



BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 1
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-9-10/0942	Date/Time Total Depth Reached 12-9-10/1010
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 1 8-oz jar (#2000)(1010)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/4/11		

Radiological Background 0.4, 13	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.4 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
0.5'				0.5 14	Silty sand with gravel, (10 YR, 4/4), brown, 55% fine to medium grained sand, 35% silt, 10% gravel (siltstone, sandstone, fill gravel), common roots and rootlets, dry, loose. TB = 0.5' No GW encountered	SM	

BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 2
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-9-10/1400	Date/Time Total Depth Reached 12-9-10/1416
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 1 8-oz jar (#20003)(1415)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/19/14		

Radiological Background 0.3, 15	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.3 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'			0.4	14	Gravelly sand, (10 YR, 4/3), brown, 65% medium grained subangular sand, 35% gravel (subangular fill gravel), medium dense to dense sand, dry. Top 2 in. is gravel TD = 0.5' No GW encountered	SP SP		



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID SB, group 1	Location ID 3
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-9-10/1348	Date/Time Total Depth Reached 12-9-10/1355
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 1 8-oz jar (#20006)(1355)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/4/11		

Radiological Background 0.3, 15	Radiological Equipment Used up R meter	PID Used Mini Raz 2000 (Background = 0.3 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'			0.3	15	<p>Silty sand with gravel, (10 YR, 4/4), brown, 65% fine to medium grained sand, 25% silt, 10% subangular gravel (fill gravel), medium dense, ^{cc} dry.</p> <p>Top 2-3 inches is gravel.</p> <p>TD = 0.5'</p> <p>No GW encountered</p>	SM	

BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID: 5b, Group 1	Location ID: 4
Drilling Company: HGL	Driller: D. Bivler	Ground Elevation: NA	Total Drilled Depth: 0.5'
Drilling Equipment: trawl/shovel	Borehole Diameter: NA	Date/Time Drilling Started: 12/04/10, 1330	Date/Time Total Depth Reached: 12/04/10, 1340
Type of Sampling Device: trawl/shovel	Samples Collected: 2008.1335 (2) 1/2 gal bag / (1) 4oz jar		
Geologist: P. Seaman	Checked by/Date: [Signature] 5/24/11		

Radiological Background: 14 NE, 0.2 ppm	Radiological Equipment Used: AP R meter	PID Used: Mini Rae 2000 (background = 0.2 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'			0.5	14	<p>silty sand silty sand, brown (10YR 4/3), moist, loose sand, 80% sand (G), 15% silt, 5% non-plastic gravel. no other</p>	SM SP MF		
<p>T.D. = 0.5'</p> <p>Groundwater not encountered</p> <p>2" granite gravel (>1/4") on surface</p>								

BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 55, Group 1	Location ID 5
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5
Drilling Equipment Trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/02/10, 1405	Date/Time Total Depth Reached 12/02/10, 1415
Type of Sampling Device Trowel/shovel	Samples Collected 200.0, 1410 (2) 1/2 gal bags, (1) 4oz jar		
Geologist D. Searns	Checked by/Date [Signature] 5/9/11		

Radiological Background 14 ne, 0.1 ppm	Radiological Equipment Used AP R meter	PID Used Mini Rae 2000 (Background = 0.14 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0.5				0.1 14	<p>Silty sand, w/ gravel dry, loose sand red. dense sand, 55% fine sand, 30% silt, 15% coarse gravel & asphalt, no odor</p> <hr/> <p>TD = 0.5 ft Groundwater not encountered 2" of granite gravel @ surface (d = 3/4")</p>	SM	

BORING LOG

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID / Group 5b / 1		Location ID 6	
Drilling Company HGL		Driller D. R. J. ...		Ground Elevation NA		Total Drilled Depth 0.5'	
Drilling Equipment trowel/shovel		Borehole Diameter NA		Date/Time Drilling Started 12/09/10, 12:35		Date/Time Total Depth Reached 12/09/10, 12:45	
Type of Sampling Device trowel/shovel				Samples Collected 200m, 1240 (2) 1/2 gal bag, (1) 4oz jar			
Geologist P. Skeam				Checked by/Date S. ... 5/4/11			
Radiological Background 0.3 ppm, 12.4		Radiological Equipment Used w/ R meter		PID Used Mini Rae 2000 (Background = 0.3 ppm)			
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
0.5'			0.2	15	<p>fine sand w/ silt w/ gravel. dark yellowish brown (10YR 4/6), dry, ^{moist} 70% fine sand, 15% silt, 15% coarse gravel fill, no color</p>	SP	
					<p>P.D = 0.5'</p> <p>2" top layer of granite gravel</p> <p>NO GW encountered</p>		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 1	Location ID 6
Drilling Company Bort Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 6ft
Drilling Equipment Geo probe	Borehole Diameter 1 3/4"	Date/Time Drilling Started 12/21/10 1423	Date/Time Total Depth Reached 12/21/10 1431
Type of Sampling Device 1 7/4" macro core acetate liner		Samples Collected 20012-1500 (2) 1/2 gallon bags, (1) 4oz jar	
Geologist I. Stan		Checked by/Date <i>[Signature]</i> 5/9/14	

Radiological Background SG / 2458	Radiological Equipment Used Pannaka / Downhole	PID Used mini RAE 2000 (Bkgd: 1.2 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
1			1.2 48		Silty Sand, yellowish brown. 65% fine sand, 35% silt, trace gravel, dry, loose-med dense, no odor or staining	SM	2303
			1.2 64				4560
			1.2 61				4526
			1.2 90				5108
			1.2 64				5252
2			1.2 59				5046
			1.2 63				5124
3			1.2 40				5190
			1.2 45				5159
			1.2 62				5220
4			1.2 57				5167
			1.2 53				4753
5			1.2 48		Bright Red (unmatched in munsell) (Possible crushed red concrete), 70% fine sand, 25% gravel, 5% silt, low dense, no odor.		3581

TD = 6ft logs
no gas encountered.

BORING LOG

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID 56, Group 1	Location ID 07				
Drilling Company HGL		Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'				
Drilling Equipment trowel/shovel		Borehole Diameter NA	Date/Time Drilling Started 12/02/10, 1445	Date/Time Total Depth Reached 12/02/10, 1450				
Type of Sampling Device trowel/shovel			Samples Collected 20012, 1445 (2) 1/2 gal bag, (1) 4oz jar					
Geologist D. S. ...			Checked by/Date Shadm 5/4/11					
Radiological Background 14 mF, 0.3 ppm		Radiological Equipment Used AP R meter		PID Used Mini Rae 2000 (Background = 0.3 ppm)				
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'				0.4	<p>primary gravel Sand w/ silt w/ gravel, dark yellowish brown (10 4R/6), dry, med. dense, 70% fine sand 15% silt, 15% 3/4" granite gravel, no other</p>	SP		
<p>TD = 0.5'</p> <p>Groundwater not reached</p> <p>1" layer of 3/4" gravel @ surface</p>								



BORING LOG

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID 5B, group 1		Location ID 8	
Drilling Company HGL		Driller H. Thompson		Ground Elevation NA		Total Drilled Depth 0.5'	
Drilling Equipment trowel/shovel		Borehole Diameter NA		Date/Time Drilling Started 12-10-10/0819		Date/Time Total Depth Reached 12-10-10/0825	
Type of Sampling Device trowel/shovel				Samples Collected 2 1/2 gall bags, 1 8-oz jar (#20016) (0825)			
Geologist C. Carmichael				Checked by/Date <i>[Signature]</i> 5/4/11			
Radiological Background 0.0, 12		Radiological Equipment Used up R meter			PID Used Mini Raz 2000 (Background = 0.0 ppm)		
Depth	Interval	Recovery	PID	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>		USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'			0.0 12	Sand with gravel, (10 YR, 6/3), greyish beige, 80% fine to medium grained subrounded sand, 20% pea gravel (fill), dry, loose. TD = 0.5' No GW encountered		SW	




BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID: 50, gravel	Location ID: 9
Drilling Company: HGL	Driller: D. Evers	Ground Elevation: NA	Total Drilled Depth: 0.5
Drilling Equipment: trowel/shovel	Borehole Diameter: NA	Date/Time Drilling Started: 12/10/10, 0815	Date/Time Total Depth Reached: 12/10/10, 0825
Type of Sampling Device: trowel/shovel	Samples Collected: 2001B, 0820 (2) 1/2 gal bags, (1) 4-oz. jar		
Geologist: P. Swann	Checked by/Date: [Signature] 5/9/11		

Radiological Background: 0.0 ppm, 12 MC	Radiological Equipment Used: AP R meter	PID Used: Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0.5				12	<p>silty sand w/ gravel, dense yellowish brown (10R 4/4), dry, medium dense, 50% fine sand, 30% silt, 20% coarse gravel, no odor</p> <p>TD = 0.5'</p> <p>Groundwater not encountered</p> <p>1" of 3/4" granite gravel</p>	SN	

BORING LOG

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID 5B, group 1		Location ID 10	
Drilling Company HGL		Driller H. Thompson		Ground Elevation NA		Total Drilled Depth 0.5'	
Drilling Equipment trowel/shovel		Borehole Diameter NA		Date/Time Drilling Started 12-9-10/1023		Date/Time Total Depth Reached 12-9-10/1236	
Type of Sampling Device trowel/shovel				Samples Collected 2 1/2 gall bags, 1 8-oz jar (#20020)(1235)			
Geologist C. Carmichael				Checked by/Date  5/9/11			
Radiological Background 0.4, 14		Radiological Equipment Used up R meter			PID Used Mini Rae 2000 (background = 0.4ppm)		
Depth (ft)	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5			0.3	14	<p>Sandy silt⁺ (10 YR, 5/3), brown, 60% silt, 25% fine to medium grained sand, 15% subangular gravel (fill rock), loose, moist, trace rootlets.</p> <p>with gravel</p> <p>TD = 0.5' bgs No groundwater encountered</p>	ML	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 11
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-9-10/0848	Date/Time Total Depth Reached 12-9-10/0915
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 1 8-oz jar (#20022)(0910)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/9/11		

Radiological Background 0.0, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background=0.0cpm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			0.2	13	Silty sand, (10YR, 4/4), brown, 60% fine to medium grained, subrounded sand, 35% silt, 5% rock fragments (sandstone, fill gravel, asphalt), few rootlets, dry, loose, piece of aluminum metal found. TD = 0.5' bgs NO GW encountered	SM		



BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID / Group 5B / 1	Location ID 12
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-9-10/1245	Date/Time Total Depth Reached 12-9-10/1307
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 1 8-oz jar (#20023)(1300)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/9/11		

Radiological Background 0.2, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.2 ppm)
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Depth Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings
						Inches (CPM)
0.5'			0.3 13	Sandy silt with gravel, (10 YR, 4/4), brown, 60% fine grained sand, 25% silt, 15% subangular gravel, loose, moist. TD = 0.5' bgs No GW encountered	ML	

BORING LOG

Project Name: SSEL Area IV Radiological Study		Project Number: EP9038.01.22.04.03	Subarea ID: 5b, Group 1	Location ID: 13			
Drilling Company: HGL		Driller: D. B. V. L. W.	Ground Elevation: NA	Total Drilled Depth: 0.5'			
Drilling Equipment: trowel/shovel		Borehole Diameter: NA	Date/Time Drilling Started: 12/09/10, 1300	Date/Time Total Depth Reached: 12/09/10, 1310			
Type of Sampling Device: trowel/shovel			Samples Collected: 20026, 1305 (2) 1/2 gal bags / (1) 4oz-jar				
Geologist: P. S. Calk			Checked by/Date: <i>[Signature]</i> 5/9/11				
Radiological Background: 0.3 ppm, 14 mR		Radiological Equipment Used: M R meter		PID Used: Mini Rae 2000 (Background = 0.3 ppm)			
Depth (ft)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
0.5				0.2, 13	poorly sorted sand w/ gravel, dark yellowish brown (10YR 4/4), 65% fine sand, 10% silt, 25% coarse gravel fill, no odor	SP	
<p>TD = 0.5 ft 1" granite gravel Groundwater not encountered</p>							



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID S5, Group 1	Location ID 14
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/09/10, 0905	Date/Time Total Depth Reached 12/09/10, 0915
Type of Sampling Device trowel/shovel	Samples Collected 2002B, 0910 (2) 1/2 gal bags, (1) 4 oz. jar		
Geologist P. Searles	Checked by/Date <i>[Signature]</i> 5/9/11		

Radiological Background 14 us, 0.000m	Radiological Equipment Used AP R meter	PID Used Mini Rae 2000 (background = 0.0 cpm)
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Depth ft	Interval	Recovery	PID (CPM)	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5					<p>silty sand w/ gravel, dark yellowish brown (D₅₀ 4/5), dry, soft ^{medium}, 45% fine sand, 35% silt, 20% gravel fill, few rootlets, no odor</p> <hr/> <p>TD = 0.51 Groundwater not encountered</p>	SM		

3'-5'



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B; group 1	Location ID 14
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 7'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1-20-11/0841	Date/Time Total Depth Reached 1-20-11/0949
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags, 1 8oz jar (#20027)(0945)		
Geologist C. Carmichael	Checked by/Date [Signature] 5/9/11		

Radiological Background 0.0, 2741, 36	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rae 2000 (Background=0.5 ppm)
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Depth (ft)	Interval	Recovery	PID	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings		
							Inches	(CPM)	
			0.0	40			0.5	2228	
								0	2792
1'			0.0	50	Sandy silt, (10 YR, 5/4), light brown, ^{ca} 70% silt, ^{ca} 30% fine grained sand, 5% gravel (fill), dry, medium stiff, some rootlets in top 2", trace sandstone rock fragments; no odor.	ML		3890	
				65				4345	
				55				4509	
2'				60				4721	
				45				4650	
3'				60			4769		
				50			4876		
4'				50	Silt with gravel, (10 YR, 3/3), dark brown, 80% silt, 20% gravel fill, dry, medium stiff, low plasticity and hardness, no odor.	ML		4896	
				55				5209	
				4.75'					
5'				55	Band with silt, (10 YR, 5/4), light brown with trace iron-oxide tinting, 80% fine to medium grained subrounded sand, 20% silt, semi-moist, medium dense, no odor	SM		5286	
				65				5225	
6'				65				5180	

Radiological Background 0.0, 2741, 36					Project Name SSFLE Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 14
Depth (ft)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
			0.0	60	Sand with silt (same as above, except significant iron-oxide tint throughout). <i>Gradational contact</i>		4962
7'			0.0	55	Sandy silt, same as 0'-4', except gray stained (10 YR 5/2)	ML	4897
					Refusal at 7' No GW encountered		



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 1	Location ID 15
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 7'6" (7 1/2')
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/26/11 / 1507	Date/Time Total Depth Reached 1/26/11 / 1518
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected Sample ID 20029 / time: 1545 (2) 1/2 gallon bags / (1) 4 oz jar		
Geologist Stephanie Lapeyre Montrose		Checked by/Date TBW 5/18/11	

Radiological Background 82 / 2544	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkqd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	55	0-4" SM silty SAND (light yellowish brown) ^{platt material} 30% silt, 15% clay, 55% fine med. grained sand, low plasticity, soft, dry	SM	0.0 = 2773
			0.0	50	4'-2'2" SM silty SAND with clay (brownish yellow 10YR 6/6) 20% clay, 25% silt, 55% fine-coarse grained sand, low plasticity, soft, dry, dense	SM	0.5 = 3710
1.0			0.0	70	1'4" asphalt debris		1.0 = 4090
			0.0	75			1.5 = 4454
2.0			0.0	57	2'2"-2'8" SC clayey SAND (brown 10YR 4/3)	SC	2.0 = 4547
			0.0	85	2'2" asphalt debris 25% clay, 15% silt, 60% fine-coarse grained sand, trace gravel-subangular, low plasticity, soft, dry		2.5 = 4637
3.0			0.0	80	2'8"-3'9" SC SAND with clay @ (brown 10YR 4/3) 20% clay, 10% silt, 65% fine-coarse grained sand, 5% gravel-subrounded, low plasticity, very soft, loose, dry	SC	3.0 = 4497
			0.0	100	3/6" red concrete piece		3.5 = 4445
4.0			0.0	100	3'9"-4'7" SC clayey SAND (brown 10YR 4/3) 25% clay, 15% silt, 60% fine-coarse grained sand, trace gravel-subangular, low plasticity, soft, dry	SC	4.0 = 4482
			0.0	65			4.5 = 4663
			0.0	65	4'7"-5' NO Recovery		
5.0			0.0	65	4'7"-5' NO Recovery		5.0 = 4716
			0.0	80	5'-5'7" CL sandy CLAY with silt (very dark grayish brown) ^{10YR 3/2} 45% clay, 20% silt, 40% fine grained sand, med. plasticity, firm, dry	CL	5.5 = 4498
			0.0	80	5'7"-7'3" SM silty SAND (brown 10YR 4/3) 15% clay, 30% silt, 50% fine-coarse grained sand, loose, low plasticity, dry, 5% gravel-subangular & subrounded	SM	

Radiological Background 82 / 2544					Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 15
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings (CPM)
			0.0	56	<p>Same as above</p> <p>Same as above</p> <p>7' color change to (brownish yellow 10YR 6/6)</p> <p>7'3"-7'6" SP SAND (yellow 10YR 8/6) 10% silt, 90% fine-coarse grained sand non plastic, very loose, clay</p> <p>TD = 7'6" (refused) NO GW encountered</p>	SM	6.0 = 4840
			0.0	45			6.5 = 4816
7.0			0.0	40			7.0 = 4956
			0.0	85			7.5 = 5051
8.0							
9.0							
10.0							

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 1	Location ID 16
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 10'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/26/11 / 1258	Date/Time Total Depth Reached 1/26/11 / 1308
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected sample ID 20030 / time 1345 (2) 1/2 gallon bags / (1) 4oz jar		
Geologist Stephanie Lepayn Montrose	Checked by/Date [Signature] 5/18/11		

Radiological Background 89 / 2635	Radiological Equipment Used Pancake / Down-hole	PID Used Mini RAE 2000 (Bkqd: 2.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			2.0	80	0-7" SM silty SAND (light yellowish brown)	SM	+0.5 = 2443
			2.0	80	30% silt, 15% clay, 55% fine med. grained sand, trace gravel - sub angular, plant material (grass & roots) low plasticity, soft, dry		0.0 = 3038
			2.0	80	2'9" trace gravel - sub angular, plant material (grass & roots) low plasticity, soft, dry		0.5 = 3873
1.0			2.0	85	7"-2'9" SM silty SAND (brownish yellow 10YR 6/6)	SM	1.0 = 4268
			2.0	91	10% clay, 40% silt, 50% fine - coarse grained sand low plasticity, soft, dry		1.5 = 4443
2.0			2.0	140	trace gravel - sub angular & subrounded		2.0 = 4398
			2.0	100			2.5 = 4308
3.0			2.0	140	2'9" - SM SAND - color change to (light yellowish brown 2.5Y 6/3)	Sw	3.0 = 4213
			2.0	140	3'3" 10% silt, 80% fine - coarse grained sand trace gravel - subrounded, very loose, dry		
			2.0	85	3'3"-4'2" SC clayey SAND (brown 10YR 4/3)	SC	3.5 = 4450
			2.0	100	25% clay, 15% silt, 60% fine - coarse grained sand low plasticity, soft, dry trace gravel - sub angular & subrounded		4.0 = 4499
4.0			2.0	100	4'2"-4'9" SM silty SAND with clay (brownish yellow 10YR 6/6)	SM	4.5 = 4627
			2.0	100	25% silt, 20% clay, 5% gravel - subangular & subrounded, 50% fine - coarse grained sand low plasticity, soft, dry		
5.0			2.0	95	4'9"-5' SC clayey SAND (very dark gray 10YR 3/1)	SC	5.0 = 4294
			2.0	95	30% clay, 10% silt, 60% fine - coarse grained sand, trace gravel - sub angular, firm, dry, med. plasticity		
			2.0	90	5'6"-6' SC clayey SAND (very dark gray 10YR 3/1)	SC	5.5 = 4533
			2.0	90	30% clay, 15% silt, 55% fine - med. grained sand med. plasticity, firm, dry		

Radiological Background					Project Name	Project Number	Location
89 / 2635					SSFL Area IV Radiological Study	EP9038.01.22.04.03	16
Depth	Interval	Recovery	PID	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings
							Inches (CPM)
				2.0	130	same as above	SC 6.0 = 4633
				2.0	100	6'4" - 6'9" CL sandy CLAY (reddish brown 5R 4/3) 15% silt, 60% clay, 25% fine grained, med. plasticity, hard, dry	CL 6.5 = 4679
7.0				2.0	90	6'9" - 7'1" SC clayey SAND (very dark gray 10R 3/1) 30% clay, 15% silt, 55% fine-med. grained sand, med. plasticity, firm, dry	SC 7.0 = 4693
				2.0	95	7'1" - 7'3" CL sandy CLAY (reddish brown 5R 4/3) 15% silt, 60% clay, 25% fine grained sand, med. plasticity, hard, dry	CL 7.5 = 4869
				2.0	89	7'3" - 8'1" SC clayey SAND (very dark gray 10R 3/1) 30% clay, 15% silt, 55% fine-med. grained sand, med. plasticity, firm, dry	SC 8.0 = 4782
8.0				2.0	98	8'1" - 8'8" SP SAND (olive brown 2.5Y 4/3) 15% silt, 85% fine coarse grained sand, non plastic, loose, dry, trace gravel - subangular	SP 8.5 = 4900
				2.0	105	8'8" - 9'1" SC clayey SAND (very dark grayish brown 10R 3/2) 25% clay, 15% silt, 60% fine coarse grained sand, low plasticity, soft, dry, trace gravel - subangular	SC 9.0 = 4835
9.0				2.0	115	9'1" - 9'3" concrete debris / concrete	
				2.0	115	9'3" - 10' SP SAND (grayish brown 2.5Y 5/2) 15% silt, 15% clay, 70% fine coarse grained sand, low plasticity, loose, dry	SP 9.5 = 4812
				2.0	75	9'6" ~ Same as above - color change to black 10R 2/1	SP 10 = 4936
10.						TD = 10' bgs NO GW encountered	

BORING LOG

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID 5b, Group 2	Location ID 1704				
Drilling Company HGL		Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'				
Drilling Equipment trowel/shovel		Borehole Diameter NA	Date/Time Drilling Started 12/02/10, 1515	Date/Time Total Depth Reached 12/02/10, 1525				
Type of Sampling Device trowel/shovel		Samples Collected 20032 (16) 20033 1520g	Dups: 20511 (MS), 50513 (Field Dup-no line) 20512 (lab dup) (2) 1/2 gal bags, (1) 4oz jar					
Geologist P. Stearn		Checked by/Date <i>[Signature]</i> 5/24/11						
Radiological Background 15 p.p.m. 0.3cpm		Radiological Equipment Used AP R meter	PID Used Mini Rae 2000 (Background = 0.3cpm)					
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0-0.5			0.3	15	sandy silt, dark yellowish brown (10YR 3/5), dry, soft, 60% silt, 40% fine sand, common gravel non-native rock fragments, common roots, ^(PS) no odor			
<p>TD = 0.5'</p> <p>Groundwater not encountered</p>								

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 1	Location ID 17
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 10'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/27/11 / 0831	Date/Time Total Depth Reached 1/27/11 / 0930
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected (2) 1/2 gallon bags / (1) 4oz jar	ID 20031	Time: 0840
Geologist Stephanie Lepere Montrose	Checked by/Date e M. Sullivan / 1/19/11	Field Dup 20560 MS 20562	

Radiological Background 49 / 12 / 2352	Radiological Equipment Used Pancake / Micro R / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.3 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.3	60	0-10" SM silty SAND with clay (light brownish yellow 10YR 6/4)	SM	0.0 = 3042
			0.3	73	20% clay, 30% silt, 50% fine-coarse grained sand, low plasticity, soft, dry, plant material (roots & grass)		0.5 = 4114
1.0			0.3	70	10"-2' SC SAND with clay (yellowish brown 10YR 5/4)	SC	1.0 = 4301
			0.3	55	20% clay, 10% silt, 70% fine-coarse grained sand, low plasticity, soft, dry		1.5 = 4532
2.0			0.3	59	trace gravel - subangular & subrounded concrete debris		2.0 = 4545
			0.3	75	2-2'7" SC clayey SAND (brown 10YR 4/3) 30% clay, 15% silt, 55% fine-coarse grained sand	SC	2.5 = 4669
			0.3	62	concrete debris, trace gravel - subangular, low-med plasticity, soft, dry		3.0 = 4479
3.0			0.3	55	2'7"-3'2" SC SAND with clay (yellowish brown 10YR 5/4) 20% clay, 10% silt, 70% fine-coarse grained sand, trace gravel - concrete debris, low plasticity, very soft, dry	SC	3.5 = 4634
4.0			0.3	75	3'2"-5' SC clayey SAND (brown 10YR 4/3) 35% clay, 15% silt, 50% fine-coarse grained sand, low-med plasticity, soft, dry	SC	4.0 = 4545
			0.3	55	trace gravel subangular concrete debris		4.5 = 4365
5.0			0.3	49	5"-5'2" Same as (3'2"-5') above (brown 10YR 4/3)	SC	5.0 = 4416
			0.3	54	5'2"-6' SC SAND with clay (yellowish brown 10YR 5/4) 20% clay, 15% silt, 65% fine-coarse grained sand, low plasticity, soft, dry concrete debris	SC	5.5 = 4508

Radiological Background				Project Name	Project Number	Location		
49	12	2352		SSFL Area IV Radiological Study	EP9038.01.22.04.03	17		
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
			0.3	46	6'-7' SC clayey SAND (very dark grayish brown 10YR 3/2)	SC	6.0	4724
			0.3	75	35% clay, 15% silt, 50% fine - coarse sand red concrete debris, med. plasticity, soft-firm, dry		6.5	4870
			0.3	69	6'-7' CL sandy CLAY (color change to brown 7.5YR 4/4)	CL	7.0	4926
			0.3	80	45% clay, 10% silt, 45% fine grained sand med. plasticity, hard, dry		7.5	4754
			0.3	70	7'-9' SC clayey SAND (dark grayish brown 10YR 4/2)	SC	8.0	4905
			0.3	85	25% clay, 15% silt, 60% fine - coarse grained sand, trace concrete debris granul - sub angular subrounded low plasticity, soft, dry		8.5	4765
			0.3	65	8'-9' dark staining - organic odor		9.0	4902
			0.3	55	9'-10' SP SAND (brownish yellow 10YR 6/6)	SP	9.5	4889
			0.3	65	10% clay, 15% silt, 75% fine - coarse grained sand trace granul - sub rounded, non plastic, loose, dry red concrete debris and gray concrete debris		10	4661
					TD = 10' logs NO GW encountered			



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID Sh; Group 2	Location ID 18
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment Trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/27/10, 0835	Date/Time Total Depth Reached 12/27/10, 0845
Type of Sampling Device Trowel/shovel	Samples Collected 20034, 0840 (2) 1/2 gal bags / (1) 4oz jar		
Geologist P. Sireath	Checked by/Date [Signature] 5/9/11		

Radiological Background 15 ppb, 0.0 ppm (PID)	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0.5					silty sand w/ gravel, dark yellowish brown (WYA 4/6), clay, ^{medium} silt, 50% fine sand, 30% silt, 20% gravel fill, few rootlets, no odor	SM	
TO = 0.5' Groundwater not encountered							

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 1	Location ID 18
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 10'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/25/11 / 0828	Date/Time Total Depth Reached 1/25/11 / 0938
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected Sample 10 20033 / time 1110 / Date: 1/26/11 (2) 1/2 gallon bags / (1) 4 oz jar		
Geologist Stephanie Lapeyrie Dentrose	Checked by/Date J.S.W 5/18/14		

Radiological Background 37 / 2499	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.10 ppm)
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Depth Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0.0 - 0.5		65	65	0-4" SC SAND with clay 20% clay, 10% silt, 70% fine-coarse grained sand trace gravel - subangular, low plasticity, very soft, dry 1.9hr olive brown 2.5Y 5/3	SC	0.0 = 2867
0.5 - 1.0		75	75	4"-11" SP SAND 15% clay, 15% silt, 70% fine-coarse grained sand trace gravel - subangular, low plasticity, very soft, dry (light olive brown 2.5Y 5/4)	SP	0.5 = 3831
1.0 - 1.5		60	60	1"-1 1/2" SP SAND (light olive brown 2.5Y 5/4)	SP	1.0 = 4148
1.5 - 2.0		70	70	15% clay, 15% silt, 70% fine-med. grained sand trace gravel - sub angular, low plasticity, very soft, dense, dry		1.5 = 4366
2.0 - 2.5		80	80	1 1/2" - 2 1/2" SC SAND with clay 20% clay, 15% silt, 65% fine-coarse grained sand trace gravel - low plasticity, soft, dry, building material debris	SC	2.0 = 4431
2.5 - 3.0		90	90	2 1/2" - 3 1/2" SM silty SAND with clay 20% clay, 30% silt, 50% fine-med. grained sand low plasticity, soft, dry (yellowish brown 10YR 5/4)	SM	2.5 = 4711
3.0 - 3.5		58	58	2 1/2" - 3 1/2" SM - same as above - color change to (very dark brown 10YR 2/2) - same as above - color change to (dark yellowish brown 10YR 3/10)	SM	3.0 = 4966
3.5 - 4.0		72	72	3 1/2" - 4 1/2" SC clayey SAND with silt (very dark brown 10YR 2/2)	SC	3.5 = 5174
4.0 - 4.5		80	80	20% silt, 25% clay, 55% fine grained sand low plasticity, soft, dry		4.0 = 5199
4.5 - 5.0		75	75			4.5 = 5245
5.0 - 5.5		72	72	4 1/2" - 5' no recovery		5.0 = 5547
5.5 - 6.0		82	82	5 1/2" - 6 1/2" ML clayey SILT with sand (brown 10YR 5/3)	ML	5.5 = 5671
6.0 - 6.5				30% clay, 25% fine grained sand, 55% silt low-med. plasticity, soft, dry		

Date: 1/26/11
10
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Radiological Background				Project Name	Project Number	Location	
37 / 2499				SSFL Area IV Radiological Study	EP9038.01.22.04.03	18	
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole
							Gamma Readings
							Inches (CPM)
			0.0	75	Same as above	ML	6.0 = 5617
			0.0	80	6'5" - 7'5" SP SAND (yellowish brown 104R 5/6)	SP	6.5 = 5655
7.0			0.0	85	15% silt, 85% fine to coarse grained sand, trace red concrete non plastic, loose, dry		7.0 = 5535
			0.0	46	7'5" - 7'9" SP SAND (dark yellowish brown) 15% silt, 85% fine to coarse grained sand 104R 4/4 non plastic, loose, dry	SP	7.5 = 5325
8.0			0.0	57	7'9" - 9'7" SM silty SAND with clay (grayish brown) 25% silt, 55% fine to coarse grained sand	SM	8.0 = 5287
			0.0	69	low plasticity, well indurated sand, dry, concrete debris		8.5 = 5331
9.0			0.0	55	9'3" - 9'4" wood debris		9.0 = 5802
			0.0	60	9'7" - 10' NO recovery		9.5 = 6215
10.0			0.0	105	TO = 10' bgs NO GW encountered		10.0 = 6351

3'-5'



5B_019



BORING LOG

Sheet 1 of 1

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID 5B:group 1		Location ID 19	
Drilling Company Cascade		Driller H. Lopez		Ground Elevation NA		Total Drilled Depth 5'	
Drilling Equipment Geoprobe 6600		Borehole Diameter 1 3/4"		Date/Time Drilling Started 1-20-11/0950		Date/Time Total Depth Reached 1-20-11/1039	
Type of Sampling Device 1 3/4" macrocore				Samples Collected 2 1/2 gall bags, 1 8oz jar (#20035) (1030)			
Geologist C. Carmichael				Checked by/Date <i>[Signature]</i> 5/9/11			
Radiological Background 0.0, 2446, 51		Radiological Equipment Used Pancake meter, Downhole scanner		PID Used Mini Rae 2000 (Background=0.0 ppm)			
Depth (FID)	Interval	Recovery	Radiological CPD 60	Description <small>(include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
						Inches	(CPM)
1' 2' 3' 4' 5'			60	Sand with clay (10 YR, 5/3) greyish light brown, 80% fine grained subrounded sand, 20% clay, no hardness or plasticity, dry, medium dense, no odor.	SC	0.5	2538
			65	Silt with clay and sand, (10 YR, 3/2), dark brown, 60% silt, 20% clay, 20% fine grained sand, semi-moist, medium stiff, low to medium hardness, low plasticity, no odor.	ML	0	3024
			60		ML	4854	
			65	Some gray staining toward 2.9'		5266	
			55			5392	
			56	Thin sand bed (fine grained, subrounded), (10 YR, 4/4)	SP	5629	
			3'	Silt with clay (same as 1'-2.9'), except see	ML		
			60	Sand (10 YR, 6/6), light orange-ish brown, 95% fine to medium grained subrounded sand, 5% silt, dry, medium dense, no odor.	ML	5599	
			70		SP	5302	
			70			5122	
		85	Refusal hit at 5'. No GW encountered		5115		



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 20
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-9-10/0831	Date/Time Total Depth Reached 12-9-10/0845
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gal bags, 1 8-oz jar (#20037)(0842)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/9/11		

Radiological Background 0.0, 10	Radiological Equipment Used w/ R meter	PID Used Mini Rae 2000 (Background=0.0 ppm)
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Depth (ft)	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5				0.0 14	Silty sand, (10YR, 5/4), brown, 65% fine to medium grained, subrounded sand, 35% silt, trace rounded rock fragments (fill pea gravel), trace rootlets, dry, loose. TD = 0.5' bgs No GW encountered	SM		



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 1	Location ID 21
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 10'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/27/11 / 1014	Date/Time Total Depth Reached 1/27/11 / 1030 (1050)
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected ID 20038 / time 1025 (2) 1/2 gallon bags / (1) 4oz jar		
Geologist Stephanie Lopez Montrose	Checked by/Date		

(52)

Radiological Background 52 / 13	Radiological Equipment Used Pancake / Downhole / MUDR	PID Used Mini RAE 2000 (Bkgd: 0.16 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.6	75	0-3" SM silty SAND (brown 10YR 5/3) 30% silt, 15% clay, 55% fine-coarse grained sand, low plasticity, soft, dry	SM	0.0 = 3285
			0.9	90	3"-2'6" SM silty SAND with clay (dark brown 10YR 3/3) 20% clay, 25% silt, 55% fine-coarse grained sand low plasticity, soft, dry, trace gravel - sub angular	SM	0.5 = 4172
1.0			1.0	105	8" same as above - color change to brownish yellow (10YR 6/6)		1.0 = 4307
			1.0	60	same as above		1.5 = 4347
2.0			1.0	55			2.0 = 4310
			1.0	75	2'6" - 3'2" SP SAND (yellowish brown 10YR 5/4) 15% clay, 15% silt, 70% fine-coarse grained sand non plastic, loose, dry trace gravel - sub angular & sub rounded	SP	2.5 = 4208
3.0			1.0	75			3.0 = 4381
			1.1	55	3'2" - 4'5" SC clay, SAND (brown 10YR 4/3) 33% - concrete debris 25% clay, 15% silt, 60% fine-coarse grained sand low plasticity, very soft, dry trace gravel - sub angular	SC	3.5 = 4667
4.0			1.1	65			4.0 = 4588
			1.0	70	4'5" - 4'11" SM silty SAND with clay (very dark grayish brown) 20% clay, 30% silt, 50% fine-coarse grained sand low plasticity, soft, dry	SM	4.5 = 4466
5.0			1.0	59	4'11" - 5' NO Recovery		5.0 = 4477
			1.0	100	5' - 5'2" SM silty SAND with clay (very dark grayish brown) 20% clay, 30% silt, 50% fine-coarse grained sand low plasticity, soft, dry	SM	5.0 = 4477
			1.0	100	5'2" - 6' SM silty SAND (dark brown 10YR 3/3) 15% clay, 25% silt, 60% fine-coarse grained sand low plasticity, soft, dry trace red concrete debris	SM	5.5 = 4550

Radiological Background					Project Name	Project Number	Location
52 / - / 13					SSFL Area IV Radiological Study	EP9038.01.22.04.03	21
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings
							Inches (CPM)
7.0			1.0	50	6' - 7' 9" SC clayey SAND (very dark grayish brown 10YR 3/2) ② 35% clay, 15% silt, 50% fine-med. graded sand, med. plasticity, hard, dry trace red concrete debris	SC	6.0 = 4489
			1.1	65			6.5 = 4696
			1.9	75			7.0 = 4714
			1.2	85			7.5 = 4586
			1.4	65			8.0 = 4650
8.0			1.2	55	7' 9" - 10' SC clayey SAND with silt (very dark grayish brown 10YR 3/2) 30% clay, 20% silt, 50% fine-med. graded sand, trace gravel-subangular, trace concrete debris med. plasticity, firm, dry	SC	8.5 = 4755
			1.2	68			9.0 = 4573
			1.3	115			9.5 = 4718
9.0			1.2	68			9.0 = 4573
			1.3	115			9.5 = 4718
10.0			1.3	73	TD = 10' bgs NO GEL encountered		10.0 = 4829

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 22
Drilling Company HGL	Driller M. Hughes	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-8-10/1540	Date/Time Total Depth Reached 12-8-10/1551
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 1 8-oz jar (#20040) (1550)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/9/11		

Radiological Background 0.7, 14 (Pb)	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background=0.7ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'			0.8	14	Gravelly sand with silt, (10 YR, 4/3), 60% fine to medium grained subangular sand, 20% silt, ^{ca} 20% 25% gravel (0.5-2 inch diameter) fill and sandstone, 15% silt, some rootlets, dry, loose. TD=0.5' bgs No GW encountered	SW		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 1	Location ID 22
Drilling Company: Beart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 3'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/19/11 / 1343	Date/Time Total Depth Reached 1/19/11 / 1347
Type of Sampling Device 1 3/4" macrocore acetate liners	Samples Collected 10 20039 / fine 1405 (2) 1/2 gallon bags / (1) 4oz jar		
Geologist Stephanie Lapeyre Montrose	Checked by/Date RW 5/24/11		

Radiological Background 47 / 2588	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	30	0'-7" SL clayey SAND (yellowish brown 10R 5/4)	SC	±0.5 = 2572
			0.0	42	5% gravel-subangular, 15% silt, 25% clay, 55% fine to coarse grained sand, low plasticity, soft, dry		0.0 = 3439
					7"-8" SW SAND (yellowish brown 5Y 2)	SW	0.5 = 4485
			0.0	24	5% gravel-subangular, 10% silt, 85% fine to coarse grained sand, very loose, clay		1.0 = 5053
					8"-1'10" SL clayey SAND (dark brown 7.5 YR 3/3)	SC	1.5 = 5327
			0.0	44	15% silt, 25% clay, 60% fine to med. grained sand, low plasticity, soft, clay		2.0 = 5548
					1'10"-3' SP SAND (yellow 10YR 7/6)	SP	2.5 = 5516
			0.0	64	10% silt, 90% fine to coarse grained sand		3.0 = 5566
			0.0	76	trace gravel-subangular, loose, clay		
					TD = 3' bgs (refused)		
					NO GWS encountered		



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID: 5B, group 1	Location ID: 24
Drilling Company: HGL	Driller: M. Thompson	Ground Elevation: NA	Total Drilled Depth: 0.5'
Drilling Equipment: trowel/shovel	Borehole Diameter: NA	Date/Time Drilling Started: 12-22-10/0959	Date/Time Total Depth Reached: 12-22-10/1005
Type of Sampling Device: trowel/shovel	Samples Collected: 2 1/2 gall bags, 8-oz jar (#20043)(1005)		
Geologist: C. Carmichael	Checked by/Date: <i>[Signature]</i> 5/9/11		

Radiological Background: 0.0, 14	Radiological Equipment Used: up R meter	PID Used: Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'			0.0	14	<p>Silty sand with rock fragments, (10 YR 4/2), greyish-brown, 60% fine grained subangular sand, 20% silt, 10% rock fragments (sandstone), some rootlets, wet, loose, water table supersaturated to surface, no odor.</p> <p>TD = 0.5' bgs Note: heavy rain while sampling</p>	SM		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B / 1	Location ID 24
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 10'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/19/11 / 1023	Date/Time Total Depth Reached 1/19/11 / 1030
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 10 20042 / 1120 (2) 1/2 gallon bags / (1) 4oz jar		
Geologist Stephanie Lapuyé Montrose	Checked by/Date [Signature] 5/24/11		

Radiological Background 47 / 2744	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgr: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches (CPM)</small>
			0.0	44	0'-6" SM silty SAND 25% silt, 75% fine to (yellowish brown 10YR 5/4) plant material (roots), trace gravel - subangular, non plastic, soft, dry fine grained sand	SM	0.0 = 3606
			0.0	71	6"-11" SL clayey SAND 30% clay, 15% silt, 55% fine to med. grained sand low plasticity, soft, dry (brown 10YR 4/3)	SL	0.5 = 4565
1.0			0.0	88	11"-1' SW SAND 10% silt, 85% fine to coarse grained sand 5% gravel - subangular & subrounded, non plastic, loose, dry (dark brown 10YR 3/3)	SW	1.0 = 5050
			0.0	112	1'1" - 2'2" SL clayey SAND 30% clay, 15% silt, 55% fine to med. grained sand low - med. plasticity, soft, dry (brown 10YR 4/3)	SL	1.5 = 5309
2.0			0.0	76			2.0 = 5330
			0.0	79	2'2" - 2'5" SL clayey SAND 25% clay, 15% silt, 60% fine grained sand low plasticity, soft, dry (dark brown 10YR 3/3)	SL	2.5 = 5108
			0.0	55	2'5" - 4'10" SL clayey SAND 35% clay, 10% silt, 55% fine grained sand med. plasticity, hard, dry (dark brown 7.5YR 3/3)	SL	3.0 = 5056
3.0			0.0	72			3.5 = 5048
			0.0	109			4.0 = 5048
			0.0	58			4.5 = 5062
5.0			0.0	96	4'10" - 5' NO Recovery		5.0 = 5022
					5' - 5'9" SL clayey SAND (dark yellowish brown 10YR 3/4) 30% clay, 10% silt, 60% fine grained sand med. plasticity, firm, dry	SL	5.5 = 5085
					5'9" - 8' SL clayey SAND (black 10YR 2/1) 35% clay, 25% silt, 50% fine grained sand med. plasticity, hard, dry	SL	

Radiological Background 47 / 2744				Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 24	
Depth	Interval	Recovery	RPD	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings
							Inches (CPM)
			0.0	44	SC clayey sand (black 10YR 2/1) 35% clay, 15% silt, 50% fine grained sand med. plasticity, hard, dry	SC	6.0 = 5164
			0.0	99			6.5 = 5133
7.0			0.0	95			7.0 = 4997
			0.0	71			7.5 = 5092
			0.0	42	Same as above	SC	8.0 = 5139
8.0			0.0	56			8.5 = 5178
			0.0	58	8'-8'11" SC clay, sand with silt (dark grayish brown) 25% clay, 20% silt, 55% fine grained sand low plasticity, soft, dry (10YR 4/2)	SC	9.0 = 4835
9.0			0.0	70	9.5 = 4852		
			0.0	93	8'11"-10' SC clayey sand (brown 7.5YR 4/4) 35% clay, 10% silt, 65% fine grained sand med. plasticity, hard, dry	SC	10 = 4862
10.					TD = 10' bgs NO GW encountered		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B / 1	Location ID 25
Drilling Company Beart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 10'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/19/11 / 0855	Date/Time Total Depth Reached 1/19/11 / 0904
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected (2) 1/2 gallon bags / (1) 4oz jar	ID 20044 / 0945	
Geologist Stephanie Lepaym Northrose	Checked by/Date TRW 5/24/11		

Radiological Background S1 / 2713	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	54	0'-10" SM silty SAND with clay (yellowish brown 10YR 5/4) 20% clay, 25% silt, 55% fine to medium grained sand plant debris/moderate (twigs, roots) low plasticity, soft, dry	SM	0.0 = 3278
			0.0	60			0.5 = 4689
1.0			0.0	48	10"-1' SM SAND with silt (brown 10YR 4/3) 15% clay, 20% silt, 65% fine to medium grained sand low plasticity, soft, dry, dense	SM	1.0 = 4950
			0.0	65	1'-2' 7" ML sandy SILT with clay (dark yellowish brown 10YR 4/4) 25% clay, 45% silt, 30% fine to med. grained sand low plasticity, firm, dry	ML	1.5 = 5120
2.0			0.0	63			2.0 = 4878
			0.0	45			2.5 = 5036
3.0			0.0	40	2' 7" MH clayey SILT with sand (dark brown 10YR 3/3) 35% clay, 25% fine to med. grained sand, 40% silt low-med plasticity, firm, dry	MH	3.0 = 5200
			0.0	82	3' 4" color change to (yellowish brown 10YR 5/4) Same as above		3.5 = 5290
4.0			0.0	46	3' 8" color change to (dark brown 10YR 3/3)		
			0.0	46	3' 10" - 4' 2" MH clayey SILT with sand (yellowish brown 10YR 5/6) 30% clay, 25% fine grained sand, 45% silt low plasticity, firm, dry	MH	4.0 = 5317
			0.0	55	4' 2" - 6' SM silty SAND (brownish yellow 6/6) 20% clay, 25% silt, 55% fine to medium grained sand low plasticity, soft, dry	SM	4.5 = 5306
5.0			0.0	56	5'-6' same as above - trace gravel - subangular		5.00 = 5298
			0.0	87	same as above		5.5 = 5286

Radiological Background				Project Name	Project Number	Location	
SI / 2713				SSFL Area IV Radiological Study	EP9038.01.22.04.03	25	
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings
						Inches	(CPM)
			0.0	48	6'-82" SC clayey sand with silt (dark yellowish brown) 25% clay, 20% silt, 55% fine to med grained sand low plasticity, soft-dry	SC	6" = 5446
			0.0	63			6.5" = 5282
70			0.0	62			7.0" = 5256
			0.0	90	Same as above		7.5" = 5289
80			0.0	70			8.0" = 5093
			0.0	57	8'2" color change SM silty sand with clay (brown 104R 4/3) 20% clay, 30% silt, 50% fine to med grained sand low plasticity, firm-dry	SM	8.5" = 5240
			0.0	55	8'9" color change SC clayey sand with silt (yellowish brown 104R 5/4) 25% clay, 20% silt, 55% fine-med. grained sand low plasticity, soft-dry	SC	9.0" = 5172
90			0.0	52	9'5-10' CL silty CLAY with silt (Strong brown 7.5R 4/6) 45% clay, 25% fine grained sand, 30% silt med. plasticity, hard, dry roots	CL	9.5" = 4931
10.			0.0	93	TD = 10' b55 NO GW encountered		10" = 5019

BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID SB, group 1	Location ID 26
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-8-10/1106	Date/Time Total Depth Reached 12-8-10/1130
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall. bags, 1 8-oz jar (#20046)(1130)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/9/11		

Radiological Background 0.5, 13	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (background=0.5ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches (CPM)</small>
0.5			0.8	13	<p>Sand with silt and gravel, (10YR, 3/3), brown, 75% fine to medium-grained subrounded sand, 20% silt, 5% pea gravel (mainly fill, loose, moist, trace rootlets.</p> <p>TD=0.5' bgs No gw encountered</p>	SM	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 1	Location ID 26
Drilling Company Bort Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 104'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 12/17/10 1358	Date/Time Total Depth Reached 12/17/10 1403
Type of Sampling Device 1 3/4" macro core acetate liner	Samples Collected: 20045 ~ 1425 (2) 1/2 gallon bags; (1) 4oz jar		
Geologist Ian Stone	Checked by/Date [Signature] 5/27/11		

Radiological Background 41 / 2680	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Background = 0.1ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches 0.5 = 2608 (CPM)
1			0.1 47		Sandy silt, Brown (5/3 104R) 70% silt, 30% fine sand, trace gravel, dry, med dense, no odor or staining, low toughness, low strength.	ML	3889
			0.1 74	5018			
			0.1 63	5220			
			0.1 72	5188			
2			0.1 90		Silty Sand, Yellowish Brown (5/6 104R) 80% sand, 20% silt, dry, loose-med dense, no odor or staining, trace gravel.	SM	5192
			0.1 102	5345			
3			0.1 61				5393
			0.1 50	5203			
4			0.1 59				5225
			0.1 65	5110			
5			0.1 73		Sandy silt, Brown (5/3 104R) 70% silt, 25% fine sand, 5% gravel 70% silt, 30% fine sand, dry low strength, low toughness, no odor, continued	ML	5035
			0.1 37	5115			
6			0.1				5116

next page

Radiological Background					Project Name	Project Number	Location	
41 / 2680					SSFL Area IV Radiological Study	EP9038.01.22.04.03	5B, 1, 26	
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
7			0.1	48	SFS staining from 7.5' - 8.0'. possible	ML		5116
			0.1	55			5018	
8			0.1	39	Staining & end staining	ML		5080
			0.1	55			4740	
9			0.1	71	Silty Clay, Reddish brown (5/4.5YR) 65% clay, 30% silt, 5% fine sand, dry, med plasticity, med tough, med strength, no odor or staining.	CL		4890
			0.1	55			5016	
			0.1	84			4680	
			0.1	81			4736	
10			0.1	61				NM
					TID = 10ft logs No gw encountered			

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 27
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 1.4'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 1-5-11/1531	Date/Time Total Depth Reached 1-5-11/1545
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 1 8-oz jar (#20048) (1540)		
Geologist C. Carmichael	Checked by/Date [Signature] 5/9/11		

Radiological Background PID 0.1, 12	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.1 cpm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'					3" asphalt			
1'					7" fill rock			
1.5'			0.1 12		Sandy silt with clay, ^{and rock fragments} (10 YR, 4/2), greyish brown, 55% silt, 25% fine grained subrounded sand, 10% clay, 10% rock fragments (asphalt and fill rocks), wet, medium stiff, no odor.	ML		
					Surface water Groundwater encountered! (sw)			



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID & Group: 5B 1	Location ID: 27
Drilling Company: Bort Longyear	Driller: D. Hansen	Ground Elevation: NA	Total Drilled Depth: 9ft
Drilling Equipment: Geo probe	Borehole Diameter: 1 3/4"	Date/Time Drilling Started: 12/15/10 0914	Date/Time Total Depth Reached: 12/15/10 0924
Type of Sampling Device: 1 3/4" macrocore acetate liners	Samples Collected 20047 - 0940 (2) 1/2 gallon bags, (1) 4oz jar		
Geologist: I. Stone	Checked by/Date: <i>[Signature]</i> 5/19/11		

Radiological Background: 41 / 2648	Radiological Equipment Used: Pancake / Down hole	PID Used: mini RAE 2000 (Range: 0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches = 2468 (CPM)
			0.1	16	ASPHALT 2 1/2"		2934
			0.1	71	Gravelly sand, Dark grayish Brown (4/2 10YR) 70% fine-medium grained sand, 30% fine gravel, loose, dry, non-sticky	SP	4100
1			0.2	48	Sandy silt, very dark grayish brown (3/2 10YR) 70% silt, 5% clay, 25% fine sand, dry, med dense, low plasticity, low toughness, low strength. NO odor or staining.	ML	4888
			0.2	47			5042
2			0.2	50			5116
			0.2	35			5006
3			0.2	70			5132
			0.2	64			5162
4			0.2	58	Silty SAND, Greenish Gray (5/10GY 6.5Y2) 75% fine sand, 25% silt, dry, loose-med dense no odor, some staining (4'2"-5')	SM	5286
			0.2	31			5242
5			0.2	66	Silty Clay, ^{very} Dark grayish brown (3/2 10YR) 65% clay, 30% silt, 5% fine sand, dry, med plasticity, med. tough, med. strength, no odor or staining	CL	5106
			0.2	75			4848
6			0.3	46	SANDSTONE cobbles, weathered sandstone cobbles Very pale brown (7/3 10YR)		4980

Radiological Background				Project Name	Project Number	Location	
41 / 2648				SSFL Area IV Radiological Study	EP9038.01.22.04.03	27	
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings
							Inches
			0.3	46	Same as above		4980
			0.3	32	Silty SANDS, Brown (4/3 10YR) 70% fine sand, 30% silt, dry loose - med dense, no odor. some staining (8'10" - 9') color change: yellowish brown (5/6 10YR)	SM	5312
7			0.2	19			5535
			0.3	51			5813
8			0.3	56			5763
			0.2	75			5538
9			0.3	60	staining color: greenish gray (5/10 6Y GLEY)		5561
TD = 9 ft bgs no gw encountered							



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB 2	Location ID 28
Drilling Company Bort Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 2ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 12/15/10 1111	Date/Time Total Depth Reached 12/15/10 1118
Type of Sampling Device 1 3/4" macrozone acetate liner	Samples Collected 20049-1140 (2) 1/2 gallon bags + (1) 4oz jar		
Geologist I. Stone	Checked by/Date		

Radiological Background 48 / 2362	Radiological Equipment Used Pacobe / Downhole	PID Used Mini RAE 2000 (Background=0.8)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole
							Gamma Readings Inches (CPM)
			0.9	44	ASPHALT 2.5"		2311
			0.9	75	Silty SAND, 60% fine grained sand, 40% silt, med dense, dry, no odor or staining	SM	3438
1			0.9	56			4777
			0.9	68			5147
			0.9	72			5078
2			0.9	72	SAND (weathered sandstone), 100% fine sand, dry, low dense	SP	NM
TD = 2ft bgs (refusal) No GW encountered							



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 29
Drilling Company HGL	Driller M. Hughes	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-8-10/1428	Date/Time Total Depth Reached 12-8-10/1436
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 1 8-oz jar (#20051) (1435)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/9/11		

Radiological Background D-7, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.7 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'			0.8	14	Sand with silt, (10YR, 4/4), brown, 75% fine grained subrounded sand, 20% silt, 5% rock fragments, few rootlets, moist, loose. TD= 0.5' bgs No Gw encountered	SM		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 1	Location ID 29
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 10'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/20/11 / 1315	Date/Time Total Depth Reached 1/20/11 / 1322
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 10 20050 / 1400 (2) 1/2 gallon bags / (1) 4 oz jar		
Geologist Stephanie Laperey Morin	Checked by/Date TJW 5/24/11		

Radiological Background 65 / 2551	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	94	0-3" SW SAND with silt 5% clay, 20% silt, 65% fine to coarse grained sand plant material (roots, grass), low plasticity, very soft, dense	SM	0.0 = 3305
			0.0	79	3"-9" same as above - no plant material		0.5 = 4521
			0.0	90	9"-17" SP SAND 10% clay, 15% silt, 75% fine to coarse grained sand trace gravel - subangular & subrounded low plasticity, very soft, loose, dry	SP	1.0 = 4558
			0.0	62	17"-19" sandstone (yellow 10YR 6/6)		1.5 = 4616
			0.0	40	19"-2'6" SC clayey SAND with silt 25% clay, 20% silt, 55% fine to coarse grained sand asphalt debris, trace gravel - subangular & subrounded low plasticity, soft, dry	SC	2.0 = 4735
			0.0	57	2'6"-2'7" concrete debris		2.5 = 4669
			0.0	60	2'7"-2'10" SC clayey SAND, 25% clay, 15% silt, 60% fine to coarse sand (brown 10YR 4/3) 2'10"-3'1" concrete debris		3.0 = 4203
			0.0	49	3'1"-4'1" SC clayey SAND 25% clay, 15% silt, 60% fine to coarse grained sand low plasticity, soft, dry piece of building material	SC	3.5 = 4654
			0.0	85	4'1"-5' NO recovery		4.0 = 4611
			0.0	76			4.5 = 4517
			0.0	51			5.0 = 4787
			0.0	65	5'-5'1/2" SC clayey SAND 25% clay, 15% silt, 60% fine to coarse grained sand low plasticity, soft, dry	SC	5.5 = 4601
			0.0	65	5'1/2"-6'6" SC clayey SAND 30% clay, 15% silt, 55% fine to coarse grained sand, low plasticity, firm, dry	SC	

Radiological Background 65 / 2551				Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 29	
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings
							Inches (CPM)
			0.0	42	Same as above	SC	6.0 = 4645
			0.0	63	6'6" - 7' CL sandy CLAY with silt (brown 7.5R 4/4) 40% clay, 20% silt, 40% fine grained sand	CL	6.5 = 4729
7.0			0.0	56	high plasticity, hard, dry		
			0.0	104	7' - 7'2" SL clayey SAND 25% clay, 15% silt (brown 10YR 4/3) 60% fine to coarse grained sand, low plasticity, soft, dry	SC	7.0 = 4726
			0.0	104	7'2" - 8'7" SL clayey SAND (dark grayish brown 10YR 4/2) 7'4" same as above - concrete debris	SC	7.5 = 4579
8.0			0.0	87	25% clay, 15% silt, 60% fine to coarse grained sand, low plasticity, soft, dry, no odor		8.0 = 4842
			0.0	88	8'5" - Same as above - concrete debris		8.5 = 4736
9.0			0.0	59	8'7" - 10' SL clayey SAND (brown 10YR 4/3) 25% clay, 15% silt, 60% fine to coarse grained sand	SC	9.0 = 4654
			0.0	46	building material debris low plasticity, soft, dry		9.5 = 4807
10.0			0.0	97			10 = 4726
<p>TD = 10' bgs NO GW encountered</p>							



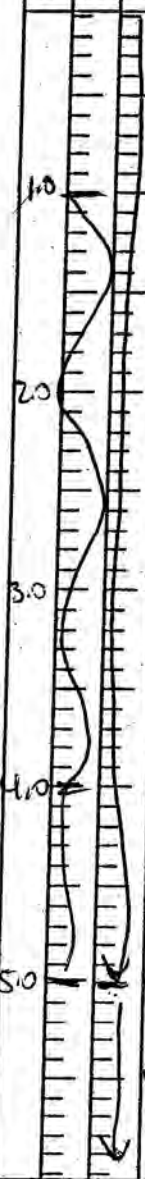
BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B / 1	Location ID 30
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 10'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/20/11 / 1010	Date/Time Total Depth Reached 1/20/11 / 1030
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected (2) 1/2 gallon bags / (1) 4 oz jar		
Geologist Stephanie Lapeyre Norrose	Checked by/Date TGW 5/24/11		

also collected:
MS: 20556
Lab cup: 20554
Field dup: 20555

Radiological Background S7 / 2415	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkqd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	74	0'-9" SM silty SAND with clay (yellowish brown 10YR) 20% clay, 25% silt, 55% fine to coarse grained sand 5/4 low plasticity, soft, dense, dry, trace subrounded gravel	SM	0.0 = 2973
			0.0	57	9'-1' SM SAND with silt 15% silt, 10% clay, 75% fine to coarse grained sand piece of plastic wiring, low plasticity, dense, dry	SM	0.5 = 3957
			0.0	32	1'-2'8" SM silty SAND (light yellowish brown 2.5Y 6/4) 10% clay, 25% silt, 65% fine to coarse grained sand red concrete debris, trace subrounded gravel low plasticity, very soft, dense, dry	SM	1.0 = 4391
			0.0	51	1'-11" same as above - color change (brownish yellow 10YR 6/6) trace concrete debris, trace subrounded gravel	SM	1.5 = 4469
			0.0	67			2.0 = 4296
			0.0	62			2.5 = 4309
			0.0	71	2'8" - 2'10" SW SAND (yellowish brown 10YR 5/4) 10% silt, 10% clay, 80% fine to coarse grained sand 10% gravel - subangular	SW	3.0 = 4509
			0.0	78	2'10" - 3'4" SC clay SAND (dark brown 7.5YR 3/3) 30% clay, 20% silt, 50% fine to coarse grained sand, trace gravel - subangular, low plasticity, soft, dry	SC	3.5 = 4439
			0.0	60	3'4" - 4'5" CL sandy CLAY (dark brown 7.5YR 3/3) 40% clay, 15% silt, 45% fine to coarse grained sand, med plasticity, hard, dry	CL	4.0 = 4621
			0.0	39	4'5" - 5'10" SC clayey SAND (very dark grayish brown 10YR 3/3) 15% silt, 30% clay, 55% fine to coarse grained sand med plasticity, firm, dry	SC	4.5 = 4549
			0.0	41			5.0 = 4512
			0.0	61	5'10" - 6'6" SC clayey SAND (brown 10YR 4/3) 25% clay, 75% fine to coarse grained sand trace gravel - subangular & subrounded low plasticity, soft, dry	SC	5.5 = 4616



Radiological Background 57 / 2415				Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 30		
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
			0.0	97	same as above		6.00	4708
			0.0	89	6'6" - 10' ⁶ sandy CLAY (very dark grayish brown)	CL	6.50	4832
7.0			0.0	74	7'2" - 7'3" fine to med. sand, med. plasticity, hard, dry. color change to brown 7.5 yr 4/3		7.10	4702
			0.0	60	7'3" - same as above - color change to (very dark grayish brown) 100R 4/2	CL	7.50	4659
8.0			0.0	51			8.00	4710
			0.0	59	8'10" same as above - concrete debris	CL	8.50	4700
9.0			0.0	72			9.00	4659
			0.0	65	9'10" - 10' same as above - concrete debris	CL	9.50	4753
10.0			0.0	86			10.00	4643
					TD = 10' bgs			
					No GW encountered			



BORING LOG

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID 5B, group 1		Location ID 31	
Drilling Company HGL		Driller M. Hughes		Ground Elevation NA		Total Drilled Depth 0.5'	
Drilling Equipment trowel/shovel		Borehole Diameter NA		Date/Time Drilling Started 12-8-10/1502		Date/Time Total Depth Reached 12-8-10/1516	
Type of Sampling Device trowel/shovel				Samples Collected 2 1/2 gall bags, 1 8-oz jar (#20054) (1515)			
Geologist C. Carmichael				Checked by/Date <i>[Signature]</i> 5/10/11			
Radiological Background 0.6, 14			Radiological Equipment Used up R meter			PID Used Mini Rae 2000 (Background = 0.6 ppm)	
Depth	Interval	Recovery	PID	Radiological	Description <small>(include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole
							Inches
0.5'			0.6	14	Silty sand, (10 YR, 4/4), brown, 70% fine grained subrounded sand, 25% silt, 5% rock fragments (siltstone and sandstone - weathered), common rootlets, dry, loose. TO = 0.5' bgs No GW encountered	SM	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 11	Location ID 31
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 10'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/19/11 1449	Date/Time Total Depth Reached 1/19/11 1500
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 10 20053 / 1 fine 1540 (2) 1/2 gallon bags / (1) 4oz. jar		
Geologist Stephanie Lapaine Montross	Checked by/Date TBL 5/24/11		

Radiological Background 60 / 2448	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches (CPM)
				84	0-4" SC clayey SAND with silt (yellowish brown 10YR 5/4) 20% silt, 25% clay, 55% fine to med. grained sand plant material (roots), trace gravel - subangular, low plasticity soft, dry	SC	0.0 = 3146
				72	4"-1' SC SAND with CLAY 15% silt, 20% clay, 65% fine to coarse grained sand dry trace gravel - subangular, low plasticity, soft, dense	SC	0.5 = 4265
1.0				57	1'-2'4" CL silty CLAY with sand (dark brown 7.5 YR 3/4)	CL	1.0 = 4605
				58	45% clay, 30% fine grained sand, 3/4 35% silt med. plasticity, hard, dry		1.5 = 4755
2.0				39	2'4"-2'8" SM SAND with silt 15% clay, 20% silt, 65% fine to coarse grained sand trace gravel - subangular, trace concrete debris 100% med. plasticity, dry	SM	2.0 = 4786
				71	2'8"-2'8" same as above - color change (dark brown 10YR 3/3)		2.5 = 4803
3.0				84	-2'8"-4'4" CL silty CLAY with sand (yellowish red 5YR 4/6) 25% @ 40% clay, 30% fine grained sand 35% silt, med. plasticity, hard, dry	CL	3.0 = 4790
				42			3.5 = 4625
4.0				31			4.0 = 4886
				52	4'4"-4'9" SM silty SAND (dark grayish brown 10YR 4/2) 10% clay, 25% silt, 65% fine to coarse grained sand wet, low plasticity, soft, loose, trace gravel subangular	SM	4.5 = 4826
5.0				69	4'9"-5'6" CL sandy CLAY with silt (dark yellowish brown) 45% fine-med grained sand, 30% clay, trace gravel - subangular, 10YR 4/4 25% silt, med. plasticity, firm, dry	CL	5.0 = 5022
				43	5'6"-6'3" SC clayey SAND (very dark grayish brown 10YR 3/2) 30% clay, 15% silt, 55% fine to coarse grained sand med. plasticity, hard, dry	SC	5.5 = 5171

Radiological Background					Project Name	Project Number	Location
60 / 2448					SSPL Area IV Radiological Study	EP9038.01.22.04.03	31
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings
							Inches (CPM)
			0.0	60	Same as above		6" = 5175
			0.0	84	6'3" - 6'9" SL SAND with clay (gray dark gray) 20% clay, 15% silt, 65% fine to med. grained sand low plasticity, soft, dry, dense, trace gravel	SL	6.5" = 4880
7.60			0.0	70	6'9" - 8'11" CL SANDY CLAY with silt (brown 7.5YR 4/4) 40% clay, 20% silt, 40% fine grained sand med. plasticity, hard, dry	CL	7.0" = 4818
			0.0	88	7'10" - 8'11" Same as above - dark staining, no odor		7.5" = 4694
			0.0	90			8.0" = 4847
			0.0	71			8.5" = 4878
8.20			0.0	47	8'11" - 9'4" SM silty sand (very dark brown) 25% silt, 75% fine to med. grained sand non plastic, dense, dry	SM	9.0" = 5261
			0.0	94	9'4" - 10' SP SAND (light yellowish brown 2.5Y 6/4) 10% silt, 90% fine to coarse grained sand loose, non plastic, dry	SP	9.5" = 5071
10.0			0.0	86			10" = (N.M.)
<p>TD = 10' bgs no observations water encountered at @ 4'4" - 4'9" 4'4"</p>							

Project Name: SSEL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID S ₁ , G ₂ , G ₃	Location ID 32				
Drilling Company HGL		Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'				
Drilling Equipment trowel/shovel		Borehole Diameter NA	Date/Time Drilling Started 12/09/10, 12:50	Date/Time Total Depth Reached 12/09/10, 12:57				
Type of Sampling Device trowel/shovel			Samples Collected 2 0.25g, 1 0.5g (2) 1/2 gal bag, (1) 4 oz jar					
Geologist D. Secam			Checked by/Date <i>[Signature]</i> 5/24/11					
Radiological Background in soil, 0.3ppm		Radiological Equipment Used MP R meter		PID Used Mini Rae 2000 (Background=0.3ppm)				
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			0.3	in	<p>Silty sand w/ gravel, dark yellowish brown (10YR 4/5) dry, soft, 30% silt, 70% fine sand, ^{common} gravel non-haline rock fragments, few roots, no other.</p> <hr/> <p>TD: 0.5 ft Groundwater not encountered</p>	SM		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 1	Location ID 32
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 15 ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/24/11 1232	Date/Time Total Depth Reached 1/24/11 1250
Type of Sampling Device 1 3/4" macrocore acetate liners	Samples Collected 2055 - 1355 2059 - 1400 (1) 1/2 gallon bags, (2) 4oz jars		
Geologist I. Stone	Checked by/Date 5/27/11		

Radiological Background 50 / 2660	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches 0.5 = 2559 (CPM)
			0.0	41	Silty Sand, Olive Yellow (6/6 2.54) 70% fine sand, 30% silt, dry, low dense, trace gravel, no odor or staining, trace roots	SM	2781
		0.0	30	4022			
		0.0	56	4120			
		0.0	65	4069			
			0.0	71	Sandy Silt, Dark grayish brown (4/2 2.54) 30% fine sand, 65% silt, 5% clay, trace gravel, dry, low tough, low strength, no odor or staining	ML	4237
		0.0	66	4322			
			0.0	92	Clayey Silt, Olive brown (4/3 2.54) 30% clay, 60% silt, 10% fine sand, dry, low strength, low tough, no odor or staining	ML	4657
		0.0	88	4775			
			0.0	63	Clayey Silt IS Sandy Silt, Dark grayish brown (4/2 2.54) 60% silt, 30% fine sand, 10% clay, trace gravel, dry, low tough, low strength, no odor or staining	ML	4853
		0.0	92	4898			
			0.0	78	Silty Clay, very dark gray (3/1 2.54) 60% clay, 35% silt, 5% fine sand, dry, med tough, med strength, no odor or staining, trace gravel	CL	5014
		0.0	29	4931			
			0.0	41			4738

Radiological Background 50 / 2660				Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 5B, 1, 32		
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
			0.0	41	Same as above	CL		4738
			0.0	48	Sandy silt, olive brown (4/4 to 2.54) 35% fine sand, 55% silt, 10% clay, dry trace gravel, low strength, low toughness	ML		5122
7			0.0	97	Silty Clay, very dark gray (3/1 2.54)			4928
			0.0	78	10% fine sand, 30% silt, 60% clay, trace gravel, dry, med tough, med strength, med plasticity, no odor or staining	CL		4927
8			0.0	73	Sandy Silt, dark olive gray (3/2 54)			4790
			0.0	59	35% fine sand, 55% silt, 10% clay, dry, low tough, low strength, no odor or staining	ML		4961
9			0.0	48		ML		4949
			0.0	65				5221
10			0.0	73				5146
			0.0	50	Sandstone, Greenish Gray (5/1 GLEVI)			5339
11			0.0	53	Sandy Silt, Dark Olive Gray (3/2 54)	ML		5025
			0.0	31	30% fine sand, 60% silt, 10% clay, dry, low strength, low tough, no odor or staining, trace gravel			5083
12			0.0	28				4896
			0.0	52				4989
13			0.0	43				4997

Radiological Background 50 / 2660					Project Name SSPL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 56, 1, 32		
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings		
							Inches	(CPM)	
			0.0	73	Same as above, sandy silt	ML		4997	
			0.0	86			4838		
14			0.0	74			4955		
			0.0	58			5033		
15			0.0	84			5013		
					TD = 15 ft bgs no gw encountered				



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 1	Location ID 33
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 15 FT
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/24/11 0828	Date/Time Total Depth Reached 1/24/11 0845
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20057-0945 (1-5) 20592-0950 (10-15) (1) 1/2 gallon bags, (2) 4oz jars		
Geologist I. Stone	Checked by/Date I. Stone 5/10/11		

Radiological Background 60 / 2541	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches</small> 0.5 = 2369 (CPM)
1			0.0	65	Sand w/ silt, Olive Yellow (6/6 2.5YR) IS	SP	3224
			0.0	62	85% fine sand, 15% silt, dry, low dense, no odor or staining, trace rocks, trace gravel		4091
2			0.0	89	Sandy Silt, Dark Olive Brown (3/3 2.5YR) IS	ML	4426
			0.0	66	60% silt, 40% fine-med sand, dry, low tough, low strength, no odor or staining, trace gravel		4500
3			0.0	60	Sandstone Yellowish Brown (5/6 10YR)	ML	4727
			0.0	71	Sandy Silt, Dark Olive Brown (3/3 2.5YR) IS		4836
4			0.0	67	70% silt, 25% fine sand, 5% clay, dry, trace gravel, low tough, low strength	CL	4861
			0.0	65	Silty Clay, Dark grayish Brown (4/2 2.5YR) IS		4824
5			0.0	69	Sandstone light olive brown (5/4 2.5YR) IS	ML	4936
			0.0	87	Sandy Silt, Dark yellowish brown (3/6 10YR) 65% silt, 30% fine sand, 5% clay, dry, trace gravel, low tough, low strength		5113
6			0.0	83	Color change: very dark gray (3/1 10YR) trace gravel (sandstone, siltstone, granite)	ML	5087
			0.0	38			5115
			0.0	30			5002

Radiological Background					Project Name	Project Number	Location
60 / 2591					SSFL Area IV Radiological Study	EP9038.01.22.04.03	5B, 1, 33
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole
							Gamma Readings (CPM)
			0.0	30	Same as above, Sandy Silt cont'd		5002
			0.0	53		5099	
7			0.0	44		4938	
			0.0	75		4934	
8			0.0	60		5020	
			0.0	44		5089	
9			0.0	58		5165	
			0.0	53		5186	
10			0.0	47		5182	
			0.0	63		5255	
11			0.0	67		Slight color from 11-14	5129
			0.0	70		5096	
12			0.0	109		4987	
			0.0	105	5102		
13			0.0	107	Same as above, Sandy Silt	4907	

Radiological Background				Project Name	Project Number	Location	
60 / 2591				SSFL Area IV Radiological Study	EP9038.01.22.04.03	5B, 1, 33	
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings
							Inches
(CPM)							
			0.2	107	Same as above, Sandy silt,	ML	4907
			0.2	94			5038
			0.2	91			5154
			0.2	97	Sand, light yellowish brown (6/4 2.54) 90% sand, 10% silt, dry, med dense, no color or staining	SP	5181
15			0.2	86	5274		
					TD = 15 ft bgs no gas encountered		

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 34
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-8-10/1314	Date/Time Total Depth Reached 12-8-10/1330
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 1 8-oz jar (#20059) (1325)		
Geologist C. Carmichael	Checked by/Date [Signature] 5/10/11		

Radiological Background (RAD) 0.6, 13	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background=0.6 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'				0.8 13	Sand with gravel and silt, (10 VR, 4/4), brown, 75% fine to medium grained sand, 20% rock fragments (pea gravel), 5% silt, dry, loose, common rootlets and vegetation. TD = 0.5' bgs No Gw encountered	SW		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B / 1	Location ID 34
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 9'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/20/11 / 1444	Date/Time Total Depth Reached 1/20/11 / 1458
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected ID 20058 / time 1535 (2) 1/2 gallon bags / (1) 4 oz jar		
Geologist Stephanie Laporte Montrose	Checked by/Date DOW 5/24/11		

Radiological Background 45 / 2382	Radiological Equipment Used Pancake / Dosimeter	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			00	51	0-7" SC SAND with clay 20% clay, 10% silt, 70% fine to coarse grained sand plant material (roots), gravel - subangular, no odor, reddish staining, low plasticity, soft, dry	SC	0.0 = 3132
			60	75	7"-16" SC clayey SAND 30% clay, 15% silt, 55% fine to coarse grained sand, low plasticity, firm, dry	SC	0.5 = 4287
1.0			00	98	1'6"-1'10" SP SAND 15% silt, 85% fine to med. grained sand non plastic, loose, dry	SP	1.0 = 4493
			00	110	1'10"-2'4" SC clayey SAND 25% clay, 10% silt, 65% fine to med. grained sand low plasticity, very soft, dry	SC	1.5 = 4639
2.0			00	106	2'4"-2'7" asphalt debris 5% SAND (light yellowish brown 10YR 6/4) 10% silt, 85% fine to coarse grained sand 5% gravel - subangular, very loose, dry	SC	2.0 = 4565
			00	56	2'7"-3'3" SC SAND with clay 20% clay, 15% silt, 65% fine to med. grained sand, low plasticity, soft, dry	SC	2.5 = 4784
3.0			00	61	2'9" concrete debris	SC	3.0 = 4411
			00	52	3'3"-3'7" concrete	SC	3.5 = 4688
4.0			00	30	3'7"-4'3" SC clayey SAND 25% clay, 15% silt, 60% fine to med. grained sand rust staining, low plasticity, soft, dry	SC	4.0 = 4659
			00	23	4'1"-4'2" rust staining trace gravel - subangular	SC	4.5 = 4607
			00	45	4'3"-5' CL sandy CLAY 40% clay, 15% silt, 45% fine to coarse grained sand trace gravel - subangular, low to med. plasticity, firm, dry	CL	5.0 = 4524
5.0			00	92	5'-7'4" SC clayey SAND 30% clay, 15% silt, 55% fine to coarse grained sand, concrete debris, asphalt debris trace gravel - subangular, low plasticity soft, dry	SC	5.5 = 4672

Radiological Background		Project Name		Project Number		Location	
45 / 2382		SSFL Area IV Radiological Study		EP9038.01.22.04.03		34	
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole
							Gamma Readings <small>(CPM)</small>
			0.0	71		SC	6.0 = 4921
			0.0	81			6.5 = 4785
			0.0	86			7.0 = 4733
7.0			0.0	88	7'4" - 7'6" CL sandy CLAY 45% clay, 20% silt, 35% fine grained sand, med. plasticity, hard dry (brown 7.5YR 4/4)	CL	7.5 = 4865
			0.0	97	7'6" - 8'4" SC clayey SAND 30% clay, 15% silt, 55% fine to coarse grained sand, low plasticity, firm, dry (very dark gray, 10YR 3/2 brown)	SC	8.0 = 4819
8.0			0.0	69	8'4" - 8'8" CL sand CLAY 45% clay, 20% silt, 35% fine grained sand, med. plasticity, hard dry (brown 7.5YR 4/4)	CL	8.5 = 4776
			0.0	60	8'8" - 9' SC clayey SAND 30% clay, 15% silt, 55% fine to coarse grained sand, low plasticity, firm, dry, concrete debris (very dark grayish brown 10YR 3/2)	SC	9.0 = ---
9.0					TD = 9' bgs		
					NO GW encountered		
10.0							

BORING LOG

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID 5B, group 1		Location ID 35	
Drilling Company HGL		Driller M. Hughes		Ground Elevation NA		Total Drilled Depth 0.5'	
Drilling Equipment trowel/shovel		Borehole Diameter NA		Date/Time Drilling Started 12-8-10/1359		Date/Time Total Depth Reached 12-8-10/1410	
Type of Sampling Device trowel/shovel				Samples Collected 2 1/2 gall bags, 1 8-oz jar (#20061) (1410)			
Geologist C. Carmichael				Checked by/Date [Signature] 5/10/11			
Radiological Background 0.7, 12		Radiological Equipment Used up R meter		PID Used Mini Rae 2000 (Background=0.7 ppm)			
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings (CPM)
0.5'			0.7	13	Sand with silt and gravel, (10 YR, 4/4), brown, 75% fine grained sand (subrounded), 15% silt, 10% small pea gravel and weathered sandstone, common rootlets, dry, loose. TD=0.5' bgs No GW encountered	SM	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 35
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 8'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1-20-11/1251	Date/Time Total Depth Reached 1-20-11/1359
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags, 18-oz jar (#20060)(1350)		
Geologist C. Carmichael	Checked by/Date Super Jim 5/10/11		

Radiological Background D.O., 2311, 61	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rae 2000 (Background=0.0ppm)
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Depth (ft)	Interval	Recovery	PID C	Radiological 20	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
							0.5	2292
							0	2811
1'				60	Clayey silt, (10 YR, 3/6), reddish-brown, 60% silt, 30% clay, 10% fine grained sand, trace rock fragments (siltstone), dry, stiff, low-medium hardness, low plasticity, no odor.	ML		4184
				55				4655
				60	Silt with sand, (10 YR, 5/4), light brown, 65% silt, 30% fine grained sand, 5% rock fragments (siltstone), very low hardness, no plasticity, dry, medium stiff, no odor.	ML		4402
2'				60				4640
				50	Silt with sand and gravel (10 YR, 5/4 ^{cc} 4/3), brown, texture is a matrix of silt with inclusions of sand and gravel, 55% silt, 25% fine grained to medium grained subrounded sand, 20% gravel (fill rock), dry, medium stiff, no hardness or plasticity, no odor.	ML		4471
3'				40				4736
				65				4705
4'				40				4729
				50				4776
5'				30				4879
				55				4807
6'				80				4985

Radiological Background 0.0, 23il, 6l					Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 35
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
7'			0.0	45			5016
				50			4870
				45	7.5'		4796
8'			70		Sand, (10 YR, 6/6), beige, 100% fine to medium grained subangular sand (weathered bedrock), dry, medium dense, no odor.	SW SP	4505
					TD = 8' bgs NO GW encountered		



BORING LOG

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 36				
Drilling Company HGL		Driller M. Hughes	Ground Elevation NA	Total Drilled Depth 0.5'				
Drilling Equipment trowel/shovel		Borehole Diameter NA	Date/Time Drilling Started 12-8-10/1332	Date/Time Total Depth Reached 12-8-10/1356				
Type of Sampling Device trowel/shovel		Samples Collected 2 1/2 gall bags, 1 8-oz jar (#20063)(1355)						
Geologist C. Carmichael		Checked by/Date <i>[Signature]</i> 5/10/11						
Radiological Background 0.7, 14		Radiological Equipment Used up R meter		PID Used Mini Rae 2000 (Background=0.7 ppm)				
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'			0.6	13	Sand with silt and gravel, (10 YR, 4/4), brown, 70% fine to medium grained, subrounded sand, 20% silt, 10% pea gravel and weathered sandstone, some rootlets, loose, dry. TD= 0.5' bgs No Gw encountered	SM SM		

31-5-11

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B; group 1	Location ID 36
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 7.5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1-20-11/1420	Date/Time Total Depth Reached 1-20-11/1512
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags, 1 8oz jar (#20062)(1505)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/10/11		

Radiological Background 0.0, 2688, 59	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth (ft)	Interval	Recovery	D.P.D.	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.0	40				Silt with sand, (10YR, 4/4), brown, 65% silt, 25% fine grained, subrounded sand, 10% gravel (fill and concrete), dry, medium stiff, no hardness or plasticity, no odor.	ML	0.5 - 2331	0 - 2859
1'	60				Sand with silt (10YR, 5/4), light brown, 60% fine grained sand, 40% silt, dry, medium dense, no odor, no plasticity or hardness.	SM	4172	4501
2'	60				Silt with sand (same as 0'-1') except	ML	4361	4620
3'	50						4834	4853
4'	70				Concrete layer		4968	5084
5'	50				Silt with sand (same as 0'-1' and 2'-3.9')	ML	5267	5231
6'	40						5482	5429

Radiological Background 0.0, 2688, 59					Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 36
Depth	Interval	Recovery	PID	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
7'			0.0	50	6.75' Sand with clay, (10 VR, 7/4), beige, 80%. fine grained subangular sand, 20% clay, dry medium dense, no odor.	SM (S) SC	5443 5833
8'			45	7.5'	Refusal hit at 7.5' No GW encountered		n/a



BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B/Group	Location ID 37
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 4.5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1-20-11/1518	Date/Time Total Depth Reached 1-20-11/1602
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags, 18-oz jar (#20064)(1600)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/10/11		

Radiological Background 0.0, 2718, 43	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rac 2000 (Background=0.0ppm)
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Depth	Interval	Recovery	RPD	Radiological	Description <small>(include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings		
							Inches	(CPM)	
				50			0.5	2362	
				50	Sandy silt with gravel, (10 VR, 4/4), brown, 60% silt, 25% fine grained subrounded sand, 15% gravel (fill rock, asphalt, red brick pieces) sporadically mixed throughout, dry, medium stiff, no hardness or plasticity, no odor.	ML		3261	
1'				60			4163		
				40			4261		
				75			4615		
2'				75			4535		
				75			4607		
3'				110			4890		
				75			5201		
4'				75		Sand, with (10 VR, 5/4), 90% fine grained sand, 10% silt (semi-lithified), probable weathered bedrock, semi-moist, medium dense, no odor, some iron-oxide tinting	SP		5227
				75				5215	
5'					Refusal hit at 4.5'				
6'					no GW encountered				

BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID SB, group 1	Location ID 38
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-8-10/1200	Date/Time Total Depth Reached 12-8-10/1217
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 1 8-oz jar (#20066) (1215)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/10/11		

Radiological Background 0.6, 10	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.6 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'				0.7 14	Sand with silt, (10 YR, 5/4), brown, 70% fine-grained, subrounded sand, 25% silt, 5% rock fragments (weathered sandstone), dry, loose, some rootlets. TD = 0.5' bgs No Gw encountered	SM		



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 39
Drilling Company HGL	Driller M. Hughes	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-8-10/1048	Date/Time Total Depth Reached 12-8-10/1057
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 1 8-oz jar (#20068)(1055)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/10/11		

(PID) Radiological Background 0.0, 12 Radiological Equipment Used up R meter PID Used Mini Rae 2000 (Background=0.0ppm)

Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'			0.3	14	Sand with silt and gravel, (10 YR, 3/3) brown, 70% fine to medium-grained subrounded sand, 15% silt, 15% subrounded pea gravel, trace rootlets, moist, loose. TD= 0.5' bgs No Gw encountered	SW Sm	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 1	Location ID 39
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 10
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/17/11 / 1403	Date/Time Total Depth Reached 1/17/11 / 1418
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected (2) 1/2 gallon bags / (1) 4 oz jar	ID - 20067 / 1500	
Geologist Stephanie Lapierre Montrose		Checked by/Date TBW 5/24/11	

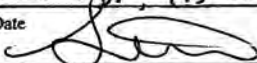
Radiological Background 41 / 2510	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	43	0'-3" SM silty SAND (yellowish brown 10YR 5/4) 10% clay, 30% silt, 60% fine to coarse grained sand rootlets, grass, trace gravel - subangular	SM	0.0 = 2970
			0.0	47	loose, dry, non-plastic		0.5 = 4490
			0.0	55	3"-1' SM silty SAND (brown 10YR 4/3) 25% silt, 15% clay, 60% fine to coarse grained sand loose, low plasticity, dry	SM	1.0 = 4973
			0.0	64	1'-1'3" sandstone (light yellowish brown 10YR 6/4)		1.5 = 5385
			0.0	50	1'3"-2'1" SM silty SAND with clay (yellowish brown 10YR 5/4) trace gravel-sub, staining - greenish gray GLEY 2 6/1, silty sand	SM	2.0 = 5126
			0.0	75	2'1"-4'7" ML sandy SILT (dark brown 10YR 3/3) 15% clay, 40% fine to medium grained sand, 45% silt, trace gravel - subrounded low plasticity, soft, dry	ML	2.5 = 5053
			0.0	61			3.00 = 5096
			0.0	64			3.5 = 5223
			0.0	69	4'3" - 4'7" same as above		4.0 = 5056
			0.0	58	Staining - greenish gray GLEY 2 6/1 SBG		4.5 = 4965
			0.0	47	4'7"-5' ML sandy SILT with clay staining (Greenish gray GLEY 2 6/1 SBG) 20% clay, 35% fine to medium grained sand, 45% silt (dark gray 10YR 4/1)	ML	5.0 = 5155
			0.0	35	5'1"-5'6" ML sandy SILT with clay (greenish black GLEY 1 10Y 2.5/MSM) 30% clay, 35% fine to med. grained sand, 35% silt trace gravel - sub rounded, slight HC odor Med. plasticity, firm, dry	ML	5.5 = 5237

5'6" - 6'7" SM silty SAND (greenish black GLEY 1 10Y 2.5/1)
30% silt, 15% clay, 55% fine to medium grained sand
low plasticity, soft, dry, dense, slight HC odor

Radiological Background				Project Name	Project Number	Location	
41	2510			SSFL Area IV Radiological Study	EP9038.01.22.04.03	39	
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings
							Inches (CPM)
		0.0	42		5'6" - 6'7" SM silty SAND (greenish blk GLEY 1 10% 25%) 30% silt, 15% clay, 55% fine to med. grained sand low plasticity, soft, dry, slight HC odor	SM	6.0 = 5170
		0.0	41		6'7" - 10' CL silty CLAY with sand (dark brown 7.5 YR 3/4)	CL	6.5 = 5005
7.0		0.0	27		20% fine grained sand, 30% silt, 50% clay med-high plasticity, very hard, dry, staining, no odor	CL	7.0 = 5069
		0.0	36				7.5 = 4809
8.0		0.0	46				8.0 = 4706
		0.0	40				8.5 = 4745
9.0		0.0	53		Same as above		9.0 = 4774
		0.0	43				9.5 = 4547
10.0		0.0	33		TD = 10 ft logs NO GW encountered		10 = 4667

BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 1	Location ID 40
Drilling Company* Bort Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 10 ft
Drilling Equipment Geoprobe	Borehole Diameter 1 3/4"	Date/Time Drilling Started 12/16/10 0851	Date/Time Total Depth Reached 12/16/10 0858
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20069-0920 (2) 1/2 gallon bags; (1) 4oz jar		
Geologist I Stone	Checked by/Date  5/27/11		

Radiological Background 48 / 2397	Radiological Equipment Used Pacalake / Downhole	PID Used mini RAE 2000 (Bkgd = 0.1)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.3	33	SAND , Gravelly sand, yellowish brown (5/4 10YR) 70% fine-medium sand, 30% gravel, dry, loose, no odor or staining	SP	3313
			0.3	89			4435
1			0.3	57	Sandy silt, very dark grayish brown (3/2 10YR) 65% silt, 30% fine sand, 5% clay, dry, med dense, low toughness, low strength, slight odor, staining from 10" - 2' 8"		4977
			0.3	54			5284
2			0.3	60	Black (2/1 10YR) Greenish gray (6/5G 6.5YR)	ML	5259
			0.3	51			5143
3			0.3	55			5003
			0.3	87	Silty sand, yellowish brown (5/8 10YR) 70% fine sand, 30% silt, dry, low dense, no odor or staining	SM	5148
4			0.3	56	Clay, Dark Reddish Brown (3/4 5YR) 90% clay, 10% silt, med strength, med tough, dry, no odor or staining	CL	5268
			0.3	85			5263
5			0.3	63	SAND Yellowish brown (5/8 10YR) 70% fine sand, 30% silt, dry, low dense no odor or staining	SM	5252
			0.3	78	Clay, Dark brown (7/2 7.5YR) 90% clay, 10% silt, fine sand , dry med strength, med tough, no odor or staining	CL	4993
			0.3	62	Silty SAND, yellowish brown (5/8 10YR) 70% IS same as previous silty sand layers	SM	5019
6					see next page	CL	

12/16/05

Radiological Background					Project Name	Project Number	Location
48 / 2397					SSFL Area IV Radiological Study	EP9038.01.22.04.03	5B.1, 40
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole
							Gamma Readings <small>(CPM)</small>
			0.3	62	Silty Clay, Dark brown (3/2 7.5 YR) 70% clay, 30% silt, trace fine gravel (granite, quartzite), sandstone), dry, med strength, med tough, low plasticity, no odor or staining	CL	5019
			0.3	51			4821 4821
7			0.3	36			4790 4813
			0.4	51			4790
8			0.4	34			4730
			0.4	33			4710
9			0.3	87			4830
			0.3	92	4854		
10			0.3	114	SAND (weathered bedrock), Yellowish Brown (5Y 10YR) 100% sand, dry, loose interbedded w/ very dense, TD = 10 ft bgs NO @w encountered	SP	5227

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 1	Location ID 41
Drilling Company Bort Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 9ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 12/16/10 1043	Date/Time Total Depth Reached 12/16/10 1049
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20070-1100 (2) 1/2 gallon bags; (1) 4oz jar		
Geologist I. Stone	Checked by/Date <i>[Signature]</i> 5/27/11		

Radiological Background 38 / 2255	Radiological Equipment Used Percake / Downhole	PID Used mini RAE 2000 (Bkg: 0.2 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches</small> 2123 (CPM)
			0.2	84	Silty sand, IS ASPHALT	SM IS	2316
			0.2	72	Gravelly SAND, yellowish brown (5/4 104R) 70% fine-coarse sand, 30% fine-coarse gravel, low dry as 0+3	SP	3920
1			0.2	65	Sandy silt, very dark grayish brown (3/2 104R) 70% silt, 30% fine sand, dry, low toughness, low strength, no odor, some staining from 1'-2'5"	ML	4939
			0.2	63			5133
2			0.2	95			5311
			0.2	59	Silty SAND, brown (1/2 104R) 70% fine sand, 30% silt, dry, low dense. NO O+3	SM	4994
3			0.2	56	Sandy silt, very dark grayish brown (3/2 104R) 70% silt, 30% fine sand, dry, low tough, low strength, low plasticity, slight staining	ML	4919
			0.2	41	Clay, Dark yellowish brown (7/6 104R) 85% clay, 10% silt, 5% fine sand; med tough, med strength, med plasticity, dry, no odor, some staining from 3'8"-5'0". (slight trending to IS then increasing w/ depth)	CL	4899
4			0.2	71			4593
			0.2	68			4811
5			0.2	56			4802
			0.2	57			4859
6			0.2	78			4765

Radiological Background 38 / 2255				Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 5B, 1, 41	
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings
							Inches (CPM)
6			0.2	78	Same as above but no staining	CL	4765
			0.2	84			4828
			0.2	77			5144
			0.2	69			5256
7			0.2	81	Sandy silt, very dark grayish brown (3h 10YR) 70% silt silt, 30% fine sand, dry, low tough and strength, no odor or staining.	ML	5431
			0.2	47			5171
8			0.2	75	S. Hy SAND, yellowish brown (5/4 10YR), low-mud dense	SM	N M
9					TD = 9 ft. bgs no gw encountered		
10							

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 1	Location ID 42
Drilling Company Bort Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 10A
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 12/16/10 1301	Date/Time Total Depth Reached 12/16/10 1307
Type of Sampling Device 1 3/4" mercury acetate liner	Samples Collected 20071-1330 (2) 1/2 gallon bags; (1) 4oz jar		
Geologist T. Stone	Checked by/Date <i>[Signature]</i> 5/27/11		

Radiological Background 50 / 2155	Radiological Equipment Used Pancake / Downhole	PID Used mini RAE 2000 (Bgd: 0.2 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches <small>(CPM)</small>
			0.2	52	Asphalt		2538
			0.3	54	Gravelly SAND, yellowish brown (5/4 104R) 70% fine-course sand, 30% fine to coarse gravel, loose, dry	SP	3852
1			0.2	79	Sandy silt, very dark grayish brown (3/2 104R) 70% silt, 30% fine sand, dry, low toughness, low strength, no odor, slight staining	ML	4857
			0.3	83			5126
2			0.3	107			5133
			0.3	85			5312
3			0.3	94	Silty Sand, Dark Olive Gray (3/2 54) 70% fine sand, 30% silt, dry, med dense, sandstone cobble @ 2' 10", no odor, stained.	SM	5326
			0.3	68			5303
4			0.3	40	ASPHALT (4")		5231
			0.3	64	Silty Sand, Very dark Gray (3/1 54) 70% fine sand, 30% silt, dry, loose, no odor, slightly stained	SM	5033
5			0.3	42	ASPHALT		5128
			0.2	61	Sandy silt, Very dark gray (3/1 104R) 60% silt, 40% fine sand, slightly moist, low dense, low toughness, low strength, no odor, slight staining.	ML	5285
6			0.2	53			5253

Radiological Background 50 / 2155				Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 58, 1, 42	
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole
							Gamma Readings (CPM)
6			0.2	53	Same as above except color change @ 6.2" : Olive Gray (4/2 54) still slightly stained	ML	5253
			0.2	48			5128
7			0.2	46			5188
			0.2	33			5145
8			0.2	28	color change: Dark yellowish brown (3/6 10YR)		5146
			0.2	25	Silty SAND, Dark grayish brown (4/2 2.5Y) SS to 65% fine sand, 35% silt, moist, low dense, possible staining ^{to wet}	SM	5486
9			0.2	50			5696
			0.2	37	SAND, yellowish brown Pale Yellow (7/4 2.5Y) 95% fine grained sand, 5% silt, loose, no o/s	SP	5786
10			0.2	75	Clay, Dark grayish brown (4/2 2.5Y) 100% clay, med-high tough, mottled, no o/s	CL	NM
TD = 10ft bgs no gw encountered							

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 1	Location ID 43
Drilling Company Bort Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 7'
Drilling Equipment Geoprobe	Borehole Diameter 1 3/4"	Date/Time Drilling Started 12/16/10 1445	Date/Time Total Depth Reached 12/16/10 1451
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20072-151P (2) 1/2 gallon bags; (1) 4oz jar		
Geologist I. Stone	Checked by/Date <i>[Signature]</i> 5/27/11		

Radiological Background 41 / 2392	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.3 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches 10.5 = 2882 (CPM)
			0.3	41	Asphalt (2")		2653
			0.3	59	Gravelly SAND, yellowish gray to Brown (5/6 104R) 65% fine - coarse sand, 35% fine - coarse gravel, dry loose, no odor or staining	SP	4933
1			0.3	57	Sandy Silt, very dark grayish brown (3/2 104R) 65% silt, 30% fine sand, 5% clay, dry, low toughness, low strength, slight odor, slight staining	ML	5213
			0.3	80	(Black - Greenish Gray)		5176
2			0.3	70			5375
			0.3	47	Silty Sand, very dark brown (2/2 104R) 70% fine sand, 30% silt, dry med med dense, slight odor, slight staining, trace coarse gravel	SM	5431
3			0.4	69			5206
			0.4	51	end staining		5201
4			0.4	62	- moist ↓	SM	5051
			0.4	46			4886
5			0.4	28	Silty Clay, Dark Gray (3/2 54), moist 70% clay, 30% silt, med tough, med strength	CL	4941
			0.3	49	Silty Sand, Sandy Silt, Dark grayish brown (4/2 104R) 35% fine sand, 65% silt, moist, med dense, med strength, no odor or staining	SM	4679
6			0.4	60	Silty Sand, Sandy Silt, Dark grayish brown (4/2 104R) 35% fine sand, 65% silt, moist, med dense, med strength, no odor or staining	SM	4943

Silty Sand
Sandy Silt
low tough, low strength

SM
ML

Radiological Background				Project Name	Project Number	Location	
41 / 2392				SSFL Area IV Radiological Study	EP9038.01.22.04.03	SB, 1, 43	
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole
							Gamma Readings
							(CPM)
6			0.4	60	Same as above	Mz	4943
			0.3	54			5011
7			0.3	45	Silty SAND, Dark yellowish Brown (4/16 10/2) 75% fine sand, 25% silt, med dense, moist, matting	Sm	4923
					TD = 7.0 ft bgs no gw encountered		
8							
9							
10							

BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 1	Location ID 44
Drilling Company Bort Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 8.5ft
Drilling Equipment Geoprobe	Borehole Diameter 1 3/4"	Date/Time Drilling Started 12/20/10 10:20	Date/Time Total Depth Reached 12/20/10 10:16
Type of Sampling Device 13ft macrocon acetate liner	Samples Collected 20073-1040	(2) 1/2 gallon bag, 15402 jar	
Geologist J. Stone	Checked by/Date [Signature] 5/27/11		

Radiological Background 47cp/2318cp	Radiological Equipment Used Pencakes / Downhole	PID Used mini RAE 2000 (background: 0.0cpm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches 0.5 = 2194 (CPM)</small>
			0.255		ARTHAULT (3")		3542
			0.278		Gravelly SAND, Yellowish brown, low dense (5/8 104R) 70% fine sand, 30% gravel (granite, quartzite), dry	SM	4360
			0.241		Silty SAND, Brown (5/3 104R) 65% fine sand, 35% silt, med dense, dry, no odor or staining		4866
			0.261		Color change: dark grayish brown (4/2 104R)		5081
			0.256			SM	5187
			0.260				5133
			0.248				4984
			0.259				4879
			0.260				4633
			0.276				4571
			0.262		density and color change: Dark brown, loose (3/3 104R)		4585
			0.247		Sandy SILT, Dark Greenish Gray, (4/1 564)		4606
			0.250		70% silty, 30% fine sand, moist, low	ML	4432

roughness, low strength

44



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 1	Location ID 45
Drilling Company Bort Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 4 ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 12/20/10 1353	Date/Time Total Depth Reached 12/20/10 1358
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20074-1415 (2) 1/2 gallon bags, (1) 4oz jar		
Geologist I. Stone	Checked by/Date <i>[Signature]</i> 5/27/11		

Radiological Background 46 / 2430	Radiological Equipment Used Pacabe / Downhole	PID Used mini RAE 2000 (Background = 62)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches</small>
			1.4	56	ASPHALT (1")		2292 (CPM)
			1.4	39	Sandy silt, Dark Dark Grayish Brown (4/2 10YR) 70% silt, 30% fine sand, dry, low toughness, low strength, no odor or staining	ML	3495
			1.4	63			4801
			1.4	37	Silty Sand, Brown (4/3 10YR) 65% fine sand, 35% silt, dry, med dense, no odor or staining	SP	5203
			1.4	40	reddish brown (4/4 5YR) 75% sand, 25% silt, med dense		5236
			1.4	49		SP	5463
			1.4	26	brown, (4/3 10YR)		5256
			1.4	25	60% fine sand, 40% silt	SP	5239
			1.5	39	SAND (washed sandstone), reddish brown (5/4 10YR)	SP	5293
					TD = 4 ft bgs no gw encountered		NUM



BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 1	Location ID 46
Drilling Company Bort Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 10ft
Drilling Equipment Geo probe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 12/21/10 0917	Date/Time Total Depth Reached 12/21/10 0924
Type of Sampling Device 1 3/4" macrolon acetate liner	Samples Collected 20075-0940 (2) 1/2 yellow bags, (1) 4oz jar		
Geologist I. Stone	Checked by/Date <i>[Signature]</i> 5/27/11		

Radiological Background 46 / 2776	Radiological Equipment Used Pencil / Downhole	PID Used mini RAE 2000 (Bgd = 0.3 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches 0.5" = 2175 (CPM)</small>
			0.6	83	Asphalt J		3108
			0.6	41	Silty Sand, Dark yellowish brown (5/8 10R2) 60% fine sand, 40% silt, dry, med IS low-med dense, no odor or staining	SM	4799
1			0.6	29			5332
			0.6	67			5291
2			0.6	49	Sandy silt, very dark grayish brown (4/2 10R2) 60% silt, 40% fine sand, dry, med dense, low toughness, low strength, no odor	ML	5301
			0.6	73			5287
3			0.6	60	Silty Sand, Brownish yellow (6/8 10Y2)		5200
			0.6	76	70% fine sand, 30% silty dry, low density, no odor, mottled	SM	5093
4			0.6	57	w/ greenish gray sand		4881
			0.6	52	sandstone cobble		5079
5			0.6	59	sandstone cobble		5165
			0.6	62	Silty Sand, very dark grayish brown (3/2 10Y2) 60% fine sand, 40% silt, dry moist, med dense, no odor or staining	SM	5152
6			0.6	58			5217

Radiological Background 46 / 2376					Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location SB, 1, 46
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole
							Gamma Readings (CPM)
7			0.6	59	Same as above	SM	5217
			0.6	73			5104
			0.6	46			5138
			0.7	50			5215
8			0.7	66	Sandy Silt, dark grayish brown (4/2:10YR) 70% silt, 30% fine sand, moist-wet, low toughness, low strength, no odor	ML	5045
			0.7	43			5109
9			0.7	36	SANDSTONE CONGLO		5245
			0.7	71	Sandy Silt, dark grayish brown (4/2:10YR) 70% silt 60% silt, 40% fine sand, moist, low strength, low toughness, no odor	ML	4744
10			0.7	93	TD = 10 ft bgs no gw encountered		4766



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 1	Location ID 47
Drilling Company Bornt Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 6 ft
Drilling Equipment Geoprobe 660x	Borehole Diameter 1 3/4"	Date/Time Drilling Started 12/21/10 1144	Date/Time Total Depth Reached 12/21/10 1151
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20076-1210 (2) 1/2 gallon bag ; (1) 4oz jar		
Geologist I. Stone	Checked by/Date <i>[Signature]</i> 5/27/11		

Radiological Background 45 / 2346	Radiological Equipment Used Pomereke / Downhole	PID Used mini RAE 2000 (Bkgd: 0.8 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches <small>(CPM)</small>
			0.9	39	ASPHALT		3160
			0.9	34	Gravelly SAND, Yellowish Brown (5/6 10YR)		4507
			0.9	36	65% fine sand, 30% gravel, 5% silt, dry, loose, no odor or staining	SP	5213
1			0.9	62	SANDY Silt, Brown (5/3 10YR)		4296
			0.9	65	70% silt, 30% fine sand, trace gravel, dry, low toughness, low strength, slight odor + staining in top 2 inches	ML	5396
			0.9	52			5539
3			0.9	76	Silty SAND, Reddish Brown (5/4.5 4R)		5597
			0.9	49	70% fine sand, 30% silt, dry, med dense, no odor or staining	SM	5479
4			0.9	27			5496
			0.9	35			5665
5			1.0	40			5923
			0.9	23	SAND, Yellowish brown (5/8 10YR)	SP	5765
			1.0	53	95% fine sand, 5% silt, dry, low dense, no odor or staining, slight mottling (reddish brown)		NM

TD=6 ft bgs
no gw encountered



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B/Group	Location ID cc 28T 48
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-10-10/0858	Date/Time Total Depth Reached 12-10-10/0905
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 1 8-oz jar (#20078) (0845) (cc)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/10/11		

Radiological Background 0.0, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'				0.0 13	Sandy silt, (10YR, 4/4), brown, 60% silt, 40% fine to medium grained subrounded sand, ^{dry} moist ^{cc} , loose, common rootlets, no plasticity or toughness. TD = 0.5' bgs No GW encountered	ML		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 48
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 10'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1-19-11 / 0922	Date/Time Total Depth Reached 1-19-11 / 1028
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 8 1/2 gall bags, 1 8-oz jar (#20067) (1010) 20077 DUPs: 20553 (MS); 20551 (lab DUP) 20552 (field DUP - no time)		
Geologist C. Carmichael	Checked by/Date [Signature] 5/10/11		

Radiological Background 0.2, 2876, 66	Radiological Equipment Used Pancake meter, Rad Downhole scanner	PID Used Mini Rac 2000 (background=0.2 ppm)
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Depth (ft)	Interval	Recovery	PID 0.2	Radiological 45	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
1'					Silty sand (4/4, 10YR), brown, 70% fine to medium grained subrounded sand, 20% silt, 10% gravel (asphalt, fill gravel, sandstone pieces); no hardness or plasticity; no odor, semi-moist, medium dense.	Sm	05	2547
			0.2	65			4243	
			0.2	50			4799	
			0.2	75			4984	
2'			0.2	55			4802	
			0.2	40			4989	
3'			0.2	60			4974	
			0.2	75			5059	
4'			0.2	55			4977	
			0.2	65			4853	
5'			0.2	40	5.25'		4973	
			0.3	35	Sand with rock fragments, (10YR, 5/3), light brown; 80% fine to medium grained subangular sand, 20% rock fragments (sandstone), dry; medium dense, no hardness or plasticity, no odor.	SW		5171
6'			0.3	30				5189

Radiological Background 0.2, 2876, 66					Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 48
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
7'			0.3	70	Silty sand (same as 1'-5.25')	SM	5380
			0.3	75			5389
			0.3	80			5327
8'			0.3	70	Dark coloration (10YR, 3/3) dark brown-wooder	ML	5293
			0.3	60	Silt (10YR, 4/4), brown, 90% silt, 10% fine grained sand, dry, medium stiff, very low hardness and plasticity, no odor.		5401
9'			0.3	65			5543
			0.2	70			5701
10'			0.3	45	9.9' Sand, (10YR, 5/4), light brown, 100% fine to medium grained sand, medium dense, dry, no odor.	SW	5752
<p>Goal 10' depth reached. NO GW encountered</p>							

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 49			
Drilling Company HGL		Driller P. Skeath	Ground Elevation NA	Total Drilled Depth 0.5'			
Drilling Equipment trowel/shovel		Borehole Diameter NA	Date/Time Drilling Started 2-11-11/0851	Date/Time Total Depth Reached 2-11-11/0905			
Type of Sampling Device trowel/shovel		Samples Collected 1 4-oz jar, 2 1/2 gall bags (#20080) (0905)					
Geologist C. Carmichael		Checked by/Date <i>[Signature]</i> 5/10/11					
Radiological Background 14		Radiological Equipment Used up R meter		PID Used Mini Rae 2000 (Background = 0.1 ppm)			
Depth	Interval	Recovery	PID	Radiological	Description <small>(include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings (CPM)
0.5'				0.114	Sand, (10 VR, 6/6) light brown, 95% fine to coarse grained subrounded sand, 5% small gravel (fill rock), dry, loose, no plasticity, hardness or odor. No groundwater encountered.	SW	

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 13 ^{cc} 49
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 10'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1-19-11/1435	Date/Time Total Depth Reached 1-19-11/1546
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags, 1 8-oz jar (#20079) (1535)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/10/11		

Radiological Background 0.3, 2529, 71	Radiological Equipment Used Pancake meter at Rade Downhole scanner	PID Used Mini Rae 2000 (Background=0.3ppm)
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Depth (ft)	Interval	Recovery	CPD	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
			3	25			0.5	3397
			0.3	45				
1'				80	Sand (10YR, 6/6), light brown, 90% fine to medium grained subrounded sand, 10% gravel (fill), dry, medium dense, trace rootlets in top 1', no odor.	SW		
				75				
				50				
2'				75		SM		
				55	Silty sand, (10YR, 4/4), brown, 60% fine grained sand, 40% silt, semi-moist, medium dense, no plasticity or hardness, no odor.			
				45				
3'				65				
				50				
4'				65	Sand (same as 0'-2'), plus trace sandstone rock fragments.	SW		
				65				
				60				
5'				50				
6'				55				

Radiological Background 0.3, 2529, 71					Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 49
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
				0.350			4473
7'				55			4254
				70			4231
8'				65			4647
				60			4980
9'				65.9'	Clay (10 YR, 3/2), dark greyish brown, 90% clay, 10% fine grained sand, dry, stiff, medium plasticity, medium-high hardness, no odor.	CL	5159
				65.85'	Sand (same as 0'-2' and 4'-9')	SW	5037
10'				70	10' goal depth reached. No groundwater encountered		5147

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID & Group 5B Group 2	Location ID 50
Drilling Company: Boart Longyear		Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 4ft
Drilling Equipment Geoprobe 6600		Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/6/11 1506	Date/Time Total Depth Reached 1/6/11 1510
Type of Sampling Device 1 3/4" macrocore acetate liner			Samples Collected 20133-1525 (2) 1/2 gallon bags	
Geologist J. Stone			Checked by/Date <i>[Signature]</i> 5/10/11	
Radiological Background 43 / 2517		Radiological Equipment Used Pancake / Downhole		PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)

Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	CPM
			0.0	45	Silty Sand, Yellowish Brown (5/6 10YR) 70% fine sand, 30% silt, dry, medium, no odor or staining, trace gravel fill material	SM	2513	2901
			0.0	37			4261	
			0.0	44			5002	
			6.0	26			5118	
			0.0	56	- moist		5057	
			0.0	69	- trace roots (1/4" diameter max).		4910	
			0.0	77	Sand, Brownish yellow (6/6 10YR)	SP	4933	
			0.0	48	95% fine sand, 5% silty, moist, med-high dense, no odor or staining		4989	
			0.0	29	TD = 4ft bgs no gw encountered		5008	

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID Sb, Group 2	Location ID SF (S) 51			
Drilling Company HGL		Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'			
Drilling Equipment trowel/shovel		Borehole Diameter NA	Date/Time Drilling Started 12/10/10 1310	Date/Time Total Depth Reached 12/10/10 1320			
Type of Sampling Device trowel/shovel		Samples Collected 20135, 1315 (2) 1/2 gal bags					
Geologist S. Graham		Checked by/Date <i>[Signature]</i> 5/24/11					
Radiological Background 0.6 ppm, 4 ppb		Radiological Equipment Used up R meter		PID Used Mini Rae 2000 (Background = 0.6 ppm)			
Depth (PID)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
0.5					<p>sandy silt, dark yellowish brown (w/RTu), dry soft, 35% fine sand, 65% silt, few rootlets no odor.</p> <hr/> <p>TD = 0.5'</p> <p>Groundwater not encountered</p>	(S)	

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 2	Location ID S1			
Drilling Company Boart Longyear		Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 4ft			
Drilling Equipment Geoprobe 6600		Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/6/11 1400	Date/Time Total Depth Reached 1/6/11 1405			
Type of Sampling Device 1 3/4" macrocore acetate liner		Samples Collected 20134-1420 (2) 1/2 yellow bags					
Geologist I. Stone		Checked by/Date <i>[Signature]</i> 5/10/11					
Radiological Background 49 / 2468		Radiological Equipment Used Paracake / Downhole		PID Used Mini RAE 2000 (Bkgd: 0.0cpm)			
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches 0.5 = 2440 (CPM)
1			0.0	36	Silty Sand, Dark yellowish brown (4/4 10YR) 60% fine sand, 40% silt, med dense, dry, trace gravel (coarse), no odor or staining	SM	2822
			0.0	49			4092
2			0.0	67	Silty Sand, Yellowish brown (5/6 10YR) 70% fine sand, 30% silt, dry, med dense, no odor or staining, some mottling. All material	SM	5018
			0.0	59			5323
3			0.0	48	moist		5254
			0.0	43			5085
4			0.0	59	Sand, Yellow (7/6 10YR) 95% fine-medium grained sand, 5% silt, ^{FS} dry moist	SP	5005
			0.0	61			4877
			0.0	48			4395
TD = 4ft bgs no gw encountered							

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID SB, group 5	Location ID 54
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-14-10/0917	Date/Time Total Depth Reached 12-14-10/0925
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20242) (0925)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/10/11		

Radiological Background (P) 0.0, 14	Radiological Equipment Used up Reiter	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches (CPM)</small>
0.5'			0.0	13	<p>Sandy silt with gravel, (10YR, 4/4), brown, 60% silt, 25% fine grained sand, 15% pea gravel (fill rock), dry, loose, rootlets common, no odor.</p> <p>TD = 0.5' bgs No GW encountered</p>	ML	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 2	Location ID 55
Drilling Company Cascade Drilling	Driller H. Lopez, S. Lora	Ground Elevation NA	Total Drilled Depth 9.5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 1/4"	Date/Time Drilling Started 1-7-11/1119	Date/Time Total Depth Reached 1-7-11/1219
Type of Sampling Device 1 1/4" macrocore	Samples Collected 2 1/2 gall bags (#20139) (1215)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/10/11		

Radiological Background 0.2, 66, 2332	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rae 2000 (Background= 0.2 ppm)
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(PID)

Depth	Interval	Recovery	PID	Radiological	Description <small>(include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings		
							Inches	(CPM)	
			0.2	80	Silt with clay, (10 YR, 4/3), brown, 80% silt, 15% clay, 5% fine grained sand, dry, soft, trace rootlets, trace rock fragments (pea gravel), low plasticity, low-medium hardness, no odor.	ML	0.5	2242	
				60					
				70					
1'				65					
				60					
2'				53	Sandy silt, (10 YR, 4/4), brown, 65% silt, 35% fine grained, subrounded sand; dry, soft, no plasticity or hardness, trace rock fragments (gravel), no odor.	(L) ML			
				50					
				55					
3'				75	Sand, (10 YR, 7/4), beige, 95% fine to medium grained subangular sand, 5% rock fragments (weathered sandstone), dry, loose, no odor.	SW			
				50					
4'				70					
				40					
5'				40					
6'				40					

Radiological Background					Project Name	Project Number	Location
0.2, 66/2332					SSFL Area IV Radiological Study	EP9038.01.22.04.03	55
Depth	Interval	Recovery	PID	Radiological	Description	USCS Symbol	Borehole Gamma Readings (CPM)
					(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	Inches	
7'			0.2	75	Silty sand, (IDVR, 4/4), brown, 60% fine grained subround sand, 40% silt, medium dense, dry, no odor.	SM	5465
				70			5442
				65			5469
8'				50	Sand (same as 4.5'-6')	SW	5204
				55			5358
				45	Sandy silt (same as 3.75'-4.5')	ML	5529
9'				45			
				40	Sand (same as 4.5'-6')	SW	5391
10'					Refusal hit at 9.5' No @w encountered		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 2	Location ID 56
Drilling Company Cascade Drilling	Driller H. Lopez, S. Lorn	Ground Elevation NA	Total Drilled Depth 10'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 1/4"	Date/Time Drilling Started 1-7-11/1355	Date/Time Total Depth Reached 1-7-11/1456
Type of Sampling Device 1 1/4" macrocore	Samples Collected 2 1/2 gall bags (#20140)(1455)		
Geologist C. Carmichael	Checked by/Date [Signature] 5/10/11		

Radiological Background 0.1, 37, 2373	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rae 2000 (Background = 0.1 ppm)
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(PID)

Depth	Interval	Recovery	EPID	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
				65			0.5	2166
				50			0	2775
1'				50	Silt with clay, (10 YR, 4/2), brown, 75% silt, 20% clay, 5% fine grained subrounded sand, speckled texture, soft, dry, low-medium plasticity, hardness, no odor.	ML		3648
				50				4180
				60				4669
2'				45	Sandy silt, (10 YR, 4/3), brown, 65% silt, 30% fine grained sand, 5% rock fragments (pea gravel), dry, soft, low plasticity and hardness, no odor.	ML		4930
				50				5199
3'				60	Silty sand (10 YR, 5/4), light brown, 70% fine grained, subrounded sand, 25% silt, 5% rock fragments (pea gravel)	SM		5336
				50				5420
4'				65				5613
				40				5594
5'				65				5605
				60				5629
6'				60				5518

Radiological Background					Project Name	Project Number	Location
0.1, 37, 2373					SSFEL Area IV Radiological Study	EP9038.01.22.04.03	56
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
							Inches
			0.1	50		SM	5539
7'				40			5511
				45			5200
8'				70			5253
				60			5215
9'				65			5288
				65			5231
10'			✓	50			5284
					10' target depth reached. No GW encountered		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID SB, group 2	Location ID 57
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-10-10/1115	Date/Time Total Depth Reached 12-10-10/1121
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20142) (1120)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/10/11		

Radiological Background (PID) 0.0, 13	Radiological Equipment Used w/ R meter	PID Used Mini Rae 2000 (Background=0.0cpm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'			0.0	14	Clayey silt with sand, (10 YR, 4/4), brown, 70% silt, 25% clay, 5% fine grained subrounded sand, low plasticity, low toughness, common rootlets, dry, soft. TD=0.5' bgs no gw encountered	ML	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 2	Location ID 58
Drilling Company Cascade	Driller H. Lopez, S. Lorn	Ground Elevation NA	Total Drilled Depth 6'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 1/4"	Date/Time Drilling Started 1-6-11/1451	Date/Time Total Depth Reached 1-6-11/1555
Type of Sampling Device 1 1/4" macrocore	Samples Collected 2 1/2 gall bags (# 20143) (1550)		
Geologist C. Carmichael	Checked by/Dt S11011		

(PID) Radiological Background 0.1, 52, 2285 Radiological Equipment Used ~~pancake~~ Downhole scanner PID Used Mini Rae 2000 (Background = 0.1 ppm)

Depth	Interval	Recovery	PID	Radiological #	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
							0.5	2116
							0	2526
1'			0.1	40	Silt with clay, (10YR, 4/3), brown, 85% silt, 15% clay, some rootlets, dry, soft, low to medium plasticity and hardness; no odor.	ML		3807
1'			0.1	45	Silty sand, (10YR, 4/4), brown, 70% fine grained subrounded sand, 30% silt, trace rock fragments (gravel fill), dry, loose, very low plasticity, no hardness, no odor.	SM		4614
2'			60					5318
2'			45					5424
3'				40				5289
3'				45	Sand, (10YR, 6/4), beige, 100% fine grained subrounded sand, no plasticity or hardness, dry, loose, no odor.	SP		5490
4'				50	Silty sand (same as 1'-3')	SM		5456
4'				60				5548
5'				55				5843
5'				50	Sand (same as sand layer at 3')	SP		6920
5'				60				7607
6'				50				n/a

Refusal hit at 6'
No groundwater encountered

BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID / Group 5B / 2	Location ID 59
Drilling Company HGL	Driller D. RIVERA	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/10/10, 1400	Date/Time Total Depth Reached 12/10/10, 1410
Type of Sampling Device trowel/shovel	Samples Collected 20515, 1470 (2) 1/2 gal bags	DUPS: 20520 (MS), 20519 (Field Dup), 20518 (Lab Dup) no time	
Geologist P. Graham	Checked by/Date [Signature] 5/24/11		

Radiological Background (CPD) 0.8 ppm	Radiological Equipment Used M/R meter	PID Used Mini Rae 2000 (Background = 0.8 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5				0.8	14			
					<p>sandy silt, dark yellowish brown (10 PR 4/6) dry, soft, 30% fine sand, 20% silt, some rootlets, no odor</p> <hr/> <p>TD = 0.5' Groundwater not encountered</p>			

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 2	Location ID 59
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 9.5ft ^{SS} 9.5ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/7/11 0818	Date/Time Total Depth Reached 1/7/11 0825
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20144 - 2855 (2) 1/2 gallon bags		
Geologist I. Stone	Checked by/Date <i>[Signature]</i> 5/10/11		

Radiological Background 35 / 2266	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>0.5" = 2151 (CPM)</small>
1			0.0	26	Clayey silt, Brown (4/3 10YR) 60% silt, 40% clay, trace sand, trace roots dry, low strength, low toughness, med. plasticity, no odor or staining	ML	2334
			0.0	41			2874
			0.0	59			3792
			0.0	68			4253
2			0.0	52	Silty Sand, Yellowish brown (5/6 10YR) 65% fine sand, 35% silt, trace gravel (granitic concrete, asphalt), dry, med dense no odor or staining fill material to total depth Some metal scrap @ approx. 3ft bgs	SM	4569
			0.0	91			4939
3			0.0	104			5102
			0.0	95			5336
4			0.0	59	concrete etc IS		5511
			0.0	51			5302
5			0.0	45			5410
			0.0	31			5588
6			0.0	35			5456

Radiological Background				Project Name	Project Number	Location	
35 / 2266				SSFL Area IV Radiological Study	EP9038.01.22.04.03	5B, 2, 59	
Depth	Interval	Recovery	PTD	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings
							Inches
6			0.0	33	Same as above, Silty Sand, fill	SM	5456
			0.0	74			5419
7			0.0	66			5482
			0.0	58			5243
8			0.0	72			5321
			0.0	63			5313
9			0.0	54			5239
			0.0	67	5034		
10					TD = 9.5 ft bgs no gr encountered		



5B_060



BORING LOG

Sheet 1 of 2

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B Group <u>2</u>	Location ID 60
Drilling Company Bart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 10ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/7/11 0955	Date/Time Total Depth Reached 1/7/11 1001
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20146-1025 (2) 1/2 gallon bags		
Geologist I. Stone	Checked by/Date <i>[Signature]</i> 5/10/11		

Radiological Background 37 / 2283	Radiological Equipment Used Paracake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	CPM
1			0.0	30	Clayey silt, Brown (4/3 10YR) 60% silt, 40% clay, trace gravel, sand, & roots, dry, low toughness, low strength, med plasticity, no odor or staining	ML		2411
			0.0	52			3552	
			0.0	34			3837	
			0.0	61			4268	
2			0.0	38	Silty sand, yellowish brown (5/6 10YR) 65% fine sand, 35% silt, trace gravel, dry, med dense no odor or staining	SM		4832
			0.0	71	Sandy silt, Brown (4/3 10YR) 70% silt, 30% fine sand, dry, trace gravel, low toughness, low strength, no O&S	ML		4671
3			0.0	95	Silty sand, yellowish brown (5/6 10YR) 65% fine sand, 35% silt, trace gravel, dry, med dense, med H	SM		4775
			0.0	104	Sandy silt, clayey silt, (yellowish brown (5/4 10YR)) 60% silt, 40% fine sand, 30% clay, dry, low toughness, low strength, med. plasticity, no odor or staining, trace gravel (granitic)	ML		4778
4			0.0	59				4822
			0.0	52			4759	
5			0.0	56				4970
			0.0	28			4805	
6			0.0	35				4912

Radiological Background 37 / 2283				Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location SB, 2, 60	
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings
							Inches (CPM)
6			0.0	35	Silty Sand, Yellowish brown (5/6 10YR) 65% fine sand, 35% silt, trace gravel, dry, med dense	SM	4912
			0.0	23	Silty clay Very dark grayish brown (3/2 10YR) 40% silt, 60% clay, dry, med tough, med strength no org	CL	5076
7			0.0	43	Silty Sand, Yellowish Brown (5/6 10YR) 55% s		5378
			0.0	42	65% fine sand, 35% silt, trace gravel, dry, med dense, no org.	SM	5207
8			0.0	27			5141
			0.0	87			5176
9			0.0	72			5046
			0.0	58			5152
10			0.0	69	TD = 10 ft bgs no gas encountered		5248

BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 54, Group 2	Location ID 61
Drilling Company HGL	Driller D. Zivca	Ground Elevation NA	Total Drilled Depth 0.5
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/10/10, 1335	Date/Time Total Depth Reached 12/10/10, 1345
Type of Sampling Device trowel/shovel	Samples Collected 2040, 1340 (2) 1/2 gal bags		
Geologist P. Gorman	Checked by/Date <i>[Signature]</i> 5/24/11		

Radiological Background (PID) 0.8cpm, 12/10/10	Radiological Equipment Used M/R meter	PID Used Mini Rae 2000 (Background = 0.8cpm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
0.5				0.8	<p>Sandy silt, dark yellowish brown (10YR 4/4), dry soft, 35% fine sand, 65% silt, some rootlets, no spher</p> <hr/> <p>TD = 0.5' Groundwater not encountered</p>	MS	

BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID Sb, Group 2	Location ID 02
Drilling Company HGL	Driller D. Sica	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/10/10, 1250	Date/Time Total Depth Reached 12/10/10, 1230
Type of Sampling Device trowel/shovel	Samples Collected 20150, 1255 (2) 1/2 gal bags		
Geologist P. Sica	Checked by/Date <i>[Signature]</i> 5/24/11		

Radiological Background (PID) 0.4 ppm, 1.4 ppm	Radiological Equipment Used AP R meter	PID Used Mini Rae 2000 (Background=0.14 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			0.6	13	sandy silt, dark brown (10YR 3/3) dry, soft 44% fine sand, 55% silt, common roots, no odor			
					TO = 0.5' Groundwater not encountered			

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB 2	Location ID 62
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 10ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/7/11 1240	Date/Time Total Depth Reached 1/7/11 1245
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20149 - 1330 (2) 1/2 gallon bags		
Geologist I. Stone	Checked by/Date <i>[Signature]</i> 5/10/11		

Radiological Background 45 / 23072	Radiological Equipment Used 410 Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0cpm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>0.5" = 2211 (CPM)</small>
			0.0	78	Silty Clay, Yellowish Brown (5/4 10YR) 60% clay, 40% silt, trace sand, gravel, roots, dry, med toughness, med strength, med plasticity, no odor or staining	CL	2578
			0.0	61			3445
			0.0	58			3643
			0.0	63			3859
			0.0	44			3879
			0.0	25			3881
			0.0	32			4208
			0.0	47			4766
			0.0	34	Clayey Silt, Yellowish Brown (5/4 10YR) 60% silt, 35% clay, 5% fine sand, trace gravel, trace roots, dry low strength, low toughness, low plasticity, no odor or staining	ML	4904
			0.0	44			4865
			0.0	61	Silty Sand, Yellowish brown (5/6 10YR) 65% fine sand, 35% silt, dry, med dense, no odor or staining trace gravel to depth	SM	5275
			0.0	22			5496
			0.0	43			5431

2410

Radiological Background 45 / 2807 25				Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 5B, 2, 62	
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
			0.0	43	Same as above; Silty Sand fill material		5431
			0.0	43		5414	
7			0.0	51		5504	
			0.0	64		SM 5258	
8			0.0	46		5159	
			0.0	61		5228	
9			0.0	69		5325	
			0.0	78		5526	
10			0.0	52	TD = 10ft bgs no gas encountered	5296	

5B_063



BORING LOG

Sheet 1 of 1

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB 2	Location ID 63
Drilling Company Bart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 4 ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/6/11 1427	Date/Time Total Depth Reached 1/6/11 1130
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20151-1150 (2) 1/2 gallon bags		
Geologist I. Stone	Checked by/Date <i>[Signature]</i> 5/10/11		

Radiological Background 35 / 2295	Radiological Equipment Used Paracake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings
							Inches
			0.0	58	Clayey silt, Brown (4/10 YR)		2632
			0.0	65	60% silt, 40% clay, trace sand & gravel, trace roots in top 3 inches, dry, low toughness, low strength, and plasticity, no o+s	ML	3659
1			0.0	70	Silty Sand, Yellowish Brown (5/6 10YR)		4451
			0.0	75	60% fine sand, 40% silt, trace gravel (granitic), trace burnt material, dry, med dense, no o+s.	SM	4961
2			0.0	92			5261
			0.0	66			5034
3			0.0	63			5436
			0.0	38			5441
4			0.0	63	weathered sandstone (Kos) frag , yellowish brown (5/8 10YR) 95% fine sand, 5% silt, med-high dense, dry, no o+s		NM
TD = 4' bgs (refusal) NO GW encountered							

BORING LOG

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID 5B, group 2		Location ID 64	
Drilling Company HGL		Driller H. Thompson		Ground Elevation NA		Total Drilled Depth 0.5'	
Drilling Equipment trowel / shovel		Borehole Diameter NA		Date/Time Drilling Started 12-10-10/1312		Date/Time Total Depth Reached 12-10-10/1319	
Type of Sampling Device trowel / shovel				Samples Collected 2 1/2 gall bags (#20153) (1318)			
Geologist C. Carmichael				Checked by/Date <i>[Signature]</i> 5/10/11			
Radiological Background (PID) 0.0, 13		Radiological Equipment Used up R meter		PID Used Mini Rae 2000 (Background = 0.0 ppm)			
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
0.5'				0.0 14	Sandy silt with gravel, (10YR, 6/3), light brown, 65% silt, 25% fine grained sand, 10% pea gravel (fill), loose, dry. TD = 0.5' bgs No Gw encountered	ML	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 2	Location ID 64
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 2ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/6/11 1030	Date/Time Total Depth Reached 1/6/11 1035
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20152-1045 (2) 1/2 gallon bags		
Geologist I. Stanz	Checked by/Date <i>[Signature]</i> 5/10/11		

Radiological Background 39 / 2304	Radiological Equipment Used Paracake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0cpm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole
							Inches
			0.0	71	Clayey Silt, Brown (4/3 10YR)		2885
			0.0	44	60% silt, 40% clay, trace sand & gravel, dry low toughness, low strength, and plasticity, no odor or staining.	ML	3640
1			0.0	33	Silty Sand, light Brown (5/6 10YR) 60% fine sand, 40% silt, dry, med. dense, no Ors. trace gravel		4390
			0.0	39	70% fine sand, 30% silt, some mottling, trace gravel Yellowish Brown (5/8 10YR)	SM	5364
2			0.0	57	Sand w/ silt, Yellowish Brown ^{light} 40% sand, 60% silt, dry, med dense (4/4 10YR)	SP	5662
					TD = 2 ft bgs no gw encountered		

BORING LOG

Project Name: SSEL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID 5B, group 2		Location ID 65	
Drilling Company HGL		Driller H. Thompson		Ground Elevation NA		Total Drilled Depth 0.5'	
Drilling Equipment trowel/shovel		Borehole Diameter NA		Date/Time Drilling Started 12-10-10/1419		Date/Time Total Depth Reached 12-10-10/1421	
Type of Sampling Device trowel/shovel				Samples Collected 2 1/2 gall bags (#20155) (1420)			
Geologist C. Carmichael				Checked by/Date <i>[Signature]</i> 5/10/11			
Radiological Background (PID) 0.0, 14		Radiological Equipment Used up R meter		PID Used Mini Rax 2000 (Background=0.0cpm)			
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'			0.0	13	<p>Clayey silt with sand, (10 YR, 4/4), brown, 65% silt, 30% clay, 5% fine grained sand, trace gravel, medium stiff, dry, low plasticity and toughness.</p> <p>TD=0.5' bgs No GW encountered</p>	ML	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 2	Location ID 65
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 10ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/5/11 0902	Date/Time Total Depth Reached 1/5/11 0908
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20154 - 0935 (2) 1/2 gallon bags		
Geologist I. Stone	Checked by/Date <i>[Signature]</i> 5/10/11		

Radiological Background 41 / 2315	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology; bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>0.5' = 2384 (CPM)</small>
1			0.0	33	Sandy silt, Brown (4/2 10YR), 70% silt, 30% fine sand, dry, med dense, low tough, low strength, no Oil	ML	4258
			0.0	45	Silty sand, Yellowish Brown (5/6 10YR)	SM	4873
			0.0	20	70% fine grained sand, 30% silt, trace gravel, dry, med dense ↳ granitic & concrete chunks		4434
			0.0	28	lithic sand/sandstone cobble		4815
2			0.0	72	Coarsely sand, light brownish gray (6/2 10YR), 30% fine, 40% med sand, 30% fine gravel, dry, low dense	SP	5402
			0.0	49	Silty sand, Yellowish Brown (5/6 10YR) 60% fine sand, ⁴⁰ 35% silt, trace coarse gravel (granitic), dry, med dense, no odor or staining	SM	5383
3			0.0	75	fill material to TD.		5429
			0.0	81			5397
4			0.0	43			5461
			0.0	58			526 5248
5			0.0	70			5253
			0.0	72	Same as above		5478
6			0.0	53			5406

Radiological Background				Project Name	Project Number	Location	
41 / 2315				SSFL Area IV Radiological Study	EP9038.01.22.04.03	SB, 2, 65	
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole
							Gamma Readings (CPM)
6			0.0	53	Same as above		5406
			0.0	77			5362
7			0.0	81			5412
			0.0	68			5310
8			0.0	44	increased sand content ↓ 70% fine sand, 30% silt	S _{sh}	5423
			0.0	39			5395
9			0.0	46	↑ thickness of silt stone		5418
			0.0	81			5319
10			0.0	90	TD = 10 ft bgs no gw encountered		NM



BORING LOG

Sheet 1 of 1

Project Name: SSFL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID & Group: SB 2	Location ID: 66
Drilling Company: Boart Longyear	Driller: D. Hansen	Ground Elevation: NA	Total Drilled Depth: 4 ft
Drilling Equipment: Geoprobe 6600	Borehole Diameter: 1 3/4"	Date/Time Drilling Started: 1/6/11 0853	Date/Time Total Depth Reached: 1/6/11 0859
Type of Sampling Device: 1 3/4" macrocore acetate liner	Samples Collected 20156-0910 (2) 1/2 gallon bags		
Geologist: I. Stone	Checked by/Date: 5/27/11		

Radiological Background: 46 / 2504	Radiological Equipment Used: Paracake / Downhole	PID Used: Mini RAE 2000 (Bkgd: 0.10 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>0.5 = 1986 (CPM)</small>
1			0.0	35	Silty Sand, Dark yellowish brown (4/4 104R) 60% fine sand, 40% silt, dry, med dense, no odor + staining, trace gravel in top 6"	SM	2077
			0.0	47			2665
			0.0	12			4284
			0.0	62			5127
2			0.0	41	SAND w/ silt, Brownish Yellow (6/6 104R) 90% fine sand, 10% silt, dry, med dense, no odor or staining	SP	5197
			0.0	43			5219
3			0.0	63	Sandy silt, Yellowish Brown (5/6 104R) 60% silt, 35% fine sand, 5% clay, dry, low tough, low strength, low plasticity, no odor, small black streak.	ML	5485
			0.0	29			5593
4			0.0	109	SAND, very Pale Brown (8/7 104R) 70% fine sand, dry, low dense, no odor or staining	SP	6379
							TD = 4ft logs No gw encountered

BORING LOG

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID 5B, group 2	Location ID 67			
Drilling Company HGL		Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'			
Drilling Equipment trowel/shovel		Borehole Diameter NA	Date/Time Drilling Started 12-10-10/1349	Date/Time Total Depth Reached 12-10-10/1355			
Type of Sampling Device trowel/shovel			Samples Collected 2 1/2 gall bag (#20158) (1355)				
Geologist C. Carmichael			Checked by/Date <i>[Signature]</i> 5/10/11				
Radiological Background (D.O., 14)		Radiological Equipment Used w/ R meter		PID Used Mini Rae 2000 (background = 0.0 ppm)			
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
0.5'			0.0	14	Silty sand, (10 YR, 4/4), brown, 65% fine to medium grained subrounded sand, 35% silt, trace subangular pea gravel, trace rootlets, loose, dry, piece of asphalt found. TD = 0.5' bgs No groundwater encountered	SM	

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID & Group SB 2	Location ID 67			
Drilling Company Boart Longyear		Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 4.5ft			
Drilling Equipment Geoprobe 6600		Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/5/11 1347	Date/Time Total Depth Reached 1/5/11 1350			
Type of Sampling Device 1 3/4" macrocore acetate liner			Samples Collected 20157 - 1400 (2) 1/2 gallon bags				
Geologist I. Stone			Checked by/Date <i>[Signature]</i> 5/10/11				
Radiological Background 59 / 2507		Radiological Equipment Used Pancake / Downhole		PID Used Mini RAE 2000 (Bkgd: 0.0cpm)			
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches 0.5" = 2363 (CPM)
1			0.0	28	Silty Sand, Brown (4/3 10YR) 60% fine sand, 40% silt, trace gravel, moist at surface, dry below surface, med dense, no odor or staining.	SM	2760
			0.2	53			4190
2			0.0	59	Sand w/silt, Brownish Yellow (6/6 10YR), 90% fine sand, 10% silt, dry, low-med dense no OTS	SP	5028
			0.2	92			5185
3			0.1	83	Sandy Silt Strong Brown (4/6 7.5 YR), 70% silt, 30% fine sand, dry, low tough, low stain, med	ML	5082
			0.2	60			5089
4			0.1	77	Silty Sand, Brownish Yellow (6/3 10YR) 50% fine sand, 20% med sand, 30% silt, low-med dense, no odor or staining	SM	5201
			0.1	85			5050
5			0.1	54	TD = 4.5ft bgs no gw encountered		5169
			0.1	72			5228

BORING LOG

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID & Group 5B 2		Location ID 68	
Drilling Company Bart Longyear		Driller D. Hansen		Ground Elevation NA		Total Drilled Depth 4ft	
Drilling Equipment Geoprobe 6600		Borehole Diameter 1 3/4"		Date/Time Drilling Started 1/5/11 1235		Date/Time Total Depth Reached 1/5/11 1241	
Type of Sampling Device 1 3/4" macrocore acetate liner				Samples Collected 20159-1300 (2) 1/2 gallon bags			
Geologist I. Stone				Checked by/Date <i>[Signature]</i> 5/10/11			
Radiological Background 57 / 2063		Radiological Equipment Used Paracake / Downhole		PID Used Mini RAE 2000 (Bkgd: 0.0 cpm)			
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings 0.5" Inches 2247 (CPM)
1	0.0 - 104		80		Sandy Silt, Brown (4/3 10YR) 70% silt, 30% fine sand, dry, low tough, low strength, no odor or staining	ML	3391 4304
	0.0 - 90		90		Silty Sand, Yellowish Brown (5/6 10YR) 70% fine sand, 30% silt, dry, med dense, trace gravel (granitic + some asphalt), no odor or staining	SM	4853 5554
2	0.0 - 64		64				6637
	0.0 - 61		61				6769
3	0.0 - 100		100				7020
	0.0 - 53		53		Clayey Silt, Yellow (7/6 2.5Y) 65% silt, 35% clay, trace fine sand, dry, low-med tough, low strength, no odor or staining	ML	6967
4	0.0 - 73		73		siltstone flakes at depth		6777
TD = 4ft bgs no gw encountered							

BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 2	Location ID 69
Drilling Company: Bart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 4ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/5/11 1455	Date/Time Total Depth Reached 1/5/11 1500
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20160 - 1515 (2) 1/2 gallon bags		
Geologist I. Stone	Checked by/Date [Signature] 5/10/11		

Radiological Background 38 / 2124	Radiological Equipment Used Paracake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings
							Inches 0.5" = 2412 (CPM)
1	0.0 - 53				Silty Sand, Dark Brown (4/3 10YR)		3029
	0.0 - 61				asphalt chunk (1") 60% fine sand, 40% silt, dry med dense, no OTS trace gravel	SM	4219
	0.0 - 95						5147
2	0.0 - 78				Silty sand, Brownish Yellow (6/5 10YR)		5141
	0.0 - 74				65% fine sand, 35% silt, dry med dense, trace gravel	SM	5081
	0.0 - 56						5100
3	0.0 - 62				Sand w/ silt Strong Brown (5/8 7.5YR)		5135
	0.0 - 60				90% fine sand, 10% silt, dry, low-med density, no OTS	SP ID	4986
	0.0 - 70						5094
					TD = 4' bgs (refused)		
					NO GW encountered		

BORING LOG

Project Name: SSEL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID 5B, group 2		Location ID 70	
Drilling Company HGL		Driller H. Thompson		Ground Elevation NA		Total Drilled Depth 0.5'	
Drilling Equipment trowel/shovel		Borehole Diameter NA		Date/Time Drilling Started 12-10-10/1334		Date/Time Total Depth Reached 12-10-10/1340	
Type of Sampling Device trowel/shovel				Samples Collected 2 1/2 gall bags (#20162) (1340)			
Geologist C. Carmichael				Checked by/Date S. J. Smith 5/10/11			
Radiological Background (PID) 0.0, 12		Radiological Equipment Used up R meter		PID Used Mini Rae 2000 (Background=0.0ppm)			
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
0.5'			0.0	14	Clayey silt with sand, (10 YR, 4/4), brown, 65% silt, 30% clay, 5% fine grained subrounded sand, soft, dry, common rootlets. TD=0.5' bgs No GW encountered	ML	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB 2	Location ID 70
Drilling Company Bart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 4ft IS 3.5ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/5/11 1042	Date/Time Total Depth Reached 1/5/11 1045
Type of Sampling Device 1 3/4" macrocore acetate liner		Samples Collected 20161-1100 (2) 1/2 gallon bags	
Geologist I. Stone		Checked by/Date [Signature] 5/10/11	

Radiological Background 43 / 2251	Radiological Equipment Used Paracake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches 0.5" 2225 (CPM)
			6.0	43	Sandy Silt, Brown (4/3 10YR)		2544
			6.0	65	70% silt, 30% fine sand, trace fine gravel, dry, low tough, low strength, no odor or staining fill material	ML	3782
1			0.0	85	Silty Sand, Dark yellowish brown (4/6 10YR)		4340
			0.0	52	65% fine sand, 35% silt, trace fine gravel, dry, med dense, no odor or staining fill.	SM	5121
2			0.0	61			5612
			0.0	69			5288
3			0.0	58	Weathered sandstone (Kcs), Brownish yellow (6/6 10YR)		5335
			0.0	41	100% sand fine-med grained, dry, med-high dense no odor or staining		5385
4					TD = 3.5 ft logs, no gw encountered		
					TD = 4 ft logs, IS		
					No gw encountered IS		



5B_071



BORING LOG

Sheet 1 of 1

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID SB, group 3	Location ID 71
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-13-10/1008	Date/Time Total Depth Reached 12-13-10/1010
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20177)(1010)		
Geologist C. Carmichael	Checked by/Date [Signature] 5/10/11		

Radiological Background (PID) 0.0, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'				0.0 14	<p>Sandy silt with rock fragments, (10 yr, 4/4), brown, 65% silt, 25% fine grained subrounded sand, 10% rock fragments (sandstone), dry, soft, rootlets common. Piece of iron wire found while digging.</p> <p>TD = 0.5' bgs No GW encountered</p>	SM ML		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 3	Location ID 71
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 3'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/12/11 / 1514	Date/Time Total Depth Reached 1/12/11 / 1520
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected (2) 1/2 gallon bags ID 20176 / 1535		
Geologist Stephanie Lepore Montrose	Checked by/Date TBW 5/24/11		

Radiological Background SZ / 2661	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings ± 0.5 = 2444 (CPM)
			0.0	74	0-7" SM silty SAND (dark yellowish brown) 104R 4/4 30% silt, 70% fine to coarse grained sand low plasticity, very soft, loose, dry	SM	0.0 = 2771
			0.0	57	7"-1'6" SM silty SAND SP SAND with silt (yellowish brown) 104R 5/6 20% silt, 80% fine to coarse grained sand non plastic, loose, dry	SM	0.5 = 4340
1.0			0.0	83	1'6"-1'10" SC clayey SAND with silt (yellowish brown) 104R 6/6 30% clay, 50% fine to med. grained sand, 20% silt med. plasticity, firm, dry, trace gravel - sub angular	SC	1.0 = 5323
2.0			0.0	45	1'10"-2'5" SP SAND with silt (yellowish brown) 104R 6/8 15% silt, 85% fine to coarse grained sand trace gravel - sub angular	SP	1.5 = 5653
			0.0	50	2'5"-3' SC clayey SAND with silt (yellowish brown) 104R 6/6 30% clay, 50% fine to med. grained sand, 20% silt med. plasticity, firm, dry, trace gravel - sub angular	SC	2.0 = 6251
3.0			0.0	67			2.5 = 6092
					TO = 3.0' (hit refusal) NO GW encountered		3.0 = 6049



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 3	Location ID 72
Drilling Company HGL	Driller M. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-13-10/0946	Date/Time Total Depth Reached 12-13-10/0951
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20179) (0950)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/10/11		

Radiological Background (10) 0.0, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'				0.0 14	<p>Sandy, gravelly silt, (10YR, 4/3), brown, 60% silt, 25% fine grained sand, 15% rock fragments (siltstone and sandstone, common rootlets, dry, medium dense.</p> <p>TD = 0.5' bgs NO GW encountered</p>	SM ML	

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 3	Location ID 72
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/12/11 / 1415	Date/Time Total Depth Reached 1/12/11 / 1420
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected (2) 1/2 gallon bags Sample ID 20178 / 1440		
Geologist Stephanie Lapere Montrose	Checked by/Date TBW 5/24/11		

Radiological Background 47 / 2567	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkqd: 0.1 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	57	0'-4" SM silty SAND (brown 10YR 4/3)	SM	0.0 = 3044
			0.0	41	30% silt, 70% fine to coarse grained sand worms, plant material (grass and roots) low plasticity, very soft, loose, dry trace gravel - subangular		0.5 = 4697
1.0			0.0	89	4"-16" SM silty SAND (dark yellowish brown) 10YR 4/4	SM	1.0 = 5387
			0.0	114	30% silt, 70% fine to coarse grained sand trace gravel - subangular, low plasticity, very soft, loose, dry		1.5 = 5545
2.0			0.0	88	1'6" - 2' SM silty SAND with clay (brown 10YR 4/3)	SM	2.0 = 5810
			0.0	94	2'- 20% clay, 30% silt, 50% fine to medium grained sand, low plasticity, soft, dry (yellowish brown) 10YR 5/4	ML	2.5 = 6085
3.0			0.0	97	2'4" ML sandy SILT with clay 45% silt, 20% clay, 35% fine to medium grained sand, low plasticity, firm, dry (yellowish brown) 10YR 5/6	ML	3.0 = 6491
			0.0	68	3'0" - 3'5" 25% clay, 35% fine to medium grained sand 40% silt, medium plasticity, firm, dry (brownish yellow) 10YR 6/6		3.5 = 6450
4.0			0.0	72	3'5" - 4'6" SM silty SAND 40% silt, 60% fine to coarse grained sand, non plastic, dense, dry trace gravel - sub angular (brownish yellow) 10YR 6/6	SM	4.0 = 6552
			0.0	52	4'6" - 5' ML clayey SILT with sand 30% clay, 25% fine grained sand, 45% silt, medium plasticity, firm, dry (brownish yellow) 10YR 6/6	ML	4.5 = 6386
5.0			0.0	90			5.0 = 6259
TD = 5' (hit refusal) NO GW encountered							



5B_073



BORING LOG

Sheet 1 of 1

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID 5B, group 3	Location ID 73			
Drilling Company HGL		Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'			
Drilling Equipment trowel/shovel		Borehole Diameter NA	Date/Time Drilling Started 12-13-10/0924	Date/Time Total Depth Reached 12-13-10/0931			
Type of Sampling Device trowel/shovel		Samples Collected 2 1/2 gall bags (#20181) (0925)					
Geologist C. Carmichael		Checked by/Date <i>[Signature]</i> 5/10/11					
Radiological Background (AD) 0.0, 12		Radiological Equipment Used w/ R meter		PID Used Mini Rae 2000 (Background = 0.0ppm)			
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
0.5'			0.013		Sandy silt with rock fragments, (10 YR, 4/3), brown, 65% silt, 25% fine grained, subrounded sand, 10% rock fragments (siltstone and sandstone), dry, loose, rootlets common. TD = 0.5' bgs No Gw encountered	ML	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group S13 3	Location ID 73
Drilling Company: Boert Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 5.2
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/13/11 11:48	Date/Time Total Depth Reached 1/13/11 11:54
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20180 - 1210 (2) 1/2 gallon bags		
Geologist I. Stone	Checked by/Date <i>[Signature]</i> 5/10/11		

Radiological Background 44 / 2549	Radiological Equipment Used Pancake / Downhole	PID Used MiniRAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches 0.5 = 2534 (CPM)
1			6.0	38	Sandy silt, dark yellowish brown (3/4 10YR) 70% silt, 25% fine sand, 5% clay, trace silt, trace roots, low strength, low tough, no OHS	ML	3383
			0.0	70			4788
2			0.0	108	Clayey silt, dark brown (3/3 10YR) 60% silt, 30% clay, 10% fine sand, dry, low strength, low-med tough, med. plasticity, no OHS	ML	5159
			0.0	90			5333
			0.0	94			5489
3			0.0	68	Silty clay, brown (4/3 10YR) 60% clay, 35% silt, 5% fine sand, dry med-high strength, med-high tough med-high plasticity, no odor or staining	CL	5893
			0.0	82			5938
			6.0	60			6121
4			0.0	49	Sands clay, light yellowish brown (6/4 10YR 2.5Y) 60% clay, 30% fine sand, 10% silt, dry med-high strength, med tough, med plastic, no OHS	CL	6175
			0.0	65			6224
5			0.0	37	Siltstone		6249
	TD = 5.2 ft bgs no gw encountered						



BORING LOG

Sheet 1 of 1

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID SB, group 3	Location ID 74
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-13-10/0906	Date/Time Total Depth Reached 12-13-10/0911
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20183) (0910)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/10/11		

Radiological Background 0.0, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'				0.0 14	Silty sand with rock fragments, C10 YR, 4/3 brown, 70% sand - fine grained, subrounded, 25% silt, 5% subangular rock fragments (siltstone and sandstone), dry, medium dense, rootlets common. TD = 0.5' bgs no Gw encountered	SM		

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 3	Location ID 7j
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 8 ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/13/11 1015	Date/Time Total Depth Reached 1/13/11 1020
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20182-1045 (2) 1/2 gallon bags		
Geologist I. Stone	Checked by/Date <i>[Signature]</i> 5/11/11		

Radiological Background 60 / 2589	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>0.5' = 2557 (CPM)</small>
1			0.0	30	Sandy silt, dark yellowish brown (7/4 10YR) 70% silt, 25% fine sand, 5% clay, trace gravel, dry, low strength, low toughness, no odor or staining	ML	2832
			0.0	22			4264
2			0.0	43	Clayey silt, dark brown (7/3 10YR) 60% silt, 30% clay, 10% fine sand, trace gravel, dry-moist, low strength, low-med toughness, med plasticity no odor or staining	ML	4886
			0.0	67			5413
3			0.0	97	Silty clay, Brown (4/3 10YR) 60% clay, 35% silt, 5% fine sand, dry, med-high strength, med-high toughness, med-high plasticity, no odor or staining	CL	5562
			0.0	51			5431
4			0.0	43	Silty clay, Brown (4/3 10YR) 60% clay, 35% silt, 5% fine sand, dry, med-high strength, med-high toughness, med-high plasticity, no odor or staining	CL	5445
			0.0	64			5395
5			0.0	86	Silty clay, Brown (4/3 10YR) 60% clay, 35% silt, 5% fine sand, dry, med-high strength, med-high toughness, med-high plasticity, no odor or staining	CL	5692
			0.0	78			5822
6			0.0	92	- same as above		5711
			0.0	56			5721
			0.0	53			5734

Radiological Background 60 / 2589					Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 58, 3, 74
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings
							Inches (CPM)
			0.0	53	- same as above, silty clay		5734
			0.0	77	Sandy Clay, light yellowish brown (6/4/2051) 60% clay, 30% fine sands, 10% silt, dry med-high strength, med tough, med plasticity, no odor or staining, slightly mottled	CL	5869
7			0.0	51		CL	5674
			0.0	82		CL	5978
8			0.0	67	TD = 8ft bgs no gw encountered		5967

BORING LOG

Project Name: SSEL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID Sb, Group 3	Location ID 75				
Drilling Company HGL		Driller D Rivera	Ground Elevation NA	Total Drilled Depth 0.5'				
Drilling Equipment trowel/shovel		Borehole Diameter NA	Date/Time Drilling Started 12/13/10, 0955	Date/Time Total Depth Reached 12/13/10, 0905				
Type of Sampling Device trowel/shovel		Samples Collected 20105, 0900 (2) 1/2 gal bags						
Geologist P. Scaam		Checked by/Date <i>[Signature]</i> 5/11/11						
Radiological Background US 0.000 (ND)		Radiological Equipment Used M R meter		PID Used Mini Rae 2000 (Background=0.0ppm)				
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5			15	0.0	<p>silty sand w/ gravel, yellowish brown (WTR SM) dry, med. dense sand, 45% fine sand, 40% silt, 15% sandstone gravel rock fragments, many rootlets, no odor</p> <hr/> <p>TD = 0.5' Groundwater not encountered</p>	SM		

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 3	Location ID 75
Drilling Company Boart Longyear		Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 2.5 ft
Drilling Equipment Geoprobe 6600		Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/13/11 1347	Date/Time Total Depth Reached 1/13/11 1355
Type of Sampling Device 1 3/4" macrocore acetate liner		Samples Collected 20184-1405 (2) 1/2 gallon bags		
Geologist I. Stone		Checked by/Date 5/27/11		
Radiological Background 42 / 2628		Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.1 ppm)	

Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
1			0.1	44	Sand, Pale Yellow (7/4 2.5Y) 95% fine grained sand, 5% silt, trace gravel, dry	SP	0.5'	2443
			0.1	28	Sandy silt, Dark yellowish brown (4/4 10YR) 70% silt, 20% fine sand, dry, low rough,	ML		3757
			0.1	46	low strength, no odor or staining	SM IS		5204
			0.1	77	Weathered siltstone, ^{IS} Dark grayish brown (5/2 10YR) 100% silt, dry, very rough IS			5989
			0.1	72	med-high strength			6227
2			0.1	89		Bedrock		6241
3					TD = 2.5 ft bgs No gas encountered			6017

BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5b, Group 3	Location ID 76
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/13/10, 0910	Date/Time Total Depth Reached 12/13/10, 0920
Type of Sampling Device trowel/shovel	Samples Collected 20187, 20188, 20189, 20190, 20191, 20192, 20193, 20194, 20195 (2) 1/2 gal bags		
Geologist P. S. Carr	Checked by/Date <i>[Signature]</i> 5/11/11		

Radiological Background 4.0 ppb, 0.0 ppm	Radiological Equipment Used AP R meter	PID Used Mini Rae 2000 (background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5			0.0	16	<p>coarsely silt w/ gravel, yellowish brown (10YR 5/6) clay, med. stiff, 70% silt, 30% fine sand, 20% silt-size gravel fragments, some rootlets, no color.</p> <p>Refusal</p> <p>* sandstone bedrock</p> <p>R.O = 0.5'</p> <p>Groundwater not encountered</p>	SL SH (S)		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 3	Location ID 76
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 2 ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/13/11 1455	Date/Time Total Depth Reached 1/13/11 1505
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20186 - 1515 (2) 1/2 gallon bags		
Geologist I. Stone	Checked by/Date 5/27/11		

Radiological Background 57 / 3051	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	62	Sand, Pale yellow (7/4 2.5Y), 95% fine sand, 5% silt, trace gravel, dry	SP	0.5' = 2880 3389
0.5			0.0	79	Sandy silt, pink yellowish brown (7.5YR 6/4 10R), 70% silt, 30% fine sand, low strength, low shrinkage	ML	5380
1			0.0	81	Siltstone (weathered), grayish brown (5/2 10R), 100% silt, dry, med-high strength	Bedrock	5870
1.5			0.0	108	Sandstone (weathered) 90% sand, 10% silt, dry, high dense, no odor or staining		5980
2			0.0	96			5952
TD = 2 ft bgs no gw encountered							

BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5b, Group 3	Location ID 77
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/13/10, 0950	Date/Time Total Depth Reached 12/13/10, 1000
Type of Sampling Device trowel/shovel	Samples Collected 2.0189, 0955 (2) 1/2 gal bags		
Geologist P-Skeath	Checked by/Date <i>[Signature]</i> 5/11/11		

Radiological Background 16 nR, 0.0 pp- (10)	Radiological Equipment Used RP R meter	PID Used Mini Rae 2000 (background 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			0	16	silt w/ sand w/ gravel, dark yellowish brown (10 YR 4/6) dry, med. stiff, 50% silt, 25% fine sand, 25% siltstone gravel Retinal siltstone TD = 0.5' Groundwater not encountered	RL		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 3	Location ID 77
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 1.5 ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/14/11 0845	Date/Time Total Depth Reached 1/14/11 0850
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20155 (2) 1/2 gallon bags → NO Sample collected		
Geologist I. Sten	Checked by/Date <i>[Signature]</i> 5/11/11		

Radiological Background 53 / 2752	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
			0.0	90	Sand, yellowish brown (5/4 (D&R)) (weathered sandstone) 95% fine sand, 5% silt, dry, mid-high dense, no odor or staining	SP	0.5 = 2607	
			0.0	24			3940	
1			0.0	82			4632	
1.5			0.0	64			4817	
					TD = 1.5 ft logs NO GW encountered			



Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID SB, Group 3	Location ID 7B
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/17/10, 1110	Date/Time Total Depth Reached 12/17/10, 1120
Type of Sampling Device trowel/shovel	Samples Collected 2, 91, 115 (2) 1/2 gal bags		
Geologist P. Seach	Checked by/Date <i>[Signature]</i> 5/24/11		

Radiological Background 15 mR, 0.03 ppm (Pb)	Radiological Equipment Used M/R meter	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
0.5'				15	<p>silty sand w/ gravel, very dark greyish brown (10 YR 3/2) moist, soft, 65% silt, 5% clay, 20% fine sand, 10% asphalt & sandstone gravel, no odor</p> <p>2" of asphalt on surface</p> <p>TD = 0.5'</p> <p>Ground water not encountered</p>	ML	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B / 3	Location ID 78
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 71
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/17/11 / 1038	Date/Time Total Depth Reached 1/17/11 1050
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected (2) 1/2 gallon bags Sample ID 20190 / 1130		
Geologist Stephanie Lopez Montrose	Checked by/Date TB 5/24/11		

Radiological Background S7 / 2753	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	61	0'-6" ML Clayey SILT with sand (very dark gray 10YR 3/1)	ML	0.0 = 2661
			0.0	45	30% clay, 25% fine to medium grained sand, 45% silt medium plasticity, firm, dry, no odor		0.5 = 3499
1.0			0.0	44	6"-2'3" CL silty CLAY with sand (very dark grayish brown 10YR 3/2)	CL	1.0 = 4432
			0.0	132	40% clay, 25% fine to coarse grained sand 35% silt, medium plasticity, hard, dry no odor		1.5 = 4865
2.0			0.0	97			2.0 = 5065
			0.0	87	2'3"-3'2" ML sandy SILT with clay (brown 10YR 4/3)	ML	2.5 = 5152
			0.0	63	30% clay, 35% fine to coarse grained sand, 40% silt, medium plasticity, firm, dry		3.0 = 5154
3.0			0.0	70	3'4"-4'2" ML sandy SILT (brown 10YR 5/3)	ML	3.5 = 4851
			0.0	92	15% clay, 40% fine to medium grained sand, 45% silt, low plasticity, very soft, wet		4.0 = 4944
4.0			0.0	84	4'2"-4'8" same as above (brown 10YR 5/3) wet with asphalt debris	ML	4.5 = 4774
			0.0	60	15% clay, 30% silt, 55% fine to coarse grained sand, low plasticity, very soft, loose wet	SM	5.0 = 5311
5.0			0.0	36	4'8"-6'1" ML clayey SILT with sand (light brownish yellow 10YR 6/4)	ML	5.5 = 5774
					30% clay, 25% fine grained sand, 40% silt, low plasticity, firm, dry		

Radiological Background 57 / 2753					Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 78
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings
							Inches (CPM)
			0.0	55	6'-7' no recovery TD = 7' ft bgs Encountered water from 3'4" - 4'8"	ML	6.0 = 6371
			0.0	72			6.5 = 6728
7.0			0.0	65			7.0 = 6709



BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 3	Location ID 80
Drilling Company: Beart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 2'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/14/11 0917	Date/Time Total Depth Reached 1/14/11 0921
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20193 - 0930 (2) 1/2 gallon bags		
Geologist I. Stone	Checked by/Date [Signature] 5/11/11		

Radiological Background Si / 2308	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches
			0.0	57	Silty Sand, light yellowish brown (6/4 10YR)		0.5 = 2314 (CPM)
0.5			0.0	68	70% fine grained sand, 30% silt, trace gravel, trace roots, dry, low dense, no odor or staining	SP	2253
1			0.0	99	Sandy Silt, Dark yellowish brown (4/6 10YR)	ML	3377
			0.0	99	65% silt, 30% fine sand, dry, low tough, low strength, no odor or staining trace gravel (5%)		4510
1.5			0.0	51	Sand (weathered sandstone), yellowish brown (5/4 10YR)	SP	4898
2			0.0	67	95% fine sand, 5% silt, dry, med-high dense, no odor or staining		
					TD = 2ft by s No GW encountered		NM



BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 3	Location ID 81
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 7ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/14/11 1412	Date/Time Total Depth Reached 1/14/11 1720
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20194-1440 (2) 1/2 gallon bags		
Geologist I. Stone	Checked by/Date <i>[Signature]</i> 5/11/11		

Radiological Background 49 / 2533	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.2 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches 0.5' = 2529 (CPM)
1			0.0	33	Silty sand, Dark yellowish brown 70% fine sand, 30% silt, dry, low-med dense, no odor or staining, trace gravel, trace roots.	SM	3225
			0.0	55			5070
			0.0	80			5510
			0.0	54			5375
2			0.0	66	Clayey silt, Dark brown 70% silt, 30% clay, trace sand, dry, low-med strength, low-med toughness, no odor, possible staining from 2.5-3.5 ft to black	ML	5332
			0.0	46			5298
3			0.0	53	Sandy silt, dark yellowish brown 60% silt, 30% fine sand, 10% clay, dry, low strength, low tough, no odor or staining	ML	5251
			0.0	34			5284
4			0.0	77	Sandy silt, brown 55% silt, 30% fine sand, 15% clay, dry, low-med strength, low-med toughness	ML	5185
			0.0	56			5370
5			0.0	81	Sandy silt, brown 55% silt, 30% fine sand, 15% clay, dry, low-med strength, low-med toughness	ML	5142
			0.0	59			5234
6			0.0	74			4893

Radiological Background 49/2533					Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 58, 3, 81		
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings		
							Inches	(CPM)	
7			0.0	74	same as above			4893	
			0.0	83		ML		5104	
			0.0	99	Sand, Pale Yellow 95% fine sand, 5% silt, dry, med-high dense, no OTS	SP		4983	
					TD = 7ft bgs no gas encountered				

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B / 3	Location ID 82
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 8'0"
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/17/11 / 0835	Date/Time Total Depth Reached 1/17/11 / 0855
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected (2) 1/2 gallon bags sample ID 20195 / 0930		
Geologist Stephanie Lepoyne Montrose	Checked by/Date TBN 5/24/11		

Radiological Background 43 / 211	Radiological Equipment Used Pancake / Downhole	PID Used Mini, RAE 2000 (Bkqd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	84	0-7" SM silty sand (very dark gray) 10YR 3/0	SM	0.0 = 2717
			0.0	57	asphalt debris, 25% silt, 75% sand, non plastic, loose, dry		0.5 = 4443
			0.0	60	SM silty sand (dark yellowish brown) 10YR 4/4	SM	1.0 = 5158
			0.0	41	1'4" - 1'7" silty CLAY with sand (dark yellowish brown) 10YR 4/3	CL	1.5 = 5226
			0.0	48	1'7" - 2'5" SM silty sand (dark grayish brown) 10YR 4/2	SM	2.0 = 5172
			0.0	32	2'5" - 2'10" ML clayey SILT with sand (black 7.5YR) 2.5/1	ML	2.5 = 4941
			0.0	41	2'10" - 4'9" ML clayey SILT with sand (very dark grayish brown) 10YR 3/2	ML	3.0 = 5189
			0.0	56	25% fine to medium grained sand, 30% clay, 45% silt, med. plasticity, firm, dry, slight HC odor		3.5 = 5184
			0.0	72	Same as above		4.0 = 5360
			0.0	81			4.5 = 5153
			0.0	67	4'9" - 5' ML clayey SILT with sand (very dark grayish brown) 10YR 3/2	ML	5.0 = 5076
			0.0	42	5' - 7' ML sandy SILT with clay (brown 10YR 4/3)	ML	5.5 = 5090

Radiological Background 43/2111					Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 82	
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
			0.0	41				
			0.0	53	Same as above	ML	6.0 = 4862	
			0.0	63			6.5 = 4786	
7.0			0.0	63	7'-8'6" SM silty SAND		7.0 = 4685	
			0.0	54	10% clay, 30% silt, 60% fine to coarse grained sand, dense, soft, low plasticity, dry (yellowish brown 10R 5/4)	SM	7.5 = 4867	
8.0			0.0	57			8.0 = 5049	
			-	-	8'6"-8'7 1/2" ϕ SAND 15% silt, 85% fine to coarse grained sand, trace gravel - sub-rounded, loose, dry (brownish yellow 10R 6/6)	SP	-	-
9.0					TD = 8' 0" ft bgs (recovery to 8'7") NO GW encountered			
10.0					TD = 8' 0" ft bgs			



BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID SB, group 3	Location ID 83
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-13-10/1046	Date/Time Total Depth Reached 12-13-10/1050
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20197) (1050)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/11/11		

Radiological Background (P.D.) 0.0, 13	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'				0.0 13	<p>Sandy silt with rock fragments, (10 YR, 4/4), brown, 60% silt, 30% fine grained sand, 10% pea gravel sized sandstone rock fragments, dry, medium dense, common rootlets.</p> <p>TD: 0.5' bgs No GW encountered</p>	SM ML		

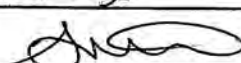
Radiological Background				Project Name	Project Number	Location	
56 / 2611				SSFL Area IV Radiological Study	EP9038.01.22.04.03	56, 3, 83	
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole
							Gamma Readings
							(CPM)
			0.0	31	Silt (siltstone) w/ sand (sandstone), Pale Yellow 90% silt, 10% sand, dry, very dense, hard		5657
			0.0	56		6081	
7			0.0	84		6051	
					TD = 7ft logs No gw encountered		

BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID S ₃ , Group 3	Location ID 84
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/13/10, 1040	Date/Time Total Depth Reached 12/13/10, 1050
Type of Sampling Device trowel/shovel	Samples Collected 20.99, 1045 (2) 1/2 gal bags		
Geologist P. S. Smith	Checked by/Date <i>[Signature]</i> 5/11/11		

Radiological Background 16 nR 0.0ppm	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background: 0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0.5			0	16	sandy silt w/ gravel, dark yellowish brown (10YR 4/6) dry, med. stiff, 30% fine sand, 50% silt, 20% siltstone gravel, common rootlets, no odor	AL	
					Refusal Siltstone		
					TD = 0.5'		
					Groundwater not encountered		

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 3	Location ID 84
Drilling Company: Boart Longyear		Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 2 ft
Drilling Equipment Geoprobe 6600		Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/14/11 10:14	Date/Time Total Depth Reached 1/14/11 10:17
Type of Sampling Device 1 3/4" macrocore acetate liner		Samples Collected 20198-1025 (2) 1/2 gallon bags		
Geologist I. Stou		Checked by/Date  5/27/11		
Radiological Background 67 / 2685		Radiological Equipment Used Pancake / Downhole		PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)

Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches 0.5 = 2604 (CPM)
			0.0	75	Sandy silt, dark yellowish brown (4/6 10YR) 60% silt, 30% fine sand, 10% clay, trace gravel dry, low toughness, low strength, no odor or staining		2830
			0.0	94			4359 IS
			0.0	66			5048 IS
			0.0	63	Sand (weathered sandstone), yellowish brown (5/4 10YR) 95% fine sand, 5% silt, dry, med-high dense, no odor or staining		4992 IS
			0.0	71	TD = 2 ft bgs no gw encountered		4884



BORING LOG

Project Name: SSEI Area IV Radiological Study	Project Number: EP9058.01.22.04.03	Subarea ID: Sb. Group 4	Location ID: 85
Drilling Company: HGL	Driller: D. Rivera	Ground Elevation: NA	Total Drilled Depth: 0.5
Drilling Equipment: trowel/shovel	Borehole Diameter: NA	Date/Time Drilling Started: 12/13/10, 1325	Date/Time Total Depth Reached: 12/13/10, 1325 to 1420
Type of Sampling Device: trowel/shovel	Samples Collected: 20211, 1370 (2) 1/2 gal bags		
Geologist: P. S. Cash	Checked by/Date: [Signature] 5/11/11		

Radiological Background: 15 nR, 0.0 cpm (RP)	Radiological Equipment Used: RP Meter	PID Used: Mini Rae 2000 (Background = 0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5				15	silt w/ sand w/ gravel, dark yellowish brown (10 YR 4/4), dry, medium dense, 60% silt, 20% fine sand, 20% gravel siltstone, some rootlets, no odor	ml		
<p>TD 0.5' Groundwater not encountered</p>								

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 4	Location ID 85
Drilling Company Cascade Drilling	Driller H. Lopez, S. Lorn	Ground Elevation NA	Total Drilled Depth 4'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 1/4"	Date/Time Drilling Started 1-11-11/ 1057	Date/Time Total Depth Reached 1-11-11/ 1142
Type of Sampling Device 1 1/4" macrocore	Samples Collected 2 1/2 gall bags (#20210) (1135)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/11/11		

Radiological Background 0.0, 2778, 70	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Ra2 2000 (Background = 0.0 ppm)
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Depth Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
						Inches	(CPM)
		0.0	35			0.5	2431
			68	Silt with sand (10 YR, 3/3), dark brown, 80% silt, 20% medium grained subangular (light colored) grains + sand, very low plasticity and hardness, dry, medium stiff, some rootlets in top 3", no odor.	ML		4177
			30				4957
			90				5294
2'			75	Silt with sand and clay (10 YR, 4/6), reddish-brown, 70% silt, 15% fine grained sand, 15% clay, low plasticity and hardness, dry, medium stiff, no odor.	ML		5357
			78				5567
3'	Sample		67	Silty sand, (10 YR, 5/7), light brown, 60% fine sand, 40% silt, dry, loose, no odor.	SM		5651
			56	Sand, (10 YR, 6/6), light reddish-brown, 95% fine grained subrounded sand, 5% silt, dry, loose, no odor.	SP		5472
4'			58				5518
				Refusal hit at 4' No Gw. encountered			
5'							
6'							

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 4	Location ID 86
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-13-10/1340	Date/Time Total Depth Reached 12-13-10/1346
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20213) (1345)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/11/11		

Radiological Background 0.0, 14 (10)	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5			0.0	15	Sandy silt, (10 YR, 4/3), brown, 70% silt, 30% sand - fine grained subrounded sand, dry, loose, rootlets common. TD = 0.5' bgs NO GW encountered	ML		

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID & Group SB 4	Location ID 86			
Drilling Company Berk Logistics		Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 5ft			
Drilling Equipment Geoprobe 660		Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/11/11 1525	Date/Time Total Depth Reached 1/11/11 1530			
Type of Sampling Device 1 3/4" macrocore acetate liner			Samples Collected 20212 - 1540 (2) 1/2 gallon bags				
Geologist I. Stone			Checked by/Date <i>[Signature]</i> 5/11/11				
Radiological Background 54 / 2605		Radiological Equipment Used Pancake / Downhole		PID Used Mini RAE Zone (Bkgd = 0.0 ppm)			
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches 0.5' = 2603 (CPM)</small>
1			0.0	70	Silty Sand, Dark yellowish brown (3/4 10 YR) 60% fine sand, 40% silt, trace gravel roots; dry; med dense, no odor or staining	SM	3081
			0.0	57			4646
2			0.0	49	Sand w/ silt, Brownish yellow (6/8 10 YR) 90% fine sand, 10% silt, med- high dense, dry, no odor or staining	SP	4982
			0.0	45			5204
3			0.0	55			5169
			0.0	37			5244
4			0.0	66			5652
			0.0	74			5837
5			0.0	89			5638
			0.0	69			5518
			0.0	111	SP = 5 ft bags no gw encountered		5432

BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID / Group 5b / 4	Location ID 07
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/17/10, 1305	Date/Time Total Depth Reached 12/17/10, 1315
Type of Sampling Device trowel/shovel	Samples Collected 20215, 1310 (2) 1/2 gal bags		
Geologist P. S. ...	Checked by/Date [Signature] 5/11/11		

Radiological Background 15 nR, 0.0 ppm (PID)	Radiological Equipment Used w/ R meter	PID Used Mini Rae 2000 (background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5			0	15	silty sand, ^{w/ gravel} dark yellowish brown (10YR 4/4), dry, med. dense sand, 65% fine sand, 25% silt, 10% gravel, few rootlets, no odor.	SM		
TD = 0.5' Groundwater not encountered								

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 4	Location ID 87
Drilling Company Cascade Drilling	Driller H. Lopez, S. Lom	Ground Elevation NA	Total Drilled Depth 4'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 1/4"	Date/Time Drilling Started 1-11-11/0833	Date/Time Total Depth Reached 1-11-11/0925
Type of Sampling Device 1 1/4" Macrocore	Samples Collected 2 1/2 gall bags (#20214)(0910)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/11/11		

Radiological Background 0.0, 2445, 48	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rac 2000 (Background = 0.0 ppm)
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Depth (ft)	Interval	Recovery	Radiological (CPM)	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
						Inches	(CPM)
			0.0			0.5	2292
			39			0	2813
1'	0.0 - 0.48		48	Silt with sand, (10 YR, 4/4), brown, 75% silt, 25% fine grained subrounded sand, some rootlets, trace gravel (fill), very low plasticity, no hardness, no odor, is semi-moist, soft.	ML		4430
	0.0 - 0.40		40	Sand, (10 YR, 5/6), light brown, 95% fine grained, subrounded sand, 5% silt, dry, loose, no odor.	SP		5150
			77				5371
2'			79	Gradational contact Sand with silt, (10 YR, 4/4), brown, 80% fine grained sand, 20% silt slight tinting of iron-oxide, is dry, medium dense, no plasticity or hardness, no odor, trace gravel. (gravel are concrete pieces)	SM		5209
			83				5071
3'			64	Silt with sand (same as 0-.75')	ML		4853
			59				4841
4'			72	Sand (same as 0.75' - 2')	SP		5035
5'				Refusal hit at 4'. No GW encountered			
6'							

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 4	Location ID 88
Drilling Company Cascade Drilling	Driller H. Lopez, S. L...	Ground Elevation NA	Total Drilled Depth 4'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 1/4"	Date/Time Drilling Started 1-11-11/0954	Date/Time Total Depth Reached 1-11-11/1048
Type of Sampling Device 1 1/4" macrocore	Samples Collected 2 1/2 gall bags (#20216)(1040)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/11/11		

Radiological Background 0.0, 2834, 56	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rac 2000 (background = 0.0ppm)
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Depth (ft)	Interval	Recovery	Radiological CPD	Description <small>(include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
						Inches	(CPM)
			96			05	2239
			93	Silt with sand, (10YR, 4/3), brown, 75% silt, 25% fine grained subrounded sand, some rootlets, semi-moist, soft, no odor, very low hardness and plasticity.	ML		4104
			82	Sandy silt; (10YR, 4/4), brown, 65% silt, 35% fine grained sand, trace rock fragments (siltstone), dry, soft, no odor, no hardness or plasticity.	ML		4978
			94				5350
			59	Sandy silt (same as above, except (10YR, 3/4) dark brown, with 10% rock fragments - concrete pieces, 60% silt, 30% sand)	ML		5142
			69				5296
				Siltstone - laminated			5322
			77	Silty sand, (10YR, 4/4), brown, 60% fine grained sand, 40% silt, dry, loose, no odor.	SM		4942
			59				4942
				Gradational contact Sand (10YR, 6/4), beige, 95% fine grained subangular sand, 5% silt, dry, loose, no odor.	SP		4768
			67				4768
				Refusal hit at 4' No GW encountered			

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 4	Location ID 89
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-13-10/1406	Date/Time Total Depth Reached 12-13-10/1410
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20218) (1410)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/11/11		

Radiological Background 0.0, 13	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background=0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'			0.0	14	Sandy silt with rock fragments, (10 YR, 4/4), brown, 60% silt, 30% fine grained sand, 10% rock fragments (sandstone), loose, dry, rootlets common. TD = 0.5' bgs NO GW encountered	SM ML		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B & 4	Location ID 89
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 5ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/11/11 1325	Date/Time Total Depth Reached 1/11/11 1330
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20217-1340 (2) 1/2 gallon bags		
Geologist I. Sten	Checked by/Date <i>[Signature]</i> 5/11/11		

Radiological Background 45 / 2214	Radiological Equipment Used Paracake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings
							Inches
1			0.0	45	Silty sand, Dark yellowish brown (3/4 10YR) 60% fine sand, 40% silt, trace gravel, concrete, dry, no odor or staining, med dense	SM	3306
			0.0	61			4297
			2.0	55			4473
			0.0	70			4843
			0.0	107			5020
2			0.0	110			4962
			0.0	80	Sand w/ silt, Yellowish brown (5/6 10YR) 90% fine sand, 10% silt, trace gravel, dry, med dense, no odor or staining	SP	4695
3			0.0	99			4642
			0.0	102	Sandy silt, Yellowish brown (5/8 10YR) 60% silt, 30% sand (fine), 10% clay, dry, low tough, low strength, no odor or staining	ML	4962
4			0.0	94			4977
			0.0	78	Sand w/ silt, Yellowish brown (5/4 10YR) 95% fine sand, 5% silt, dry, med-high dense, no odor or staining (weathered indurated)	SP	4960
TD = 5ft bgs No gw encountered.							



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B & Group 4	Location ID 90
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 3.5 ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/11/11 1231	Date/Time Total Depth Reached 1/11/11 1235
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20219 - 1245 (2) 1/2 gallon bags		
Geologist E. Stone	Checked by/Date <i>[Signature]</i> 5/11/11		

Radiological Background 41 / 2480	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>0.5 = 2304 (CPM)</small>
0.0			0.0	64	Silty Sand, Dark yellowish brown (3/4 10YR) 60% fine sand, 40% silt, trace gravel, asphault, roots, dry, med dense, no odor or staining. fill.	SM	2835
0.5			50	4049			
1.0			33	4442			
1.5			24	4849			
2.0			0.0	19	Silty Sand, Dark yellowish brown (3/4 10YR) 70% fine sand, 30% silt, trace gravel, dry, med dense, no odor or staining fill	SM	5061
2.5			0.0	60	Sand w/silt, yellowish brown (5/6 10YR) 90% fine sand, 10% silt, dry, med-high dense, no odor or staining, weathered sandstone	SP	4926
3.0			0.0	48			4995
3.5			0.0	57	TD = 3.5 ft by no gr encountered		4733



BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5b, Group 4	Location ID 91
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/3/10, 1505	Date/Time Total Depth Reached 12/3/10, 1515
Type of Sampling Device trowel/shovel	Samples Collected 20221 1510 (2) 1/2 gal bags		
Geologist P. S. ...	Checked by/Date <i>[Signature]</i> 5/11/11		

Radiological Background 17 ne, 0.0007 (P10)	Radiological Equipment Used MP R meter	PID Used Mini Rae 2000 (Background: 0.0cpm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0-5			0	14	silt w/ sand, 10-15 yellowish brown (10YR 4/6) dry, med. dens. 70% silt, 30% 15% sand fine sand, 15% sandstone gravel, many rootlets, no odor TO 0.5' no GW encountered			

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID & Group SB 4		Location ID 91	
Drilling Company Boert Longyear		Driller D. Hansen		Ground Elevation NA		Total Drilled Depth 6ft	
Drilling Equipment Greenshake		Borehole Diameter 1 3/4"		Date/Time Drilling Started 11/11/11 1421		Date/Time Total Depth Reached 11/11/11 1428	
Type of Sampling Device 1 3/4" macrocore acetab liner				Samples Collected 20220- 1440 (2) 1/2 gallon bags			
Geologist I. Stone				Checked by/Date <i>[Signature]</i> 5/11/11			
Radiological Background 53 / 2544		Radiological Equipment Used Pan cake / Downhole		PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)			
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches 0.5 = 2497 (CPM)
1			0.0	57	Silty Sand, Dark yellowish brown (7/4 10YR) 60% fine grained sand, 40% silt, trace gravel; trace roots, dry, med dense, no odor or staining	SM	3339
			0.0	81			4685
2			0.0	71			5024
			0.0	68			5049
3			0.0	83	slight color change: Dark yellowish Brown (4/6 10YR) trace gravel, trace roots, dry, med dense		5243
			0.0	74			4977
4			0.0	59	Silty Sand, Brownish yellow (6/6 10YR) 70% fine sand, 30% silt, dry, med dense, no odor or staining some mottling	SM	4865
			0.0	38			4807
5			0.0	37	increase in silt, decrease in sand 60% sand, 40% silt, some mottling		4779
			0.0	89			4947
6			0.0	52	Sand/silt, Brownish yellow (6/6 10YR) 90% fine sand, 10% silt, dry, med-high dense, no roots	SP	597
			0.0	47			4978
6			0.0	42			NA

TD = 6' bgs
No GW encountered



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 4	Location ID 92
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-13-10/1320	Date/Time Total Depth Reached 12-13-10/1330
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20223)(1330)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/11/11		

Radiological Background (CPM) 0.0, 13	Radiological Equipment Used w/ R meter	PID Used Mini Rae 2000 (background=0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'				0.0 13	Sandy silt, (10YR, 4/3), brown, 70% silt, 30% fine grained, subrounded sand, rootlets common, dry, loose. TD = 0.5' bgs No GW encountered	SM ML		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B / 4	Location ID 92
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 5'6"
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/12/11 / 0954	Date/Time Total Depth Reached 1/12/11 / 1004
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected (2) 1/2 gallon bags		ID 20222 / 1025
Geologist Stephanie Lopez Montrose		Checked by/Date RSD 5/24/11	

Radiological Background 55 / 2458	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	65	0-2" Top soil ML sandy SILT (brown 10YR 4/3) 10% clay, 30% fine grained sand, 60% silt low plasticity, soft, dry	ML	0.0 = 3580
			0.0	70	2"-1'3" ML sandy SILT (brown 10YR 4/3) 10% clay, 25% fine grained sand, 65% silt, medium plasticity, firm, dry	ML	0.5 = 4373
1.0			0.0	55	1'3"-2'10" ML clayey SILT (brown 10YR 4/3) 25% clay, 20% fine grained sand, 55% silt medium plasticity, firm, dry	ML	1.0 = 4457
			0.0	65			1.5 = 4626
2.0			0.0	43			2.0 = 4808
			0.0	40	Same as above		2.5 = 5074
3.0			0.0	85	2'10"-3'8" SP SAND with silt (yellowish brown 10YR 5/6) 15% silt, 5% gravel, 80% fine to coarse grained sand loose, dry, trace asphalt gravel - sub angular	SP	3.0 = 4974
			0.0	90	3'8"-4'1" SM silty SAND (brown 10YR 4/3) 20% clay, 25% silt, 55% fine grained sand trace gravel, low plasticity, soft, dry	SM	3.5 = 5171
4.0			0.0	55	4'1"-4'8" SM silty SAND (brown 10YR 4/3) 30% silt, 15% clay, 55% fine to coarse grained sand low plasticity, soft, dry, dense	SM	4.0 = 5163
			0.0	60			4.5 = 5373
			0.0	58	4'8"-5' ML clayey SILT with sand 25% clay, 25% fine grained sand, 45% silt medium plasticity, firm, dry (brown 10YR 4/3)	ML	5.0 = 5338
5.0			0.0	80	5'5"-5'6" SP SAND (yellowish brown 10YR 5/6) 15% silt, 85% fine to coarse grained sand	SP	5.5 = ---
					Refusal @ 5'6" no cw encountered		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 4	Location ID 93
Drilling Company Cascade Drilling	Driller H. Lopez, S. Lom	Ground Elevation NA	Total Drilled Depth 4'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 1/4"	Date/Time Drilling Started 1-11-11/1401	Date/Time Total Depth Reached 1-11-11/1502
Type of Sampling Device 1 1/4" macrocore	Samples Collected DAPS: 20547 (MS); 20545 (1ab DUP); 20546 (Field DUP - no time)		
Geologist C. Carmichael		Checked by/Date <i>[Signature]</i> 5/11/11	

Radiological Background 2685, 64, 0.0, 2775, 70	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	RPD	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
			0.0	44			0.5	2109
			56		Silt (10YR, 3/3), dark brown, 90% silt, 10% fine grained subrounded sand, some rootlets in top 3", moist, soft, low plasticity and hardness, no odor.	ML		4610
			75				5081	
			91				5365	
			86				5394	
			41				5101	
			73				5284	
			64		Sand (10YR, 5/6), light reddish-brown, 90% fine grained subangular sand, 10% silt, dry, medium dense, no plasticity or hardness, no odor.	SP		5577
			69				5733	
					Refusal hit at 4'. No GW encountered			

Radiological Background D.O, 2V28, 65					Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 94
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
					Same as above		6025
7'			0.0	70	Refusal at 6.5'. No GW encountered		



BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID Sb, Group 4	Location ID 95
Drilling Company HGL	Driller D. Raveca	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/13/10, 1435	Date/Time Total Depth Reached 12/13/10, 1445
Type of Sampling Device trowel/shovel	Samples Collected 20227, 1440 (2) 1/2 gal bags		
Geologist P. Raveca	Checked by/Date <i>[Signature]</i> 5/11/11		

Radiological Background 14 uR, 0.00ppm	Radiological Equipment Used MP R meter	PID Used Mini Rae 2000 (Background=0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
0.5				14	<p>silt w/ sand w/ gravel, dark yellowish brown (w/ 4/4), dry, med. dense, 55% silt, 25% sand, 20% gravel siltstone, some rootlets, no odor</p> <hr/> <p>TO 0.5'</p> <p>no GW encountered</p>		

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 4	Location ID 95
Drilling Company Cascade Drilling	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 6.5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1-12-11/0823	Date/Time Total Depth Reached 1-12-11/0918
Type of Sampling Device 3/4" macrocore	Samples Collected 2 1/2 gall bags (#20226) (0910)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/11/11		

Radiological Background 0.0, 2771, 53	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rac 2000 (Background: 0.0 ppm)
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Depth (ft)	Interval	Recovery	PID 0.0 65	Radiological	Description <small>(include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
1' 2' 3' 4' 5'	0.0-6.5'	[Diagram]	0.0	50	Silt with sand, (10 YR, 3/4), dark brown, 80% silt, 20% fine grained subrounded sand, trace gravel (fill), semi-moist, medium stiff, some rootlets in top 3", very low plasticity and no hardness, no odor.	ML	0.5	2460
							0	3264
								4682
								4995
								5066
								5149
								5180
								5190
								5363
								5426
6'	50	[Diagram]	50	Sandy silt, (10 YR, 4/6), light reddish-brown, 70% silt, 30% fine grained subrounded sand, semi-moist, medium stiff, very low hardness, no plasticity, no odor, gravel has disappeared.	ML		5384	
							5196	
							5747	
				Sand, (10 YR, 5/6), light brown, 90% fine	SP		5534	

(cont.)

Radiological Background 0.0, 2771, 53					Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 95
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
			0.0	92	grained sand, 10% silt, dry, loose, no odor.		5312
7'					Refusal hit at 6.5'. No GW encountered.		

3'-5'



5B_097



BORING LOG

Sheet 1 of 2

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 6	Location ID 97
Drilling Company Cascade Drilling	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 8'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1-12-11/1342	Date/Time Total Depth Reached 1-12-11/1443
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags (#20255) (14:30)	Checked by/Date <i>[Signature]</i> 5/11/11	
Geologist C. Carmichael		PID Used Mini Rac 2000 (Background = 0.0 ppm)	

Radiological Background 0.0, 2525, 70	Radiological Equipment Used Pancake meter, Downhole scanner
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Depth (ft)	Interval	Recovery	CPD b	Radiological b	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
1'	0.0 - 1.0	100%	60	60	Silt with sand (10YR, 4/4), brown, 80% silt, 20% fine grained subrounded sand, dry, medium stiff, no ^{pl} plasticity and very low hardness, no odor.	ML	0.5 - 2462	0 - 3001
							4599	
							5046	
							5186	
							5137	
2'	1.0 - 2.0	100%	60	71			5122	
							5115	
							5342	
3'	2.0 - 3.0	100%	67	65			5146	
							5112	
							5412	
4'	3.0 - 4.0	100%	82	96	Gradational Contact Silt (10YR, 3/3), dark brown, 90% silt, 10% fine grained subrounded sand, low plasticity, very low hardness, semi-moist, medium stiff, no odor.	ML	5412	
							5615	
							6211	
5'	4.0 - 5.0	100%	53	95	Sand with silt (10YR, 5/4), light brown, 85% fine to medium grained subangular sand, 15% silt, semi-moist, medium dense, no odor.	SW		
6'	5.0 - 6.0	100%	90					

Radiological Background 0.0, 25, 25, 70					Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 97	
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)</small>		USCS Symbol Inches	Borehole Gamma Readings (CPM)
7'			0.0	60	(ex) Same as above		Sw	5764
				80				5994
				90				6015
8'				75				5941
9'					Refusal hit at 8'. No SW encountered			

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID SB, group 6	Location ID 98
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-14-10/1040	Date/Time Total Depth Reached 12-14-10/1045
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gallon bags (# 20257) (1045)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 12/14/10		

Radiological Background (RD) 0.0, 13	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches (CPM)</small>
0.5'			0.0	14	Gravelly sand with silt, (10 YR, 5/3), light brown, 65% fine to medium grained sand, 30% subangular gravel (fill), 5% silt, few rootlets, no odor. TB = 0.5' bgs no GW encountered	SW	

Radiological Background 0.1, 25K6, 60					Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 98
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
			0.1	70	<p>(CL) Same as above</p> <hr/> <p>Refusal hit at 6.5'. No GW encountered</p>	SW	n/a



5B_099



BORING LOG

Sheet 1 of 1

Project Name: SSEI Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 6	Location ID 99
Drilling Company Bart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 5ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 11/11/11 0943	Date/Time Total Depth Reached 11/11/11 0948
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20258-1000 (2) 1/2 yellow bags		
Geologist I. Stone	Checked by/Date <i>[Signature]</i> 5/11/11		

Radiological Background 44 / 2289	Radiological Equipment Used Paracake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.09cpm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches 0.5' = 2503 (CPM)
			0.0	76	Silty Sand, Brown (4/3 10YR) 70% fine sand, 30% silt, trace roots, trace gravel, dry, no odor or staining, low dense.	SM	3152
			0.0	105	Sandy Silt, Dark yellowish brown (3/6 10YR) 65% silt, 35% fine sand, dry, low tough		4739
1			0.0	97	low strength, no odor or staining, trace gravel		5007
			0.0	86	-most	ML	5124
2			0.0	59			5129
			0.0	70			5091
3			0.0	56	Silty Clay, Yellowish Brown (5/4 10YR) 60% clay, 35% silt, 5% fine sand, dry, med strength	Ch	5070
			0.0	87	Silty Sand, Reddish Yellow (6/6 7.5YR) 70% fine sand, 30% silt, dry, med dense, no odor or staining	SM	5170
4			0.0	65	Sandy Silt, Brownish Yellow (6/6 10YR) 70% silt, 30% fine sand, dry, low tough, low strength, no odor	ML	5230
			0.0	70	Sand, Brownish Yellow (6/6 10YR) w/ silt 90% fine sand, 10% silt, dry med-high dense, no odor or staining	SP	5105
5			0.0	57	(weathered bedrock)		5113
					TD = 5ft logs no gas encountered		

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 6	Location ID 100
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-22-10/0856	Date/Time Total Depth Reached 12-22-10/0900
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20260) (0900)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/11/11		

Radiological Background ⑧ 0.0, 12	Radiological Equipment Used w/ R meter	PID Used Mini Rae 2000 (Background = 0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'			0.0	14	Sandy silt, (10YR, 5/3), brown, 65% silt, 35% fine grained subrounded sand, wet, soft, rootlets common, high water table because of rain, pockets of weathered sandstone appear around 3" depth.	ML		
					TD = 0.5' bgs			

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID & Group SB 6		Location ID 100	
Drilling Company Boart Longyear		Driller D. Hansen		Ground Elevation NA		Total Drilled Depth 5ft	
Drilling Equipment Geoprobe 6600		Borehole Diameter 1 3/4"		Date/Time Drilling Started 11/11/11 0835		Date/Time Total Depth Reached 11/11/11 0840	
Type of Sampling Device 1 3/4" macrocore acetate liner				Samples Collected 20259-0858 (2) 1/2 gallon bags			
Geologist I. Stone				Checked by/Date 5/11/11			
Radiological Background 44 / 2520		Radiological Equipment Used Paracake / Downhole			PID Used Mini RAE 2000 (Bkgd: 0.0cpm)		
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches <small>0.5 = 2515 (CPM)</small>
1			0.0	53	Silty Sand, Yellowish Brown (5/6 104R) 65% fine sand, 35% silt, trace gravel, trace siltstone, med dense, no odor or staining.	SM	4333
			0.0	35			4335
			0.0	56			5406
2			0.0	74	Sandy silt Dark yellowish brown (3/4 104R) 85% silt, 15% fine sand, dry, low tough, low strength, no odor or staining	ML	5322
			0.0	61			5568
3			0.0	49	Sandy silt, Dark yellowish brown (4/4 104R) 60% silt, 40% fine sand, dry, low strength, low tough. no odor or staining	ML	5710
			0.0	60			5872
4			0.0	33	Sand/silt, Brownish yellow (6/6 104R) 85% fine sand, 15% silt, dry, med dense, no odor or staining	SP SM	6138
			0.0	31			6094
5			0.0	44	TD = 5ft bgs no gw encountered		5834
			0.0	55			N/A



BORING LOG

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID / Group 5b, Camp 6	Location ID 101				
Drilling Company HGL		Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'				
Drilling Equipment trowel/shovel		Borehole Diameter NA	Date/Time Drilling Started 12/22/10, 0850	Date/Time Total Depth Reached 12/22/10, 0857				
Type of Sampling Device trowel/shovel		Samples Collected 20262, 20255 (2) 1/2 gallon bags						
Geologist P. Seaman		Checked by/Date <i>[Signature]</i> 5/11/14						
Radiological Background 0 ppm 13 uR		Radiological Equipment Used uR meter	PID Used Mini Rae 2000 (Background = 0.0 ppm)					
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			0	13	<p>lightly cracked sand w/ silt (10 YR 4/3) brown, moist, loose sand, 95% med. sand, 15% silt, few pebbles, no water</p> <p>TO 0.5'</p> <p>standing water near location / GW not encountered</p>	SP		

3'-5' bgs



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 6	Location ID 101
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth +0 ^{ce} 8.5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1-17-11/0829	Date/Time Total Depth Reached 1-17-11/1005
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags (#20261) (1000)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/11/11		

Radiological Background 0.2, 2610, 62	Radiological Equipment Used Pancake meter, up Radio Downhole scanner	PID Used Mini Rac 2000 (Background=0.2ppm)
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Depth	Interval	Recovery	Radiological PID	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
						Inches	(CPM)
1'	0.2 60		0.2 78	Silt with gravel, (10 YR, 3/4), brown, 75% silt, 15% gravel (fill gravel), 5% subrounded fine grained sand, 5% clay, dry, medium stiff, very low plasticity, low hardness, no odor, some rootlets in top 3".	ML	0.5	2332
	0.2 70		0.2 78			4542	
	0.2 60		0.2 78			4949	
	0.2 50		0.2 78			5087	
	0.2 75		0.2 78			5069	
2'	0.2 70		0.2 78	Sandy silt, (10 YR, 4/4), brown, 65% silt, 35% fine to medium grained subrounded sand, trace gravel: (asphalt), dry, medium stiff, no plasticity, very low hardness, no odor.	ML	0.5	3225
	0.2 55		0.2 78			4945	
	0.2 65		0.2 78			5034	
	0.2 75		0.2 78			4912	
	0.2 48		0.2 78			4900	
3'	0.2 60		0.2 78	Silty sand, (10 YR, 4/4), brown, 65% subrounded fine to medium grained sand, 35% silt, trace gravel, dry, medium dense, no odor.	SM	0.5	3225
	0.3 80		0.2 78			4851	
	0.3 90		0.2 78			4888	
4'	0.3 80		0.2 78			0.5	3225
	0.3 80		0.2 78				
	0.3 90		0.2 78				
5'	0.3 80		0.2 78				
	0.3 90		0.2 78				
6'	0.3 90		0.2 78				

Radiological Background 0.2, 2.6, 10, 62					Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 101
Depth	Interval	Recovery	RPD	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings
							Inches (CPM)
			0.385				5498
7'			0.360		Sand, (10YR, 7/4), beige, 95% fine to medium grained subangular sand; 5% silt, dry, loose, no odor.	SW	5442
			0.355				5288
8'			0.370				5428
			0.360		Refusal hit at 8.5'		5569
9'					No Gw encountered		
10'							



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 4	Location ID 102
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-22-10/0932	Date/Time Total Depth Reached 12-22-10/0938
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20230) (0938)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/1/11		

Radiological Background (R) 0.0, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			0.0	14	<p>Silty sand, (10 YA, 5/4), brown mottled with orangey-beige, 50% fine grained subangular sand, 45% silt, 5% clay, moist, loose, rootlets common, no odor.</p> <p>TD = 0.5' bgs No gw encountered</p>	SM		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 4	Location ID 102
Drilling Company Cascade Drilling	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 2'4" ^{1cc} 3' ^{1cc}
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1-12-11/1512	Date/Time Total Depth Reached 1-12-11/1550 ^{1cc} 1600
Type of Sampling Device 1 3/4" Macrocore	Samples Collected 2 1/2 gall bags (#20229) (1555)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/11/11		

Radiological Background (PID) 0.2, 2706, 80	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rae 2000 (Background = 0.2 ppm)
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Depth	Interval	Recovery	CPD	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
			0.2	80	Sand (10YR, 5/6), light brown, ^{1cc} 95% fine to medium grained subrounded sand, 5% silt, dry, loose, no odor. (weathered bedrock).	SW	0.5	2100
			0.255	50			3986	
				80			4808	
				50			5374	
				100			5323	
				62	5092			
3'					Refusal hit at 3' ^{1cc} 2'4"			
4'					No GW encountered			
5'								
6'								



BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 4	Location ID 103
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-13-10/1420	Date/Time Total Depth Reached 12-13-10/1428
Type of Sampling Device trowel/shovel	Samples Collected Dups: 20523 (MS); 20524 (106 Dup); 20522 (Field Dup - no time) 2 1/2 gall bags (#20232) (1428)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/11/11		

Radiological Background (PID) 0.0, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background=0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
0.5'				0.0 14	Silt with sand and clay, (10YR, 4/4), brown, 80% silt, 15% clay, 5% fine grained, subrounded sand, dry, medium dense, rootlets common. TD=0.5' bgs No GW encountered	ML	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 4	Location ID 103
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 10'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/12/11 / 1104	Date/Time Total Depth Reached 1/12/11 / 1134
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected (2) 1/2 gallon bags Sample ID 20231 / 1205		
Geologist Stephanie Lopeya Montrose	Checked by/Date A. J. Williford 5/24/14		

Radiological Background 45 / 2524	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings + 0.5 - 2330 (CPM)
			0.0	38	0'-8" ML clayey SILT with sand (brown 10YR 4/3) 30% clay, 20% fine grained sand, 45% silt plant material (roots, grass), medium plasticity, firm,	ML	0.0 = 2528
			0.0	92	8"-3'1" ^{dry} ML clayey SILT (brown 10YR 4/3) 35% clay, 10% fine grained sand, 55% silt medium plasticity, firm, dry	ML	0.5 = 3533
1.0			0.0	69			1.0 = 4373
			0.0	45			1.5 = 4508
2.0			0.0	36			2.0 = 4616
			0.0	54	Same as above		2.5 = 4767
3.0			0.0	87			3.0 = 4836
			0.0	67	3'1" SM silty SAND with clay (dark yellowish brown 10YR 4/6) 20% clay, 25% silt, 55% fine to coarse grained sand trace gravel - subangular, low plasticity, soft, dense dry	SM	3.5 = 4711
4.0			0.0	63	3'1"-4' ML clayey SILT with sand (brown 10YR 4/3) 30% clay, 25% fine grained sand, 45% silt med. plasticity, firm, dry	ML	4.0 = 4733
			0.0	46	4'3"-4'6" sandstone fine - med. grained sand (white 8/1)		4.5 = 4716
			0.0	62	4'6"-5' ML silty SAND with clay (dark brown 10YR 3/2) 25% clay, 40% fine grained sand, 35% silt low plasticity, soft, dry	ML	5.0 = 4842
5.0			0.0	55	5'-5'8" ML SANDY SILT with clay (brown 10YR 4/3) 25% clay, 35% fine grained sand, 40% silt low plasticity, soft, dry	ML	5.5 = 4733
			0.0	58	5'8"-6'4" ML SANDY SILT with clay (brown 10YR 4/3) 25% clay, 40% fine to med grained sand, 35% silt low plasticity, firm, dry	ML	

Radiological Background					Project Name	Project Number	Location
45 / 2524					SSFL Area IV Radiological Study	EP9038.01.22.04.03	103
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings
							Inches (CPM)
6.0			0.0	62	Same as above		6.0 = 4848
	6'4" - 6'10"		0.0	48	ML Clayey silt with sand (dark brown 10YR 3/3) 35% clay, 25% fine to medium grained sand 40% silt, medium plasticity, firm, dry	ML	6.5 = 4799
7.0	6'10" - 7'2"		0.0	50	SM SAND with silt (dark yellowish brown) 10YR 4/4 10% clay, 20% silt, 70% fine to coarse grained sand, low plasticity, very soft, med. dense, dry, trace gravel - sub angular	SM	7.0 = 5028
	7'2" - 8'3"		0.0	55	SM silty sand (brown 10YR 4/3) 25% silt, 10% clay, 65% fine to coarse grained sand, low plasticity, very soft, med. dense, dry, trace gravel - sub angular	SM	7.5 = 5155
8.0	8'3" - 10'		0.0	75	SM SAND with silt (yellowish brown) 10YR 5/6 15% clay, 20% silt, 65% fine to coarse grained sand, loose, dry, low plasticity, very soft, trace gravel - sub angular	SM	8.0 = 5111
			0.0	55			8.5 = 5136
9.0			0.0	49			9.0 = 5283
			0.0	56			9.5 = 5311
10.0			0.0	62	Same as above		10.0 = ---
TD = 10 ft bgs NO GW encountered							

Project Name: SSPL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID & Group: 5B / 4	Location ID: 104
Drilling Company: Beart Longyear	Driller: D. Hansen	Ground Elevation: NA	Total Drilled Depth: 10 ft. bgs
Drilling Equipment: Geoprobe 6600	Borehole Diameter: 1 3/4"	Date/Time Drilling Started: 1/12/11 / 0824	Date/Time Total Depth Reached: 1/12/11 / 0837
Type of Sampling Device: 1 3/4" macrocore acetate liner	Samples Collected: (2) 1/2 gallon bags ID 20233 / 0905		
Geologist: Stephanie Lapeyre Morthose	Checked by Date: [Signature] 5/24/11		

46 Radiological Background: 24 / 24 (24) Radiological Equipment Used: Pancake (46) / D=102 hole (2412) PID Used: Mini RAE 2000 (Bkgd: 0.0 ppm)

Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	30	Top 4" top soil (brown 10YR 5/3)	ML	0.0 = 2548
			0.0	40	0-4" ML sandy SILT 20% clay, 30% fine grained sand, 30% silt low plasticity, soft, dry, plant material	ML	0.5 = 3705
1.0			0.0	50	4"-2'4" ML clayey SILT with sand (brown 10YR 4/3) 30% clay, 25% fine grained sand, 45% silt medium plasticity, firm, dry, rootlets	ML	1.0 = 4417
1.5			0.0	51			1.5 = 4616
2.0			0.0	38			2.0 = 4886
2'4"			0.0	69	2'4" SM silty sand (brown 10YR 4/3) 25% silt, 75% fine to coarse grained sand non-plastic, loose, dry trace gravel	SM	2.5 = 4817
3.0			0.0	72			3.0 = 4855
3'3"			0.0	64	3'3" ML sandy SILT with clay (brown 10YR 4/3) 26% clay, 35% fine to medium grained sand, 40% silt medium plasticity, soft, dry	ML	3.5 = 4909
4.0			0.0	95			4.0 = 4790
			0.0	85			4.5 = 4787
5.0			0.0	56			5.0 = 4900
			0.0	39	Same as above		5.5 = 4881

Radiological Background				Project Name	Project Number	Location	
46 / 2412				SSFL Area IV Radiological Study	EP9038.01.22.04.03	104	
Depth	Interval	Recovery	PID	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings
							Inches (CPM)
6.0		0.0	73		6'-6'10" SM silty SAND (dark yellowish brown 10 ⁴ R 4/4)	SM	6 = 4818
		0.0	68		35% silt, 10% clay, 55% fine to coarse grained sand, low plasticity, soft, dry		6.5 = 4858
6'10"					6'10" - 7'8" ML clayey SILT with sand (dark brown 10 ⁴ R 3/3)	ML	7.0 = 4854
7.0		0.0	61		35% clay, 25% fine grained sand, 40% silt medium plasticity, firm, dry		7.5 = 5090
		0.0	46				
7'8"		0.0	48		7'8" - 8'6" SM silty SAND with silt (brownish yellow 10 ⁴ R 6/6)	SM	8.0 = 5127
8.0		0.0	33		25% silt, 75% fine to coarse grained sand low plasticity, very soft, dry, loose		8.5 = 5229
		0.0	56		8'6" - SM silty SAND with silt (yellowish brown 10 ⁴ R 5/4)	SM	9.0 = 5202
9.0		0.0	77		25% silt, 75% fine to coarse grained sand trace gravel, small pieces of concrete non-plastic, loose, dry		9.5 = 5145
9'7"					9'7" - 10' NO recovery		10 = ---
10.0		0.0	49				
TD = 10 ft bgs NO GW encountered							



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 5	Location ID 105
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-14-10/0832	Date/Time Total Depth Reached 12-14-10/0836
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20244) (0835)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/12/11		

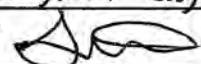
Radiological Background 0.0, 14	Radiological Equipment Used w/ R meter	PID Used Mini Rae 2000 (Background=0.0ppm)
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Depth (ft)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'			0.0	15	<p>Sandy silt & Sandy, gravelly silt (10YR, 4/4), brown, 55% silt, 30% gravel, 15% fine grained subrounded sand, no odor, rootlets common, dry, loose</p> <p>TD=0.5' bgs no gw encountered</p>	GM ML		

Project Name: SSFL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID & Group: SB 5	Location ID: 105
Drilling Company: Boart Longyear	Driller: D. Hansen	Ground Elevation: NA	Total Drilled Depth: 5 ft
Drilling Equipment: Geoprobe 6600	Borehole Diameter: 1 3/4"	Date/Time Drilling Started: 1/10/11 1047	Date/Time Total Depth Reached: 1/10/11 1050
Type of Sampling Device: 3/4" macrocore acetate liner	Samples Collected: (2) 1/2 yellow bags	Duplicates collected: 20542, 20543, 20544 (lab dup) (field dup - no fine)	
Geologist: I. Stone	Checked by/Date: <i>[Signature]</i> 5/12/11		

Radiological Background: 57/2641	Radiological Equipment Used: Pancake / Downhole	PID Used: Mini RAE 2000 (Bkgd: 0.9cpm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>0.5" = 2462 (CPM)</small>
1			1.0	66	Silty Sand, yellowish brown (5/6 10YR)		3763
			1.0	79	70% fine sand, 30% silt, trace gravel, dry, low dense, no odor or staining	SM	4429
2			1.0	108	Silty Sand, dark yellowish brown (3/4 10YR)		4876
			1.0	83	60% fine sand, 40% silt, moist, med dense, no odor or staining	SM	4960
			1.0	106			5031
3			1.0	73			4958
			1.0	48			4874
4			1.0	55			4883
			1.0	79	Sandy silt, brownish yellow (6/6 10YR)	ML	5545
5			1.0	64	60% silt, 30% sand, 10% clay, moist, low toughness, no odor or staining		5009
			1.0	29	Sand, yellow (7/6 10YR)	SP	nm
					90% fine sand, 10% silt, med-high dense, dry, no odor or staining TD = 5ft bgs no gw encountered		

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SIS 5	Location ID 106
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 6ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/10/11 1307	Date/Time Total Depth Reached 1/10/11 1311
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20245-1330 (2) 1/2 gallon bags		
Geologist I. Stone	Checked by/Date  5/27/11		

Radiological Background 67 / 2454	Radiological Equipment Used Paracake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.9cpm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.1	56	Silty Sand, Dark yellowish brown (3/4 10YR) 60% fine sand, 40% silt, dry, med dense, no odor or staining trace roots, trace gravel, scrap metal.	SM	3071
			0.9	72			4083
1			0.1	86	Concrete (5")		4045
			0.1	91	Silty Sand, Brown (4/4 7.5YR) 60% fine sand, 40% silt, dry, med dense, trace gravel, no odor or staining	SM	4291
2			0.1	58			5047
			0.1	73	color change: reddish yellow (6/6 10YR) low dense		5282
3			0.1	69	Silty Clay, Pale Yellow (7/4 2.5Y) 60% clay, 40% silt, trace fine sand, dry, med tough, med strength, no odor + staining, trace roots	CL	5709
			0.1	55			6055
4			0.1	61			6309
			0.1	42			6259
5			0.1	62	Silty Sand, yellowish brown (5/6 10YR) 90% fine sand, 10% silt, dry, med dense, no odor or staining	SP	6325
			0.1	78			6407
6			0.1	50			NM

TD = 6' bgs
no GW encountered



BORING LOG

Sheet 1 of 2

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID & Group 58 5	Location ID 107			
Drilling Company Boart Longyear		Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 7ft			
Drilling Equipment Geoprobe 6600		Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/10/11 0845	Date/Time Total Depth Reached 1/10/11 0853			
Type of Sampling Device 1 3/4" macrocore acetate liner		Samples Collected 20246-0910 (2) 1/2 gallon bags					
Geologist I Stone		Checked by/Date <i>[Signature]</i> 5/12/11					
Radiological Background 40 / 2391		Radiological Equipment Used Paracake / Downhole		PID Used Mini RAE 2000 (Bkgd: 1.6ppm)			
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches ^{0.5} = 2422 (CPM)
1			1.2	41	SAND, yellow (7/6 2.5Y) 95% fine sand, 5% silt, dry, loose, no odor or staining, fill material trace roots	SP	2618
			1.2	35			3979
2			1.2	56	Silty Sand, Dark yellowish brown (4/6 10YR) 60% fine sand, 40% silt, trace gravel, trace asphalt (0.4"), dry, med dense, no odor or staining. fill material.	SM	4653
			1.2	52			4744
			1.2	86			4667
3			1.2	78			4788
			1.2	69			4634
4			1.2	57			4482
			1.2	85			4090
5			1.2	68			4166
			1.2	72			4678
6			1.3	68	Sandy silt, yellowish brown (5/4 10YR) 65% silt, 35% fine sand, dry, low tough, low strength, no odor or staining, fill Some mudding.	ML	5324
			1.3	52			5954

Radiological Background				Project Name	Project Number	Location	
40 / 2391				SSFL Area IV Radiological Study	EP9038.01.22.04.03	5B, 5, 107	
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole
							Gamma Readings
							(CPM)
			1.3	52	Silt (weathered siltstone) (interbedded) IS 100% silt, very fine light yellowish brown (US 2.54) 50% silt, 50% siltstone, low strength, low tough, no odor or staining. native	ML	5954
			1.3	79			6270
7			1.3	81			6455
					TD = 7ft logs no gw encountered		
8							
9							
10							



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 5	Location ID 108
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-14-10/0846	Date/Time Total Depth Reached 12-14-10/0851
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bag (#20248) (0850)		
Geologist C. Carmichael	Checked by/Date [Signature] 5/12/11		

Radiological Background (CP) D.O. 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			D.O. 14		Gravelly sand with silt, (10 YR, 4/4), brown, 60% fine grained, subrounded sand, 30% gravel (pea fill gravel, sandstone and asphalt chunks), 10% silt, dry, loose, rootlets common. TD = 0.5' bgs No GW encountered	SP-SM		

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID & Group 5B Group 5		Location ID 108	
Drilling Company Boart Longyear		Driller D. Hansen		Ground Elevation NA		Total Drilled Depth 5 ft	
Drilling Equipment Geoprobe 6600		Borehole Diameter 1 3/4"		Date/Time Drilling Started 1/10/11 1409		Date/Time Total Depth Reached 1/10/11 1415	
Type of Sampling Device 1 3/4" macrocore acetate liner				Samples Collected 20247 - 1430 (2) 1/2 gallon bags			
Geologist I. Stone				Checked by/Date <i>[Signature]</i> 5/12/11			
Radiological Background 65 / 2440			Radiological Equipment Used Pancake / Downhole			PID Used Mini RAE 2000 (Bkgd: 0.7cpm)	
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches 0.5 = 2437 (CPM)
1	0.4	54			Silty Sand, Yellowish Brown (5/8 109R)		3280
	0.4	91			70% fine sand, 30% silty trace gravel, trace roots, dry, low dense, no odor or staining	SM	4847
2	0.4	102			Silty Sand, Dark Brown (3/4 7.54R)		5003
	0.4	34			60% fine sand, 40% silt, dry, med dense, no odor or staining	ju	5166
3	0.4	55					5197
	0.4	82			Sandy Silt, Strawn brown (4/6 7.54R)		5467
4	0.4	66			60% silt, 40% fine sand, dry, low tough, low strength, no odor or staining	ML	5596
	0.4	48					5775
5	0.4	69					5927
	0.4	67					6034
5	0.4	58			TD = 5 ft bgs no ju encountered		6250

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID SB, group 5	Location ID 109
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-14-10/0859	Date/Time Total Depth Reached 12-14-10/0905
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20250) (0905)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/12/11		

(PID) Radiological Background 0.0, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'				0.014	Sandy, gravelly silt, (10 YR, 4/4), brown, 60% silt, 25% pea gravel (fill and sandstone), 15% fine grained, subrounded sand, dry, medium dense, common rootlets, no odor. TD = 0.5' bgs NO GW encountered	GM ML		

Radiological Background					Project Name	Project Number	Location
0.0, 2649, 70					SSFL Area IV Radiological Study	EP9038.01.22.04.03	240 ^{ca} 109
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
							Inches
7'			0.050		Refusal hit at 7' no GW encountered	SW	5534
			0.048				5629
8'							



Project Name: SSEL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID & Group 5B 5		Location ID 110	
Drilling Company Boart Longyear		Driller D. Hansen		Ground Elevation NA		Total Drilled Depth 5ft	
Drilling Equipment Geoprobe 6600		Borehole Diameter 1 3/4"		Date/Time Drilling Started 1/10/11 0953		Date/Time Total Depth Reached 1/10/11 0958	
Type of Sampling Device 1 3/4" macrocore acetate liner				Samples Collected 20251-1010 (2) 1/2 gallon bags			
Geologist I. Stone				Checked by/Date <i>[Signature]</i> 5/12/11			
Radiological Background 52 / 2720		Radiological Equipment Used Paracake / Downhole		PID Used Mini RAE 2000 (Bkgd: 1.1cpm)			
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches CS = 2630 (CPM)
1			1.1	48	Silty Sand, Grayish Brown (5/2 10YR) 70% fine-course sand, 30% silt, trace gravel, dry, low dense, no odor or staining fill.	SM	4774
			1.1	47			4733
			1.1	25			5058
2			1.2	57	Sandy silt, Dark yellowish brown (5/4 10YR) 60% silt, 35% fine sand, 5% clay, dry, low tough, low strength, no odor or staining, native	ML	5063
			1.2	28			5097
			1.2	46			5391
3			1.3	72	- color change: Yellowish brown (5/4 10YR) 65% silt, 35% fine sand		5449 5450
			1.3	59			5450 5461
4			1.3	83			5461 5366
			1.3	79			5398
5			1.3	71	silty sand, very pale brown (7/3 10YR) 70% fine sand, 30% silt, dry, med dense, no odor ID = 5 ft bags NO GW encountered	SM	NM



5B_111



BORING LOG

Sheet 1 of 2

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 5	Location ID 111
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 104ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/10/11 1508	Date/Time Total Depth Reached 1/10/11 1515
Type of Sampling Device 1 3/4" macrocore acetate liner		Samples Collected 2025' 1535 (2) 1/2 yellow bags	
Geologist I. Stone		Checked by/Date 5/27/11	

Radiological Background 57 / 2587	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.2 cpm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches <small>(CPM)</small>
1			0.2	71	Silty Sand, Dark yellowish brown (3/6 109R) 65% fine sand, 35% silt, trace gravel, concrete, med dense, no odor or staining, fill.	SM	2645
			0.2	66			4544
		0.2	62	4783			
		0.2	42	4904			
2			0.2	68			5038
			0.2	90			5056
3			0.2	63			5060
			0.2	71			5116
4			0.2	49			5054
			0.2	58			5117
5			0.2	73	5189		
			0.2	99	5081		
6			0.2	97	5898		

Radiological Background					Project Name	Project Number	Location	
57 / 2587					SSFL Area IV Radiological Study	EP9038.01.22.04.03	53, 5, 111	
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
			0.2	97				5898
			0.2	105				5050
7			0.2	66				4835
			6.2	73				5019
8			0.2	82	moist-wet	SM		5014
			0.2	103				4919
9			0.2	94				4847
			0.2	67	Sand w/ silt, Brownish Yellow (6/8 10YR) 90% fine sand, 10% silt, dry-slightly moist, high dense, no odor or staining; native (weathered sandstone)	SP		5292
10			0.2	81				NM
					TD= 104ft bgs no. gw encountered			

3'-5' bgs



BORING LOG

Sheet 1 of 1

Project Name: SSEL Area JV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 6	Location ID 112
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 3.5' @ 5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1-17-11 / 1053	Date/Time Total Depth Reached 1-17-11 / 1152
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags (#20263) (1150)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/19/11		

(g10)

Radiological Background 0.4, 2766, 62	Radiological Equipment Used at Radio Pancake meter, Downhole scanner	PID Used Mini Rae 2000 (Background = 0.4 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
			0.4	100				0.5 - 2378
			0.4	70	Silt with clay, (10 YR, 4/3), greyish-brown, 80% silt, 20% clay, low plasticity and hardness, no odor, medium stiff.	ML	5138	0 - 4059
1'				77	Silt with sand, (10 YR, 5/4), light reddish-brown, 75% silt, 25% subrounded fine grained sand, speckled texture, some tinting from iron-oxide, no odor, very low to no hardness and plasticity, dry, medium stiff.	ML	5578	
				85			5460	
2'				65			5766	
				80			5985	
3'				85	Sand with silt, (10 YR, 5/4), light brown, 85% fine grained subrounded sand, 15% silt, no odor, medium dense, dry.	SM	5865	
				40			6248	
4'				40	Sand with clay (10 YR, 5/4), light brown, 80% fine grained subrounded sand with 20% clay, dry, medium dense, no odor.	SM SC	6195	
				65	Sand with silt (same as 3'-3.5')	SM	6080	
5'				100			5894	
					Refusal hit at 5.5' NO Gw encountered			

3'-5' bgs



5B_113



BORING LOG

Sheet 1 of 2

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 6	Location ID 113
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 8' refusal, 7' recovery
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1-17-11/1313	Date/Time Total Depth Reached 1-17-11/1430
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags (#20264) (1425)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/12/11		

(PID) Radiological Background 0.5, 2496, 63 Radiological Equipment Used Pancake meter, ~~up Probe~~ Downhole scanner PID Used Mini Rae 2000 (Background=0.5ppm)

Depth	Interval	Recovery	PID	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)	
			0.5	65				0.5 - 2270	
1'			0.5	80	Silty sand with gravel, (10YR, 4/4), brown, 55% fine to medium grained subrounded sand, 30% silt, 15% gravel (subangular fill gravel - 1/2-1" diameter), dry, medium dense, no plasticity; very low to no hardness, no odor.	SM		0 - 2818	
				80				3989	
				90				4931	
				100				4960	
2'				70				5071	
				65				5145	
3'				60			5113		
				80			5234		
				65			5287		
4'				90			5270		
				53	Gravel with sand, (10YR, 4/4), brown sand with grey gravel, 80% fill gravel, 20% sand, trace silt, wet moist, loose, no odor.	GP		5077	
								5266	
5'				40				5723	

Radiological Background 0.5, 2.4, 10, 63				Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 113	
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
			0.5		Silty sand with gravel (same as 1'-5')	SM	
			110				4388
			120				n/a
7'					Gravel (same as 5'-5.75') but larger gravel and ~10% Sand. [not viable for sampling]	GW	
8'							
					Refusal hit at 8.5'		
9'					No groundwater reached.		
10'							

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 6	Location ID 114
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-22-10/0916	Date/Time Total Depth Reached 12-22-10/0922
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20266) (0922)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/12/11		

Radiological Background (NA) 0.0, 14	Radiological Equipment Used MP R meter	PID Used Mini Rae 2000 (Background = 0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches (CPM)</small>
0.5'			0.0	14	Sandy silt, (10 YR, 5/3), brown, 70% silt, 30% fine grained, subrounded sand, trace gravel (asphalt piece and 2 pieces of fill gravel), some rootlets, wet, soft, water table is at surface - oversaturated, no odor. TD = 0.5' bgs	ML	

Project Name: SSEL Area JV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B / Group 6	Location ID H5 ^{aa} 114
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 5.5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1-18-11/1342	Date/Time Total Depth Reached 1-18-11/1428
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags (#20265) (1425)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/12/11		

Radiological Background 0.5, 2675, 70	Radiological Equipment Used Pancake meter, not Ractor Downhole scanner	PID Used Mini Rac 2000 (Background=0.5 ppm)
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(PID)

Depth	Interval	Recovery	PID 0.5 65	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
							0.5	2538
							0	3459
1'			0.5	65	Silt with sand and gravel, (10YR, 4/4), brown, 55% silt, 25% gravel (granite fill rock, sandstone, siltstone fragments), 20% fine to medium grained subrounded sand, dry, medium stiff, no plasticity or hardness, no odor.	ML		
				60				4713
				60				5178
				60				5198
2'				35				5191
				45				4994
3'				45				5086
				80				5014
4'				80				5165
				75				5211
5'				85	Silt with sand, (10YR, 3/4), brown, 75% silt, 20% fine grained sand, 5% clay, moist, medium stiff, very low plasticity, low hardness, no odor.	ML		5120
				65				5169
6'					Water saturated gravel fill (granite) TD = 5.5' bgs			

3'-5' bgs



5B_115



BORING LOG

Sheet 1 of 1

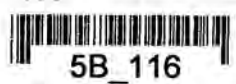
Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 6	Location ID HFC 115
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 6'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1-18-11/1513	Date/Time Total Depth Reached 1-18-11/1610
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags (#20267, #20268) (1605)	Geologist C. Carmichael	
Radiological Background 0.7, 2853, 55		Radiological Equipment Used Pancake meter, Downhole scanner PID Used Mini Rae 2000 (Background = 0.7 ppm)	

(10)

Depth	Interval	Recovery	PID	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
			0.7	55			0.5	2329
							0	2794
1'			0.7	65	Silt with sand and gravel, (10YR, 4/4), brown, 60% silt, 20% fine grained subrounded sand, 20% gravel fill, trace rootlets in top 2", dry, medium stiff, no plasticity, very low hardness, no odor.	ML		
				75				
				75				
2'				60	Gravel consists of granite fill, brick fragments, asphalt.			
				45				
				45				
3'				60				
				60				
4'				75				
				50				
				60	Gradational contact Sandy silt, (10YR, 3/6), brown, 55% silt, 40% fine to medium grained subrounded sand, 5% gravel fill, moist, medium stiff, no plasticity and hardness, no odor.	ML		
				60				
5'				45				
6'								

Refusal at 6'.
(Wet gravel below 6')

3'-5'



5B_116



BORING LOG

Sheet 1 of 2

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 6	Location ID 116
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 5.5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1-18-11 / 1122	Date/Time Total Depth Reached 1-18-11 / 1220
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags (#20268) (1215)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/12/11		

Radiological Background 0.5, 2948, 47	Radiological Equipment Used Pancake meter, up Probe Downhole scanner	PID Used Mini Rae 2000 (Background: 0.5cpm)
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(PID)

Depth	Interval	Recovery	PID	Radiological	Description <small>(include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>	
1'			0.5	80	Silt with sand and gravel, (10 YR, 4/3), brown, 60% silt, 20% fine grained sand, 20% gravel (fill), texture is speckled with sand, dry, medium stiff, no odor, no hardness or plasticity, trace rootlets in top 2".	ML	0.5 - 2455	
				60				
				50				
				120				
2'				70				
				50	Siltstone (laminated)			
3'				80	Sandy silt, (10 YR, 4/4), brown, 60% silt, 40% fine to medium grained sand, trace rock fragments (siltstone), dry, medium stiff, no hardness or plasticity, no odor.	ML	5587	
				75				5711
				70				5598
4'				80	Sandy silt (same as above, except wet and soft)	ML	5682	
				60				5667
5'					Gravel fill (well graded, wet)			
6'								

(C) TD: 5.5' refusal at 5.5' on gravel



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID / Group 5b, Group 6	Location ID 117
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/22/10, 0930	Date/Time Total Depth Reached 12/22/10, 0930
Type of Sampling Device trowel/shovel	Samples Collected 20270, 0925 (2) 1/2 gal bags		
Geologist P. Secora	Checked by/Date [Signature] 5/12/11		

Radiological Background 0 ppm 12 hr	Radiological Equipment Used MFR meter	PID Used Mini Rae 2000 (Background=0.0ppm)
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(PID)

Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'					clayey silt w/ sand, dark brown (w/ 3/3), moist, soft, 35% clay, 15% fine sand, 45% silt, 5% gravel fill, few rocks, no odor, low plasticity			
					TO 0.5' Saturated conditions			

3'-5' bgs



BORING LOG

Sheet 1 of 1

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 6	Location ID 117
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 6'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1-17-11/1503	Date/Time Total Depth Reached 1-17-11/1602
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags (#20269) (1555)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/12/11		

(PID) Radiological Background 0.5, 2423, 69 Radiological Equipment Used Pancake meter, ~~at Radio~~ Downhole scanner PID Used Mini Rae 2000 (Background=0.5ppm)

Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
							0.5 - 2316
							0 - 2693
1'			0.6	92	Silt with sand (10 YR, 4/4), brown, 75% fine silt, 20% fine grained subrounded sand, 5% gravel (fill and asphalt pieces), dry, no plasticity, very low hardness, no odor, medium stiff, some rootlets in top 3".	ML	4311
			0.6	81		5229	
				88		5546	
2'				104		(some sandstone/siltstone ^{gr} rock fragments.)	5701
				83		5829	
3'				81		5689	
				77		5634	
4'				108	laminated siltstone		5566
				117	Sandy silt, (10 YR, 3/4), dark brown, 60% silt, 40% fine to medium grained subrounded sand, dry, medium stiff, no hardness or plasticity, no odor.	ML	5573
5'				130			5417
				111	Sand, (10 YR, 5/6) light brown, 90% fine to medium grained subrounded sand, 10% silt, ^{wet} medium dense, no odor.	SW SP	5397
6'				104			5342

Refusal hit at 6'.

No groundwater reached.

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID / group 5b, Group b	Location ID 118
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/22/10, 0905	Date/Time Total Depth Reached 12/22/10, 0915
Type of Sampling Device trowel/shovel	Samples Collected 20272, 0910 (2) 1/2 gal bags		
Geologist P. Scogin	Checked by/Date <i>[Signature]</i> 5/12/11		

Radiological Background (RAD) 0 ppm 12 hr	Radiological Equipment Used up R meter	PID Used Mini Rax 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
0.5'					sandy silt w/ clay, dark yellowish brown (10 YR 4/4) moist, soft, 35% fine sand, 40% silt, 15% clay, few rocklets, 10% gravel fill, no odor		
					to 0.5' saturated soil		

3'-5' bgs



BORING LOG

Sheet 1 of 2

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B / group 6	Location ID 118
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 9' ± 8.5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1-18-11/0841	Date/Time Total Depth Reached 1-18-11/1028
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags (#20271)(1020)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/19/11		

(110) Radiological Background 0.2, 2445, 52 Radiological Equipment Used Pancake meter, ~~at Ractor~~ Downhole logger PID Used Mini Rae 2000 (Background=0.2ppm)

Depth	Interval	Recovery	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
						Inches	(CPM)
			33			0.5	2351
			45			0	2784
1'			35	Silt with rock fragments, (10 YR, 4/3), greenish-brown, 65% silt, 25% gravel rock fragments (fill), 10% sand, dry, soft, very low hardness and plasticity, no odor.	ML		4768
			70	Silt with sand, (10 YR, 3/3) dark brown with speckled texture, 65% silt, 25% fine grained subrounded sand, 10% gravel (fill), semi-moist, medium stiff, very low hardness, no plasticity, no odor.	ML		4978
			65				5231
2'			60				5674
			45				5870
3'			50	Sand with silt silty sand (10 YR, 4/6), brown, 70% fine to medium grained subrounded sand, 30% silt, trace fill gravel, dry, medium dense, no odor.	SM		5888
			50				5858
			45				5826
4'			55				5651
			50	Sand (10 YR, 6/6), beige, 95% fine to medium grained subrounded sand, 5% silt, dry, loose, no odor.	SW		5647
5'			55				5439
6'			70				5533

Radiological Background 0.2, 2445, 52					Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 118
Depth	Interval	Recovery	PD	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
			0.3	60	Sand with clay, (10YR, 6/3), light greyish-brown, 75% fine grained sand, 25% clay, dry, medium dense, no odor.	SC	5867
7'			0.4	45	Sand (same as 4.5' - 6')	SW	6208
			0.4	35			6117
8'			0.4	60	Clay with silt, (10YR, 7/4), beige, 80% clay, 20% silt, dry, medium stiff, medium plasticity, medium hardness, no odor.	CL	6076
			0.4	40	Refusal at 8.5' cl		6085
9'			0.5	50	Refusal at 9' cc Refusal at 9' no gw encountered		6354
10'							



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID: 5b, Group 6	Location ID: 119
Drilling Company: HGL	Driller: D. Rivera	Ground Elevation: NA	Total Drilled Depth: 0.5'
Drilling Equipment: trowel/shovel	Borehole Diameter: NA	Date/Time Drilling Started: 12/14/10, 0825	Date/Time Total Depth Reached: 12/14/10, 0835
Type of Sampling Device: trowel/shovel	Samples Collected: 20274, 0830 (2) 1/2 gal bags		
Geologist: P. Sweeney	Checked by/Date: <i>[Signature]</i> 5/12/11		

Radiological Background: 16 p.p.m., 0.2 ppm	Radiological Equipment Used: w/ R meter	PID Used: Mini Rae 2000 (Background = 0.2 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
0.5'				D.I. 16	Silt w/ sand, dirty yellowish brown (w/ R 3/4) dry, soft, 85% silt, 15% fine sand, few rootlets, no odor	ml	
					TO 0.5' NO GW encountered		

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID / group 5b, 6	Location ID 119
Drilling Company Cascadia		Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 4.0'
Drilling Equipment 6600 Geoprobe		Borehole Diameter 1 3/4"	Date/Time Drilling Started 01/13/11, 0830	Date/Time Total Depth Reached 01/13/11, 0840
Type of Sampling Device 1 3/4" macrocore		Samples Collected 20273, 0835 (2) 1/2 gal bags		
Geologist P. SKEATH		Checked by/Date <i>[Signature]</i> 5/24/11		
Radiological Background 45cpm, 2862cpm		Radiological Equipment Used pancake, downhole & scamer	PID Used Mini Rac 2000 (Background = 0.0ppm)	

Depth ft	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole
							Gamma Readings (CPM)
							+ 0.5' 2382
				45	sandy silt, dark brown (10 YR 3/3), moist, soft, 30% fine sand, 65% silt, 5% clay, no odor, few rootlets	ML	4235
			45	5081			
1.6			55	5226			
			55	5267			
2.0			55	sandy silt w/ clay, dark yellowish brown (10 YR 3/4), moist, soft, 30% sand fine, 55% silt, 15% clay, no odor	ML	5288	
			65	poorly graded sand, 100% sand (50% med sand, yellowish brown 50% fine sand) (10 YR 5/6), moist, med. dense sand, no odor	SP	5128	
3.0			65			5098	
			50			5042	
4.0			45			4967	
					Refusal sandstone		
					TD = 4.0'		
					NO GW		

Project Name: SSFL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID 5b Group 6	Location ID 120
Drilling Company: HGL	Driller: D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5
Drilling Equipment: trowel/shovel	Borehole Diameter: NA	Date/Time Drilling Started: 12/17/10, 0845	Date/Time Total Depth Reached: 12/14/10, 0855
Type of Sampling Device: trowel/shovel	Samples Collected: 20276, 9550 (2) 1/2 gal bags		
Geologist: P. Scream	Checked by/Date: <i>[Signature]</i> 5/12/11		

Radiological Background 16 uR, 0.2 ppm	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.2 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5			0.2	16	<p>w/ gravel poorly graded sand w/ silt, dark yellowish brown (w/ 2% M) dry, med. dense, 70% fine sand, 15% silt, 15% sandstone gravel, few rootlets, no odor</p> <hr/> <p>to 0.5' no GW encountered</p>	SP		

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID / Group 5b, 6		Location ID 120	
Drilling Company Cascado		Driller H. Lopez		Ground Elevation NA		Total Drilled Depth 4' 4"	
Drilling Equipment 6600 Geoprobe		Borehole Diameter 1 3/4"		Date/Time Drilling Started 01/13/11, 1110		Date/Time Total Depth Reached 01/13/11, 1120	
Type of Sampling Device 1 3/4" macrocore				Samples Collected 20275, 1115 (2) 1/2 gal bags			
Geologist P. Skerath				Checked by/Date <i>[Signature]</i> 5/24/11			
Radiological Background 64 cpm, 2880 cpm		Radiological Equipment Used pancake, down hole X scanner		PID Used Mini Rac 2000 (Background = 0.0ppm)			
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches +0-5' 2880 (CPM)
			0	50	poorly sorted w/ gravel w/ silt sand, dark brown (10 YR 3/3), moist, med. dense sand, 25% silt, 65% med sand, 10% fine gravel silt, no odor	SR	3478
				45			4908
				55			5206
				80	silt w/ sand, dark yellowish brown (10 YR 4/6) moist, soft, 85% silt, 15% fine sand, no odor	ML	5524
2				65			5679
				45	silt, yellowish brown (10 YR 5/4) dry, med. stiff, 100% silt, no odor	ML	5743
3				60			5925
				55			6150
4				70			6333
5					Refusal		
					TO 4' 4" NO GW		

BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID Sb, Group G	Location ID 121
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/14/10, 0910	Date/Time Total Depth Reached 12/14/10, 0920
Type of Sampling Device trowel/shovel	Samples Collected 2027B, 0915 (2) 1/2 gal bags		
Geologist P. S. Cate	Checked by/Date <i>[Signature]</i> 5/12/11		

Radiological Background: 16 pCi, 0.2 ppm
 Radiological Equipment Used: HP K meter
 PID Used: Mini Rae 2000 (Background = 0.2 ppm)

Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5				0.2 16	silt w/ sand w/ gravel, clay yellowish brown (10YR 3/4) dry, med. stiff, 65% silt, 20% fine sand, 15% granite gravel & sandstone gravel, few pebbles, no octon	ML		
					TO 0.5' no GW encountered			

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID / Group 5b, Group 6	Location ID 121
Drilling Company Cascadia	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 10'
Drilling Equipment 6600 Geoprobe	Borehole Diameter 1 3/4"	Date/Time Drilling Started 01/13/11, 1020	Date/Time Total Depth Reached 01/13/11, 1020
Type of Sampling Device 1 3/4" macro core	Samples Collected 20277, 1015 (2) 1/2 gal bags		
Geologist P. Skerth	Checked by/Date <i>[Signature]</i> 5/24/11		

Radiological Background 31cpm, 293cpm	Radiological Equipment Used Pacorr, downhole & scanner	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0			80		sandy silt, dark brown (10YR 3/3), moist, soft, 30% fine sand, 65% silt, 5% clay, no odor, few rootlets	ML	2753
10			60	3698			
20			50	5037			
30			70	5526			
40			80	5648			
2			80		silty sand, yellowish brown (10YR 5/6), dry, loose sand, 35% silt, 65% fine sand, no odor	SM ML (P)	5610
50			90	5718			
3			10		silt w/ sand, brownish yellow (10YR 6/8), dry, soft, 80% silt, 20% fine sand, no odor	ML	5757
60			90	5379			
70			55	5280			
4			80				5612
80			70	5689			
90			45	6211			
5			70				6155

Radiological Background		Project Name	Project Number	Location				
51 cpm / 2930 cpm		SSFL Area IV Radiological Study	EP9038.01.22.04.03	121				
Depth	Interval	Recovery	PTD	Radiological	Description	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
50			0	70	same as above		72	
				45				6211
				70				6155
				70	-----			5933
				80	clayey silt, dark yellowish brown (10YR 4/4) moist, soft, 35% clay, 60% silt, 5% fine sand, no odor, med. plasticity	ML		6317
				100	-----			6744
				100	silt, dark yellowish brown (10YR 4/4) moist, soft, 80% silt, 10% fine sand, 10% clay, trace rootlets, no odor	ML		6971
				75				6720
				85				6726
				60				6126
				70				6022
					Refusal siltstone			
					TD = 100.0' NO GW			



Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID / Group 56 / 6	Location ID 122
Drilling Company HGL	Driller P. Rivera	Ground Elevation NA	Total Drilled Depth 0.5
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/12/10, 0935	Date/Time Total Depth Reached 12/12/10, 0945
Type of Sampling Device trowel/shovel	Samples Collected 20280, 0940 (2) 1/2 gal bags		
Geologist R. Sweeney	Checked by/Date <i>[Signature]</i> 5/12/11		

Radiological Background 15 mR @ 300m	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.3 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5				0.3 15	sandy silt, dark yellowish brown (10YR 3/4) clay solid med dense, 65% silt, 35% fine sand, 15% gravel sandstone & siltstone, few roots, no odor et (FS)	ML		
					rd 0.5'			
					no GW encountered			

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID / Group Sb, Group 6	Location ID 122
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 3'
Drilling Equipment 6600 Geoprobe	Borehole Diameter 1 3/4"	Date/Time Drilling Started 01/13/11, 1320	Date/Time Total Depth Reached 01/13/11, 1330
Type of Samline Device 1 3/4" macro core	Samples Collected 20279, 1325 (2) 1/2 gal bags		
Geologist P. Skam	Checked by/Date <i>[Signature]</i> 5/24/11		

Radiological Background 61 cpm, 2968 cpm	Radiological Equipment Used pancake, downhole & scummer	PID Used Mini Rae 2000 (Background=0.0cpm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches + 0.5' 2855 (CPM)
0.0				45	silt w/ sand, very dark greyish brown (10YR 3/2), moist, soft, 80% silt, 15% fine sand, 5% clay, no odor	ML	3749
0.5			60	5739			
1.0			90	5816			
1.5			60	6127			
2.0				80	silt w/ clay w/ gravel, light yellowish brown (2.5Y), dry, stiff, 70% silt, 15% clay, 15% fractured gravel bedrock, no odor, low plasticity	ML	6640
2.5			60	6752			
3.0			75	6497			
					Refusal Siltstone		
					TO PS 3.0'		
					NO GW		

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID Sb, Group 6		Location ID 123	
Drilling Company HGL		Driller D. Rivera		Ground Elevation NA		Total Drilled Depth 0.5'	
Drilling Equipment trowel/shovel		Borehole Diameter NA		Date/Time Drilling Started 12/14/10, 1035		Date/Time Total Depth Reached 12/17/10, 1045	
Type of Sampling Device trowel/shovel				Samples Collected 20282, 1040 (2) 1/2 gal bags			
Geologist P. Siskin				Checked by/Date <i>[Signature]</i> 5/12/14			
Radiological Background 15 uCi, 0.2 ppm		Radiological Equipment Used MP R meter			PID Used Mini Rae 2000 (Background=0.2ppm)		
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
0.5'				0.2 15	<p>silty sand w/ gravel, dense yellowish brown (10YR 4/6) dry, med. dense, 30% silt, 50% fine sand, 20% sandstone gravel, few rootlets, no odor</p> <p>to 0.5' no GW encountered</p>	SM	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID / Group 5b, Group 6	Location ID 123
Drilling Company Cascadia	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 2.0' @ 2.5'
Drilling Equipment 6600 Geoprobe	Borehole Diameter 1 3/4"	Date/Time Drilling Started 01/13/11, 1430	Date/Time Total Depth Reached 01/13/11, 1440
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 #2 #1, 1435 (2) 1/2 gal bags 5/24/11		
Geologist P. Stearns	Checked by/Date <i>[Signature]</i> 5/24/11		

Radiological Background: 60 cpm, 2700 cpm
 Radiological Equipment Used: pancake, downhole scanner
 PID Used: Mini Rae 2000 (Background = 0.0 ppm)

Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
3"			0	60	poorly graded sand w/ silt, dark yellowish brown (10YR 2/4), moist, loose, 80% sand, 20% silt, no odor, common roots	SP	2699	2699
10				90	poorly graded sand, light yellowish brown (10YR 6/4), moist, med. dense, no odor, 90% fine to med. sand, 10% fines	SP	3909	3909
16				80			4772	4772
				80			5274	5274
25				80	refused sandstone		5581	5581

TD = 2.5'
NO GW

BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID Sb, Group 6	Location ID 124
Drilling Company HGL	Driller P. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/14/10, 10:55	Date/Time Total Depth Reached 12/14/10, 11:05
Type of Sampling Device trowel/shovel	Samples Collected 20284, 1100 (2) 1/2 gal bags		
Geologist P. Rivera	Checked by/Date <i>[Signature]</i> 5/24/11		

Radiological Background 15 pp 10.2 (PID)	Radiological Equipment Used MP R meter	PID Used Mini Rae 2000 (Background = 0.2 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5			0.2	15	<p>wi graves</p> <p>sandy silt silty sand, clay yellowish brown (10 YR 4/1)</p> <p>dry, med. stiff, 30 % silt, 60 % fine sand, 10 % sandstone, few rootlets, no odor</p>	SM		
to 0.5'					no GW encountered			

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID SB, Group 6	Location ID 124
Drilling Company Cascade Drilling	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 8.5
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 01/14/11, 0905	Date/Time Total Depth Reached 01/14/11, 0915
Type of Sampling Device 1 3/4" macro core?	Samples Collected 20283, 2910 (2) 1/2 gal bags		
Geologist P. Skeath	Checked by/Date <i>[Signature]</i> 5/12/11		

Radiological Background: 53 cpm, 2874 cpm
 Radiological Equipment Used: Pancake meter, Downhole scanner
 PID Used: Mini Rae 2000 (Background = 0.1 ppm)


Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches + 0.5' 2533 (CPM)
			0.1	60			3658
				50	silt w/ sand, dark brown (10YR 3/3), moist, soft, 85% silt, 15% fine sand, few roonets, no odor	ml	4710
				85			5185
				75			5284
				65	silt w/ sand w/ clay, dark yellowish brown (10YR 7/6), moist, med stiff, 70% silt, 20% fine sand, 10% clay, no odor	ml	5393
				55			5473
				65			5454
				60			5327
				70			5420
				55			5480
				60	Fill		5668
				80	silt, yellowish brown (10YR 5/6), clay, med. stiff, 90% silt, 5% clay, 5% fine sand, no odor	ml	5628
				50			5754

Radiological Background					Project Name	Project Number	Location	
53 cpm / 2874 cpm					SSFL Area IV Radiological Study	EP9038.01.22.04.03	124	
Depth	Interval	Recovery	PID	Radiological	Description	USCS Symbol	Borehole Gamma Readings (CPM)	
					(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	Inches		
5			0.1	60	Same as above	71	5668	
				80				5628
6				50				5754
				60				5564
7				70				5484
				80				5573
8				85				5515
				65				5721
9						Refusal Siltstone		
10								
					TD 8.5'			
					50 GW			

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, Group 6	Location ID 125
Drilling Company Cascade Drilling	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 3.0'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 01/14/11, 1405	Date/Time Total Depth Reached 01/14/11, 1415
Type of Sampling Device 1 3/4" macro core!	Samples Collected 20285, 1410 (2) 1/2 gal bags		
Geologist P. Skerth	Checked by/Date <i>[Signature]</i> 5/12/11		

Radiological Background 2869 cpm 72 cpm	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rae 2000 (Background = 0.3 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings <small>(CPM)</small>
				100	silt w/ sand, dark brown (10YR 3/3), moist, soft, 80% silt, 20% fine sand, common roots, no odor	ML	2741 ± 0.5'	
				80			5277	
				80			5239	
				80	silty sand, dark yellowish brown (10YR 3/6), moist, med. dense, 45% silt, 55% fine sand, no odor	SM	5228	
				90			5238	
				80			5228	
				70	partly gravel sand w/ silt, brownish yellow (10YR 6/6), dry, dense, 85% fine sand, 15% silt, no odor	SP	5304	
				60			5203	
				70			5471	
				75			5292	
				70	Refusal sand/silt stone		NM	
					TO 5.0'			
					NO GW			

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID 5b, Group 6	Location ID 126			
Drilling Company HGL		Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'			
Drilling Equipment trowel/shovel		Borehole Diameter NA	Date/Time Drilling Started 12/14/10, 1415	Date/Time Total Depth Reached 12/14/10, 1425			
Type of Sampling Device trowel/shovel			Samples Collected DUPS: 20526 (MS), 20525 (Field Dup - no time), 20524 (1st Dup)				
Geologist D. Scream		Checked by/Date  5/12/11					
Radiological Background 16 nR, 0.0 cpm		Radiological Equipment Used up R meter		PID Used Mini Rae 2000 (background = 0.0 ppm)			
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
0.5'				16	Silt w/ sand, dark yellowish brown (w/ 2/4) dry, med. silt, 85% silt, 15% fine sand, some roots, no odor		
					+d 0.5' no GW encountered		

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, Group 6	Location ID 126
Drilling Company Cascade Drilling	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 3.0'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 01/14/11, 1100	Date/Time Total Depth Reached 01/14/11, 1120
Type of Sampling Device 1 3/4" macro core!	Samples Collected 20287, 1115 (2) 1/2 gal bags		
Geologist P. Skeath	Checked by/Date <i>[Signature]</i> 5/12/11		

Radiological Background 77cpm 248cpm	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rae 2000 (Background=0.2cpm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
				65	Silt w/ sand, dark brown (WLR 3/3), moist, soft, 85% silt, 15% fine sand, few roots, no odor	ML	+0.5'	2656
				45				3237
				85	Silty sand, dark yellowish brown (WLR 3/6), moist, med. dense, 40% silt, 60% med. sand, no odor	SM		4593
				70				5121
				65				5590
				60	Silt w/ gravel, yellowish brown (WLR 5/6), dry, hard, 65% silt, 35% siltstone gravel fragments, no odor	ML		5304
				90				5594
					Refusal Siltstone			5625
					TO 3'			
					no CW			

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID SB, Group C	Location ID 12B
Drilling Company HGL	Driller D. RIVERA	Ground Elevation NA	Total Drilled Depth 0.5
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/17/10, 1330	Date/Time Total Depth Reached 12/17/10, 1340
Type of Sampling Device trowel/shovel	Samples Collected 20292, 1335 (2) 1/2 gal bags		
Geologist P. SKEAM	Checked by/Date <i>[Signature]</i> 5/12/11		

(PID) 0.0ppm, 16 HR Radiological Equipment Used: *up R meter* PID Used: *Mini Rae 2000 (Background = 0.0ppm)*

Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0.5				16	Silt w/ sand, w/ gravel dry, medium stiff, brown (10YR 4/3) 70% silt, 15% fine sand, 15% sandstone gravel, common rootlets, no odor	ml	
					to 0.5' no GW encountered		

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, Unit 6	Location ID 128
Drilling Company Cascade Drilling	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 5'0"
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 01/14/11, 10:20	Date/Time Total Depth Reached 01/14/11, 10:30
Type of Sampling Device 1 3/4" macro core!	Samples Collected 20291, 1025 (2) 1/2 gal bags		
Geologist P. Skeath	Checked by/Date <i>[Signature]</i> 5/24/11		

Radiological Background 66cpm, 2941cpm	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rae 2000 (Background = 0.2ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches +0.5' 2567 (CPM)
70					silt w/ sand, dark brown (10YR 3/3), moist, soft, 85% silt, 15% fine sand, few rocks, no odor	ml	4339
70							5256
60					silt w/ sand w/ clay, dark yellowish brown (10YR 3/6), moist, med. stiff, 70% silt, 20% fine sand, w% clay, no odor	ml	5307
90							5513
85							5323
85							5641
90							5666
70					silt w/ sand, yellowish brown (10YR 5/6), stiff, 90% silt, 10% fine sand, no odor	ml	5761
90							5892
80							5718
65							5573
TD = 5' bgs No GW (return)							



BORING LOG

Project Name: SSEL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID 5b, Group 6	Location ID 129				
Drilling Company HGL		Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5				
Drilling Equipment trowel/shovel		Borehole Diameter NA	Date/Time Drilling Started 12/14/10, 1340	Date/Time Total Depth Reached 12/14/10, 1350				
Type of Sampling Device trowel/shovel			Samples Collected 20297, 1345 (2) 1/2 gal bags					
Geologist P. S. Cam			Checked by/Date <i>[Signature]</i> 5/12/11					
Radiological Background open, 16 hr		Radiological Equipment Used w/ R meter		PID Used Mini Rae 2000 (Background = 0.0ppm)				
Depth (ft)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5			0	16	Silt w/ sand w/ gravel, brown (10 YR 4/3) dry, med. stiff, 70% silt, 20% fine sand, 10% gravel siltstone & sandstone, few rootlets, no odor			
					TO 0.5 no GW encountered			

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, Group 6	Location ID 129
Drilling Company Cascade Drilling	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 3.0'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 01/14/11, 1300	Date/Time Total Depth Reached 01/14/11, 1310
Type of Sampling Device 1 3/4" macro core!	Samples Collected 20293, 1305 (2) 1/2 gal bags		
Geologist P. Skeath	Checked by/Date <i>[Signature]</i> 5/24/11		

Radiological Background 77 / 2861	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rae 2000 (Background = 0.1 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.1	65	silt w/ sand, dark brown (10YR 3/3), moist, soft, 65% silt, 15% fine sand, common rootlets, no odor	ml	2735
				70			3954
				100	silty sand, dark yellowish brown (10YR 3/6) moist, med. dense, 40% silt, 60% med. sand, no odor.	sm	4869
				100			5057
				80	silt w/ gravel, yellowish brown (10YR 5/6), dry, hard, 65% silt, 35% siltstone gravel fragments, no odor	ml	5393
				85			5840
				40			6158
					Refusal Siltstone		
					TD 0-5' 3.0'		
					NO GW		



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 6	Location ID 131
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-15-10/1116	Date/Time Total Depth Reached 12-15-10/1120
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20297) (1120)		
Geologist C. Carmichael	Checked by/Date S/12/11		

Radiological Background (1120) 0.0, 14 Radiological Equipment Used up R meter PID Used Mini Rae 2000 (Background = 0.0ppm)

Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings <small>(CPM)</small>
0.5'			0.0	14	<p>Silty sand with rock fragments, (10YR, 4/4), brown, 60% fine to medium grained sand, 35% silt, 5% rock fragments (sandstone and asphalt), moist, medium dense, rootlets common, no odor.</p> <p>No groundwater encountered. TD=0.5' bgs</p>	SM		



5B_132



BORING LOG

Sheet 1 of 1

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 6	Location ID 132
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-15-10/1105	Date/Time Total Depth Reached 12-15-10/1110
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20298) (1110)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/12/11		

Radiological Background <i>(CPM)</i> 0.0, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings <small>(CPM)</small>
0.5'			0.0	14	<p>Silty sand with gravel, (10 YR, 4/3), brown, 55% fine to medium grained sand, 40% silt, 5% subrounded pea gravel and asphalt, some rootlets, moist, medium dense.</p> <p>No groundwater encountered.</p> <p>TD = 0.5' bgs</p>	<p>SM SM</p>		

Project Name: SSFL Area JV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group b	Location ID 133
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-15-10/1055	Date/Time Total Depth Reached 12-15-10/1101
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20299) (1100)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/12/14		

Radiological Background 0.0, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'			0.0	14	<p>Sand with silt and rock fragments, (10 YR, 5/4), brown, 70% fine grained subrounded sand, 25% silt, 5% rock fragments (fill and asphalt), dry, loose, common rootlets, no odor.</p> <p>No groundwater encountered.</p> <p>TD = 0.5' bgs</p>	SM	

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5b, Group 6	Location ID 134
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/15/10, 1050	Date/Time Total Depth Reached 12/15/10, 1057
Type of Sampling Device trowel/shovel	Samples Collected 20300, 1055 (2) 1/2 gal bags		
Geologist P. Scream	Checked by/Date [Signature] 5/12/11		

Radiological Background (10) 0.0 ppm, 16 ppb	Radiological Equipment Used M/R meter	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5				0.2 15	<p>silty sand, yellowish brown (10 YR 5/6), moist loose, 35% silt, 65% fine sand, common rootlets, no odor</p> <p>TD 0.5'</p> <p>GW ⊗ not encountered</p>	SM		



BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5b, Group 6	Location ID 135
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/15/10, 1105	Date/Time Total Depth Reached 12/15/10, 1115
Type of Sampling Device trowel/shovel	Samples Collected 20301, 1110 (2) 1/2 gal bags		
Geologist P. Sweeney	Checked by/Date <i>[Signature]</i> 5/24/11		

Radiological Background 0.0ppm, 14 ne	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.0ppm)
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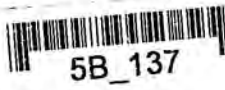
(PID)

Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5			0	14	poorly graded sand w/ silt, dark yellowish brown (w/ 4/16), moist, med. dense, 85% fine sand, 15% silt fines, common rootlets, no odor.	SP-SM		
					to 0.5'			
					GW ⌀ No GW encountered			

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID S6, Group 6	Location ID 136
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/15/10, 1340	Date/Time Total Depth Reached 12/15/10, 1350
Type of Sampling Device trowel/shovel	Samples Collected 20302, 1345 (2) 1/2 gal bags		
Geologist P. SKEAM	Checked by/Date <i>[Signature]</i> 5/12/11		

(PID) 1.6, 1.5 Radiological Background Radiological Equipment Used PID Used Mini Rae 2000 (Background = 1.6 ppm)

Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
0.5'				16 15	<p>Silty sand w/ clay, very dark greyish brown (10YR 3/2), moist, med. dense, 35% silt, 50% fine sand, 15% clay, no odor</p> <hr/> <p>3" of asphalt @ surface</p> <p>to 0.5'</p> <p>GW & NO GW encountered</p>	SM	



BORING LOG

Sheet 1 of 1

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 137
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 1-6-11/0955	Date/Time Total Depth Reached 1-6-11/1001
Type of Sampling Device trowel/shovel		Samples Collected 2 1/2 gall bags (#20081)(1000)	
Geologist C. Carmichael		Checked by/Date <i>[Signature]</i> 5/12/11	

Radiological Background 0.0, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background=0.0ppm)
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(PID)

Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'				0.0 15	Sandy silt, (10 YR, 4/3) brown, 60% silt, 40% fine grained, subrounded sand, mottled texture with weakly cemented weathered sandstone (10 YR, 4/6) medium ^{cc} soft, dry, no odor.	ML		
					No groundwater encountered.			



BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID: 5B, group 2	Location ID: 138
Drilling Company: HGL	Driller: P. Skeath	Ground Elevation: NA	Total Drilled Depth: 0.5'
Drilling Equipment: trowel/shovel	Borehole Diameter: NA	Date/Time Drilling Started: 2-11-11/0952	Date/Time Total Depth Reached: 2-11-11/1008
Type of Sampling Device: trowel/shovel	Samples Collected: 2 1/2 gall bags (#20163) (1005)		
Geologist: C. Carmichael	Checked by/Date: <i>[Signature]</i> 5/12/11		

Radiological Background: 12	Radiological Equipment Used: up R meter	PID Used: Mini Rae 2000 (Background = 0.1 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'				0.114	Silty sand, (10YR, 4/2), brown, 70% fine to medium grained subrounded sand, 30% silt, moist, medium dense, no plasticity, hardness or odor. 2-3" of asphalt on top. No groundwater encountered.	SM		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 3	Location ID 139
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-13-10/1103	Date/Time Total Depth Reached 12-13-10/1110
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gallon bags (#20200)(1110)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/2/11		

Radiological Background CPD 0.0, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'			0.0	14	Clayey silt with sand, (10 YR, 3/2), dark brown, 70% silt, 25% clay, 5% fine grained subrounded sand, rootlets common, low-medium plasticity and toughness, piece of black plastic found while digging. No groundwater reached.	ML		



Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B/Group 6	Location ID 140
Drilling Company HGL	Driller P. Skeath	Ground Elevation NA	Total Drilled Depth 0.5' 1'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 1/4/11/0907	Date/Time Total Depth Reached 1/4/11/0914
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20303) (0912)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/12/11		

Radiological Background (CPD) 0.0, 15	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (background = 0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'			0.0	15	Top 6" is made up of cobble / small boulders.		
1'					Sand with silt, (10 YR, 4/3); brown, 80% subrounded fine to medium grained sand, 20% silt, some rootlets, loose, moist, no odor. Groundwater reached at 1' depth.	SW SM	

Project Name: SSEL Area IV Radiological Study		Project Number: EP9038.01.22.04.03	Subarea ID: 5B, group 6	Location ID: 141				
Drilling Company: HGL		Driller: P. Skeath	Ground Elevation: NA	Total Drilled Depth: 0.5'				
Drilling Equipment: trowel/shovel		Borehole Diameter: NA	Date/Time Drilling Started: 2-11-11/1409	Date/Time Total Depth Reached: 2-11-11/1420				
Type of Sampling Device: trowel/shovel		Samples Collected: 2 1/2 gall bags (#20304) (1420)						
Geologist: C. Carmichael		Checked by/Date: <i>[Signature]</i> 5/12/11						
Radiological Background: 16		Radiological Equipment Used: up R meter		PID Used: Mini Rae 2000 (Background=0.0 ppm)				
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			0.1	14	Sandy silt, (10YR, 4/4), brown, 70% silt, 30% fine grained sand, trace gravel (fill, sandstone), dry, medium stiff, some rootlets, low hardness, no plasticity or odor. No groundwater encountered.	ML		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group b	Location ID 142
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-14-10/ 1055	Date/Time Total Depth Reached 12-14-10/ 1108
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20306) (1100)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/12/11		

Radiological Background 0.0, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background=0.0 ppm)
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Depth (ft)	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'			0.0	16	Silty sand, (10 YR, 4/4), brown, 70% fine grained, subrounded sand, 30% silt, dry, loose, common rootlets, no odor. NO GW encountered	SM		

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B; group b	Location ID 142
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 2.5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1-21-11/1010	Date/Time Total Depth Reached 1-21-11/1046
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags (#20305)(1045)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/12/11		

Radiological Background D.O., 2954, 65	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	CPID	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)	
			60		Silty sand; (10 YR, 4/6) reddish-brown (tinting from iron-oxide), 60% fine grained subrounded sand, 40% silt, dry, medium dense, trace gravel (siltstone), some rootlets in top 3", no odor, no plasticity or hardness.	SM	8.5	2415	
			70				4124	0	2713
			60		Sand, (10 YR, 6/4), beige, 100% fine to medium grained subrounded sand, dry, medium dense	SW		4928	
			65				4993		
			75				4970		
					Refusal hit at 2.5'				
					No Gw encountered				



BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 6	Location ID 143
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-14-10/1118	Date/Time Total Depth Reached 12-14-10/1119
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20308) (1118)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/12/11		

Radiological Background (p) 0.0, 13	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (background = 0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches (CPM)</small>
0.5'			0.0	14	Silty sand with rock fragments, (10 YR, 4/4), 65% sand - fine grained, subangular, 30% silt, 5% rock fragments (sandstone), few rootlets, dry, medium dense. No Gw encountered	SM	



5B_144



BORING LOG

Sheet 1 of 1

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 7	Location ID 144
Drilling Company HGL	Driller P. Skeath	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 2-11-11/1038	Date/Time Total Depth Reached 2-11-11/1048
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (# 20331) (1048)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/12/11		

Radiological Background 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (background=0.1 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings <small>(CPM)</small>
0.5'				0.114	Silty sand, (10 YR, 5/4 to 4/3), brown, 65% fine to coarse grained sand, 30% silt, 5% gravel (fill rock, sandstone, asphalt), moist, medium dense, no plasticity, hardness, or odor. 2" of asphalt on top. No groundwater encountered.	SM		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B, 7	Location ID 145
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 7ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 12/22/10 1402	Date/Time Total Depth Reached 12/22/10 1410
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20332-1425 (2) 1/2 gallon bags		
Geologist I. Stone	Checked by/Date <i>[Signature]</i> 5/22/11		

56 Radiological Background #2.0 / 2373	Radiological Equipment Used Parcake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches to 0.5 = 2284 (CPM)
			0.0	35	Asphalt		3111
			0.0	62	Sandy silt, dark yellowish brown (4/4 10XR) 60% silt, 40% fine sand, trace gravel, dry, low tough, low strength, no odor or stain	ML	4770
1			0.0	81	Silty sand, dark yellowish brown		3080
			0.0	49	75% fine sand, 35% silt, trace gravel, dry, mud dense, no odor or staining.	SM	5359
2			0.0	57			5292
			0.0	73			5498
3			0.0	94	Sandy silt, dark grayish brown	ML	5387
			0.0	51	70% silt, 30% fine sand, trace gravel dry-moist, low tough, low strength, no odor or staining.		5377
4			0.0	64			5409
			0.0	56			5269
5			0.0	69			5003
			0.0	10			5161
6			0.0	32			5174

Radiological Background				Project Name	Project Number	Location	
56/2373				SSFL Area IV Radiological Study	EP9038.01.22.04.03	SB, 7, 145	
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings
							Inches
0			0.0	32	<p>Silty Sand, ^{to 15} 65% fine sand, 35% silt, dry, medium dense, ^{no odor or staining}</p> <hr/> <p>80% fine sand, 20% silt, low dense</p>	SM	5174
			0.0	60			5115
7			0.0	55			4977
					TD = 7ft bgs no gw encountered		



5B_146



BORING LOG

Sheet 1 of 2

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 7	Location ID 146
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 7.0'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/4/11 1025	Date/Time Total Depth Reached 1/4/11 1100
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected (2) 1/2 gallon bag	DUPS: 20541 (MS) 1030 20539 (lab DUP) 1030 20540 (field DUP) -10 time	
Geologist C. Knight	Checked by/Date <i>[Signature]</i> 5/12/11		

Radiological Background (cpm) 49 / 2165	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 1.1 cpm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.1	90	3" Asphalt surface		1912
			0.2	75	Fill		2183
0.5			0.3	45	AF/silty sand; Brown (10Y 3/4), moist, loose to medium dense, no odor, 5% coarse, 15% medium sand, 35% silt, 45% 55% (FS)	AF Sm	3552
1.0			0.3	70	fine sand, mottled w/ silt and poorly graded sand pockets, trace fine gravel, recovered last 2.5' of section and material easy to push through		4667
			0.3	70			4935
			0.3	75			5034
2.0			0.3	60			5080
			0.3	85			5112
			0.3	66			5019
			0.3	70			5030
4.0			0.3	60			4912
			0.3	90	Some at a time	SM	4968
			0.3	90			4931
6.0			0.3	66			4471

Radiological Background 44/2165				Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 146 513	
Depth	Interval	Recovery	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>		USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
6.0			0.7	65	Same as above	SM	4971
			0.3	85	Bedrock Sandstone (Kcs), light yellowish brown (10YR 2/3), moist, dense to very dense, no odor, fine to medium grained sandstone, trace coarse sand, trace Iron Oxide staining		4983
7.0			0.3	108	refusal @ 7.0' bgs TD: 7.0' bgs No GW encountered		4922
8.0							
9.0							
10.0							

BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5b, Group 7	Location ID 147
Drilling Company HGL	Driller R. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/16/10, 0840	Date/Time Total Depth Reached 12/16/10, 0850
Type of Sampling Device trowel/shovel	Samples Collected 20324, 0845 (2) 1/2 gal bag		
Geologist P. Sneath	Checked by/Date <i>[Signature]</i> 5/12/11		

Radiological Background 0.0 ppm 15 uR	Radiological Equipment Used AP R meter	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0.5'			0	15	silty sand, dark brown (10 YR 3/3), moist, loose, 30% silt, 70% f. sand, trace rocklets no odor 2" asphalt TO 0.5' No GW	SN	

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B; group 7	Location ID 148
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 5.5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1-25-11/1041	Date/Time Total Depth Reached 1-25-11/1135
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags (#20335)(1130)		
Geologist C. Carmichael	Checked by/Date [Signature] 5/12/11		

Radiological Background 0.0, 2622, 38	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rac 2000 (Background = 0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
			0.0	30	0.25' Asphalt (top 3")		0.5	2542
			0.0	70	Silt (10YR, 3/4), dark brown, 90% silt, 10% fine grained sand, semi-moist, medium stiff, low plasticity, low hardness, trace asphalt pieces, no odor.	ML		4633
				45	Silt with sand (10YR, 5/6), 80% silt, 20% fine grained subrounded sand, reddish-brown, speckled texture, no plasticity, low hardness, no odor, semi-moist, medium stiff.	ML		5053
				65				4948
2'				70				5046
				70				5012
3'				70				5210
				75				4887
				3.75'				
4'				55	Sandy silt (10 YR, 5/6), reddish-brown, 60% silt, 40% fine to medium grained subrounded sand; no plasticity, very low hardness, no odor, semi-moist, medium stiff.	ML		5110
				80				5508
5'				85				5345
				70	Sand with rock fragments, (10 YR, 7/4), beige, 80% fine to medium grained subangular sand, 20% rock fragments (sandstone), dry, medium dense, no odor.	SW		5474
6'					Refusal hit at 5.5' No GW encountered			

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID SB, group 7	Location ID 149
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-15-10/1540	Date/Time Total Depth Reached 12-15-10/1545
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20337) (1545)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/12/11		

Radiological Background (ppm) 0.0, 14	Radiological Equipment Used M R meter	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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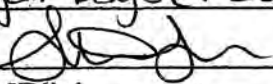
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'			0.0	14	Silty sand with gravel, (10 VR, 4/4), brown, 55% fine grained subrounded sand, 35% silt, 10% pea gravel, rootlets common, dry, medium dense, no odor. No groundwater encountered.	SM	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B / Group 7	Location ID 149
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 45'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1-25-11/1327	Date/Time Total Depth Reached 1-25-11/1415
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags (#20336) (1410)		
Geologist C. Carmichael	Checked by/Date [Signature] 5/12/11		

Radiological Background 0.0, 2829, 61	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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(PID)

Depth Interval	Recovery	PID	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
						Inches	(CPM)
			65			0.5	2455
1'			60	Silty sand, (10 YR, 4/4), brown, 70% fine grained subrounded sand, 30% silt, dry, medium dense, no hardness or plasticity, no odor, some rootlets in top 3"	SM		
			60				4591
			70	Silt with sand, (10 YR, 3/4), dark brown, 80% silt, 20% fine grained sand, moist, soft, no plasticity, very low hardness, no odor.	ML		
			70				4761
2'			55	2.25' Gradational Contact			
			65	Silt with sand (same as above, except 5% clay, 75% silt, 20% fine grained sand, dry)			
			50				5094
3'			60	3.5'			
			50	Sand (10 YR, 7/4), beige, 100% fine to medium grained subangular sand, dry, dense, no hardness or plasticity, no odor.	SW		
			60				5538
4'			60				5461
			60				5395
			50				5210
			60				5227
5'				Refusal hit at 4.5'			
				No Gw encountered			

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID 5B, group 7		Location ID 150	
Drilling Company HGL		Driller H. Thompson		Ground Elevation NA		Total Drilled Depth 0.5'	
Drilling Equipment trowel/shovel		Borehole Diameter NA		Date/Time Drilling Started 12-15-10/1507		Date/Time Total Depth Reached 12-15-10/1521	
Type of Sampling Device trowel/shovel		Samples Collected DMPs: 20529 (HS), 20527 (lab dup), 20528 (Field dup - no time) 2 1/2 gall bags (#20339) (1520)					
Geologist C. Carmichael				Checked by/Date  5/12/11			
Radiological Background (p) 0.0, 14			Radiological Equipment Used up R meter			PID Used Mini Rae 2000 (Background = 0.0cpm)	
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
0.5'			0.0	14	Silty sand with gravel, (10 YR, 4/4), brown, 60% fine grained subrounded sand, 30% silt, 10% pea gravel, dry, medium dense, rootlets common, no odor. No groundwater encountered.	SM	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B; group 7	Location ID 150
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1-25-11/ 1442	Date/Time Total Depth Reached 1-25-11/ 1524
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags (#20338) (1520)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/12/11		

Radiological Background 0.0, 2869, 52	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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(50)

Depth	Interval	Recovery	DPR	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings		
							Inches	(CPM)	
			0.0	45			0.5	1545	
1'			0.0	40	Silty sand, (10 YR, 4/4), brown, 65% fine grained sand, 35% silt, trace rootlets in top 2", dry, medium dense, no plasticity, very low hardness, no odor.	SM			
				65				4438	
				1.25'				4964	
2'				75	Silt with sand, (10 YR, 3/3), dark brown, 75% silt, 25% fine grained sand, moist, medium stiff, low plasticity and hardness, no odor.	ML			
				75				4990	
				70				5079	
3'				50	Same as above, except dry.				
				45				4958	
				55				4976	
4'				55	Sand, (10 YR, 6/6), beige, 100% fine to medium grained subangular sand, dry, dense, no odor.	SW			
				4.25'				5181	
				55				5136	
5'				65	Refusal hit at 5' No GW encountered				
							5004		

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B; Group 7	Location ID 151
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 8'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/24/11 / 1234	Date/Time Total Depth Reached 1/24/11 / 1245
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags, 20340		ID 20340 / Time = 1315
Geologist Stephanie Lepeye Montrose	Checked by/Date TBN 5/24/11		

Radiological Background 64 / 2516	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rae 2000 (Background=0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches +0.5 = 2538 (CPM)</small>
0.0	0-7"	SM	0.0	58	SAND with silt 70% fine-grained sand (brown 10YR 5/4) plant material (roots & grass) 10% clay, 20% silt low plasticity, soft, dry	SM	0.0 = 2725
0.0	7"-1'7"	SC	0.0	65	clay SAND 25% clay, 15% silt, 60% (dark brown 10YR 3/3) fine-med. grained sand low plasticity, very soft, dry	SC	0.5 = 4098
1.0	1'7" - 3'1"	SC	0.0	63	clay SAND (dark brown 10YR 3/3) 40% clay, 10% silt, 50% fine-med. grained sand med. plasticity, hard, dry	SC	1.0 = 4864
2.0	3'1" - 5'	No Recovery	0.0	70			1.5 = 5121
3.0	5' - 8'3"	SC	0.0	68	clayey SAND (dark brown 10YR 3/3) 40% clay, 10% silt, 50% fine-med. grained sand med. plasticity, hard, dry	SC	2.0 = 5108
4.0	8'3" - 7'11"	SP	0.0	38	SAND 15% clay, 15% silt, 70% fine-med. grained sand low plasticity, very soft, dense, dry	SP	2.5 = 4943
5.0			0.0	52			3.0 = 4974
			0.0	50			3.5 = 4939
			0.0	63			4.0 = 4882
			0.0	60			4.5 = 4841
			0.0	67			5.0 = 4862
			0.0	53			5.5 = 4997

Radiological Background				Project Name	Project Number	Location	
64 / 2516				SSFE Area IV Radiological Study	EP9038.01.22.04.03	151	
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings
							Inches (CPM)
6.0		0.0	63		<p>SP SAND (dark yellowish brown) 1042 4/4</p> <p>15% clay, 15% silt, 70% fine-med. grained sand</p> <p>low plasticity, very soft, dense, dry.</p> <p>Same as above</p>	SP	6.0 = 4918
		0.0	54			6.5 = 5161	
7.0		0.0	60			7.0 = 5252	
		0.0	67			7.5 = 5221	
8.0		0.0	65		<p>7'11" - 8' SC clayey SAND (light yellowish brown) 2.54 6/4</p> <p>25% clay, 15% silt, 60% fine grained sand (pieces of sandstone)</p> <p>low plasticity, soft, dry</p> <p>TD = 8' bgs</p> <p>NO GW encountered</p>	SC	8.0 = 5232
9.0							
10.0							

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B; Group 7	Location ID 152
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 10'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/24/11 / 1403	Date/Time Total Depth Reached 1/24/11 / 1414
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags, 20342	ID 20342 / time = 1445	
Geologist Stephanie Lopez-Monrose	Checked by/Date TBS 5/24/11		

Radiological Background 65 / 2835	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rae 2000 (Background = 0.0 cpm)
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Depth	Interval	Recovery	PID	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0.0	0.0	50			0'-8" SM sand with silt (brown 10YR 4/3) 70% fine-coarse grained sand, 10% clay, 20% silt plant material (roots & grass), low plasticity, soft, dry	SM	0.0 = 3732
0.0	0.0	70			8"-1'4" SC clayey sand with silt (dark brown 10YR 3/3) 25% clay, 20% silt, 55% fine-med. grained sand low plasticity, soft, dry (trace plant roots)	SC	0.5 = 4735
1.0	0.0	75			1'4"-2'4" SC clayey sand (very dark grayish brown 10YR 3/2) 30% clay, 15% silt, 55% fine-coarse grained sand moist, low plasticity, soft, dry trace gravel - subrounded	SC	1.0 = 4888
2.0	0.0	55			2'4"-3'5" SC clayey sand (very dark grayish brown 10YR 3/2) 40% clay, 10% silt, 50% fine grained sand med. plasticity, hard, dry	SC	1.5 = 5025
3.0	0.0	70					2.0 = 5021
3.0	0.0	70					2.5 = 5136
3.0	0.0	75					3.0 = 5148
3.0	0.0	75			3'5"-5' NO Recovery		3.5 = 4931
4.0	0.0	75					4.0 = 4942
4.0	0.0	75					4.5 = 5048
4.0	0.0	65					5.0 = 5044
5.0	0.0	80			5'-5'3" SC clayey sand (very dark grayish brown 10YR 3/2) 40% clay, 10% silt, 50% fine grained sand med. plasticity, hard, dry	SC	5.5 = 4983
5.0	0.0	65			5'3"-7' SC clayey sand with silt (dark yellowish brown 10YR 4/4) 30% clay, 25% silt, 45% fine grained sand med. plasticity, firm, dry	SC	

Radiological Background 65 / 2835				Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 152			
Depth	Interval	Recovery	PTD	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)	
6.0			0.0	55	Same as above			6.0 = 5063	
			0.0	60				6.5 = 5067	
7.0			0.0	60	7'-9'3" SC SAND with clay (dark yellowish brown) 20% clay, 15% silt, 65% fine-med. grained sand low plasticity, soft, dry 104R 4/4	SC		7.0 = 5054	
			0.0	75					7.5 = 5154
8.0			0.0	75					8.0 = 5311
			6.0	75					8.5 = 5141
9.0			0.0	70	9'3" - 10' NO Recovery			9.0 = 5236	
			0.0	65				9.5 = 5238	
10.0			0.0	55				10.0 = 5073	
TD = 10' BGS NO GW encountered									



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID: 5B, group 7	Location ID: 153
Drilling Company: HGL	Driller: H. Thompson	Ground Elevation: NA	Total Drilled Depth: 0.5'
Drilling Equipment: trowel/shovel	Borehole Diameter: NA	Date/Time Drilling Started: 12-15-10/1349	Date/Time Total Depth Reached: 12-15-10/1355
Type of Sampling Device: trowel/shovel	Samples Collected: 2 1/2 gall bags (#20344) (1355)		
Geologist: C. Carmichael	Checked by/Date: <i>[Signature]</i> 5/12/11		

Radiological Background: 0.0, 14	Radiological Equipment Used: up R meter	PID Used: Mini Rae 2000 (Background = 0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			0.0	14	<p>Silt with clay and sand</p> <p>Silty sand^{cc}, (10 YR, 5/4), brown, 55% fine grained sand, 45% silt^{cc}, common rootlets, dry, medium^{cc} dense, no odor^{cc}.</p> <p>70% silt, 20% clay, 10% fine grained, subrounded sand, moist, medium stiff, some rootlets, no odor.</p> <p>No groundwater encountered.</p>	SM ML		

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, Group 7	Location ID 153
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 7'3"
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/24/11 / 1527	Date/Time Total Depth Reached 1/24/11 / 1539
Type of Sampling Device 1 3/4" macrocore	Geologist Stephanie Lopez-Montrose	Samples Collected 2 1/2 gall bags, 20343	Time = 1605 @ 1605
Checked by/Date TJS 5/24/11			

Radiological Background 67 / 2473	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches + 0.5 = 2469 (CPM)
0.0	0-7"	75	0.0	75	SM SAND with silt (brown 10YR 4/3) 25% fine - coarse grained sand, 10% clay, 20% silt trace gravel - sub-angular (0-3" - plant material - roots & grass)	SM	0.0 = 2746
0.5	7"-15"	60	0.0	60	SM silty SAND (brown 10YR 4/3) 15% clay, 25% silt, 60% fine grained sand trace gravel - sub-angular low plasticity, soft, dry	SM	0.5 = 4237
1.0	15"-1'0"	70	0.0	70	SC SAND with clay (dark brown 10YR 3/3) 25% clay, 10% silt, 70% fine - med. grained sand low plasticity, soft, dry	SC	1.0 = 4975
2.0	1'0"-2'1"	70	0.0	70	SP SAND (brown 10YR 4/3) 15% clay, 15% silt, 70% fine - med. grained sand trace gravel - sub-angular, concrete debris, asphalt debris, low plasticity, soft, dry	SP	1.5 = 5096
3.0	2'1"-3'10"	65	0.0	65	SC clayey SAND (dark brown 10YR 3/3) 35% clay, 15% silt, 50% fine - med. grained sand, med. plasticity, firm	SC	2.0 = 5003
4.0	3'2"-4'3"	55	0.0	55	concrete debris		2.5 = 4971
5.0	4'3"-4'7"	60	0.0	60	SC clayey SAND (dark brown 10YR 3/3) 35% clay, 15% silt, 50% fine - med. grained sand med. plasticity, firm, dry	SC	3.0 = 5391
5.0	4'7"-5'	85	0.0	85	No Recovery		3.5 = 5701
5.0	5' - 5'2"	65	0.0	65	SC clayey SAND (dark brown 10YR 3/3) 35% clay, 15% silt, 50% fine - med. grained sand, med. plasticity, firm, dry	SC	4.0 = 5709
5.0	5'2"-6'4"	75	0.0	75	SC clayey SAND with silt (brownish yellow 10YR 6/6) 25% clay, 20% silt, 55% fine - coarse grained sand trace gravel - sub-angular & sub-rounded broken pieces of sandstone - well indurated sand low plasticity, soft, dry	SC	4.5 = 5810 5810

Radiological Background				Project Name	Project Number	Location	
67 / 2473				SSFL Area IV Radiological Study	EP9038.01.22.04.03	153	
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings
							Inches
6.0			0.0	75	Same as above	SC	6.0 = 6384
			0.0	80	6'4" - 6'5" Sandstone fine-med. grains (trace coarse)		6.5 = 6742
			0.0	85	6'5" - 7'3" NO Recovery		7.0 = 6594
					TD = 7'3" bgs (refusal)		7.5 = 8
					NO GW encountered		

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, Group 7	Location ID 154
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 6'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/24/11, /1007	Date/Time Total Depth Reached 1/24/11, /1018
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags, 20345	ID 20345 / time 1018	
Geologist Stephanie Lapeyre Montrose		Checked by/Date J. Stewart / 5/24/11	

Radiological Background 76 / 2568	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0.0	0.0	60			0' - 10" SM SAND with silt (brown 10YR 4/3) 70% fine to coarse grained sand, 10% clay, 20% silt dense, low plasticity, soft, dry	SM	0.0 = 2777 0.5 = 4054
1.0	1.0	60			10" - 1'6" SM silty SAND with clay (very dark grayish brown 10YR 3/2) 20% clay, 25% silt, 55% fine-med. grained sand moist, low plasticity, soft	SM	1.0 = 4759 1.5 = 4863
2.0	2.0	55			1'6" - 3'4" SC clayey SAND (brown 10YR 4/3) 35% clay, 15% silt, 45% fine grained sand med. plasticity, firm, dry	SC	2.0 = 4867 2.5 = 4831 3.0 = 5056
3.0	3.0	65			3'4" - 4'6" SP SAND (yellowish brown 10YR 5/6) 10% silt, 90% fine-med. grained sand non plastic, loose, dry	SP	3.5 = 5068 4.0 = 5142 4.5 = 5148
4.0	4.0	45			4'6" - 6' NO recovery		5.0 = 5201 5.5 = 5145 6.0 = 5108

TD = 6' bgs (refusal)
NO GW encountered

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 7	Location ID 155
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-15-10/1338	Date/Time Total Depth Reached 12-15-10/1343
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20347) (1343)		
Geologist C. Carmichael	Checked by/Date [Signature] 5/12/11		

Radiological Background (PID) 0.0, 14	Radiological Equipment Used AP R meter	PID Used Mini Rae 2000 (Background=0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			0.0	14	Silty sand, (10 YR, 4/4), brown, 60% fine grained, subrounded sand, 40% silt, common rootlets, dry, loose, no odor. No groundwater encountered.	SM		

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID / Group SB / 7		Location ID 155	
Drilling Company Hart Cascade		Driller M. Lopez		Ground Elevation NA		Total Drilled Depth 4 1/2'	
Drilling Equipment Geoprobe 6000 Trawl / shovel		Borehole Diameter 1 3/4"		Date/Time Drilling Started 1/24/11 10854		Date/Time Total Depth Reached 1/24/11 10901	
Type of Sampling Device Trawl / shovel 1 3/4" Macrocore				Samples Collected Sample 10 20346 / time 0935 (2) 1/2 gal bags / 4oz jar			
Geologist Stephanie Lapayn Montrose				Checked by/Date J.S.W. 5/24/11			
Radiological Background 70 / 2611		Radiological Equipment Used Pancake R. Factor / Downhole		PID Used Mini Rae 2000 (Background = 0.0 ppm)			
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches (CPM)</small>
			0.0	60	0'-1'5" SM SAND with silt (very dark grayish brown) 104R 3/2	SM	0.0 = 2736 0.5 = 5106
			0.0	70	10% clay, 20% silt, 70% fine-med grained sand plant material (grass, roots) low plasticity, very soft, dry, dense		1.0 = 4688
			0.0	55	1'5"-1'9" SC clayey sand (brown 104R 4/3)	SC	1.5 = 4831
			0.0	45	30% clay, 15% silt, 55% fine-med grained sand low plasticity, soft, dry		2.0 = 5130
			0.0	65	1'9" - 4'6" SP SAND (yellowish brown 104R 5/6)	SP	2.5 = 5302
			0.0	60	10% silt, 90% fine-med grained sand loose, non plastic, dry		3.0 = 5373
			0.0	70			3.5 = 5495
			0.0	55	3'3" same as above - color change to (brownish yellow 104R 6/6)	SP	4.00 = 5823
			0.0	85			4.5 = 6338
			0.0	90	TD = 4 1/2' bgs (refusal) No Gas encountered		



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 7	Location ID 156
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-15-10/1329	Date/Time Total Depth Reached 12-15-10/1335
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20349) (1335)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/12/11		

Radiological Background 0.0, 16	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (background = 0.0ppm)
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(PID)

Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'			0.0	15	Silty sand, (10 YR, 4/4), brown, moist, medium dense, 60% fine grained, subrounded sand, 40% silt, common rootlets, no odor. No groundwater encountered.	SM	

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B/Group 7	Location ID 156
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 6'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1-25-11/0839	Date/Time Total Depth Reached 1-25-11/0929
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags (#20348)(0925)	Geologist C. Carmichael	
Radiological Background D.O, 2858, 47		Radiological Equipment Used Pancake meter, Downhole scanner	
Checked by/Date <i>[Signature]</i> 5/12/11		PID Used Mini Ra2 2000 (Background = 0.0 ppm)	

Depth	Interval	Recovery	RFD	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
			0.0	40			0.5	2423
			00	55	Silt with sand, (10 YR, 3/2), dark brown, 85% silt, 15% fine grained subrounded sand, some rootlets, semi-moist, medium stiff, no odor.	ML	4664	
				65			5008	
				80			5285	
2'			60				5276	
				80			5318	
3'			70	3'	Silt with sand (same as above, except moist).		5464	
			55		Sandy silt with clay, (10 YR, 5/4), light greyish brown, 60% silt, 25% fine grained sand, 15% clay, dry, medium stiff, low hardness and low plasticity, no odor.	ML	5528	
4'			70				5507	
				65			5343	
5'			55	5'			5399	
			40		Sand with silt, (10 YR, 6/4), beige, 75% fine grained sand, 25% silt, semi-moist, dense, no hardness or plasticity, no odor.	SM	5856	
6'			3.9'		Sand, (10 YR, 6/6), beige, 100% fine grained, medium dense, dry, no odor.	SP	6110	

Refusal hit at 6'.
No GW encountered

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID & Group SB 7	Location ID 157			
Drilling Company Boart Longyear		Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 9 ft			
Drilling Equipment Geoprobe 6600		Borehole Diameter 1 3/4"	Date/Time Drilling Started 12/22/10 0923	Date/Time Total Depth Reached 12/22/10 0930			
Type of Sampling Device 1 3/4" macrocore acetate liner			Samples Collected 20350 - 0950 (2) 1/2 gallon bags				
Geologist J. Stone			Checked by/Date <i>[Signature]</i> 5/12/11				
Radiological Background 60 / 2483		Radiological Equipment Used Paracake / Downhole		PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)			
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>0.5" 2259 (CPM)</small>
1			0.1	41	ASPHALT		3123
			0.1	53	Silty SAND, Dark yellowish brown (4/4 10YR)		4785
1			0.1	47	65% fine sand, 35% silt, trace fine gravel, dry, med dense, no odor or staining	SM	5518
			0.1	43			5319
2			0.1	68			5719 5253
			0.1	85			5255 5395
3			0.1	61	Sandy SILT, Dark Greenish Gray (GLE 2.4/10Y) 60% silt silt, 30% 40% fine sand, trace fine gravel, low toughness, low strength, dry.	ML	5395 5433
			0.1	42			5433 5483
4			0.1	59			5483 5435
			0.1	22			color change: very dark greenish gray (3/10Y GLE 4 1)
5			0.1	46	70% silt, 30% fine sand		5586 5579
			0.1	37			5579 5415
6			0.1	52			5415 5319

Radiological Background 60 / 2483				Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location SB, 7, 157	
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole
							Gamma Readings (CPM)
6			0.1	52	Silty-LS Sandy silt. continued Same as above	ML	5019
			0.2	87			5240
7			0.2	92			5230
			0.2	64			5237
8			0.1	48	S. lty. SAND, yellowish brown (5/4 10YR), 75% fine sand, 25% silt, dry, low dense, no odor or staining.	SM	5178
			0.1	33			5109
9			0.1	45	TO=9ft bgs no gw encountered		5065

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group S13 7	Location ID 158
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 6.5 ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 12/22/10 1116	Date/Time Total Depth Reached 12/22/10 1123
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20351-1150 125 1/2 gallon bags		
Geologist I. Stone	Checked by/Date [Signature] 5/27/11		

Radiological Background SS / 2341	Radiological Equipment Used Paracake / Downhole	PID Used Mini RAE 2000 (Bkg d: 1.2 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches = 2329 (CPM)
			1.2	20	ASPHALT (3")		3375
			1.2	30	Sandy SILT, Brown ^{IS} Dark yellowish brown (4/6 10YR) 65% silt, 35% fine sand, trace fine gravel, 10% ^{ML} dry, low toughness, low strength, no odor or staining		4976
1			1.2	60	Silty Clay, Dark grayish brown (4/2 10YR) 60% clay, 40% 35% silt, 5% fine sand, med ^{CL} tough		5252
			1.2	67	Sandy silt, Brown ^{IS} Dark yellowish brown (4/6 10YR) 70% silt, 30% fine sand, dry, low tough, low strength, no odor or staining	^{ML}	5529
2			1.2	34			5139
			1.2	57	Silty SAND, Yellowish ^{IS} Dark yellowish brown (4/6 10YR) 65% fine sand, 35% silt, dry, med SM dense		5350
3			1.2	76	Silty Clay, Dark brown (3/3 10YR) 70% clay, 30% silt, med-high tough, ^{CL} strength		5333
			1.2	49	Sandy silt, Dark grayish brown (4/2 10YR) 65% silt, 35% fine sand, dry, low strength, low tough, no odor or staining	^{ML}	5388
4			1.2	70			5329
			1.2	56			5308
5			1.2	82			5262
			1.2	73	Sandstone cobble		5567
6			1.2	57			5441

Radiological Background				Project Name	Project Number	Location	
SS / 2341				SSFL Area IV Radiological Study	EP9038.01.22.04.03	SB, 7, 158	
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole
							Gamma Readings <small>(CPM)</small>
			62	62	Silty SAND, yellowish brown (5/8 100%)	SM	5441
			70	70	75% fine sand, 25% silt, dry, high dense (weathered sandstone) no odor or staining		5212
7					TD = 6.5' bgs No GW encountered		



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B / 8	Location ID 159
Drilling Company HGL	Driller D. Rivora	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/28/10 35	Date/Time Total Depth Reached 12/28/10 35
Type of Sampling Device trowel/shovel	Samples Collected 20375, 1040 (2) 1/2 gal bags, (1) 4 oz. jar		
Geologist C. Knight P. Srean	Checked by/Date 5/12/11		

Radiological Background 90m, 13 mR	Radiological Equipment Used M R meter	PID Used Mini Rae 2000 (Background = 0.0ppm)
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(PID)

Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings (CPM)
0.25			0	13	sandy silt w/ clay, dark brown (10YR 3/2) moist, soft, 35% fine sand, 15% clay, 50% silt, some roots, no odor	ml	
0.5					TO 0.5' NO GW		

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB 8	Location ID 159
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 9'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2/4/11 1039	Date/Time Total Depth Reached 2/4/11 11045
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 10 20374 (2) 1/2 gallon bags Time: 1125		
Geologist Stephanie Leperey Monroe	Checked by/Date TBW 5/24/11		

Radiological Background 62 / 2509	Radiological Equipment Used Pencate / Downhole	PID Used Mini RAE 2000 (Bkqd: 0.1 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.1	49	0-10" SM silty sand with clay (brown 10YR 4/3)	SM	+0.5 = 2639 (CPM)
			0.1	52	20% clay, 25% silt, 55% fine grained sand low plasticity, soft, dry		0.0 = 2743
			0.1	53	10"-2'9" SC clayey sand (brown 10YR 4/3)	SC	0.5 = 4189
			0.1	66	20% silt, 30% clay, 50% fine-med. grained sand, med. plasticity, firm dry		1.0 = 4818
			0.2	36			1.5 = 5114
			0.2	53			2.0 = 5050
			0.2	53			2.5 = 4933
			0.2	43	2'9"-4'9" SC clayey sand (yellowish brown 10YR 5/4)	SC	3.0 = 4883
			0.2	93	15% silt, 25% clay, 60% fine-med. grained sand, low plasticity, soft, moist		3.5 = 4968
			0.2	56			4.0 = 5093
			0.2	77			4.5 = 5231
			0.2	50	4'9"-5' NO Recovery		5.0 = 5131
			0.2	65	5'-6'11" SM SAND with silt (light yellowish brown) 2.5Y 6/3	SM	5.5 = 5232
					20% silt, 15% clay, 65% fine grained sand low plasticity, very soft, dry		

Radiological Background 62 / 2509				Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 159	
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole
							Gamma Readings (CPM)
6.0			0.2	110	6'1" - 7'3" SM silty SAND (light yellowish brown 2.54 6/3) 10% clay, 40% silt, 50% fine-med. grained sand low plasticity, soft, dry	SM	6.0 = 5142
			0.2	68	6'8" - 7'3" damp		6.5 = 5051
7.0			0.2	58	7'2" - 8'5" SM silty SAND (light olive brown 2.5 4 5/3) wet saturated	SM	7.0 = 5217
			0.2	110	7'3" - 8'5" 30% silt, 10% clay, 60% fine-coarse grained sand, low plasticity, soft		7.5 = 5120
8.0			0.2	80			8.0 = 5128
			0.2	70	8'5" - 8'7" SC clayey SAND (grayish brown 2.54) 30% clay, 15% silt, 55% fine-med. grained sand, low-med. plasticity, firm, clay-moist	SC	8.5 = 5272
9.0			0.2	52	8'7" - 9' NO Recovery		9.0 = 5565
					TD = 9' bgs (refusal)		
					7'3" - 8'5" GW		

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B / 8	Location ID 161
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-17-10 / 0655	Date/Time Total Depth Reached 12-17-10 / 1005
Type of Sampling Device trowel/shovel	Samples Collected 20379 (1000) 2 1/2 gal bags		
Geologist C. Knight	Checked by/Date [Signature] 5/19/11		

15 Radiological Background NR Radiological Equipment Used up R meter PID Used Mini Rae 2000 (Background=12 ppm)

Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.25			15	12	Silt w/ sand: dark yellowish brown (10YR4/6), moist, loose, no odor, 10% angular sandstone gravel, 25% fine to medium sand, 65% silt, trace roots	ML		
0.5			40		FD: 0.5 No G.W. encountered			

BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B / 8	Location ID 162
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-17-10 / 0950	Date/Time Total Depth Reached 12-17-10 / 0950
Type of Sampling Device trowel/shovel	Samples Collected 20381 (0945) 2 - 1/2 gal bags		
Geologist C. Knight	Checked by/Date <i>[Signature]</i> 5/19/11		

Radiological Background NR	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 7.3 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches (CPM)</small>
0.15				9.2 / 13	Silt; dark yellowish brown (10YR 4/1), moist, no odor, 10% fine sand, 10% angular sandstone gravel, 10% clay, 70% silt, no cohesive, trace rootlets, green top pieces	AF / ML	
0.5					MLW encountered TD: 0.5'		

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 165
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 6'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2-4-11/0850	Date/Time Total Depth Reached 2-4-11/1014
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags (#20384) (1010)	Geologist C. Carmichael	
Radiological Background 67, 2657cpm		Radiological Equipment Used Pancake meter, Downhole scanner	

PID Used Mini Rae 2000 (Background=0.0ppm)

Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
			0.0	50			0.5	2411
			0.0	70	Sand with silt, (10YR, 4/4), brown, 85% fine to medium grained sand, 15% silt, dry, medium dense, trace rootlets in top 1", trace 0.25" pieces of charcoal in top 1', no plasticity or hardness, no odor.	SM		
1'				75				
				50				
2'				50				
				55				
				55	Black tinted band of soil around 3' depth.			
3'				55	Sandy silt, (10YR, 4/3), brown, 60% silt, 40% fine to medium grained sand, semi-moist, medium stiff, very low hardness, no plasticity, no odor.	ML		
				70				
				75	Clayey sand with silt, (10YR, 4/4), 55% fine to medium grained sand, 30% clay, 15% silt, speckled texture (with iron-oxide tinting), dry, stiff & dense, medium-low hardness, very low plasticity, no odor.	SM @ SC		
4'				80				
				65	Clayey sand, (10YR, 7/4), greyish-beige, 55% fine grained sand, 45% clay, laminated texture, dry, dense, no odor, low-medium hardness, low plasticity. (bedrock - semi-weathered)	SM @ SC		
5'				50				
				65				
6'				65				

TD=6' bgs
No GW encountered



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B / 8	Location ID 166
Drilling Company HGL	Driller D. Rivon	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-17-10 / 1040	Date/Time Total Depth Reached 12-17-10 / 1050
Type of Sampling Device trowel/shovel	Samples Collected 20386 (1045) 2-1/2 seal bags		
Geologist C. Knight	Checked by/Date <i>[Signature]</i> 5/12/11		

Radiological Background 15 mR	Radiological Equipment Used MP R meter	PID Used Mini Rae 2000 (Background = 17cpm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.25					silt w/ sand = Brown (10YR5/3), moist, loose, no odor, 10% clay, 5% gravel, 25% fine sand, 60% silt, trace rustlets NO GW encountered TP: 0.5'		
0.5							

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 166
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 2.5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2-4-11/1030	Date/Time Total Depth Reached 2-4-11/1100
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags (#20385) (1058)		
Geologist C. Carmichael	Checked by/Date [Signature] 5/12/11		

Radiological Background 44,3047 cpm	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Ra2 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
			0.0	80				0.5-3008
			0.0	75	Sandy silt, (10YR, 4/3) brown, 65% silt, 35% fine to medium grained sand, rootlets common in top 6", dry, soft, very low hardness, no plasticity, no odor.	ML		0-3311
				65				
				85	1.5'			
				85	Sand, (10YR, 5/6), light orange-ish brown, 100% fine to coarse grained sub-angular sand (somewhat cemented), dry, medium dense, no odor	SW		
				70	(Weathered sandstone bedrock)			
					Refusal hit at 2.5'			
					NO Gw encountered			

Project Name: SSFL Area IV Radiological Study	Project Number EP2038.01.22.04.03	Subarea ID 5B, group 8	Location ID 168
Drilling Company HGL	Driller P. Skeath	Ground Elevation NA	Total Drilled Depth 6.5'
Drilling Equipment hand auger	Borehole Diameter 3"	Date/Time Drilling Started 2-8-11/1036	Date/Time Total Depth Reached 2-8-11/1151
Type of Sampling Device hand auger	Samples Collected 2 1/2 gall bags (#20388) (1150)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/19/11		

Radiological Background 58, 2956 cpm	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rac 2000 (Background=0.1 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
			0.1	65			05	2757
1'			0.1	65	Sand with silt, (10 YR, 4/4), brown, 75% fine to medium grained subrounded sand, 25% silt, dry, loose, trace rootlets, no hardness or plasticity, no odor.	SM		
			0.1	80	Piece of plastic found.			
			0.1	60				
2'			0.1	100	Silt with sand, (10 YR, 3/3), dark brown, 80% silt, 20% fine to medium grained subrounded sand, semi-moist, medium stiff, low hardness, no plasticity, no odor.	ML		
			0.2	65				
			0.1	85				
			0.1	85				
3'			0.1	75	Clayey sand, (10 YR, 3/6), reddish-brown, 65% fine to medium grained subrounded sand, 30% clay, 5% silt, dry, dense, low-medium hardness, no plasticity, no odor.	SM @ SC		
			0.1	80				
			0.1	65	Sand with clay, (10 YR, 5/4) light brown, 80% fine to medium grained sand, 15% clay, 5% silt, calcrete inclusions (probable), dry, medium dense, no plasticity or hardness, no odor.	SM @ SC		
			0.1	100				
			0.1	55				
4'					(same as above)			
			0.1	90				

TD=6.5' bgs
in 2' encountered



BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5b, Group 8	Location ID 169
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/16/10, 1330	Date/Time Total Depth Reached 12/16/10, 1340
Type of Sampling Device trowel/shovel	Samples Collected 20390, 1335 (2) 1/2 gal bags		
Geologist P. Smith	Checked by/Date [Signature] 5/12/11		

Radiological Background 15 p.p.m. 0.0ppm	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background=0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0-5			0	15	silt, dark brown (10YR 3/3), dry, soft, 80% silt, 20% sand & clay, common rootlets, no odor TD 0.5 No GW			



BORING LOG

Sheet 1 of 1

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B / 8	Location ID 170
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 2'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2/2/11 / 1013	Date/Time Total Depth Reached 2/2/11 / 1018
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 1D = 20391 / time 1035 (2) 1/2 gallon bags		
Geologist Stephane Leperey Montrose	Checked by/Date TBW 5/25/11		

Radiological Background 59 / 2650	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.10 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches (CPM)</small>
			0.0	67	0-2" SM silty sand with clay (brown 10YR 4/3) 20% clay, 25% silt, 55% fine grained sand, low plasticity, soft, dry	SM	0.0 = 2764
			0.0	90	3"-7" SP SAND 10% silt, 90% fine med. grained sand, loose, dry (brownish yellow 10YR 6/6)	SP	0.5 = 3944
			0.0	119	7"-9" SM SM silty sand with clay (brown 10YR 4/3) 20% clay, 25% silt, 55% fine med. grained sand, low plasticity, soft, dry	SM	1.0 = 4667
			0.0	129	9"-11" SP SAND - 10% silt, 90% fine med. grained sand, loose, dry (brownish yellow 10YR 6/6) 11"-12" SM silty sand with clay (brown 10YR 4/3) soft, dry 12"-2' SP SAND (brownish yellow 10YR 6/6)	SM	1.5 = 4826
			0.0	129	10% silt, 90% fine med. grained sand non plastic, loose, dry	SP	2.0 = 4972
			0.0	95	TD = 2' bgs (refused) NO GW encountered		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B / 8	Location ID 171
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 2'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2/2/11 / 1122	Date/Time Total Depth Reached 2/2/11 / 1127
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 10 20392 / Ave: 1150 (2) 1/2 gallon bags		
Geologist Stephanie Lepeye Montrose	Checked by/Date Dew 5/25/11		

Radiological Background S7 / 2781	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkqd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	168	0-11" Silty sand with clay (brown 10YR 4/3) plant material (roots + grass)		0.0 = 3039
			0.0	99	0-3" 20% clay, 25% silt, 55% fine-med. grained sand low plasticity, soft, dry	SM	0.5 = 4305
1.0			0.0	46	11"-2'10" SP SAND (brownish yellow 10YR 6/6)		1.0 = 4820
			0.0	153	10% silt, 90% fine-med. grained sand loose, dry, non plastic	SP	1.5 = 4801
2.0			0.0	129	Same as above	SP	2.0 = 4810
							2.5 = 4810
3.0					TO = 2' bgs - refusal 2'10" recovery no GW encountered		3.0 = 4810



BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5b, Group B	Location ID 172
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/16/10, 1345	Date/Time Total Depth Reached 12/16/10, 1355
Type of Sampling Device trowel/shovel	Samples Collected 20594, 1350 (2) 1/2 gal bags		
Geologist P. Guevara	Checked by/Date <i>[Signature]</i> 5/12/11		

Radiological Background 15 mR, 0.0 ppm	Radiological Equipment Used M/R meter	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5				15	sandy silt, brown (10 YR 4/3), dry, soft, 30% s. sand, 70% silt, common rootlets, no odor			
					TO 0.5'			
					NO GW			

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 8	Location ID 172
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 3'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2/2/11 / 1341	Date/Time Total Depth Reached 2/2/11 / 1350
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected ID 20393 / time: 1410 (2) 1/2 gallon bags		
Geologist Stephanie Lapeyre-Montrose	Checked by/Date 5/24/11 TBL		

Radiological Background 49 / 2810	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
			0.0	97	0-8" SM silty sand with clay (brown 10R 4/3)	SM	0.0 =	3094
			0.0	81	20% clay, 30% silt, 50% fine-med. graded sand low plasticity, soft, dry plant material (grass & roots)		0.5 =	4383
1.0			0.0	89	8"-12" SC clayey sand (dark yellowish brown)	SC	1.0 =	5027
					30% clay, 15% silt, 55% fine-med. graded sand (10R 4/4)			
			0.0	103	12"-3'6" SP SAND (brownish yellow)	SP	1.5 =	5353
					10% silt, 90% fine-med. graded sand		2.0 =	5385
2.0			0.0	94	non plastic, loose, dry		2.5 =	5909
			0.0	50			3.0 =	6408
3.0			0.0	62			3.5 =	⊗
					TD = 3' bgs (refused)		4.0 =	⊕
					(3'6" recovery)			
					NO GW encountered			



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID SB - Group 6	Location ID 173
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/16/10, 1305	Date/Time Total Depth Reached 12/16/10, 1315
Type of Sampling Device trowel/shovel	Samples Collected 20396, 1310 (2) 1/2 gal bags		
Geologist P. Sweeney	Checked by/Date <i>[Signature]</i> 5/12/11		

Radiological Background 0 ppm, 15 dR	Radiological Equipment Used M/R meter	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			15		sandy silt, dark yellowish brown (10YR 3/4), dry soft, 30% s. sand, 70% silt, common rootlets, no odor	ML		
					TD 0.5'			
					no GW			

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 55 18	Location ID 173
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 3'
Drilling Equipment: Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2/2/11 / 0908	Date/Time Total Depth Reached 2/2/11 / 0911
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 1) 20395 / time 0930 2) 1/2 gallon bags		
Geologist Stephanie LeDain Montross	Checked by/Date TBW 5/24/11		

Radiological Background 54 / 2629	Radiological Equipment Used Pancake / Down-hole	PID Used Mini RAE 2000 (Bkqd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	78	0-9" SM silt SAND with clay (dark yellowish brown 10YR 4/1)	SM	+0.5 = 2728
			0.0	63	20% clay, 25% silt, 55% fine-med. grained sand, low plasticity, soft, dry, plant material (roots)		0.0 = 3888 → 3188
			0.0	84	9"-2'3" SM silt SAND (dark yellowish brown 10YR 4/1)	SM	0.5 = 4237
			0.0	113	30% silt, 10% clay, 60% fine-med. grained sand, low plasticity, very soft, dry		1.0 = 4829
			0.0	118	2'3"-2'9" SL clayey SAND (strong brown 7.5YR 4/6)	SL	1.5 = 4910
			0.0	90	30% clay, 15% silt, 55% fine-med. grained sand, low plasticity, soft, dry		2.0 = 4976
			0.0	77	2'9"-3' SP SAND (brownish yellow 10YR 6/6) 15% silt, 85% fine-med. grained sand, increased, non-plastic dry	SP	2.5 = 4946
					TO = 3' bgs (refusal) NO GW encountered		3.0 = 4863



5B_174



BORING LOG

Sheet 1 of 1

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 8	Location ID 174
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 2'6"
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2/2/11 / 1438	Date/Time Total Depth Reached 2/2/11 / 1444
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 10 20397 / time: 1505 (2) 1/2 gallon bags		
Geologist Stephanie Lapere-Morose		Checked by/Date TBW 5/24/11	

Radiological Background 48 / 2769	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	67	0-13" SM silty sand with clay (brown 10YR 4/3) 0-3" plant material (roots & grass)	SM	+0.5 = 2706
			0.0	64	20% clay, 30% silt, 50% fine-med. grained sand low plasticity, soft, dry		0.0 = 3143
			0.0	63			0.5 = 4414
1.0			0.0	63			1.0 = 4847
			0.0	78	13" - 2'5" SP SAND (brownish yellow 10YR 6/6) 10% silt, 90% fine-med. grained sand loose, non plastic, dry	SP	1.5 = 4963
2.0			0.0	69	13" - 2'5" SP SAND (brown 10YR 4/3) Same as above	SP	2.0 = 4930
			0.0	73	2'5" - 2'6" SC clayey sand (brown 10YR 4/3) 35% clay, 15% silt, 50% fine-med. grained sand med. plasticity, firm, clay	SC	2.5 = ---
3.0					TD = 2'6" bgs (retired)		3.0 = ⊕
					NO GW encountered		3.5 = ⊕

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 175
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 5' cc 4.5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1-31-11/1519	Date/Time Total Depth Reached 1-31-11/1610
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags (#20398)(1605)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/12/11		

Radiological Background 0.2, 2495, 40	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rac 2000 (background = 0.2 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
				0.255	Gravel with silt, (10 YR, 8/1, 4/3) brown silt and gray gravel, 85% gravel (granite fill gravel), 15% silt, dry, loose, no plasticity or hardness, no odor.	GM	05	2452
1'				60	Silt with clay (10 YR, 3/3), dark-brown, 75% silt, 20% clay, 5% fine grained sand, trace pea gravel, low plasticity, medium hardness, no odor, dry, medium stiff.	ML		
				65			4414	
2'				40			4879	
				40			4866	
3'				45			4891	
				50	3.5' Sand, (10 YR, 6/6), light reddish brown, 95% fine to medium grained subrounded sand, 5% silt, dry, medium dense (weathered sandstone), no odor			4888
4'				40	Refusal hit at 4' cc			4940
				40				5152
				cc	<u>Refusal hit at 4.5'</u>			5340
5'				5' cc				
					Refusal hit at 5' cc No Gw encountered			

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 176
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-16-10/0923	Date/Time Total Depth Reached 12-16-10/0928
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gallon bags (#20400) (0927)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/12/11		

Radiological Background (PID) 0.0, 13	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'				0.0 14	Sandy silt, (10 YR 4/4), brown, 60% silt, 40% fine grained sand, dry, loose, rootlets common, no odor. No groundwater encountered.	SM ML		

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 176
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 65'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1-31-11/1420	Date/Time Total Depth Reached 1-31-11/1512
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags (#20399) (1505)	Checked by/Date <i>[Signature]</i> 5/12/11	
Geologist C. Carmichael			

Radiological Background 0.1, 2594, 40	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rae 2000 (Background= 0.1 ppm)
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(P10)

Depth	Interval	Recovery	DTP	% Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
							±0.5	2383
								2603
1'				70	Silt with sand (10 YR, 3/3), dark brown, 80% silt, 20% fine grained subrounded sand, medium stiff, dry, very low plasticity, low hardness, no odor, trace gravel throughout.	ML		3382
				65				4571
				65	1.5' Gradational Contact			4877
2'				70	Silt with sand and clay (same as above, except 70% silt, 15% clay, 15% fine grained sand)	ML		4998
				75				4952
3'				40				4921
				100				5099
4'				100	3.75' Sand (10 YR, 6/6), light brown, 95% fine to medium grained subrounded sand, 5% silt, dry, medium dense, no hardness or plasticity, no odor.	SW		5132
				90				5108
5'				85	Silt with clay (10 YR, 6/4), 75% silt, 25% clay, laminated texture, dry, medium stiff, medium plasticity and hardness, no odor	ML		5267
				75				5227
6'				80	Clayey silt (same as above, except 10 YR, 7/3 and 65% silt and 35% clay)			5418
				85				NM

Refusal hit at 65'

no soil encountered

Project Name: SSEL Area JV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B	Location ID 177
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 7.5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1-31-11/1320	Date/Time Total Depth Reached 1-31-11/1411
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags (#20401)(1410)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/2/11		

Radiological Background 0.0, 2736, 56	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rae 2000 (Background = 0 cpm)
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Depth	Interval	Recovery	RID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
			0.0	70			0.5	2039
							0	2872
1'				80	Silt with sand, (10YR, 3/3), dark brown, 75% silt, 25% fine grained sand, few vegetation and rootlets in top 2", dry, medium stiff, low hardness, no plasticity, no odor.	ML		
				60			4296	
				45			4708	
2'				50	Silt with sand and clay (10YR, 4/4), brown, 65% silt, 20% clay, 15% fine to medium grained subrounded sand, dry, medium stiff, speckled texture, low plasticity, low me hardness, no odor.	ML		
				55			4999	
				60			4885	
3'				70			4806	
				70			4843	
				70			4828	
4'				70			4738	
				4.25'				
				60	Sandy silt, (10YR, 4/4), brown, 60% silt, 40% fine to medium grained subrounded sand, dry, medium stiff, trace pea gravel (piece of quartz), no plasticity or hardness, no odor.	ML		
				50			4787	
5'				5'			4776	
				40	Sand (10YR, 5/4), light brown, 95% fine to medium grained subrounded sand, 5% silt, medium dense, dry, no hardness or plasticity, no odor.	SW		
				40			4940	
6'				60			5017	

Radiological Background					Project Name	Project Number	Location
0.0, 2786, 56					SSFL Area IV Radiological Study	EP9038.01.22.04.03	177
Depth	Interval	Recovery	PID	Radiological	Description	USCS Symbol	Borehole Gamma Readings (CPM)
					(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	Inches	
7'			0.0	75	Silt with sand (10 μ R, 5/4), light brown, 80% silt, 20% fine to medium grained sand, silt is laminated, dry, medium stiff, see plasticity and hardness, no odor	ML	5264
				80	Sand (same as 5'-6.5')	SW	5433
				80			5627
8'					Refusal hit at 7.5' No gw encountered		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 178
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-16-10/0911	Date/Time Total Depth Reached 12-16-10/0915
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gallon bags (#20403) (0915)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/12/11		

Radiological Background (PIC) 0.0, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'				0.0 14	<p>Silty sand, (10 YR, 4/2e^{3/3}), dark brown, 60% fine to medium grained subangular sand, 40% silt, moist, loose, rootlets common, no odor.</p> <p>No groundwater encountered.</p>	SW SM	

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, Group B	Location ID 9011 (65) 178
Drilling Company Cascade Drilling	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 7.5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 01/28/11, 1250	Date/Time Total Depth Reached 01/28/11, 1300
Type of Sampling Device 1 3/4" macro core?	Samples Collected ⁽⁸⁵⁾ 20440 20402, 1255 (2) 1/2 gal bags		
Geologist P. Skeath	Checked by/Date [Signature] 5/12/11		

Radiological Background 2602 cpm, 61 cpm	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rac 2000 (Background = 0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches + 0.5' 2317 (CPM)</small>	
1' 2' 3' 4' 5' 6'			0	85	silt w/ sand, dark brown (10 YR 3/3), moist soft, 45% silt, 15% s.s. sand, no odor, common rootlets	ml	2541	
				70			3457	
				75			4558	
				80	silt, very dark brown (10 YR 2/2); moist, med. stiff, 90% silt, 10% s.s. sand, no odor	ml	4652	
				80			4839	
				60			5084	
				70	silt w/ sand, dark yellowish brown (10 YR 3/4) dry, med. stiff, 75% silt, 15% sand, 10% clay, no odor	ml	5077	
				80			5002	
				75			4945	
				75				4813
				80				4847
				85				5022
			85				5010	



BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, Group B	Location ID 179
Drilling Company Cascade Drilling	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 8'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 01/28/11 1528	Date/Time Total Depth Reached 01/28/11 1535
Type of Sampling Device 1 3/4" macro core!	Samples Collected 20404, 1530 (2) 1/2 gal bags		Checked by/Date
Geologist P. Skeath		PID Used Mini Rac 2000 (Background = 0.0ppm)	

Radiological Background: 39cpm, 287cpm
 Radiological Equipment Used: Pancake meter, Downhole scanner
 Description: (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)

Depth	Interval	Recovery	PID	Radiological	Description	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0			35					2810
1			70		silt w/ sand, dark yellowish brown (10 YR 3/4) moist, soft, 50% silt, 20% f. sand, no other constituents			4047
2			60					4653
3			90		silt w/ sand, dark yellowish brown (10 YR 4/6) dry, med. dense, 70% silt, 20% f. sand, 10% clay, no other			4834
4			70					4862
5			80					4925
6			100					4998
7			80					4781
8			70					4812
9			90					4932
10			80					5052
11			70					4933
12			50					

Radiological Background				Project Name	Project Number	Location
39cp - 2874cp				SSFL Area IV Radiological Study	EP9038.01.22.04.03	179
Depth	Interval	Recovery	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole
						Gamma Readings (CPM)
5			60	same as above		4917 (S)
			70			4893 (S)
6			50			(S) 5018 4917
			30	silty sand fine grained sand of silt, dark yellowish brown (10 & 2 wt%), moist, dense sand, 60% med sand, 20% f. sand, 20% silt, no clay	(S) SP SM	(S) 5041 4893
7			80			5018
			65			5041
8			100	Refusal very dense poorly graded sand		5224
				TD 8'		
				No GW		



BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, Group B	Location ID 180
Drilling Company Cascade Drilling	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 10'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 01/26/11, 1455	Date/Time Total Depth Reached 01/26/11, 1505
Type of Sampling Device 1 3/4" macro core!	Samples Collected 20405, 1500 (2) 1/2 gal bags	DUPS: 20559 (MS), 20557 (lab), 20558 (File no. time)	
Geologist P. Skeath	Checked by/Date <i>[Signature]</i> 5/24/11		

Radiological Background 7' cpm, 2748 cpm	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rat 2000 (Background = 0.0 ppm)
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Depth Interval	Recovery	PID	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0 - 52'		0	66	silty sand, dark yellowish brown (10YR 4/1), dry, soft, 40% silt, 60% fine sand, no odor, few rootlets	SM	2942 4239
52 - 71'		66	53	sandy silt, dark yellowish brown (10YR 4/6) moist, soft, 40% med. sand, 60% silt, no odor	ML	4749 5251
71 - 85'		47	51			5028
85 - 90'		58	71			5018
90 - 97'		57	57	sandy silt, dark yellowish brown (10YR 4/4) moist, med. stiff, 35% med. sand, 65% silt, no odor	ML	5037
97 - 100'		63	63			4973
100 - 105'		90	90			5009
105 - 110'		85	85			5248
110 - 115'		53	53			5321
115 - 120'						5511
120 - 125'						5363

Radiological Background				Project Name	Project Number	Location	
71 cpm / 2748 cpm				SSFL Area IV Radiological Study	EP9038.01.22.04.03	W0	
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole
							Gamma Readings (CPM)
5			0	90	same as above	SL	5321
				85			5516
				83			5363
				81			5333
				77			5454
				79	same as above (PS) silty sand sandy / stiff, dark yellowish brown (10 YR 4/6) moist, med. dense, 30% silt, 70% med. sand, no odor (PS) (PS)	(PS) SM	5581
				92			5722
				66			5972
				115			6313
				90	silty gravel, yellowish brown (10 YR 5/6) dry, hard, 35% silt, 65% siltstone gravel, no odor	Gm	6439
				58			6300
					Residual siltstone		
					TD 10'		
					NO GW		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 181
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-15-10/1510	Date/Time Total Depth Reached 12-15-10/1520
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20407) (515)		
Geologist C. Carmichael	Checked by/Date [Signature] 5/13/11		

Radiological Background 1.2 ppm, 13 ppb	Radiological Equipment Used M/R meter	PID Used Mini Rae 2000 (Background = 1.2 ppm)
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(PW)

Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0.5'			1.2	13	Silt w/ sand w/ clay, very dark greyish brown (10 yr 3/2), dry, soft, 65% silt, 20% fine sand, 15% clay; some roots, no adv.	ml	
					TD 0.5'		
					GW ∅ (not encountered)		

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, Group B	Location ID 181
Drilling Company Cascade Drilling	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 6'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 01/27/11 0930	Date/Time Total Depth Reached 01/27/11 0940
Type of Sampling Device 1 3/4" macrocore!	Samples Collected 20406, 0935 (2) 1/2 gal bag		
Geologist P. Skeath	Checked by/Date <i>[Signature]</i> 5/13/11		

Radiological Background 53 cpm, 2609 cpm	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rac 2000 (Background=0.1 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches +0.5' 2620 (CPM)
0.1			35		silt w/ sand, dark brown (10 YR 3/3), moist, soft, 20% fine sand, 75% silt, 5% clay, no odor, few roots	OL	3372
0.2			50		silt, brown (10 YR 4/3), dry, med. stiff, 80% silt, 10% fine sand, 10% clay, no odor	ML	4226
			100				4660
			100				4759
			80				4787
			80				4753
			90		silty sand, dark yellowish brown (10 YR 4/6), dry, dense sand, 40% silt, 60% fine sand, no odor	SM	4918
			90				4858
			50				5116
			50				5193
			45		poorly graded sand w/ silt, yellowish brown (10 YR 4/6), dry, dense sand, 85% med. sand, 15% silt, no odor	SP	5472
			45				5650
			60				5490

Remnant @ 6'
sandstone

TD 6'
NO GW

Radiological Background				Project Name	Project Number	Location	
0.0, 2777, 54				SSFL Area IV Radiological Study	EP9038.01.22.04.03	182	
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings
							Inches
7'			0.0	75	Silty sand, (10 YR, 5/4), light brown, 70% fine to medium grained sand, 30% silt, semi-moist, medium dense, no plasticity or hardness, no odor.	SM	5115
			0.0	45	Sand, (10 YR, 6/6), beige, 100% fine to coarse grained subrounded sand, dry, medium dense, no plasticity or hardness, no odor (weathered sandstone).	SW	5201
					Refusal hit at 7'. no Gw encountered		



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 183
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-21-10/1016	Date/Time Total Depth Reached 12-21-10/1021
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gal bags (#20590) (1020)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/13/11		

Radiological Background (90) 0.4, 14	Radiological Equipment Used up Rntr	PID Used Mini Rae 2000 (Background=0.4 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'				0.4 14	Sandy silt with clay, (10 YR, 4/3), brown, 60% silt, 30% fine grained, subrounded sand, 10% clay, trace gravel and sandstone rock fragments, common rootlets, moist, soft, some no odor. No groundwater encountered.	ML		

Project Name: SSEL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID: 5B, Group B	Location ID: 1B3
Drilling Company: Cascade Drilling	Driller: H. Lopez	Ground Elevation: NA	Total Drilled Depth: 6.5'
Drilling Equipment: Geoprobe 6600	Borehole Diameter: 1 3/4"	Date/Time Drilling Started: 01/27/11, 1605	Date/Time Total Depth Reached: 01/28/11 01:28/11, 0855
Type of Sampling Device: 1 3/4" macro core!	Geologist: P. Skeath	Samples Collected: 20409, 01/28/11, 0850	(2) 1/2 gal bag
		Checked by/Date: <i>[Signature]</i> 5/24/11	

Radiological Background: **67 cpm, 2763 cpm** Radiological Equipment Used: **Pancake meter, Downhole scanner** PID Used: **Mini Rae 2000 (Background = 0.2 cpm)**

Depth	Interval	Recovery	PID	Radiological	Description <small>(include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
			0.2	60	Silt, dark yellowish brown (10YR 3/4), moist, soft, 85% silt, 5% clay, 10% f. sand, no odor, common rootlets	ML	3000	4038
				60			4677	
				80			4737	
				90	Silty silty sand, very dark greyish brown (10YR 3/2), moist, med. dense sand, 45% silt, 5% clay, 50% f. sand, no odor	SM	5022	4732
				40			4835	
				90			4855	
				80			4881	
				70			4797	
				55	poorly graded sand w/ silt, dark yellowish brown (10YR 5/6), dry, dense sand, 80% med. sand, 20% silt, no odor	SP	4908	5169
				80			5216	5256
				45				
				60	poorly graded sand, yellowish brown (10YR 5/6), dry, very dense sand, 70% med. sand, 30% f. sand, no odor	SP		
				80				

6.5' **PS** Residual sandstone

no G.S.
no GW.



BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, Group B	Location ID 184
Drilling Company Cascade Drilling	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 4'
Drilling Equipment Beoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 01/28/11, 10:3	Date/Time Total Depth Reached 01/28/11, 10:20
Type of Sampling Device 1 3/4" macro core!	Samples Collected 20410, 1015, (2) 1/2 gal bag		
Geologist P. Skeath	Checked by/Date <i>[Signature]</i> 5/13/11		

Radiological Background 2747 cpm / uSv/hr	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0	70	Silt w/ sand, dark yellowish brown (10YR 3/4), dry, soft, 80% silt, 20% f. sand, no odor, common ravellets	ml	3975
				75			4620
				65			4717
				60			4763
2'				70	Silt, dark brown (10YR 3/3), moist, med. stiff, 80% silt, 10% fine sand, 10% clay, no odor	ml	4767
				75			4777
3'				65			4526
				70			4853
4'				60			4837
					Recessed Gravel fill		
					TD 4.0' NO GW		



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 186
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-16-10/1047	Date/Time Total Depth Reached 12-16-10/1100
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20413)(1100)		
Geologist C. Carmichael	Checked by/Date [Signature] 5/13/11		

Radiological Background (D) 0.0, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background=0.0cpm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'				0.0 14	<p>Sandy silt, (10YR, 4/4), brown, 80% silt, 20% fine grained, subrounded sand, common rootlets, dry, loose, no odor.</p> <p>No groundwater encountered.</p>	SC SM ML	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 8	Location ID 186
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 7'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/27/11 / 1417	Date/Time Total Depth Reached 1/27/11 / 1447
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 10 20412 / 1mc 1425 (2) 1/2 gallon bags		
Geologist Stephanie Lapenski Montrose	Checked by/Date TOW 5/24/11		

Radiological Background 44 / 2418 / 13	Radiological Equipment Used Pancake / Downhole MICRA	PID Used Mini RAE 2000 (Bkgd: 1.2 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			1.2	48	0-3" SM silty sand 15% clay, 30% silt, 55% fine med. (dark yellowish brown) sand plant material (grass + roots) 10% low plasticity, soft, dry	SM	0.0 = 2942
			1.2	75	3"-1'3" same as above - NO plant material	SM	0.5 = 4116
1.0			1.2	80	1'3"-2'4" SC SAND with clay 20% clay, 10% silt, 70% fine-med. graded sand dense, moist, low plasticity	SC	1.0 = 4651
			1.2	80	1'6"-2'4" wet	SC	1.5 = 4714
2.0			1.2	70		SC	2.0 = 4745
			1.2	89	2'4"-3'5" SC clayey sand (light yellowish brown) with silt 30% clay, 20% silt, 50% fine-med. graded sand med. plasticity, firm, dry	SC	2.5 = 4731
3.0			1.2	63		SC	3.0 = 4836
			1.2	65	3'5"-4'2" SP SAND (brownish yellow) 10% silt, 10% clay, 80% fine-med. graded sand non plastic, indurated, dry	SP	3.5 = 4833
4.0			1.2	65		SP	4.0 = 4897
			1.2	55	4'2"-5' NO Recovery		4.5 = 5282
5.0			1.2	60			5.0 = 5768
			1.2	52	5'-5'6" SC SAND with clay (brown 10%R 4/3) 20% clay, 10% silt, 70% fine-med. graded sand dense, moist, low plasticity	SC	5.5 = 5582
					5'6"-6'9" SP SAND (brownish yellow) 10% silt, 10% clay, 80% fine-med. graded sand non plastic, indurated, dry	SP	

Radiological Background				Project Name	Project Number	Location	
44	2418	13		SSFLE Area IV Radiological Study	EP9038.01.22.04.03	186	
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings
							Inches (CPM)
			1.2	66	Same as above		6.0 = 5740
			1.2	88			6.5 = 5366
7.0			1.4	95	6'9" - 7' SC SAND with clay (yellow 10R 7/6) 20% clay, 15% silt, 65% fine-med grained sand low plasticity, very soft, dry	SC	7.0 = ---
					TD = 7' bgs @ 1'6" - 2'4" bgs		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 187
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-16-10/1116	Date/Time Total Depth Reached 12-16-10/1121
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20415) (1120)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/13/11		

Radiological Background (P) 0.0, 14 Radiological Equipment Used up R meter PID Used Mini Rae 2000 (Background=0.0cpm)

Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			0.0	15	Sandy silt, (10 YR, 4/3), brown, 75% silt, 25% fine grained, subrounded sand, dry, loose, some rootlets and vegetation, trace clasts of weathered sandstone, no odor. No groundwater encountered.	GM ML		

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B / 8	Location ID 187
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 41
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2/1/11 / 1154	Date/Time Total Depth Reached 2/1/11 / 1200
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected ID 20414 / time 1220 (2) 1/2 gallon bags		
Geologist Stephene Lapena Montrose	Checked by/Date DN 5/24/11		

53 → Radiological Background: 53 / 2616 Radiological Equipment Used: Pancake / Downhole PID Used: Mini RAE 2000 (Bkgd: 0.0 ppm)

Depth Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0.0 - 3"		54		SM silty SAND with clay (brown 10YR 4/3) 20% clay, 25% silt, 55% fine med. graded sand, trace gravel low plasticity, soft, clay	SM	0.0 = 3115
3" - 1'11"		59		SM silty SAND (brown 10YR 4/3)		0.5 = 4204
1.0 - 1'11"		62		15% clay, 35% silt, 50% fine-med. graded sand low plasticity, very soft, dry	SM	1.0 = 4641
1.5 - 1'11"		70				1.5 = 4725
2.0 - 1'11"		52		1'11" - 3' CL sandy CLAY (brown 10YR 4/3) 40% clay, 20% silt, 40% fine graded sand med. plasticity, hard, dry	CL	2.0 = 4985
2.5 - 1'11"		100				2.5 = 5178
3.0 - 3'7"		75		3' - 3'7" SC clayey SAND (brownish yellow) 30% clay, 15% silt, 55% fine-med. (10YR 6/8) low plasticity, firm, dry	SC	3.0 = 5276
3.5 - 3'7"		97		3'7" - 4" SP SAND (brownish yellow) 10% silt, 90% fine-med. graded sand (10YR 6/8) non plastic, loose, dry	SP	3.5 = 5195
4.0 - 4'1"		109		TD = 41' bgs (refusal) NO GW encountered		4.0 = 5125
4.5 - 4'1"						4.5 = 0
5.0 - 4'1"						5.0 = 0
5.5 - 4'1"						5.5 = 0

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 8	Location ID 188
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2/1/11 / 0936	Date/Time Total Depth Reached 2/1/11 / 0945
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected (2) 1/2 gallon bags		ID 20416 / time 1005
Geologist Stephanie Lapage Montrose		Checked by/Date TBW 5/24/11	

Radiological Background 43 / 2717	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkqd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	65	0-3" SM silty SAND with clay (brown 10YR 4/3)	SM	0.0 = 3396
			0.0	57	25% silt, 20% clay, 55% fine-med. grained sand (mostly coarse) low plasticity, soft, dry, plant material plant material brown 10YR 4/3	SM	0.5 = 4577
			0.0	56	3"-1'3" SM silty SAND 10% clay, 35% silt, 55% fine-med. grained sand low plasticity, soft, dry	SM	1.0 = 4916
			0.0	100	1'3"-2'3" SL clayey SAND (yellowish brown 10YR 5/6)	SL	1.5 = 5030
			0.0	50	35% clay, 15% silt, 50% fine-med. grained sand med. plasticity, firm, dry	SL	2.0 = 4734
			0.0	95	2'3"-3'2" SP SAND (yellowish brown 10YR 5/6)	SP	2.5 = 4523
			0.0	71	10% silt, 90% fine-med. grained sand non plastic, loose, dry	SP	3.0 = 4650
			0.0	52	3'2"-3'7" SL clayey SAND (yellowish brown 10YR 5/6)	SL	3.5 = 4702
			0.0	51	35% clay, 15% silt, 50% fine-med. grained sand med. plasticity, firm, dry	SL	4.0 = 5319
			0.0	71	3'7"-4'7" SP SAND (yellowish brown 10YR 5/6)	SP	4.5 = 5938
			0.0	71	10% silt, 90% fine-med. grained sand, loose, dry, non plastic	SP	4.5 = 5938
			0.0	55	4'7"-5' Sandstone (light yellowish brown) fine-med. grained sand 10YR 6/4		5.0 = 6043
					TD = 5' bgs (refused)		
					NO GW encountered		



5B_189



BORING LOG

Sheet 1 of 1

Project Name: SSEL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID: Sb Group 8	Location ID: 189
Drilling Company: HGL	Driller: D. Rivera	Ground Elevation: NA	Total Drilled Depth: 0.5
Drilling Equipment: trowel/shovel	Borehole Diameter: NA	Date/Time Drilling Started: 12/16/10, 1120	Date/Time Total Depth Reached: 12/16/10, 1130
Type of Sampling Device: trowel/shovel	Samples Collected: 20418, 1125 (2) 1/2 gal bags		
Geologist: P. Skeath	Checked by/Date: <i>[Signature]</i> 5/13/11		

Radiological Background: (PID) 0.0 ppm, 13 HR	Radiological Equipment Used: M/R meter	PID Used: Mini Rae 2000 (background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5			0	13	silt, dark greyish brown (10 YR 4/2), dry, soft, 80% silt, 20% sand (f.), common roots, no odor			
					TA 0.5'			
					NO GW			

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 8	Location ID 190
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 6'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2/1/11 / 1041	Date/Time, Total Depth Reached 2/1/11 / 1054
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected ID 20419 / time 1115 (2) 1/2 gallon bags		
Geologist Stephanie Lapeyre Montrose	Checked by/Date RW 5/24/11		

Radiological Background 59 / 2618	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkqd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	75	0-4" SM silty SAND with clay (Brown 10R 4/3) 20% clay, 25% silt, 55% fine med. graded sand low plasticity, soft, dry, plant material (roots)	SM	0.0 = 2692
			0.0	90	4"-1'7" SM silty SAND with clay (Brown 10R 4/3) 20% clay, 30% silt, 50% fine-med. graded sand low plasticity, soft, dry	SM	0.5 = 3815
			0.0	85			1.0 = 4527
			0.0	80			1.5 = 4757
			0.0	98	1'7"-2'2" SC clayey SAND (dark yellowish brown 10R 4/4) 30% clay, 15% silt, 55% fine-med. graded sand med. plasticity, firm, dry	SC	2.0 = 4658
			0.0	85	2'2"-4'7" CL sandy CLAY (dark yellowish brown 10R 4/4) with silt	CL	2.5 = 4855
			0.0	93	30% clay, 25% silt, 35% fine-med. graded sand med. plasticity, hard, dry		3.0 = 4918
			0.0	65			3.5 = 5118
			0.0	68	Same as above		4.0 = 5365
			0.0	58			4.5 = 5325
			0.0	57	4'7"-5'0" SP SAND (brownish yellow 10R 2 6/8) 10% silt, 90% fine-med. graded sand non plastic, loose, dry	SP	5.0 = 5317
			0.0	75	4'10"-5'2" SC clayey SAND (brownish yellow 10R 2 6/8) 30% clay, 15% silt, 55% fine-med. graded sand, med. plasticity, dry	SC	5.5 = 5163
			0.0	55	5'2"-5'8" SP SAND (brownish yellow 10R 2 6/8) 10% silt, 90% fine-med. graded sand, loose, dry	SP	
			0.0	55	5'8"-5'10" SE clayey SAND (brownish yellow 10R 2 6/8) 30% clay, 15% silt, 55% fine-med. graded sand, med. plasticity, dry	SC	
			0.0	55	5'10"-6' SP (brownish yellow 10R 2 6/8) 10% silt, 90% fine-med. graded sand, loose, dry	SP	6.0 = 5133

TD = 6' (refused)
No (6.1) encountered



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B / 8	Location ID 191
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 4'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2/1/11 / 1405	Date/Time Total Depth Reached 2/1/11 / 1411
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 10 20420 / 1me 1430 (2) 1/2 gallon bags		
Geologist Stephane Lepere Norton	Checked by/Date TOW 5/24/11		

Radiological Background 50 / 2667	Radiological Equipment Used Pencake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0.0 - 0.6"		0.0	52	SM silty sand with silt (brown 10R 4/3) low plasticity, soft, dry, plant material (grass & roots)	SM	0.0 = 2723
0.6 - 2.5"		0.0	42	20% clay, 25% silt, 55% fine-med grained sand		0.5 = 3937
0.6 - 2.5"		0.0	58	SM silty sand (brown 10R 4/3) 35% silt, 45% clay, 50% fine-med grained sand, low plasticity, soft, dry	SM	1.0 = 4480
		0.0	52			1.5 = 4739
		0.0	63			2.0 = 4792
		0.0	74	2'5" - 3'3" CL sand, CLAY with silt (dark reddish brown 10R 4/6) 40% clay, 25% silt, 35% fine grained sand med. plasticity, hard, dry	CL	2.5 = 4921
		0.0	58			3.0 = 5000
		0.0	49	3'3" - 4' SP SAND (yellowish brown 10R 5/8) 10% silt, 90% fine-med. grained sand non plastic, loose, dry	SP	3.5 = 5251
		0.0	45			4.0 = 5381
				TD = 4' logs (refused) NO GW encountered		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 192
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-16-10/1100	Date/Time Total Depth Reached 12-16-10/1105
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20422) (1105)		
Geologist C. Carmichael		Checked by/Date <i>[Signature]</i> 5/13/11	

Radiological Background (D.D., 14)	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background=0.0cpm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			0.0	15	Sandy silt with rock fragments, (10YR, 4/4), brown, 65% silt, 25% fine grained sand, 10% rock fragments (sandstone, asphalt), loose, dry, no odor. No groundwater encountered.	SM (20) ML		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B / 8	Location ID 192
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 7' 6" (7 1/2')
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/27/11 / 1515	Date/Time Total Depth Reached 1/27/11 / 1555 1545 @
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 10 20421 / time 1530 (2) 1/2 gallon bags		
Geologist Stephanie Lepere Motron	Checked by/Date TBW 5/24/11		

Radiological Background 62 / - / 13	Radiological Equipment Used Pancake / Downhole / Micro	PID Used Mini RAE 2000 (Bkgd: 1.2 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			1.2	90	0'-7" SM silty SAND (brown 10YR 5/3)		0.0 = 2894
			1.2	75	0'-4" plant material (grass + roots) 10% clay, 30% silt, 60% fine-med grained sand, low plasticity 7"-10" same as above - asphalt debris soft, dry	SM	0.5 = 4075
			1.2	65	10"-1'10" SC SAND with clay (dark yellowish brown 10YR 4/4) 70% fine-coarse grained sand, 10% silt, 20% clay	SC	1.0 = 4535
			1.2	90	asphalt debris, low plasticity, soft, dry		1.5 = 4999
			1.2	75	1'10"-2'11" SC clayey SAND with clay (brown 10YR 4/3) 10% silt, 20% clay, 70% fine-med grained sand 2'-2'11" - moist	SC	2.0 = 4854
			1.2	61	low plasticity, dense, dry soft	SC	2.5 = 5088
			1.2	74	Same as above	SC	3.0 = 5229
			1.2	71	3'-4'1" SP SAND (moist) (light yellowish brown 10YR 6/4) 10% silt, 10% clay, 80% fine-med grained sand	SP	3.5 = 5419
			1.2	70	non plastic, loose, dry		4.0 = 5767
			1.2	73	4'1"-5'		4.5 = 6363
			1.2	40	No Recovery		5.0 = 6864
			1.2	95	5'-5'4" SC SAND with clay (brown 10YR 4/3) 10% silt, 20% clay, 70% fine-med grained sand low plasticity, soft, dry	SC	5.5 = 7105
			1.2	95	5'4"-7'2" SM silty SAND (yellowish brown 10YR 5/6) 25% silt, 75% fine-med grained sand trace pieces of sandstone, non plastic, saturated, dry gravel	SM	

Radiological Background					Project Name	Project Number	Location
62 / - / 13					SSFL Area IV Radiological Study	EP9038.01.22.04.03	192
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings
							Inches (CPM)
			75		Same as above	SM	6.0 = 7176
			105				6.5 = (NM)
7.0			45				7.0 = (NM)
			60				7.5 = (NM)
					7'2" - 7'6" SP SAND (yellowish brown 10YR 5/8) 15% silt, 15% clay, 70% fine-med. grained sand low plasticity, very soft, dry, loose		
8.0					TD = 7'6"		
					NO GW encountered		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B / 8	Location ID 193
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/28/11 / 10458	Date/Time Total Depth Reached 1/28/11 / 1015
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected (2) 1/2 gallon bags	ID 20423	Time 1020
Geologist Stephanie Lapierre Montrose	Checked by/Date RBJ 5/24/11		

Radiological Background S7 / - / 13	Radiological Equipment Used Pancake / Downhole / Micor	PID Used Mini RAE 2000 (Bkgd: 1.2 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			1.1	36	0'-6" SM silty SAND (dark yellowish brown med grained sand) 30% silt, 10% clay, 60% fine grained sand (over 4/4) trace gravel, plant material (grass + roots), low plasticity, soft, dry	SM	+0.5 = 2761 (CPM) 0.0 = 3754
			1.1	24	6"-1'8" SM silty SAND with clay 25% silt, 20% clay, 55% fine (brown 10YR 4/3) coarse grained sand, low plasticity, very soft, moist	SM	0.5 = 4619
1.0			1.1	34	10"-1'8" - saturated	SM	1.0 = 4712
			1.1	76	Same as above		1.5 = 4870
2.0			1.1	99	1'8"-2'4" CL sandy CLAY (brown 10YR 4/3) 45% clay, 15% silt, 40% fine grained sand med. plasticity, firm, dry	CL	2.0 = 5095
			0.8	78			2.5 = 5548
3.0			1.2	92	2'9"-3'8" SP SAND (brownish yellow 10YR 6/6) 15% silt, 85% fine med grained sand non plastic, indurated, dry	SP	3.0 = 5085
			1.1	84	3'8"-5' NO Recovery		3.5 = 4929
4.0			1.1	65			4.0 = 4960
			1.2	71	NO Recovery		4.5 = 5204
5.0			1.3	69	TD = 5' bgs water = 10"-1'8"		5.00 = ---

5B_194



BORING LOG

Sheet 1 of 1

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 194
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-16-10/1339	Date/Time Total Depth Reached 12-16-10/1343
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20425) (1342)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/13/11		

Radiological Background (cpm) 0.0, 14 Radiological Equipment Used *up R meter* PID Used Mini Rae 2000 (Background = 0.0 cpm)

Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings <small>(CPM)</small>
0.5'			0.0	14	Sandy silt with gravel, (10 VR, 4/4), brown, 70% silt, 25% fine grained sand, 5% pea gravel (fill, asphalt, sandstone), common rootlets, dry, soft, no odor. No groundwater encountered.	SM ML ML		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 8	Location ID 194
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 6'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/28/11 / 1136	Date/Time Total Depth Reached 1/28/11 / 1145
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected ID 20424 / time 1150 (2) 1/2 gallon bags		
Geologist Stephanie Lapaya Montrose		Checked by/Date TKS v 5/24/11	

Radiological Background 37 / - / 13	Radiological Equipment Used Pancake / Downhole / Hawk	PID Used Mini RAE 2000 (Bkgd: 1.2 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches (CPM)
	0'-6"		1.2	75	SM silty sand (dark yellowish brown 10YR 4/4) 30% silt, 10% clay, 60% fine-med. grained sand plant material (grass & roots), low plasticity, very soft, dry	SM	0.0 = 3201
	6'-11"		1.2	80	SP SAND 15% silt, 85% fine-med. grained sand (brownish yellow 10YR 6/6) non-plastic, loose, dry	SP	0.5 = 4240
	11'-13"		1.2	72	SM silty sand (very dark brown 10YR 2/2) 10% clay, 25% silt, 65% fine-med. grained sand low plasticity, soft, dry	SM	1.0 = 4644
	13'-25"		1.2	70	SC SAND with clay (brown 10YR 4/3) 20% clay, 15% silt, 65% fine-med. grained sand low plasticity, very soft, moist	SC	1.5 = 4562
	11"		1.2	65	color change to brown 10YR 5/3 Same as above		2.0 = 4598
	25'-35"		1.2	35	SM silty sand (yellowish brown 10YR 5/4) with clay	SM	2.5 = 4628
			1.2	37	20% clay, 30% silt, 50% fine-med. grained sand low plasticity, soft, dry		3.0 = 4586
	35'-5'		1.2	90	No Recovery		3.5 = 4861
			1.2	70			4.0 = 4884
			1.2	65			4.5 = 4770
			1.2	52			5.0 = 5208
	5'-5'4"		1.2	65	SC SAND with clay (brown 10YR 4/3) 20% clay, 15% silt, 65% fine-med. grained sand low plasticity, very soft, moist	SC	5.5 = 5354
	5'4"-6'		1.2	42	SM silty sand with clay (yellowish brown 10YR 5/4) 20% clay, 30% silt, 50% fine-med. grained sand low plasticity, soft, dry	SM	6.0 = 5471

TD = 6' bgs

NO GCL encountered

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B / 8	Location ID 195
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 6'
Drilling Equipment: Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/31/11 / 0842	Date/Time Total Depth Reached 1/31/11 / 0852
Type of Sampling Device 1 3/4" macrocore acetate liners	Samples Collected 1) 20426 / time 0920 (2) 1/2 gallon bags		
Geologist Stephane Lepage Montrose	Checked by/Date TBW 5/24/11		

Radiological Background 54 / 2792	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkqd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
			0.0	55	0 - 1'3" silt silty sand with clay (brown 10YR 4/3)		0.0 = 2841	
			0.0	65	25% clay, 30% silt, 50% fine-coarse grained sand 0-6" plant material (roots, grass), trace gravel - sub angular low plasticity, soft, dry	SM	0.5 = 3854	
			0.0	95	asphalt debris		1.0 = 4564	
			0.0	68	1'3" - 2'10" SM silty sand (dark brown 10YR 3/3)	SM	1.5 = 4733	
			0.0	65	45% silt, 60% fine-med. grained sand low plasticity, very soft, moist		2.0 = 4870	
			0.0	75	2'4" - 2'10" damp		2.5 = 4907	
			0.0	73	2'10" - 3'1" SP SAND 15% silt, 85% fine-coarse grained sand (yellowish brown 10YR 5/8) non plastic, loose, dry	SP	3.0 = 4732	
			0.0	62	3'1" - 3'5" SC clayey sand with silt (dark yellowish brown 10YR 4/6) 30% clay, 20% silt, 50% fine-coarse grained sand non plastic, loose, dry	SC	3.5 = 4854	
			0.0	80	3'5" - 3'7" SP SAND 15% silt, 85% fine-coarse grained sand (yellowish brown 10YR 5/8) non plastic, loose, dry	SP	4.0 = 5202	
			0.0	45	3'7" - 4'3" SC clayey sand with silt (dark yellowish brown 10YR 4/6) 30% clay, 20% silt, 50% fine-coarse grained sand, med. plasticity, soft, dry	SC	4.5 = 5438	
			0.0	60	4'3" - 5' NO Recovery		5.0 = 5617	
			0.0	60	5'0" - 5'2" SM silty sand (dark brown 10YR 4/3) 40% silt, 60% fine-med. grained sand low plasticity, very soft, damp	SM	5.5 = 5913	
			0.0	70	5'2" - 6' SM silty sand with clay (yellowish brown 10YR 5/6) 20% clay, 30% silt, 50% fine-coarse grained sand low plasticity, soft, dry	SM	6.0 = 6230	

TD = 6' bgs (refused)
NO GW encountered



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 196
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-16-10/1311	Date/Time Total Depth Reached 12-16-10/1316
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20428) (1315)		
Geologist C. Carmichael	Checked by/Date 5/13/11		

Radiological Background (B) 0.0, 13 Radiological Equipment Used up R meter PID Used Mini Rae 2000 (Background=0.0ppm)

Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'				0.0 14	Silt with sand and gravel, (10 YR, 4/4), brown, 80% silt, 10% fine grained sand, 10% fill pea gravel, loose, dry, rootlets common, no odor. No groundwater encountered.	ML	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 56 / 8	Location ID 196
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 6'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/28/11 / 0902	Date/Time Total Depth Reached 1/28/11 / 0925
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected (2) 1/2 gallon bags	ID: 20427	Time 0910
Geologist Stephanie Lepore Montrose	Checked by/Date 5/24/11 RW		

Radiological Background 44 / 2702 / 13	Radiological Equipment Used Pancake / Downhole / Micor	PID Used Mini RAE 2000 (Bkgd: 0.3 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0.0	0.0 - 0.7	52	0.7	52	0-8" SM silty sand (dark brown 10YR 4/3) 10% clay, 30% silt, 60% fine-med. grained sand plant material (grass+roots) low plasticity, very soft, dry, trace gravel-subangular	SM	0.0 = 2989 0.5 = 4164
1.0	0.7 - 2.0	35	0.7	35	8"-2' SC clayey sand with silt (dark brown 10YR 4/3) 25% clay, 20% silt, 55% fine-med. grained sand low plasticity, soft, dry, plant material (roots), trace gravel-subangular	SC	1.0 = 4603 1.5 = 4693
2.0	2.0 - 2.5	41	0.7	41	2"2"-2'5" wet SM silty sand with clay (dark brown 10YR 4/3)	SM	2.0 = 4721
3.0	2.5 - 2.8	48	0.7	48	2'2"-2'5" wet 20% clay, 25% silt, 55% fine-med. grained sand low plasticity, soft, moist	SM	2.5 = 4859
3.0	2.8 - 4.3	97	0.7	97	2'8"-4'3" SC clayey sand (brown 7.5YR 4/4)	SC	3.0 = 4920
4.0	4.3 - 5.1	71	0.7	71	30% clay, 15% silt, 55% fine grained sand low-med. plasticity, soft, dry	SC	3.5 = 4984
4.0	5.1 - 5.3	54	0.7	54	4'3"-5' NO Recovery		4.0 = 5413
5.0	5.3 - 5.10	71	0.7	71	5'1"-5'3" CL sandy clay (dark brown 10YR 4/3) 30% clay, 15% silt, 55% fine grained sand low plasticity, soft, dry	SC	4.5 = 5167
5.0	5.10 - 5.15	85	0.7	85	5'3"-5'10" CL sandy clay (brownish yellow 10YR 6/6) 45% clay, 15% silt, 40% fine grained sand med. plasticity, firm, dry	CL	5.0 = 4968
6.0	5.15 - 6.0	60	0.6	60	5'10"-6' SP sand (brownish yellow 10YR 6/8) 10% silt, 90% fine-med. grained sand, very loose, dry	SP	5.5 = 4939 6.0 = NM

TD = 6' bgs (refused)

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B / 8	Location ID 197
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 5.5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/31/11 / 1415	Date/Time Total Depth Reached 1/31/11 / 1422
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected ID 20429 / time: 1445 (2) 1/2 gallon bags		
Geologist Stephane Lapere Montrose	Checked by/Date [Signature] 5/24/11		

Radiological Background 42 / 2494	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	55	0-5" SM silty sand with clay (dark brown 10YR 3/3) 20% clay, 25% silt, 55% fine-grained sand	SM	0.0 = 3248
			0.0	46	5"-9" SC SAND with clay (brown 10YR 4/3) 20% clay, 15% silt, 65% fine-med. grained sand low plasticity, soft, dry	SC	0.5 = 4224
			0.0	58	9"-2' SM silty sand (brown 10YR 4/3)		1.0 = 4674
			0.0	95	10% clay, 30% silt, 60% fine grained sand low plasticity, soft, dry	SM	1.5 = 4795 4795
			0.0	90	1'10" asphalt debris		2.0 = 4803
			0.0	48	2'-4' SC clayey sand (brown 10YR 4/3) with silt	SC	2.5 = 4891
			0.0	50	30% clay, 20% silt, 50% fine grained sand med. plasticity, firm, dry		3.0 = 4832
			0.0	83			3.5 = 4979
			0.0	73	4'-4'10" SP SAND (yellowish brown 10YR 5/8) 10% silty, 90% fine-med. grained sand loose, dry, non plastic	SP	4.0 = 4798
			0.0	40			4.5 = 5179
			0.0	60	4'10"-5' No Recovery		5.0 = 5113
			0.0	75	5'-5'15" SP SAND (brownish yellow 10YR 6/6) 10% silt, 90% fine-med. grained sand non plastic, loose, dry	SP	5.5 = ---
					TD = 5.5' bgs (Refusal)		
					No GW encountered		

BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5b, Group 8	Location ID 498
Drilling Company HGL	Driller P. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/16/10, 1050	Date/Time Total Depth Reached 12/16/10, 1050
Type of Sampling Device trowel/shovel	Samples Collected 20431 1055 (2) 1/2 gal bags		
Geologist P. Scream	Checked by/Date <i>[Signature]</i> 5/13/11		

Radiological Background 0-0 ppm, 13 mR	Radiological Equipment Used RP Meter	PID Used Mini Rae 2000 (Background=0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5			0	13	silt, dark yellowish brown (10 YR 4/1), dry, soft, 80% silt, 15% sand & clay, many roots, no odor (P) (P)			
					to 0.5'			
					to 60			

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 8	Location ID 198
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 5'
Drilling Equipment: Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/31/11 / 1514	Date/Time Total Depth Reached 1/31/11 / 1521
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected (2) 1/2 gallon bags		10 20430 / Time 1545
Geologist Stephanie Lepore-Montrose	Checked by/Date 5/24/11 TBN		

Radiological Background 48 / 2299	Radiological Equipment Used Pancake / Downhole	PID Used MiniRAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	50	0'-1'4" SC SAND with clay (brown 10YR 5/3)		0.0 = 3099
			0.0	52	15% silt, 20% clay, 65% fine - coarse grained sand plant material (roots & grass)	SC	0.5 = 4407
			0.0	44	low plasticity, very soft, dry		1.0 = 4531
			0.0	48	trace asphalt debris, trace gravel - subangular		1.5 = 4702
			0.0	48	1'4"-3' CL sandy CLAY with clay yellowish brown silt (10YR 5/4)	CL	2.0 = 4716
			0.0	70	40% clay, 20% silt, 40% fine - coarse grained sand		2.5 = 4712
			0.0	59	med. plasticity, hard (3), dry		3.0 = 4876
			0.0	45	3'-4' CL sandy CLAY with silt (yellowish brown 10YR 5/6)	CL	3.5 = 4990
			0.0	70	45% clay, 20% silt, 35% fine - med. grained sand		4.0 = 5189
			0.0	66	med. plasticity, soft (2), dry	SC	4.5 = 5267
			0.0	50	4'-4'4" SC clayey SAND with silt (yellowish brown 10YR 5/6)	SP	5.0 = 5218
					30% clay, 20% silt, 50% fine - coarse grained sand		
					loose, dry, non-plastic		
					TD = 5' bgs (refusal)		
					NO GW encountered		

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 199				
Drilling Company HGL		Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'				
Drilling Equipment trowel/shovel		Borehole Diameter NA	Date/Time Drilling Started 12-16-10/1319	Date/Time Total Depth Reached 12-16-10/1322				
Type of Sampling Device trowel/shovel		Samples Collected 2 1/2 gallon bag (#20433) (1322)						
Geologist C. Carmichael		Checked by/Date <i>[Signature]</i> 5/8/11						
Radiological Background (D) 0.0, 14		Radiological Equipment Used up R meter		PID Used Mini Rae 2000 (Background=0.0ppm)				
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			0.0	14	Silt with sand, (10 VR, 4/4), brown, 90% silt, 10% fine grained sand, dry, loose/soft, rootlets common, no odor. No groundwater encountered.	ML		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 53 / 8	Location ID 199
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 71
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/31/11 / 1156	Date/Time Total Depth Reached 1/31/11 / 1205
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected ID 20432 / Name 1235 (2) 1/2 gallon bags		
Geologist Stephanie Lepere Montrose		Checked by/Date YBW 5/24/11	

Radiological Background SZ / 2556	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches (CPM)</small>
			0.0	54	0'-5" SM silty sand (brown 10YR 5/3) 30% silt, 60% fine coarse grained sand, 10% clay low plasticity, soft, dry, plant material (root & grass)	SM	0.0 = 2598
			0.0	95	8"-2'7" SM silty sand (dark yellowish brown 10YR 4/4) 10% clay, 35% silt, 55% fine-med. grained sand, low plasticity, very soft, dry	SM	0.5 = 3670
			0.0	56			1.0 = 4373
			0.0	70			1.5 = 4630
			0.0	68	2'2"-2'7" moist		2.0 = 4703
			0.0	80			2.5 = 4738
			0.0	85	2'7"-4'8" SC clayey sand (dark yellowish brown 10YR 4/4) 35% clay, 15% silt, 50% fine-med. grained sand, med. plasticity, firm, dry	SC	3.0 = 4796
			0.0	90			3.5 = 5033
			0.0	65			4.0 = 4906
			0.0	58			4.5 = 5086
			0.0	60	100 Recovery		5.0 = 5084
			0.0	75	5'-5'1" SC clayey sand (dark yellowish brown 10YR 4/4) 35% clay, 15% silt, 50% fine-med. grained sand, med. plasticity, firm, dry	SC	5.5 = 5224
			0.0	75	5'1"-6'8" CL sandy clay (light olive brown 2.5 Y 5/4) 45% clay, 15% silt, 40% fine grained sand med. plasticity, hard, dry	CL	

Radiological Background				Project Name	Project Number	Location	
SZ / 2550				SSFL Area IV Radiological Study	EP9038.01.22.04.03	199	
Depth	Interval	Recovery	PTD	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings
							Inches
							(CPM)
			0.0	70	CL sandy clay		6.0 = 5286
			0.0	60	same as above	SC	6.5 = 5142
7.0			0.0	50	6' 8" - 7' SP SAND (yellowish brown 10YR 5/8) lots silt, 90% fine-med. grained sand loose, dry, non plastic	SP	7.0 = 5295
					TD = 7' bgs (refusal)		
					NO GW encountered		
80							



BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B / 8	Location ID 200
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 7'6"
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/31/11 / 1012	Date/Time Total Depth Reached 1/31/11 / 1023
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected ID: 20434 / time 1050 (2) 1/2 gallon bags		
Geologist Stephene Lepore Norrise	Checked by/Date 5/24/11 TRW		

Radiological Background 54 / 2346	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	55	0'-8" SM silty sand with clay (yellowish brown 10YR 5/4) 20% clay, 30% silt, 50% fine-med. grained sand plant material (grass & roots), low plasticity, soft, dry	SM	0.0 = 2746
			0.0	55	8'-10" asphalt		0.5 = 3984
1.0			0.0	65	10'-12" SM silty sand with clay (brown 10YR 4/3) 20% clay, 25% silt, 55% fine-med. grained sand low plasticity, soft, dry	SM	1.0 = 4550
			0.0	67	12'-13" concrete		1.5 = 4763
2.0			0.0	80	13'-22" SP SAND (light yellowish brown) 10% silt, 90% fine-med. grained sand micaceous, indurated, non plastic, dry	SP	2.0 = 4804
			0.0	100	22'-46" SM silty sand (dark brown, 10YR 3/3) 10% clay, 35% silt, 55% fine-med. grained sand, low plasticity, soft, dry	SM	2.5 = 4883
3.0			0.0	58			3.0 = 4786
			0.0	80	same as above		3.5 = 4802
4.0			0.0	54			4.0 = 4810
			0.0	75	46"-5' NO Recovery		4.5 = 4698
5.0			0.0	58	5'-7'3" SM silty sand with clay (dark yellowish brown) 20% clay, 25% silt, 55% fine-med. grained sand low plasticity, soft, dry	SM	5.0 = 4907
			0.0	61			5.5 = 4924

Radiological Background 54 / 2346				Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 200	
Depth	Interval	Recovery	PID	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)		USCS Symbol	Borehole Gamma Readings (CPM)
			80	Same as above			6.0 = 5206
			80				SM
6.0			80	7'3" - 7'6" SP SAND (brownish yellow (dry) 6/6) 10% silt 90% fine-med. grained sand, loose, dry, not plastic			7.0 = 4961
7.0			75				SP
			85	TDP 7'6" (refused) No GW encountered			

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B / 8	Location ID 201
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 10'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/28/11 / 1334	Date/Time Total Depth Reached 1/28/11 / 1343
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 1D 20435 / Time: 1345 (2) 1/2 gallon bags		
Geologist Stephanie Lopeyne Norton	Checked by/Date BW 5/24/11		

Radiological Background 53 / - / 13	Radiological Equipment Used Pancake / Downhole	PID Used MiniRAE 2000 (Bkgd: 1.2 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			1.2	65	0-5" SM silty SAND 30% silt, 10% clay, 60% fine-med. sand plant material ground sand, low plasticity, soft, dry	SM	+ 0.5 = 2949 0.0 = 3378
			1.2	63	5"-2' SP SAND 10% silt, 90% fine-med. grained sand non plastic, loose, dry	SP	0.5 = 4297 1.0 = 4692
			1.2	58			1.5 = 4733
			1.2	54	2'-4'8" SM silty SAND with clay 20% clay, 30% silt, 50% fine-med. grained sand low plasticity, soft, dry	SM	2.0 = 4736 2.5 = 4720
			1.2	69			3.0 = 4794
			1.2	55			3.5 = 4920
			1.2	90			4.0 = 4828
			1.2	65			4.5 = 5223
			1.2	90	4'8"-5' NO Recovery		5.0 = 5187
			1.2	55	5'-5'2" SM silty SAND with clay 20% clay, 30% silt, 50% fine-med. grained sand, low plasticity, soft	SM	5.5 = 5315
			1.2	65	5'2"-8'5" ML sand SILT with clay 25% clay, 40% silt, 35% fine-med. grained sand low plasticity, soft, dry, trace gravel - subangular - subrounded	ML	

Radiological Background					Project Name	Project Number	Location
531-13					SSFL Area IV Radiological Study	EP9038.01.22.04.03	201
Depth	Interval	Recovery	PID	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings
							Inches (CPM)
7.0			1.2	45	Same as above	ML	6.0 = 5223
			1.2	75			6.5 = 5241
			1.2	86			7.0 = 5320
			1.2	101			7.5 = 5686
			1.2	107			8.0 = 5254
8.0			1.2	86	8'5" - 8'11" - moist (yellowish brown 10YR 5/4)	SM	8.5 = 5317
			1.2	107	8'5" - 10' SM silty sand		9.0 = 5337
9.0			1.2	90	8'11" - 10' dry 10% clay, 35% silt, 55% fine-coarse grained sand low plasticity, very soft, dense trace gravel - sub angular & sub rounded		9.5 = 5603
			1.2	80			10.0 = 5708
10.0			1.2	80			
TD = 10' bgs NO GW encountered							



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B.1/Group 8	Location ID 202
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-16-10/1420	Date/Time Total Depth Reached 12-16-10/1423
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20437) (1422)		
Geologist C. Carmichael	Checked by/Date [Signature] 5/13/11		

(p12) Radiological Background 0.0, 15 Radiological Equipment Used up R meter PID Used Mini Rae 2000 (Background = 0.0 ppm)

Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			0.0	14	Silt with sand, (10YR, 4/4), brown, 80% silt, 20% fine grained sand, rootlets common, dry, soft, no odor. No groundwater encountered	ML		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 8	Location ID 202
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 8'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/28/11 / 1425	Date/Time Total Depth Reached 1/28/11 / 1434
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected ID 20436 / time 1435 (2) 1/2 gallon bags		
Geologist Stephanie Lopez Montoya	Checked by/Date L.J.W. 5/24/11		

Radiological Background 07 / - / 13	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 1.2 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches
							+0.5 = 2878 (CPM)
	0-8"		1.2	55	SM silty SAND (light olive brown) 30% silt, 10% clay, 60% fine-med. grained sand low plasticity, soft, dry	SM	0.0 = 3620 0.5 = 4262
	8"-1'4"		1.2	80	SM SAND with silt (lighter yellowish brown) 10% clay, 20% silt, 70% fine-coarse grained sand low plasticity, very soft, dry	SM	1.0 = 4640
	1'4"-1'8"		1.2	65	SP SAND (brownish yellow) 15% silt, 10% clay, 75% fine-med. grained sand asphalt debris, low plasticity, soft, dry, dense	SP	1.5 = 4606
	1'8"-2'10"		1.2	70	SM silty SAND, with clay (brown 10YR 4/3) 25% silt, 20% clay, 55% fine-med. grained sand moist-wet, low plasticity, soft, dry	SM	2.0 = 4774 2.5 = 4737
	2'10"-4'		1.2	90	SC clayey SAND (dark yellowish brown) 35% clay, 25% silt, 50% fine-med. grained sand low-med. plasticity, firm, moist	SC	3.0 = 4760 3.5 = 4613
	4'-5'		1.2	93	NO Recovery		4.0 = 4855
			1.2	78			4.5 = 5158
	5'-5'2"		1.2	61	SC clayey SAND (dark yellowish brown) 35% clay, 25% silt, 50% fine-med. grained sand, med. plasticity, firm, dry	SC	5.0 = 5522
	5'2"-8'		1.2	100	CL sandy CLAY with silt (brown 10YR 5/3) 40% clay, 25% silt, 35% fine-med. grained sand med. plasticity, firm, dry	CL	5.5 = 5513

Radiological Background				Project Name	Project Number	Location	
67	-	13		SSFL Area IV Radiological Study	EP9038.01.22.04.03	202	
Depth	Interval	Recovery	PID	Radiological	Description	USCS Symbol	Borehole Gamma Readings (CPM)
					(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)		Inches
			1.2	85			6.0 = 5460
			1.2	89	same as above		6.5 = 5277
7.0			1.2	105	7'-8' SP SAND (brownish yellow 10YR 6/8)	SP	7.0 = ---
			1.2	110	10% silt, 90% fine-med. grained sand non plastic, very loose, dry		7.5 = ---
8.0			1.2	75			8.0 = ---
					TD = 8' bgs No GW encountered		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 203
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-15-10/1455	Date/Time Total Depth Reached 12-15-10/1505
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (# 20439) (500.)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/13/11		

Radiological Background 13 uR, 0.9 ppm	Radiological Equipment Used M R meter	PID Used Mini Rae 2000 (Background = 0.9 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'			0.9	13	silt w/ sand, brown (10YR 4/3), dry, soft, 75% silt, 15% fine sand, 10% clay, common mottles, no odor	ML		
					GW 0.5' GW ∅ (no GW encountered)			

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, Group B	Location ID 203
Drilling Company Cascade Drilling	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 8.5
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 01/27/11, 11:5	Date/Time Total Depth Reached 01/27/11, 11:25
Type of Sampling Device 1 3/4" macro core!	Geologist P. Skeath	Samples Collected 20438, 11:20 (2) 1/2 gal bag	Checked by/Date [Signature] 5/13/11

Radiological Background 62 cpm, 2484 cpm	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rac 2000 (Background=0.3 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.3	45	Sandy silt, dense yellowish brown (10YR 3/4), dry, soft, 45% f. sand, 55% silt, common roots, no odor.	ml	2675
				75			4136
				75			4658
				40			4965
				75			4906
2'				85	Silt w/ sand, very dark brown (10YR 2/2), moist, med. stiff, 20% f. sand, 80% silt, no odor.	ml	4923
				70			4974
3'				80			5007
				55			4981
				50			4831
4'					Sandy silty sand, yellowish brown (10YR 5/6), dry, dense sand, 55% med. sand, 45% silt, no odor.	sm	4984
5'				40			5023
6'				50			5457

Radiological Background				Project Name	Project Number	Location
C2cpm / 2000cpm				SSFL Area IV Radiological Study	EP9038.01.22.04.03	203
Depth	Interval	Recovery	PTD	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)		Borehole Gamma Readings (CPM)
5			0.3	100	Same as above	4984
				40		5023
6				50		5457
				65		5573 5573
7				60	Silt w/ sand w/ clay, yellowish brown (1042 5/6), dry, wick, 70% silt, 15% s. sand, 15% clay, no odor	5574
				60		5545
				75		5581
8				75	Refusal Siltstone	5175
9						
					TD 8.5'	
					NO GW	

BORING LOG

Project Name: SSEL Area JV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5b, Group 8	Location ID 204
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/15/10, 1530	Date/Time Total Depth Reached 12/15/10, 1600
Type of Sampling Device trowel/shovel	Samples Collected 20441, 1555 (2) 1/2 gal bag		
Geologist P. S. Cam	Checked by/Date <i>[Signature]</i> 5/13/11		

Radiological Background 0.4 ppm, 15 AR	Radiological Equipment Used M/R meter	PID Used Mini Rae 2000 (Background = 0.4 ppm)
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(PID)

Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5				0.9 15	sandy silt, dark yellowish brown (10YR 3/4) dry, soft, 35% fine sand, 65% silt, common rootlets, fragments of plastic & asphalt, no odor	ML		
TB 0.5 GW ♂ (no GW encountered)								

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 204
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 7'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1-31-11 / 1034	Date/Time Total Depth Reached 1-31-11 / 1136
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags (#20440) (1130)		
Geologist C. Carmichael	Checked by/Date [Signature] 5/13/11		

(PID) Radiological Background 0.2, 2556, 49 Radiological Equipment Used Pancake meter, Downhole scanner PID Used Mini Rae 2000 (Background = 0.2 cpm)

Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
			0.2	55				0.5 - 2408
1'				70	Silt with clay (10 YR, 3/3), dark brown, 65% silt, 30% clay, 5% fine grained sand, some rootlets are in top 4", dry, medium stiff, medium plasticity and hardness, no odor, trace fill gravel and asphalt found in some cores.	ML	3988	0 - 2944
			75	4630				
			75	4904				
2'				70	Same as above, except moist.	ML	4770	
			55	4827				
			55	4798				
3'				75	3.75' Silt with sand and clay, (10 YR, 5/4), light brown, 70% silt, 15% fine grained sand, 15% clay, dry, medium stiff, very little hardness, no plasticity, no odor.	ML	4723	
			65	4724				
			4.25'					
4'				60	Sandy silt (10 YR, 5/4), light brown, 55% silt, 45% fine to medium grained sand, dry, medium stiff, speckled texture, no plasticity or hardness, no odor.	ML	4949	
			60	4929				
5'				70	5.5' Sand, (10 YR, 6/3), beige, 95% fine to coarse grained subrounded fine sand, 5% silt, dry, medium dense, no hardness or plasticity, no odor.	SW	5375	
			60	5401				

Radiological Background 0.2, 2556, 49					Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 204	
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)		USCS Symbol Inches	Borehole Gamma Readings (CPM)
			0.2	60	Same as above		Sw	5394
7'			0.2	70	Refusal hit at 7'. No gw encountered			n/a

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 205
Drilling Company HGL	Driller A. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-16-10/1426	Date/Time Total Depth Reached 12-16-10/1430
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20443) (1430)		
Geologist C. Carmichael	Checked by/Date [Signature] 5/13/11		

Radiological Background (P) 0.0, 14	Radiological Equipment Used MP R meter	PID Used Mini Rae 2000 (Background=0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'			0.0	14	Silt with sand, (10 yr, 4/4), brown, 80% silt, 20% fine grained, subrounded sand, medium stiff, dry, common rootlets, no odor. No groundwater encountered.	ML		

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B / 8	Location ID 205
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 3'6"
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2/3/11 / 0916	Date/Time Total Depth Reached 2/3/11 / 0921
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected (2) 1/2 gallon bags	ID 20442 / time: 0940	
Geologist Stephanie Lapeyre-Mastroianni	Checked by/Date ESW 5/24/11		

Radiological Background S4 / 2475	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches</small> +0.5 = 2466 (CPM)
			0.0	60	0-8" SM silty sand with clay (brown 10YR 4/3)	SM	0.0 = 2662
			0.0	55	(0-3" plant material - roots + grass) 25% silt, 20% clay, 55% fine-med. grained sand low plasticity, soft, dry		0.5 = 3636
1.0			0.0	48	8"-1'7" SM silty sand with clay (dark yellowish brown 10YR 4/4)	SM	1.0 = 4564
			0.0	67	30% silt, 20% clay, 50% fine-med. grained sand low plasticity, soft, dry		1.5 = 4700
2.0			0.0	70	1'7"-3'3" SC clayey sand (dark yellowish brown 10YR 4/4)	SC	2.0 = 4866
			0.0	74	30% clay, 15% silt, 55% fine-med. grained sand low plasticity, soft, dry		2.5 = 4796
3.0			0.0	60			3.0 = 4765
			0.0	65	3'3"-3'6" SP SAND (yellowish brown 10YR 5/6)	SP	3.5 = 5110
					15% silt, 85% fine-med. grained sand non plastic, loose, dry		
4.0					TO = 3'6" (refused) No GW encountered		
5.0							

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID SB, group 8	Location ID 206
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-17-10/1007	Date/Time Total Depth Reached 12-17-10/1011
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20445) (1010)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/13/11		

Radiological Background (PID) 0.3, 15	Radiological Equipment Used M R meter	PID Used Mini Rae 2000 (Background=0.3 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'			0.3	14	Sandstone with sandy silt overlaying, (10 YR, 4/3), brown, with beige JSS, 80% fine grained, subangular grains (SS) 20% silt, some rootlets, dry, dense, no odor. No groundwater encountered.	SP-SM	

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID SB, group 8	Location ID 207
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-17-10/1100	Date/Time Total Depth Reached 12-17-10/1117
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20447) (1115.)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/13/11		

Radiological Background <i>(PID)</i> 0.4, 15	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background=0.4 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'				0.4, 15	Sandy silt with rock fragments, (10YR, 4/4), brown, 55% silt, 30% fine grained sand, 15% sandstone rock fragments, mottled texture, soft, dry, no odor. No groundwater		

[Handwritten signature]

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 208
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-17-10/1049	Date/Time Total Depth Reached 12-17-10/1055
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20449) (1055)		
Geologist C. Carmichael	Checked by/Date  5/13/11		

Radiological Background 0.4, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (background=0.4 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'			0.4	14	<p>Silty sand Sandy silt^{cc}, (10 YR, 4/4), brown, 65% fine grained subangular sand, 35% silt, dry, loose, common rootlets, no odor.</p> <p>No groundwater.</p>	SM	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B / 8	Location ID 209
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-17-10 / 11:35	Date/Time Total Depth Reached 12-17-10 / 11:45
Type of Sampling Device trowel/shovel	Samples Collected 20451 (1140) 2-1/2 gal bags		
Geologist C. Knight	Checked by/Date <i>[Signature]</i> 5/19/11		

Radiological Background 14 mR	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 2.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.15			2.0	13	5.1 ft of sand; Brown (10YR 5/3) med, loose, no odor; 5% clay, 20% fine sand, 75% silt, non cohesive, trace rootlets in upper surface	M		
0.5								

TD 0.5' hrs
no gamma counted

Project Name: SSEL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID 5B, group 8		Location ID 209	
Drilling Company Cascade		Driller H. Lopez		Ground Elevation NA		Total Drilled Depth 5'	
Drilling Equipment Geoprobe 6600		Borehole Diameter 1 3/4"		Date/Time Drilling Started 2-2-11/ 1322		Date/Time Total Depth Reached 2-2-11/ 1420	
Type of Sampling Device 1 3/4" macrocore				Samples Collected 2 1/2 gall bags (#20446) (1415)			
Geologist C. Carmichael				Checked by/Date <i>[Signature]</i> 5/13/11			
Radiological Background 59,2778 cpm		Radiological Equipment Used Pancake meter, Downhole scanner		PID Used Mini Rae 2000 (Background=0.0 ppm)			

Depth	Interval	Recovery	RPD	Radiological	Description <small>(include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
			0.0	70			8.5	2812
			0.0	60	Silt with sand, (10 YR, 3/3), dark brown, 80% silt, 20% fine grained subrounded sand, some rootlets in top 1', dry, medium stiff, very low hardness, no plasticity, no odor.	ML		0
				60			4630	
				75			4775	
				75			4945	
				80			4987	
				60	Sand, (10 YR, 6/6), beige, 100% fine to medium grained subangular sand, dry, medium dense, no plasticity, no odor.			5233
				70		SW	5380	
				75			5555	
				100	Clayey sand, (10 YR, 6/6), beige, 65% fine grained sand, 30% clay, 5% silt, low hardness, very low plasticity, dry, stiff dense, no odor, laminated.	SM ^{sc}		6252
				60	Sand (same as 3.5' - 4') (weathered bedrock)	SW		6088
					Refusal hit at 5'			5877
					No GW encountered			

(lab)
20563
20565 (MS)
20564
(Rid - no time)

0.5 - 2812
0 - 3680



5B_210



BORING LOG

Sheet 1 of 1

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 210
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-17-10/1121	Date/Time Total Depth Reached 12-17-10/1129
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20453)(1125)		
Geologist C. Carmichael	Checked by/Date		

Radiological Background (EPID) 0.5, 15	Radiological Equipment Used w/ R meter	PID Used Mini Rae 2000 (Background = 0.5ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'				0514	Sandy silt with gravel, (10 YR, 4/4) brown, 60% silt, 30% fine grained sand, 10% pea gravel (clasts of sandstone), rootlets common, dry, soft, no odor. No groundwater.	SM		

Project Name: SSEL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 210
Drilling Company Cascade		Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 5'
Drilling Equipment Geoprobe 6600		Borehole Diameter 1 3/4"	Date/Time Drilling Started 2-3-11/1003	Date/Time Total Depth Reached 2-3-11/1046
Type of Sampling Device 1 3/4" macrocore		Samples Collected 2 1/2 gall bags (#20452) (1045)		
Geologist C. Carmichael		Checked by/Date <i>[Signature]</i> 5/19/11		
Radiological Background 57, 2964 cpm		Radiological Equipment Used Pancake meter, Downhole Scanner		PID Used Mini Rac 2000 (Background = 0.1 ppm)

Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings <small>(CPM)</small>
1'			0.1	60	Silt with sand (10YR, 4/4), brown, 85% silt, 15% fine grained sand, some rootlets in top 6", dry, medium stiff, low hardness, no plasticity, no odor, trace brick fragments found in one core.	ML	2884	0.5-2628
				75			5310	
			1.5'	75	Sand with silt, (10YR, 4/6) brown, 80% fine to medium grained subrounded sand, 20% silt, dry, medium dense, no plasticity or hardness, no odor.	SM	5223	
2'				65			5108	
				75			5162	
3'				65			5215	
				75			5389	
4'				65	Some iron-oxide tinting in last 6"		5360	
				75			5586	
5'				50	Sand (10YR, 6/6), beige, 100% fine to medium grained subrounded sand, dry, medium dense, no odor (weathered bedrock)	SW	5541	
					Refusal bit at 5'			
					No GW encountered			



Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 211
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-17-10/1401	Date/Time Total Depth Reached 12-17-10/1406
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20455) (1405)		
Geologist C. Carmichael	Checked by/Date [Signature] 5/13/11		

CP107 Radiological Background 0.5, 14 Radiological Equipment Used up R meter PID Used Mini Rae 2000 (Background=0.5ppm)

Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'			10.5	14	Sandy silt, (10YR, 3/2), dark brown, 80% silt, 20% fine grained sand, rootlets common, moist, to soft, no odor. No groundwater.	ML		

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 211
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 7'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2-3-11/1258	Date/Time Total Depth Reached 2-3-11/1351
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags (#20454) (1350)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/13/11		

Radiological Background 52, 3071cpm	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rae 2000 (Background = 0.0ppm)
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Depth	Interval	Recovery	PPID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
			0.0	65			8.5	2964
				60	Silt, (10 YR, 3/4), dark brown, 90% silt, 10% fine grained sand, dry, medium stiff, some rootlets throughout, low hardness, no plasticity, no odor.	ML		
1'				60				4842
				60	Silt with sand and clay, (10 YR, 3/3), dark brown, 70% silt, 15% fine grained sand, 15% clay, semi-moist, medium stiff, low-medium hardness, very low plasticity, no odor.	ML		
2'				50				5381
				55				5409
				60				5365
				60				5032
3'				70				4943
				45				4942
				75				4895
4'				75	Sand with clay (10 YR, 5/6), 70% fine to medium grained sand, 20% clay, 10% silt, semi-moist, dense, no plasticity or hardness, no odor.	SMSC		
				75				4911
				70				5053
				75				5175
5'				70				5319
				70				
6'				70				

Radiological Background					Project Name	Project Number	Location
52,307cpm					SSFL Area IV Radiological Study	EP9038.01.22.04.03	211
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings
							(CPM)
			0.080		Sand (10YR, 6/6), beige, 100% fine to medium subrounded sand, dry, medium dense, no plasticity or hardness, no odor. (weathered bedrock).	SW	5893
7'			0.065				6093
					Refusal hit at 7' No @w encountered		

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID 5b, Group B	Location ID 212				
Drilling Company HGL		Driller C. Knight	Ground Elevation NA	Total Drilled Depth 0.5'				
Drilling Equipment trowel/shovel		Borehole Diameter NA	Date/Time Drilling Started 12/20/10 0910	Date/Time Total Depth Reached 12/20/10 0920				
Type of Sampling Device trowel/shovel		Samples Collected 20456 plus (2) 1/2 gal bags						
Geologist P. Sireath		Checked by/Date <i>[Signature]</i> 5/24/11						
Radiological Background 13 nR, 0.0 ppm		Radiological Equipment Used M R meter	PID Used Mini Rae 2000 (Background = 0.0 ppm)					
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			0	13	<p>poorly graded sand w/ silt w/ gravel, very dark greyish brown (w/ rust) saturated med. sand, 15% silt, 15% gravel, 70% med. sand, 15% silt, 15% gravel, no other</p> <p>TO 0.5'</p> <p>plastic in soil</p> <p>saturated soil</p> <p>encountered surface water</p>	SP		

Project Name: SSEL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID: SB, group 8	Location ID: 213
Drilling Company: HGL	Driller: H. Thompson	Ground Elevation: NA	Total Drilled Depth: 0.5'
Drilling Equipment: trowel/shovel	Borehole Diameter: NA	Date/Time Drilling Started: 12-20-10/0910	Date/Time Total Depth Reached: 12-20-10/0919
Type of Sampling Device: trowel/shovel	Samples Collected: 2 1/2 gall bags, 1 8oz jar (#20457) (0915)		
Geologist: C. Carmichael	Checked by/Date: <i>[Signature]</i> 5/13/11		

Radiological Background: (PID) 0.0, 14	Radiological Equipment Used: APR meter	PID Used: Mini Rae 2000 (Background=0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'				14	<p>Sand with silt</p> <p>Silty sand^{cc}, (10YR, 3/2), brown, 80%. Fine to medium grained subangular sand, 20% silt, moist, loose, some vegetation/rootlets.</p> <p>No groundwater encountered.</p>	SW SM	

Project Name: SSFL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID: 5b, Group B	Location ID: 214
Drilling Company: HGL	Driller: C. Knight	Ground Elevation: NA	Total Drilled Depth: 0.5'
Drilling Equipment: trowel/shovel	Borehole Diameter: NA	Date/Time Drilling Started: 12/20/10, 0935	Date/Time Total Depth Reached: 12/20/10, 0945
Type of Sampling Device: trowel/shovel	Samples Collected: 2045B, 0940 (2) 1/2 gal bags		
Geologist: P. Skeath	Checked by/Date: <i>[Signature]</i> 5/24/11		

Radiological Background: 0.0ppm, 12 MP	Radiological Equipment Used: MP R meter	PID Used: Mini Rae 2000 (Background = 0.0ppm)
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(PID)

Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5					poorly graded sand w/ ^{SP} silt w/ gravel, very dark greyish brown (WYS 3/2), ^{SP} sand, 30% med. sand, 45% silt, 15% s.-s. med. gravel, no ocler, common rootlets	SP		
					TD 0.5' ignott sand in soil scattered soil ^{SP} encountered surface water			



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BORING LOG

Sheet 1 of 1

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5b, Group B	Location ID 215
Drilling Company HGL	Driller C. Knight	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/20/10, 0955	Date/Time Total Depth Reached 12/20/10, 1005
Type of Sampling Device trowel/shovel	Samples Collected 20559, 1000 (2) 1/2 gal bag		
Geologist P. Skeath	Checked by/Date <i>[Signature]</i> 5/24/11		

Radiological Background 0 ppm	Radiological Equipment Used M/R meter	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0.5			0	12	<p>Silty sand w/ gravel saturated loose sand, 35% silt, 50% fine & med. sand, 15% s. & med. gravel, no clay, few concretions</p> <p>TO 0.5' standing water saturated soil no encountered surface water</p>	SM	



BORING LOG

Sheet 1 of 1

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 216
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-20-10/0933	Date/Time Total Depth Reached 12-20-10/0936
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bag, 1.8oz jar (#20460) 0935		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/13/11		

Radiological Background 0.0, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background=0.0ppm)
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(PID)

Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'				20 14	Clayey silt with sand, (10 YR, 3/2) dark brown, 70% silt, 25% clay, 5% fine grained sand, moist soft, trace rootlets, no odor.	ML	
					No groundwater encountered.		



BORING LOG

Sheet 1 of 1

Project Name: SSEL Area JV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 217
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-20-10/0946	Date/Time Total Depth Reached 12-20-10/0950
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 1 8-oz jar (#20461) (0950)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/13/11		

Radiological Background (910) D.O. 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background=0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'				0.0 14	Sandy silt, (10 YR, 3/2) dark brown, 70% silt, 30% fine grained subrounded sand, moist, loose, some vegetation, no odor. No groundwater encountered.	ML SM et		





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BORING LOG

Sheet 1 of 1

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5b, Group B	Location ID 218
Drilling Company HGL	Driller C. Knight	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/20/10, 1025	Date/Time Total Depth Reached 12/20/10, 1035
Type of Sampling Device trowel/shovel	Samples Collected 20463, 1039 (2) 1/2 gal bags		
Geologist P. SKEATH	Checked by/Date <i>[Signature]</i> 5/13/11		

Radiological Background 12-20-10, 1039	Radiological Equipment Used MP R meter	PID Used Mini Rae 2000 (Background=0.1 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0-0.5				0.2-12	<p>poorly graded sand w/ silt, very dark brown (10 YR 2/2), moist, loose sand, 85% med. sand, 15% silt, no clay, few pebbles, med. U.M.</p> <p>TD 0.5' NO GW saturated soil</p>	SP	

5B_219



BORING LOG

Sheet 1 of 1

Project Name: SSFL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID: Sh, Group 8	Location ID: 219
Drilling Company: HGL	Driller: D. Rivera	Ground Elevation: NA	Total Drilled Depth: 0.5'
Drilling Equipment: trowel/shovel	Borehole Diameter: NA	Date/Time Drilling Started: 12/21/10, 0955	Date/Time Total Depth Reached: 12/21/10, 0905
Type of Sampling Device: trowel/shovel	Samples Collected: 20464, 0900 (2) 1/2 gal bags, (1) 4oz jar		
Geologist: P. S. KAMM	Checked by/Date: <i>[Signature]</i> 5/24/11		

Radiological Background: 11.1 nR, 0.0 ppm	Radiological Equipment Used: M/R meter	PID Used: Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0.5				11	<p>Silty sand, dark brown (10YR 7/2)</p> <p>sampled mostly loose sand, 30% silt, 70% fine sand, common roots, no odor</p> <hr/> <p>TO 0.5'</p> <p>sampled soil</p> <p>soil encountered surface water</p>	SM	

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 220
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-20-10/1027	Date/Time Total Depth Reached 12-20-10/1031
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags 1-8-oz jar (#20466) (1030)		
Geologist C. Carmichael	Checked by/Date [Signature] 5/13/11		

Radiological Background (p) 0.0, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings (CPM)
0.5'			0.0	14	Sandy silt, (10 YR, 3/2), dark brown mottled with light brown sand, 60% silt, 40% fine grained subangular sand, moist, loose, no odor. No groundwater encountered.	ML SM cl	



5B_221



BORING LOG

Sheet 1 of 1

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5b, Group B	Location ID 221
Drilling Company HGL	Driller C. Knight	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/20/10, 1045	Date/Time Total Depth Reached 12/20/10, 1055
Type of Sampling Device trowel/shovel	Samples Collected 20467, 1050 (2) 1/2 gal bags		
Geologist P. Skeath	Checked by/Date <i>[Signature]</i> 5/24/11		

Radiological Background 14 net, 0.2 ppm (PID)	Radiological Equipment Used M/R meter	PID Used Mini Rae 2000 (Background=0.2 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			0.2	14	silty sand, very dark greyish brown (with 3/2) ^{PS} 35% silt, 65% med sand, 55% silt, no odor, common rootlets.	SM		
					TD 0.5' PS saturated soil encountered surface water			

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID Group B, 5b	Location ID 222
Drilling Company HGL	Driller D. Zivick	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/21/10, 0910	Date/Time Total Depth Reached 12/21/10, 0920
Type of Sampling Device trowel/shovel	Samples Collected OT @ 2016g, 0915 (2) 1/2 gal bag, (1) 4oz jar		
Geologist P. Szean	Checked by/Date J. [Signature] 5/24/11		

Radiological Background 11 nR, 10.1 ppm (P10)	Radiological Equipment Used M/R meter	PID Used Mini Rae 2000 (Background = 0.1 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0.5'				11	<p>sandy silt w/ clay, dark brown (10YR 3/2)</p> <p>soft, ^{saturated} moist, 35% fine sand, 15% clay, 50% silt; common rootlets; no odor.</p> <p>TO 0.5'</p> <p>saturated soil</p> <p>GW @ 0.5'</p> <p>surface water</p>		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 223
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-21-10/0909	Date/Time Total Depth Reached 12-21-10/0913
Type of Sampling Device trowel/shovel		Samples Collected 2 1/2 gall bags, 1 8oz jar (#20471) (0913)	
Geologist C. Carmichael		Checked by/Date <i>[Signature]</i> 5/13/11	

Radiological Background (p) 0.1, 15	Radiological Equipment Used w/ R meter	PID Used Mini Rae 2000 (Background = 0.1 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'				0.114	Clayey, sandy silt, (10 YR, 4/3), 60% silt, 20% clay, 20% fine to medium grained subangular sand, moist, soft, some rootlets, clayey silt is top 2", sandy silt is bottom 4", no odor. No groundwater encountered.	ML		

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 223
Drilling Company HGL	Driller P. Skreath	Ground Elevation NA	Total Drilled Depth 6.5'
Drilling Equipment Hand auger	Borehole Diameter 2 3/4"	Date/Time Drilling Started 3-10-11/0857	Date/Time Total Depth Reached 3-10-11/1000
Type of Sampling Device 2 3/4" hand auger	Samples Collected 2 1/2 gall bags, 14-oz jar (#20470)(1000)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 4/14/11		

Radiological Background 68,3352 cpm	Radiological Equipment Used Downhole scanner, Pancake meter	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.2	30	Sandy silt, (10YR, 4/4), brown, 65% silt, 35% fine grained sand, moist, few rootlets, very low hardness and plasticity, no odor, soft.	ML	0.5 3143 0 3323
1'			0.2	63	Sand with clay, (10YR, 3/3), dark brown, 85% fine grained sand, 15% clay, semi-moist, low hardness, no plasticity, no odor, medium dense	SC	5073
			0.2	70			5144
2'			0.3	30	----- Gradational Contact ----- Sand with clay (same as above), except 70% fine grained sand, 30% clay, low plasticity and hardness, medium dense.	SM	5292
			0.3	45			5356
3'			0.3	80	----- Gradational Contact ----- Sand with clay (same as 1'-3')	SM	5367
			0.3	20			5438
4'			0.3	70		SM	5303
			0.4	60			5335
5'			0.4	90	Sand with silt, (10YR, 5/3), brown, 85% fine to medium grained sand, 15% silt, moist-wet, no odor, medium dense.	SM	5309
			0.3	40			5348
6'			0.4	75			5310

Radiological Background 68,3352cpm					Project Name SSFE Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 223
Depth	Interval	Recovery	P/D	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings (CPM)
7'				0.3 SD	Refusal hit at 6.5' Groundwater at 6'		5339



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BORING LOG

Sheet 1 of 1

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID 5B, group 8		Location ID 224	
Drilling Company HGL		Driller H. Thompson		Ground Elevation NA		Total Drilled Depth 0.5'	
Drilling Equipment trowel/shovel		Borehole Diameter NA		Date/Time Drilling Started 12-21-10/0901		Date/Time Total/Depth Reached 12-21-10/0905	
Type of Sampling Device trowel/shovel				Samples Collected 2 1/2 gall bags, 1 8-oz jar (#20473 ^{cc} (0905))			
Geologist C. Carmichael				Checked by/Date <i>[Signature]</i> 5/13/11			
Radiological Background 0.0, 14			Radiological Equipment Used MP R meter			PID Used Mini Rae 2000 (Background = 0.0ppm)	
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches (CPM)</small>
0.5'				0.0 13	Clayey silt with sand, (10YR, 3/1), dark brown, 70% silt, 25% clay, 5% fine grained subrounded ^{gr} sand, moist, soft, rootlets common, no odor. No groundwater encountered.	ML	

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 224
Drilling Company HGL	Driller P. Skeath	Ground Elevation NA	Total Drilled Depth 6'
Drilling Equipment Hand auger	Borehole Diameter 2 3/4"	Date/Time Drilling Started 3-10-11/1038	Date/Time Total Depth Reached 3-10-11/1145
Type of Sampling Device 2 3/4" hand auger	Samples Collected 2 1/2 gall bags, 1 4-oz jar (#20472) (1145)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 4/14/11		

Radiological Background 56, 3089 cpm	Radiological Equipment Used Downhole scanner, Pancake meter	PID Used Mini Rae 2000 (background=0.5 cpm)
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Depth	Interval	Recovery	Radiological CPM	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
						Inches	(CPM)
			0.5 70			0.5	3214
1'			0.5 90	Silt with sand, (10 YR, 4/3), brown, 80% silt, 20% fine grained sand, medium moist, soft, no plasticity, very low hardness, no odor.	ML		
			0.5 50				4663
			0.5 60	Sand with clay, (10 YR, 3/3); brown, 85% fine grained sand, 15% clay, semi-moist, mottled texture, medium dense, low hardness, no plasticity, no odor.	SM SC		5140
2'			0.5 60				5103
			0.5 60				5215
			0.5 60				5293
3'			0.5 50				5447
			0.5 55				5353
4'			0.5 110				5241
			0.5 50				5417
5'			0.5 90	Sand with clay, (10 YR, 5/3), light brown (same as above otherwise)	SM SC		5248
			0.5 75				5259
6'			0.5 75	Sandstone bedrock at 6'.			5248

Refusal hit at 6'.
No groundwater encountered.
(ca)

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 225
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-21-10/0931	Date/Time Total Depth Reached 12-21-10/0936
Type of Sampling Device trowel/shovel		Samples Collected 2 1/2 gall bags, 1 8-oz jar (#20475) (0935)	
Geologist C. Carmichael		Checked by/Date <i>[Signature]</i> 5/5/11	

Radiological Background (CPM) 0.2, 12	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background=0.2 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches (CPM)</small>
0.5'			0.1	15	Clayey silt with sand, (10YR, 3/2), dark brown, 70% silt, 20% clay, 10% fine grained subrounded sand, moist, soft, rootlets common, no odor. No groundwater encountered.	ML	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B group 8	Location ID 225
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 30
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 3-9-11 0845	Date/Time Total Depth Reached 3-9-11 0853
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected (1) 20474 (0850) (2) 1/2 gallon bags + 4oz jar		
Geologist C. Knight	Checked by/Date [Signature] 4/14/11		

Radiological Background 42 / 2692	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0.5			0.0	40	Silt w/ sand and clay; dark yellowish brown (10YR 4/4), moist, med stiff, no odor, 70% fine sand, 20% clay, 60% silt, cohesive, low plasticity, no dilatancy, some plant debris in upper foot, trace rootlets.	ML	10.5' 2669
1.0		0.0	50	2881			
		0.10	40	4236			
		0.0	50	4876			
2.0		0.0	55	4874			
		0.0	45	55	Sandstone: Olive (5Y 5/3), moist, hard, nodular, fine grained sandstone, weathers to SP	SP	4920
3.0		0.0	55	4962			
		0.10	55	55	Refusal on Sandstone 3.0' bgs		4805
4.0							
5.0							
6.0							



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BORING LOG

Sheet 1 of 1

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 226
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-21-10/0942	Date/Time Total Depth Reached 12-21-10/0948
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 1 8oz jar (#20477)(0948)		
Geologist C. Carmichael	Checked by/Date 5/15/11		

Radiological Background (P.10) 0.3, 14	Radiological Equipment Used w/ R meter	PID Used Mini Rae 2000 (Background = 0.3 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'				0.3, 14	Clayey silt with sand, (10 YR, 4/3), brown, 65% silt, 20% clay, 15% fine grained subangular sand, moist, soft, rootlets common, no odor. No groundwater encountered.	ML		

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B group 8	Location ID 226
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 2.5
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 3-9-11 0950	Date/Time Total Depth Reached 3-9-11 1030
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected (2) 1/2 gallon bags + 4oz JG1		
Geologist C. Knight	Checked by/Date [Signature] 4/14/11		

Radiological Background 52/2481	Radiological Equipment Used Pancake / Downhole	PID Used MiniRAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole
							Gamma Readings Inches
			0.0	45	surface: grass-native soil		2647
0.5			0.0	60	Sandy silt; dark yellowish brown (10YR 4/4), moist, med. stiff, no odor, 35% fine sand, 5% medium sand, 10% clay, 50% silt, trace rootlets	ML	4233
1.0			0.0	60	fine sand pocket at 1.5 and 2.0' bgs, fine sand in between silt	ML	4692
			0.0	75		SP	4809
2.0			0.0	75	2" clay; dark yellowish brown (10YR 3/6), moist, med. stiff, no odor, 10% silt, 10% fine sand, 80% clay, cohesive, low plasticity	CL	4973
			0.0	75	Sandstone: Olive (5Y 5/3), moist, med. dense, no odor, mechanically weathered to SP fine and med. sand		5055
3.0					refusal @ 2.5' bgs on sandstone		
4.0					No GW encountered		
5.0							
6.0							



5B_227



BORING LOG

Sheet 1 of 1

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5b, Group B	Location ID 227
Drilling Company HGL	Driller D. RIVERA	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/21/10, 0930	Date/Time Total Depth Reached 12/21/10, 0930
Type of Sampling Device trowel/shovel	Samples Collected Dups: 20536 (ms), 20537 (lab), 20538 (Field - no time) 20539, 0935 (2) 1/2 gal bag, (1) 4oz jar		
Geologist P. SCAW	Checked by/Date		

Radiological Background 0.3 - 0.5, 13 pp	Radiological Equipment Used M R meter	PID Used Mini Rae 2000 (Background = 0.3ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5				0.3 13	sandy silt w/ clay, dark brown (10R 2.5/1) moist, soft, 30% fine sand, 15% clay, 55% silt, some rootlets, no odor	ml		
					to 0.5 Broken clay pottery found in area NO GW encountered			



5B_228



BORING LOG

Sheet 1 of 1

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 228
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 2-10-10/0915	Date/Time Total Depth Reached 12-10-10/0920
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 1 8-oz jar (#20511) (0920)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/10/11		

Radiological Background 0.0, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background=0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'				0.0 14	Sandy silt, (10YR, 4/4), brown, 55% silt, 45% fine to medium grained subrounded sand, common rootlets, dry, loose. TO = 0.5' bgs No Gw encountered	SPW ML		



BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 229
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-10-10/0838	Date/Time Total Depth Reached 12-10-10/0845
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 1 8-oz jar (#20084)(0845)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/10/11		

(PID) Radiological Background 0.2, 12 Radiological Equipment Used up R meter PID Used Mini Rae 2000 (Background = 0.2ppm)

Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			0.2	12	Sandy silt, (10 YR, 3/3), brown, 65% silt, 35% fine grained sand, moist, medium dense, trace vegetation and rootlets, Mottled color of lighter brown and darker brown. TD = 0.5' bgs No GW encountered	SM ML		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B / 1	Location ID 229
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2/3/11 1138	Date/Time Total Depth Reached 2/3/11 1148
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected ID 20643 / Time: 1255 (2) 1/2 gallon bags / (1) 4oz. jar		
Geologist Stephane Lapeyn Norstrom	Checked by/Date TAD 5/25/11		

Radiological Background 37 / 2403	Radiological Equipment Used Pancake / Downhole	PID Used MiniRAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	65	0-8" SM SAND with silt (light yellowish brown 10YR 6/4) wood debris, asphalt debris, concrete debris 10% clay, 20% silt, 70% fine-coarse grained sand low plasticity, very soft, dry, trace gravel-subangular	SM	0.0 = 2673 0.5 = 4164
			0.0	77	8"-11" SM SAND ^{clayey sand} sandy silt ^{with clay} (yellowish brown 10YR 5/4)	SC	1.0 = 4794
			0.0	86	10% silt, 30% clay, 60% fine-med. grained sand 30% low plasticity, soft, dry	ML	1.5 = 4917
			0.0	95	1'1"-1'10" SM SAND ^{med.} sandy SILT with clay (yellowish brown 10YR 5/4) 40% silt, 20% clay, 40% fine-med. grained sand low plasticity, soft, dry	SC	2.0 = 4914
			0.0	65	1'10"-2'3" SC SAND with clay (yellowish brown 10YR 5/4) 15% silt, 20% clay, 65% fine-med. grained sand low plasticity, very soft, dry	SP	2.5 = 4792
			0.0	83	2'3"-4'6" (light yellowish brown 10YR 6/4) SP SAND	SP	3.0 = 4710
			0.0	75	10% silt, 90% fine-med. grained sand trace coarse grained, micaceous loose, dry (weathered sandstone)		3.5 = ---
			0.0	75			4.0 = ---
			0.0	65	same as above - well indurated	SP	4.5 = ---
			0.0	80	4'2"-4'6" same as above - iron-oxide staining		5.0 = ---
			0.0	63	4'6"-5' No Recovery		
					TD = 5' bgs (refusal) Sandstone @ approx 2'3" (unable to widen hole for down hole gamma post 3' bgs)		

No GW encountered



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 230
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-9-10/1448	Date/Time Total Depth Reached 12-9-10/1510
Type of Sampling Device trowel/shovel	Samples Collected DUPS: 20517 (MS), 20515 (lab), 20516 (field - no time)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/10/11		

Radiological Background (P10) 0.3, 15	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.3 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			0.4	15	Sand with silt and gravel, (10 YR, 4/4), brown, SW 70% fine to medium grained sand, 15% gravel (fill gravel - subangular), 15% silt, loose, dry, trace rootlets. TD=0.5' bgs. No gw encountered			

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B / 1	Location ID 230
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 3'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2/3/11 / 1442	Date/Time/Total Depth Reached 2/3/11 / 1448
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected ID 20644 / core 1505 (2) 1/2 gallon bags / (1) 4oz jar		
Geologist Stephanie Lopez-Morales	Checked by/Date TBS 5/25/11		

Radiological Background 49 / 2570	Radiological Equipment Used Pancake / Downhole	PID Used MiniRAE 2000 (Bkgd: 0.10 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	65	0-3" SM silty sand (pale brown 104R 6/3) 25% silt, 15% clay, 60% fine-coarse grained sand, trace gravel-subangular	SM	0.0 = 3195
			0.0	70	3"-7" SC sand with clay (dark yellowish brown 104R 4/4) 20% clay, 80% fine-coarse grained sand asphalt debris, low plasticity, soft, dry	SC	0.5 = 4713
1.0			0.0	85	7"-8" SM silty sand with clay (yellow 104R 7/6) 30% silt, 20% clay, 50% fine-coarse grained sand	SM	1.0 = 5956
			0.0	55	primarily sandstone with clay layers (primarily sandstone interbedded with thin bedded clay layers)		1.5 = 5922
2.0			0.0	63	2'-2'2" iron-oxide staining - same as above		2.0 = 5960
			0.0	77	2'2"-3" same as above (yellow 104R 7/6) dark greenish gray clay (interbedded) (GLEY 2 4/1) high plasticity, firm, dry	SM	2.5 = 6438
3.0			0.0	88	TO = 3' bgs (refusal) NO GW encountered		3.0 = 6664
4.0							



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 231
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-9-10/1426	Date/Time Total Depth Reached 12-9-10/1430
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 1 8-oz jar (#20088)(1430)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/16/11		

Radiological Background ① 0.3, 15	Radiological Equipment Used w/ R meter	PID Used Mini Rae 2000 (Background = 0.3ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'				0.3 14	Gravelly sand, (10 YR, 4/4), brown, 65% fine to medium grained sand, 35% gravel (subangular fill gravel) medium dense, dry. TO = 0.5' bags NO GW encountered	SW	



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 2	Location ID 232
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-10-10/1257	Date/Time Total Depth Reached 12-10-10/1301
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20165)(1300)		
Geologist C. Carmichael	Checked by/Date [Signature] 5/16/11		

Radiological Background (PID) 0.0, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			0.0	14	Clayey silt with sand, (10 VR, 4/4), brown, 65% silt, 30% clay, 5% fine grained sand, dry, soft, low plasticity and toughness. TD=0.5' bgs No Gw encountered	ml		



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID: 5B, group 2	Location ID: 233
Drilling Company: HGL	Driller: H. Thompson	Ground Elevation: NA	Total Drilled Depth: 0.5'
Drilling Equipment: trowel/shovel	Borehole Diameter: NA	Date/Time Drilling Started: 12-10-10/1245	Date/Time Total Depth Reached: 12-10-10/1251
Type of Sampling Device: trowel/shovel	Samples Collected: 2 1/2 gall bags (#20167)(1250)		
Geologist: C. Carmichael	Checked by/Date: <i>[Signature]</i> 5/16/11		

Radiological Background: (e) 0.0, 13	Radiological Equipment Used: up R meter	PID Used: Mini Rae 2000 (Background = 0.9ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings <small>(CPM)</small>
0.5'				0.0 13	<p>Silt with clay and sand, (10YR, 4/4), brown, 70% silt, 20% clay, 10% fine to medium grained subangular sand, trace weathered sandstone rock fragments, common rootlets, dry, soft.</p> <p>TD = 0.5' bgs No GW encountered</p>	ML		



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID / Group 5b / 2	Location ID 2016-05-234
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/10/10 / 1110	Date/Time Total Depth Reached 12/10/10 / 1114
Type of Sampling Device trowel/shovel	Samples Collected 2016, 1115 (2) 1/2 gal bags		
Geologist P. Scream	Checked by/Date <i>[Signature]</i> 5/24/11		

Radiological Background (PID) 0.4 ppm, 15	Radiological Equipment Used AP R meter	PID Used Mini Rae 2000 (Background = 0.6 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
0.5				0.6 15	silty sand, brown (w. r. / u. / s), dry, med. dense sand, 35% silt, 65% fine sand, no odor. TD = 0.5 Groundwater not encountered	SM	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 56 & 2	Location ID 234
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 3.5ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/7/11 1428	Date/Time Total Depth Reached 1/7/11 1433
Type of Sampling Device 3/4" macrocore acetate liner	Samples Collected 20168-1445 (2) 1/2 gallon bags		
Geologist I. Stone	Checked by/Date <i>[Signature]</i> 5/16/11		

Radiological Background 41 / 2117	Radiological Equipment Used Paracake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	CPM
			6.0	60	Sand, Brown-sh yellow (6/8 104R) 100% fine grained sand, trace silt, trace gravel, dry, med. dense, no odor or staining, some mottling, trace roots	SP	2604	2324
			0.0	48			3831	2.5"
			6.0	53			4540	
			6.0	42			4764	
			0.0	51	Sand w/ silt, Brown (5/3 104R) 90% fine sand, 10% silt, dry, medium dense Sand, some mottling, no odor or staining Same as top	SP	4719	5352
			0.0	78			4852	
			0.0	69			5738	
			0.1	43	TP = 3.5ft logs no gas encountered			



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5b, Group 2	Location ID 235
Drilling Company HGL	Driller D. RIVERA	Ground Elevation NA	Total Drilled Depth 0.5
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/10/10, 1055	Date/Time Total Depth Reached 12/10/10, 1105
Type of Sampling Device trowel/shovel	Samples Collected 20.71, 1100 (2) 1/2 gal bag		
Geologist P. SWEENEY	Checked by/Date [Signature] 5/16/11		

Radiological Background 0.6 ppm, 150R	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.6ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5				0.5 14	poorly graded sand w/ silt, dark yellowish brown (10 YR 3/4) dry, med. dense, 85% fine grained w/ 15% silt, no coarser	SR		
					FD = 0.5' Groundwater not encountered			

(PID)

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID 5B, group 2	Location ID 235				
Drilling Company HGL Cascade cc		Driller H. Thompson cc H. Lopez, S. Tom	Ground Elevation NA	Total Drilled Depth 2'				
Drilling Equipment hand auger Geoprobe 6600 cc		Borehole Diameter 3 + 1/4" cc	Date/Time Drilling Started 1-7-11/0917	Date/Time Total Depth Reached 1-7-11/0927				
Type of Sampling Device 3" hand auger 1/4" macrocore cc		Samples Collected 2 1/2 gall bags (# 20170) (0950)						
Geologist C. Carmichael		Checked by/Date [Signature] 5/16/11						
Radiological Background 0.0, 44, 2700		Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Raz 2000 (Background = 0.0 ppm)					
Depth	Interval	Recovery	PID	Radiological	Description <small>(include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
			0.3	50				0.5 - 2680
			0.3	50	Silty sand, (10 YR, 4/4), brown, 60% fine grained, subrounded sand, 40% silt, trace rock fragments (asphalt, sandstone), trace rootlets, semi-moist, loose, no odor.	SM	4155	
	1'		0.3	70	Same as above, except 60% sand, 30% silt, 10% sandstone rock fragment (weathered bedrock).		4827	
			0.3	55			5296	
	2'		0.3	65			5157	
					Refusal at 2' (bedrock) No GW encountered			
	3'							
	4'							
	5'							
	6'							

(P14)



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 3	Location ID 236
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-13-10/1308	Date/Time Total Depth Reached 12-13-10/1315
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20235) (1315)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/16/11		

Radiological Background 0.0, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'				0.0 14	<p>Sandy silt Silty sand with rock fragments (10YR 4/3), brown, 55% silt, 35% fine grained, subrounded sand, 10% rock fragments (sandstone), dry, medium dense, rootlets common.</p> <p>No Gw encountered</p>	SM ML		



BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 5	Location ID 240
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-14-10/0931	Date/Time Total Depth Reached 12-14-10/0931
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gallon bags (#20254) (0935)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/10/11		

Radiological Background 0.0, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'			0.0	14	Silty, gravelly sand, (10YR, 4/4), brown, 55% fine grained sand, 30% silt, 15% pea gravel (fill rock), medium dense, dry, rootlets common, no odor. No Gw encountered	SM		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B group 5	Location ID 109 ^{ce} 240
Drilling Company Cascade Drilling	Driller H. Lopez, S. Lorn	Ground Elevation NA	Total Drilled Depth 10'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 1/4"	Date/Time Drilling Started 1-10-11/1416	Date/Time Total Depth Reached 1-10-11/1459
Type of Sampling Device 1 1/4" macrocore	Samples Collected 2 1/2 gall bags (#20249 ⁵³)(1455)	Checked by/Date <i>[Signature]</i> 5/16/11	
Geologist C. Carmichael			

Radiological Background 0.2, 2618, 70	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rae 2000 (Background = 0.2ppm)
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Depth	Interval	Recovery	FPID	Radiological	Description <small>(include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings		
							Inches	(CPM)	
				56			05	2773	
				54	Sandy silt, (10 YR, 3/4), brown, 60% silt, 35% fine to medium grained subrounded sand, 5% gravel (fill), semi-moist, ^{soft} loose, no odor.	ML		0	
				75					3507
				53					
				87					
1'				55					
2'				109					
				59					
3'				59					
				55					
4'				53					
				55					
5'				53					
				55					
6'				105					

Radiological Background				Project Name	Project Number	Location	
0.2, 2618, 70				SSFL Area IV Radiological Study	EP9038.01.22.04.03	109 ^{cc} 240	
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings
							Inches (CPM)
			0.1	91			4908
7'				50	Silty sand, (10 YR, 4/4), brown with iron-oxide tinting, 70% fine to medium grained sand, 30% silt, dry, loose, no odor.	SM	5205
				120			5309
8'				57	Sand, (10 YR, 5/4), light brown, 90% fine grained sand, 5% rock fragments (fill gravel), 5% silt, dry, loose, no odor.	SP	5616
				60			5064
9'				63			5048
				74	Same as above but 90% sand, 10% clay.		5447
10'				73			5882
					10' goal depth reached. No GW encountered		

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B_group 4	Location ID 253
Drilling Company HGL	Driller P. Skeath	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel / shovel	Borehole Diameter NA	Date/Time Drilling Started 2-11-11 / 1350	Date/Time Total Depth Reached 2-11-11 / 1400
Type of Sampling Device trowel / shovel	Samples Collected 2 1/2 gall bags (#20323) (1400)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/16/11		

Radiological Background 14	Radiological Equipment Used w/ R meter	PID Used Mini Rae 2000 (background = 0.1 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'				0.1-16	Silt with sand, (10 YR, 3/4), brown, 80% silt, 20% fine grained sand, some rootlets, dry, low hardness, no plasticity, no odor. No groundwater encountered.	ML		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group b	Location ID 254
Drilling Company HGL	Driller P. Skeath	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 2-11-11/1330	Date/Time Total Depth Reached 2-11-11/1341
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20325) (1340)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/16/11		

Radiological Background 14	Radiological Equipment Used w/ R meter	PID Used Mini Rae 2000 (background = 0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'				0.016	Sandy silt, (10YR, 4/4), brown, 70% silt, 30% fine grained sand, trace asphalt fragments, some rootlets, dry, medium stiff, low hardness, no plasticity or odor. No groundwater encountered.	ML		

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B; group 6	Location ID 254
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 4.5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1-21-11/1323	Date/Time Total Depth Reached 1-21-11/1408
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags (#20324) (1400)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/16/11		

Radiological Background 0.0, 2685, 62	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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(p10)

Depth	Interval	Recovery	CPD	Radiological	Description <small>(include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings			
							Inches	(CPM)		
			0.0	5			0.5	2696		
							0	3922		
			0.0	45	Silt (10YR, 3/4), dark brown, 85% silt, 10% clay, 5% fine grained sand, trace rootlets in top 1", dry, medium stiff, low-medium hardness and plasticity, no odor.	ML				
				70				4883		
				80				5193		
				75				5281		
				95				5368		
				80	Sand with silt, (10 YR, 7/4), ^{base} 80% fine grained subrounded sand, 20% silt, dry, very low hardness, no plasticity, no odor (probable weathered sandstone/siltstone), medium dense.	SM				
				85					5354	
				90					5564	5567
				70					5428	
								5217		
								5053		
					Refusal hit at 4.5'					
					No SW encountered					

BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID: 5B, group 8	Location ID: 255
Drilling Company: HGL	Driller: H. Thompson	Ground Elevation: NA	Total Drilled Depth: 0.5'
Drilling Equipment: trowel/shovel	Borehole Diameter: NA	Date/Time Drilling Started: 12-20-10/1005	Date/Time Total Depth Reached: 12-20-10/1010
Type of Sampling Device: trowel/shovel	Samples Collected: 2 1/2 gall bags, 1 8-oz jar (#20481) (1010)		
Geologist: C. Carmichael	Checked by/Date: <i>[Signature]</i> 5/16/11		

Radiological Background: (50) 0.0, 14	Radiological Equipment Used: M/R meter	PID Used: Mini Rae 2000 (Background = 0.09cpm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'			0.0	14	Clayey silt with sand, (10 YR, 4/2), dark brown, 70% silt, 25% clay, 5% fine grained sand, moist, soft, no odor, some rootlets. No groundwater encountered.	ML		



Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B group 8	Location ID 255
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 2.5
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 3-9-11 1110	Date/Time Total Depth Reached 3-9-11 1130
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20480 (115) (2) 1/2 gallon bags + 4oz Jar		
Geologist Crl Knight	Checked by/Date <i>[Signature]</i> 4/14/11		

Radiological Background 92 / 2606	Radiological Equipment Used Pancake / Downhole	PID Used MiniRAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.0			0.0	40	Surface: native soil + grass		10.5 2392
0.5			0.0	50	Silt: dark yellowish brown (10YR 4/4), moist, soft, no odor, 10% fine sand, 10% clay, 80% silt, trace rootlets, non cohesive, low plasticity	M	3819
1.0			0.0	70	Sample silt: strong brown (7.5YR 5/8), moist, med. stiff, no odor, 35% fine sand, 10% clay, 55% silt, adhesive, low plasticity	ML	4453
2.0			0.0	60			4564
			0.0	70			4878
			0.0	70	Weathered Sandstone: yellowish brown (10YR 5/8), moist, hard, no odor, mechanically weathers to SP fine grained sand, some iron oxidation staining	Ref. Rock	5012
3.0					refusal @ 2.5' bgs on sandstone		
4.0					No GW encountered		
5.0							
6.0							

BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5b, Group 6	Location ID 257
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/15/10, 1320	Date/Time Total Depth Reached 12/15/10, 1330
Type of Sampling Device trowel/shovel	Samples Collected 20328, 1325 (2) 1/2 gal bag		
Geologist P. Sear	Checked by/Date [Signature] 5/16/11		

Radiological Background 0.6 ppm, 15 mR	Radiological Equipment Used AP R meter	PID Used Mini Rae 2000 (Background = 0.6 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings <small>(CPM)</small>
0.5			0.6	15	silty sand, brown (10YR 4/3), moist, soft, 35% silt, 65% fine sand, trace rootlets, no odor TO 0.5' GW ϕ (not encountered)	SH		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 7	Location ID 258
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 2 ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/4/11 1532	Date/Time Total Depth Reached 1/4/11 1535
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20352-1545 (2) 1/2 yellow bags		
Geologist I. Stone	Checked by/Date <i>[Signature]</i> 5/16/11		

Radiological Background 37 / 2639	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 1.0cpm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings No. 5 = 2443 (CPM)
			1.1	30	3" Asphalt @ surface		3123
			1.1	75	Sally Sand, Strong Brown (4/6 7.54R), 60% fine grained sand, 40% silt, dry, low-med dens, no odor or staining.	SM	4637
1			1.1	65			5163
			1.1	50			5372
2			1.1	48	Bedrock Sandstone: light yellowish tan, med dens, low med consistency, no odor or staining.		5512
					TD = 2 ft bgs No GW encountered		
3							

BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 7	Location ID 259
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 5ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/4/11 1408	Date/Time Total Depth Reached 1/4/11 1414
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20354 - 1430 (2) 1/2 yellow bag		
Geologist I. Stone	Checked by/Date <i>[Signature]</i> 5/16/11		

Radiological Background 49 / 2425	Radiological Equipment Used Paracake / Downhole	PID Used Mini RAE 2000 (Bkgd: 1.1ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	CPM
			1.0	35	3" Asphalt @ surface			3839
1			1.1	40	Silty Sand, Dark yellowish Brown (4/4 10YR) 55% fine grained sand, 45% silt, dry. Med. dense, no odor or staining	SM		4736
								5273
2			1.1	52	Sand w/silt, brownish yellow (6/6 10YR) 90% fine grained sand, 10% silt, dry, low-med dense, no odor or staining, some mottling.	SP		5775
								5769
								5451
3			1.1	35				5335
								4925
4			1.1	58				4919
								4815
5			1.1	60				NA
TD = 5ft bgs no gas encountered								

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B / Group 7	Location ID 262
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-15-10/0920	Date/Time Total Depth Reached 12-15-10/0925
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20361) (0925)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/16/11		

Radiological Background 0.0, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'			0.0	14	Silty sand with gravel, (10YR, 4/5), light reddish brown, 60% fine grained subangular sand, 30% silt, 10% pea gravel and sandstone rock fragments, dry, loose, no odor, common rootlets. No groundwater encountered.	SM	

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, Group 7	Location ID 262
Drilling Company Cascade Drilling	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 7.5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 01/26/11, 11:15	Date/Time Total Depth Reached 01/26/11, 11:25
Type of Sampling Device 1 3/4" macro core!	Samples Collected 20360, 1120 (2) 1/2 gal bags		
Geologist P. Skeath	Checked by/Date		

Radiological Background 61 com, 3610 com	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
1'			72		silt w/ sand, dark yellowish brown (10YR 3/4), moist, soft, 85% silt, 15% fine sand, no odor, some rootlets	ML	3007	2672 (CPM)
			83	4503				
			69	4793				
			36	5020				
			50	5275				
2'			84		sandy silt w/ clay, brown (10YR 5/3), moist soft, 35% fine sand, 15% clay, 50% silt, no odor, low plasticity	ML	5259	
			63	5362				
			65	5532				
3'			115		silt w/ sand, yellowish brown (10YR 5/4), dry, med. stiff, 15% fine sand, 85% silt, no odor	ML	5506	
			113	5470				
4'			88				5433	
			85	5636				
5'			119				5576	

Radiological Background				Project Name	Project Number	Location	
61cpm / 3010cpm				SSFL Area IV Radiological Study	EP9038.01.22.04.03	262	
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings
							Inches
5				86	same as above		5433
				85			5636
6				119			5576
				127	poorly graded sand, yellowish brown (10YR 5/6) dry, dense sand, 70% med. sand, 30% fine sand, no silt	SS	5736
7				105			5696
				67	Refusal siltstone (PS) sandstone		5654
<p>TD . 7.5'</p> <p>NO GW</p>							

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1a	Location ID 263
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-15-10/0902	Date/Time Total Depth Reached 12-15-10/0906
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (# 20363) (0905)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/16/11		

Radiological Background 0.0, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (background = 0.9ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'				14	Gravelly sand with (10 YR, 4/4), brown, 70% fine grained subangular sand, 25% gravel and cobbles (fill rock and sandstone rock fragments), 5% silt, dry, medium dense, some rootlets, no odor. No groundwater encountered.	SM SP	

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, Group 7	Location ID 263
Drilling Company Cascade Drilling	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 3'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 01/26/11, 0905	Date/Time Total Depth Reached 01/26/11, 0915
Type of Sampling Device 1 3/4" macro core!	Samples Collected 20362, 0915 (2) 1/2 gal bags		
Geologist P. Skeath	Checked by/Date <i>[Signature]</i> 5/17/11		

Radiological Background: **2491 cpm, 61 cpm**
 Radiological Equipment Used: **Pancake meter, Downhole scanner**
 PID Used: **Mini Rac 2000 (Background = 0.0 ppi)**

Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches</small>
			0	66	sandy silt, dark yellowish brown (10YR 3/4), dry, soft, 35% fine sand, 65% silt, no odor	AL	+0.5' 2412 (CPM)
			57	63			2717
			49	49			4407
			62	62	silty gravel, yellowish brown (10YR 5/4), dry, very stiff, 60% coarse siltstone gravel, 40% silt, no odor	GM	4976
			81	81			5430
			105	105			6359
					Refusal siltstone		6425
							6140

TO 3.0'
No. GW

BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5b, Group 7	Location ID 264 264 (PK)
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/15/10, 0900	Date/Time Total Depth Reached 12/15/10, 0910
Type of Sampling Device trowel/shovel	Samples Collected 20365, 0905 (2) 1/2 gal bags		
Geologist P. Sweach	Checked by/Date <i>[Signature]</i> 5/24/11		

Radiological Background 15 uR, 0.00ppm	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.9ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5			0	15	<p>poorly graded sand, yellowish brown (10YR 5/6) dry, med. stiff, 90% fine sand, with fine common rootlets, no odor</p> <p>5% clay 5% silt</p> <p>Refusal sandstone/siltstone</p>	SP		
					<p>TD 0.5 GW \emptyset (no GW encountered)</p>			

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, Group 7	Location ID 264
Drilling Company Cascade Drilling	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 1' 3"
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 01/26/11, 0950	Date/Time Total Depth Reached 01/26/11, 0951
Type of Sampling Device 1 3/4" macro core!	Samples Collected 20364 (sample not collected due to refusal)		
Geologist P. Skeath	Checked by/Date [Signature] 5/16/11		

Radiological Background 2807 cpm, 61 cpm	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Rae 2000 (Background=0.0 cpm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches</small>
				75	3" sandy silt, dark yellowish brown (WLR 3/4), dry, soft, 35% fine sand, 65% silt, no odor, no roots	ML	2944
				75	silty gravel, yellowish brown (WLR 5/4), dry, very stiff, 60% coarse siltstone gravel, 40% silt, no odor	GM	5554
				60	1 3/4" Refusal siltstone		5585
1'							
2'							
3'							
4'							
5'							
6'							

TO 1' 3"
NO GW

No sample collected

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 273 ⁰⁰ 272
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-17-10/1432	Date/Time Total Depth Reached 12-17-10/1445
Type of Sampling Device trowel/shovel	Samples Collected DVPs: 20535 (Ms), 20533 (16b), 20534 (16d-no fine) 2 1/2 gall bags (#20489) (1445)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/16/11		

Radiological Background: *0.0, 15*
 Radiological Equipment Used: *up R meter*
 PID Used: *Mini Rae 2000 (Background=0.0ppm)*

Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'				0.0 15	Silt with sand, (ID YR, 3/2) dark brown 85% silt 15% fine sand dry sett rootlets common No odor. No Gw encountered	ML		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 8	Location ID 272
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2/4/11 / 1416	Date/Time Total Depth Reached 2/4/11 / 1424
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 10 20488 / time: 1455 (2) 1/2 gallon bags		
Geologist Stephanie Lepelny Montrose		Checked by/Date TAW 5/25/11	

Radiological Background 36 / 2486	Radiological Equipment Used Pancake / Downhole	PID Used MiniRAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches <small>+ 0.5 = 2798 (CPM)</small>
	0-9"				no recovery (see surface soil sampling boring log) [soil removed during surface soil sampling]		0.0 = 3098 0.5 = 3715
1.0	9"-1'9"		85		SM silty sand with clay plant material (roots & grass) 20% clay, 25% silt, 55% fine-med. grained sand low plasticity, soft, dry	SM	1.0 = 4324 1.5 = 4644
2.0	1'9"-2'6"		89		SM silty sand with clay (dark yellowish brown 10YR 4/4) 20% clay, 30% silt, 50% fine-med. grained sand low plasticity, soft, dry	SM	2.0 = 4803 2.5 = 4788
3.0	2'6"-4'4"		56		ML sandy silt with clay (dark yellowish brown 10YR 4/4) 25% clay, 40% silt, 35% fine-med. grained sand med. plasticity, firm, dry	ML	3.0 = 4854 3.5 = 5045
4.0			100				4.0 = 5158
4.0			58				4.5 = 5227
5.0	4'4"-5'		48		SM sand with silt (yellowish brown 10YR 5/4) 15% clay, 20% silt, 65% fine-coarse grained sand low plasticity, very soft, dry	SM	5.0 = 5036
			55		TD = 5' bgs (refusal) No GW encountered		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID SB, group 8	Location ID 273 ⁰⁰
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-17-10/1421	Date/Time Total Depth Reached 12-17-10/1425
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20489) (1425)		
Geologist C. Carmichael	Checked by/Date [Signature] 5/16/11		

Radiological Background 0.0, 17	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			00	17	Silty sand, (10 YR, 4/4), brown 70% fine grained sand 30% silt Common rootlets dry, loose no odor No GW encountered	SM		

Project Name: SSEL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 273				
Drilling Company Cascade		Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 3'				
Drilling Equipment Geoprobe 6600		Borehole Diameter 1 3/4"	Date/Time Drilling Started 2-4-11/1329	Date/Time Total Depth Reached 2-4-11/1407				
Type of Sampling Device 1 3/4" macrocore		Samples Collected 2 1/2 gall bags (#20490) (1405)						
Geologist C. Carmichael		Checked by/Date <i>[Signature]</i> 5/16/11						
Radiological Background 82,3144 cpm		Radiological Equipment Used Pancake meter, Downhole scanner		PID Used Mini Rae 2000 (background=0.4 ppm)				
Depth	Interval	Recovery	CPD	Radiological	Description <small>(include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
			0.4	50	Silt with sand, (10 YR, 4/3), brown, 80% silt, 20% fine to medium grained sand, trace pea-sized fragments of sandstone, dry, soft, rootlets in top 6", low hardness, no plasticity, no odor.	ML		0.5 - 2809
				65			4862	
				70			5318	
				55	Sand with silt, (10 YR, 5/4), light brown, 80% fine to medium grained sand, 20% silt, semi-moist, no plasticity or hardness, no odor.	SM		5305
				50			5425	
				55	Silt with sand (same as 1'-1.5', except moist),	ML		5362
				55			5047	
					Refusal hit at 3' No GW encountered			



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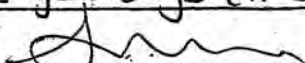
BORING LOG

Sheet 1 of 1

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B / 8	Location ID 274
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-17-10 / 11:20	Date/Time Total Depth Reached 12-17-10 / 11:30
Type of Sampling Device trowel/shovel	Samples Collected 20493 (125) 2 1/2 seal bags		
Geologist C. Knight	Checked by/Date 5/19/11		

Radiological Background 13 mR	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 1.5 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.25				15 13	5-17% sand; Brown (10YR 3/4), moist, loose, no odor, 10% clay, 5% fine gravel, 25% fine sand, 60% silt, trace roots & rootlets.	ML		
0.5					<p>TD: 0-3' nos</p> <p>No GW encountered</p>			

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 274
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2-3-11/1407	Date/Time Total Depth Reached 2-3-11/1447
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags (#20492) (1445)	Geologist C. Carmichael	
Checked by/Date  5/16/11			

Radiological Background 64, 2951 cpm	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Ra2 2000 (Background = 0.2 ppm)
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Depth	Interval	Recovery	Radiological CPM	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
						Inches	(CPM)
1'	0.2'	65	68	Silt with sand and clay, (10 YR, 4/3), brown, 70% silt, 15% fine to medium grained sand, dry, medium stiff, some rootlets/vegetation in top 6", trace sandstone rock fragments, low hardness, no plasticity, no odor. 15% clay	ML	0.5	2909
						70	3920
						75	
						45	
						40	
						45	
						40	
						40	
						45	
						45	
3'	40	40	Same as above, except semi-moist		5103		
					5045		
4'	65	65			5016		
					4941		
5'	65	65	Sand ^{is} Silty sand, (10 YR, 5/6), light reddish-brown, 65% fine to medium grained subrounded sand, 35% silt, semi-moist, medium dense, no plasticity or hardness, no odor	SM	4765		
					Refusal hit at 5' No GW encountered		



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 275
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-17-10/0940	Date/Time Total Depth Reached 12-17-10/0947
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20495) (0947)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/16/11		

Radiological Background 0.1, 15	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.1 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches (CPM)</small>
0.5'			0.1	14	Silt with sand, (10 YR, 4/4), brown, 90% silt, 10% fine grained sand, dry, soft, rootlets common, no odor. No groundwater encountered.	ML	

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 275
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 4.5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2-2-11/0853	Date/Time Total Depth Reached 2-2-11/0940
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags (#20494) (0935)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/16/11		

Radiological Background 61, 2874 epm	Radiological Equipment Used Pancake meter, Downhole scanner	PID Used Mini Ra2 2000 (Background=0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
			0.0	60	Silt with sand, (10 yr, 3/6), 85% silt, 15% fine grained subrounded sand, few rootlets in top 1', dry, medium stiff, very low plasticity and hardness, no odor.	WL	0.5	2595
				55		4656		
				60		4825		
				65		4868		
				55		4915		
				60		5009		
				65		5233		
				65	3.5' Gradational Contact Same as above, except moist with speckles of red and black coloration.			5071
				55				5167
				70				5067
					Refusal hit at 4.5'			
					No GW encountered			



BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 276
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-17-10/0920	Date/Time Total Depth Reached 12-17-10/0927
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20497) (0927)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/16/11		

Radiological Background (PID) 0.1, 15	Radiological Equipment Used M R meter	PID Used Mini Rae 2000 (Background=0.1 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0.5'				16	Silt with sand, (10 YR, 4/4), brown, 90% silt, 10% fine grained sand, soft, dry, rootlets common, no odor. No groundwater encountered.	ML	



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BORING LOG

Sheet 1 of 1

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B / 8	Location ID 277
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12.17.10 / 1350	Date/Time Total Depth Reached 12.17.10 / 1400
Type of Sampling Device trowel/shovel	Samples Collected 20499 (1355) 2-1/2 gal bags		
Geologist C. Knight	Checked by/Date <i>[Signature]</i> 5/19/11		

Radiological Background 13 mR	Radiological Equipment Used M/R meter	PID Used Mini Rae 2000 (Background = 5.0 cpm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.25					<p>5.1 ft: ^{wt sand} Brown (10YR 5/3), med s.t, low odor, 25% fine sand, 6% clay, 90% s.t</p> <p>fine wire scarp</p> <p>(CR)</p> <p>NO GW encountered</p> <p>TP: 0.15</p>	mc		
0.5								

Project Name: SSEL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID 5B / 8		Location ID 278	
Drilling Company HGL		Driller D. Rivera		Ground Elevation NA		Total Drilled Depth 0.5'	
Drilling Equipment trowel/shovel		Borehole Diameter NA		Date/Time Drilling Started 12-17-10 / 14:10		Date/Time Total Depth Reached 12-17-10 / 14:20	
Type of Sampling Device trowel/shovel				Samples Collected 205201 1415 2-1/2 gal magg			
Geologist C. Knight				Checked by/Date <i>[Signature]</i> 5/16/11			
Radiological Background 13 MR		Radiological Equipment Used up R meter		PID Used Mini Rae 2000 (Background = 6.7 ppm)			
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.25				6.7 13	silt w/ sand; Brown (10YR 3/4) moist, loose, no odor, 25% sand fine, 5% clay, no silt trace wire and scrap metal		
0.5					TD = 0.5' bgs no GW encountered		



BORING LOG

Sheet 1 of 1

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B / 8	Location ID 279
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-17-10 / 1420	Date/Time Total Depth Reached 12-17-10 / 1430
Type of Sampling Device trowel/shovel		Samples Collected 20303 (1425) 2 - 1/2 gal bags	
Geologist C. Knight		Checked by/Date <i>[Signature]</i> 5/16/11	

Radiological Background 13 <i>MR</i>	Radiological Equipment Used <i>MR meter</i>	PID Used Mini Rae 2000 (Background = 11 <i>cpm</i>)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings (CPM)
0.25			11	13	silt w/ sand = Brown (10YR 3/4), moist, loose no odor, 5% clay, 5% gravel, 25% fine sand 65% silt, freeze cuts ID 20351 No GW encountered	<i>MU</i>	

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Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 279
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 3.5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2-1-11/1427	Date/Time Total Depth Reached 2-1-11/1502
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags (#20502) (1455)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/16/11		

Radiological Background 58, 262.8cpm	Radiological Equipment Used Panacal meter, Downhole scanner	PID Used Mini Rae 2000 (Background=0.1ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)	
1'			0.1	55	Silt with sand, (10 YR, 3/3) dark brown, 80% silt, 20% fine grained sand, dry, medium stiff, some vegetation/rootlets in top 2", ^{very} low hardness, no plasticity, no odor.	ML	4175	0.5 - 2604	
				55				4714	
				60				4922	
				70				4776	
2.5'			0.1	55	Sand (10 YR, 6/6) beige, 95% fine to medium grained subrounded sand, 5% silt, dry, medium dense, no plasticity or hardness, no odor. (weathered bedrock)	SW	4773	0 - 2924	
				55				4873	
				65				4987	
3.5'					Refusal hit at 3.5'				
					NO Gw encountered				

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 280
Drilling Company HGL	Driller M. Hughes	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-8-10/1139	Date/Time Total Depth Reached 12-8-10/1153
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 1 8-oz jar (#20090)(1152)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/16/11		

Radiological Background (PID) 0.5, 13	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.5ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches (CPM)</small>
0.5			0.6	13	Gravelly sand with silt, (10 VR, 4/4), brown, 60% fine to medium-grained subrounded sand, 30% subrounded rock fragments (sandstone-weathered, pea gravel), few rootlets, moist 10% silt, moist, loose No Gw encountered	SW	

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 1	Location ID 280
Drilling Company: Bornt Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 10'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/18/11 / 1412	Date/Time Total Depth Reached 1/18/11 / 1435
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected (2) 1/2 gallon bags / (1) 4oz jar		ID 20089 / 1520
Geologist Stephanie Lepere Mortose	Checked by/Date TRW 5/25/11		

Radiological Background 48 / 2542	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	22	0'-6" SM silty SAND 15% clay, 30% silt, 55% fine to coarse grained sand low plasticity, loose, dry, trace gravel - subangular	SM	+ 0.5 = 2449 0.0 = 3143
			0.0	73	6"-1' SM silty SAND with clay (very dark grayish brown) 20% clay, 50% fine to coarse grained sand, 30% silt low plasticity, soft, dry	SM	0.5 = 4500
1.0			0.0	64	1' - 2'3" ML sandy SILT with clay (dark yellowish brown) 20% clay, 35% fine to medium grained sand, 45% silt, low plasticity, soft, dry	ML	1.0 = 4780 1.5 = 4704
2.0			0.0	53			2.0 = 4644
			0.0	70			
			0.0	67	2'3" - SM SAND with silt (dark brown 10YR 3/3)	SM	2.5 = 4821
			0.0	82	15% clay, 20% silt, 65% fine to medium grained sand, low plasticity, soft, dense, dry		3.0 = 4836
3.0			0.0	95			3.5 = 4969
			0.0	102	4'-5' CL sandy CLAY with silt (very dark grayish brown) 40% clay, 30% fine to med. grained sand, 30% silt, med plasticity, (4'1"-5') same as above - hard, dry, greenish gray staining, no odor	CL	4.0 = 4761
4.0			0.0	67			4.5 = 4696
			0.0	89	5'-6'1" SC clayey SAND with silt (black 10YR 2/1)	SC	5.0 = 4874
5.0			0.0	65	30% clay, 20% silt, 50% fine to med. grained sand low med. plasticity, soft, firm, dry		5.5 = 4876

Radiological Background				Project Name	Project Number	Location	
48 2542				SSFL Area IV Radiological Study	EP9038.01.22.04.03	280	
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings
							Inches (CPM)
		0.0	38		Same as above	CL	6.0 = 4909
		0.0	53		6' 11" - 10' CL silty CLAY with sand (brown 7.5YR 4/4) 45% clay, 25% fine to medium grained sand, 30% silt medium-high plasticity, hard, dry	CL	6.5 = 4986
7.0		0.0	44		Same as above		7.0 = 4961
		0.0	47				7.5 = 4818
8.0		0.0	46				8.0 = 4753
		0.0	67				8.5 = 4813
9.0		0.0	104				9.0 = 4739
		0.0	56				9.5 = 5008
10.0		0.0	82				10.0 = ---
TD = 10 ft bgs NO GW encountered							



Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID SB, group 1	Location ID 281
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-8-10 / 1015	Date/Time Total Depth Reached 12-8-10 / 1030
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 1 8-oz jar (#20092)(1025)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/16/11		

Radiological Background (PID) 0.0, 12	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0.5				0.0/13	Gravelly sand, (10 YR, 3/5), 70% fine to medium grained subrounded sand, 25% pea gravel (fill and asphalt), trace rootlets, 5% silt, moist, loose. No groundwater encountered	SW	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 1	Location ID 281
Drilling Company Bort Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 9 ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 12/17/10 1059	Date/Time Total Depth Reached 12/17/10 1105
Type of Sampling Device 1 3/4" macro core acetate liner	Samples Collected 20091-1140 (2) 1/2 gallon bags; (1) 4oz jar		
Geologist Ian Stone	Checked by/Date <i>[Signature]</i> 5/16/11		

Radiological Background 40 / 2484	Radiological Equipment Used Pancake / Downhole	PID Used mini RAE 2000 (Background = 0.4)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches 0.5' = 2239 (CPM)
			0.4	48	Silty Sand, Brown, 70% fine sand, 30% silt, dry, med to low-med dense, no odor or staining		2641
			0.4	59		4431	
1			0.4	52	Gravel: max size 1.5 inches 60% fine sand, 30% silt, 10% gravel	SM	4990
			0.4	60			5155
2			0.4	75	granitic, granitic rock frags, fine gravel size		5023
			0.4	66			5081
3			0.4	89			5227
			0.4	48			4975
4			0.4	61			4943
			0.4	34			4926
5			0.7	75	Silty Clay / silt =>		4673
			0.4	58	90% clay, 10% silt Silty Clay, reddish brown 70% clay, 30% silt, med tough, med strength, med plasticity, no odor or staining	CL	4686
			0.4	32			4757

Radiological Background 40 / 2484					Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 5B, 1, 281
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
7			0.4	32	Same as above (Silty Clay)	CL	4751
			0.4	30			4276
			0.4	45			4523
			0.4	38			4372
8			0.4	67			4438
			0.4	58	4293		
9			0.4	60	TD = 9 ft bgs no gw encountered		NM
10							



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID Sc Group 1	Location ID 247
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/08/10, 1340	Date/Time Total Depth Reached 12/08/10, 1350
Type of Sampling Device trowel/shovel	Samples Collected 2 bags, 1 jar (2) 1/2 gal bags, (1) 4oz jar		
Geologist P. Stearns	Checked by/Date [Signature] 5/24/11		

Radiological Background 15 ppb, 0.3 ppm (Pb)	Radiological Equipment Used M R meter	PID Used Mini Rae 2000 (Background = 0.3 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			0.3	15	silty sand, dark yellowish brown (10YR 4/6) dry, soft, 35% silt, 65% fine sand, common gravel rock fragments (non-nodular), few nodules, no ocher.	SN		
					FO = 0.5' Groundwater not encountered			

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB 1	Location ID 282
Drilling Company Bort Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 8 ft
Drilling Equipment Geoprobe	Borehole Diameter 3" to 1.314"	Date/Time Drilling Started 12/17/10 0910	Date/Time Total Depth Reached 12/17/10 0915
Type of Sampling Device 1 7/8" mucosia	Samples Collected 20093-0480 (2) 1/2 gal/100 - 6955, (1) 4 oz jar		
Geologist I. Stow	Checked by/Date <i>[Signature]</i> 5/27/11		

Radiological Background 42 / 2483	Radiological Equipment Used Pencast / Downhole	PID Used mini RAE 2000 (Background 4.0)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings
							Inches
			0.1	45			2528 (CPM)
			0.1	96			3223
			0.1	53			4890
1			0.1	59	Silty Sand, Brown (5/3 10YR) 70% fine sand, 25% silt, 5% gravel (granite, quartzite), dry, med dense, no odor or staining	SM	5128
			0.1	96	70% sand, 30% silt, no gravel		5365
2			0.1	96			5344
			0.1	50			5390
3			0.1	13	Silty sand, dark grayish brown (4/2 10YR) 60% fine sand, 40% silt, low-med dense,		5220
			0.1	24			5176
4			0.1	20	- staining (3'10" - 7'2") (Black, Greenishgray)	SM	5059
			0.1	76			5148
5			0.1	15			5225
			0.1	56			5347
			0.1	52			5275

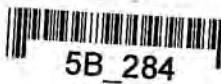
Radiological Background				Project Name	Project Number	Location	
42 / 2413				SSFL Area IV Radiological Study	EP9038.01.22.04.03	5A, 1, 282	
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole
							Gamma Readings (CPM)
			0.1	52	Same as above		5275
			0.1	38	stained	SM	5284
7			0.1	31	Sandy silt, reddish brown (4/4 10% silty		5270
			0.1	37	70% silt, 30% fine sand, tanish, some staining hard, low strength, no odor, some staining	ML	5325
8			0.1	45	SAND, yellowish brown, possible weathered sandy 95% sand (fine) 5% silt, loess	Sp	N/A
					No GW encountered TOC 8' bgs		
9							
10							

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID 5b, Group 2	Location ID 283		
Drilling Company HGL		Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'		
Drilling Equipment trowel/shovel		Borehole Diameter NA	Date/Time Drilling Started 12/22/10, 1315	Date/Time Total Depth Reached 12/22/10, 1325		
Type of Sampling Device trowel/shovel		Samples Collected 2096, 1320 (2) 1/2 gal bag, (1) 4oz jar				
Geologist P. Scream		Checked by/Date <i>[Signature]</i> 5/24/11				
Radiological Background 13 uR, 0.3 ppm		Radiological Equipment Used MP R meter	PID Used Mini Rae 2000 (Background = 0.3 ppm)			
Depth of Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0.5'			0.3 13	<p>silty sand, dark yellowish brown (W4R4/6) dry, soft, 30% silt, 70% fine sand, (cumulative) 15% rock fragments/gravel, few roudlets, no other common</p> <p>TD = 0.5'</p> <p>Groundwater not reached</p>	SM	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B / 1	Location ID 283
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 10'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/18/11 / 1151	Date/Time Total Depth Reached 1/18/11 / 1200
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected ID 20095 / 1240 (2) 1/2 gallon bags / (1) 4oz. jar		
Geologist Stephanie Lapere Montrose	Checked by/Date TGW 5/25/11		

Radiological Background 34 / 2693	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches + 0.5 = 2449 (CPM)
			0.0	22	0-3" ML sandy SILT with clay (brown 10YR 4/3) plant material (roots + grass), twigs, trace gravel - sub angular	ML	0.0 = 3143
			0.0	73	20% clay, 35% silt, 45% fine to coarse grained sand low plasticity, soft, dry		0.5 = 4500
1.0	3"-8"		0.0	64	SM silty sand 25% clay, 30% silt, 55% fine to coarse grained sand low plasticity, soft, dense, dry (dark yellowish brown 10YR 5/4)	SM	1.0 = 4780
	8"-1'		0.0	53	SM silty SAND Same as above - color change (yellowish brown 10YR 5/4)	SM	1.5 = 4704
2.0	1"-1'4"		0.0	70	CH silty CLAY with sand (dark brown 7.5YR 3/4) 40% clay, 25% fine to med. grained sand, 35% silt med. to high plasticity, hard, dry	CH	2.0 = 4644
	1'4"-2'2"		0.0	67	SM silty SAND 30% silt, 70% fine to coarse grained sand, trace gravel - sub angular concrete debris, non-plastic, loose, dry (yellowish brown 10YR 5/4)	SM	2.5 = 4821
3.0	2'2"-2'5"		0.0	82	CH silty CLAY with sand (dark brown 7.5YR 3/4) 40% clay, 25% fine to med. grained sand, 35% silt med. to high plasticity, hard, dry	SM	3.0 = 4836
	2'5"-3'9"		0.0	95	SM silty SAND 30% silt, 70% fine to coarse grained sand trace gravel - sub angular, concrete debris low plasticity, soft, dense, dry (light olive brown 2.5Y 5/3)	SM	3.5 = 4969
4.0	3'9"-5'9"		0.0	102	Same as above - color change (olive brown 2.5Y 4/3) concrete debris	SM	4.0 = 4761
			0.0	67	45% clay, 30% silt, 55% fine to coarse grained sand		4.5 = 4696
5.0			0.0	89	Same as above	SM	5.0 = 4874
			0.0	65	Same as above		5.5 = 4876
	5'9"-7'1"				SM silty SAND 15% clay, 30% silt, 55% fine to coarse grained sand low plasticity, soft, dense, dry trace gravel - sub angular (olive brown 10YR 4/3)	SM	



5B_284



BORING LOG

Sheet 1 of 1

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID Sb: Group 8	Location ID 284
Drilling Company HGL	Driller D. RIVER	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/16/10 1405	Date/Time Total Depth Reached 12/16/10 1425
Type of Sampling Device trowel/shovel	Samples Collected 20504, 1410 (2) 1/2 gal bags		
Geologist P. SKEATH	Checked by/Date <i>[Signature]</i> 5/16/11		

Radiological Background 15 NR, 0.0 ppm	Radiological Equipment Used AP R meter	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			0	15	silty sand, dark brown (10Y2 3/3), moist, loose, 30% silt, 70% f. sand, many rootlets, no odor	SM		
					70 0.5'			
					No GW			




BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID: 5B, Group 8	Location ID: 205
Drilling Company: HGL	Driller: D. Rivera	Ground Elevation: NA	Total Drilled Depth: 0.5'
Drilling Equipment: trowel/shovel	Borehole Diameter: NA	Date/Time Drilling Started: 12/16/10, 0910	Date/Time Total Depth Reached: 12/16/10, 0920
Type of Sampling Device: trowel/shovel	Samples Collected: 20505, 0915 (2) 1/2 gal bags		
Geologist: P. SKEATH	Checked by/Date: <i>[Signature]</i> 5/24/11		

Radiological Background: 15 nR, 0.0 ppm	Radiological Equipment Used: M/R meter	PID Used: Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5				15	<p>poorly graded sand w/ silt, very dark grayish brown (10YR 3/2) moist, loose, 80% fine to med. sand, 20% silt, few pebbles, no odor, scraps of metal & trash</p> <p>TO 0.5'</p> <p>NO G.W.</p>	SP-SM		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 286
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-16-10/0856	Date/Time Total Depth Reached 12-16-10/0901
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20506) (0900)		
Geologist C. Carmichael	Checked by/Date  5/16/11		

Radiological Background (PID) 0.0, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (background=0.0 gpm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			0.0	14	Silty sand with gravel, (10YR, 4/2), dark brown, 65% fine to medium grained subangular sand, 25% silt, 10% pea gravel (asphalt, fill gravel, sandstone), moist, loose, no odor, common vegetation, few rootlets. No groundwater encountered.	SW SM		

BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID / Group 5B / Group 1	Location ID 287
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/10/10, 0950	Date/Time Total Depth Reached 12/10/10, 0957
Type of Sampling Device trowel/shovel	Samples Collected 20098, 0955 (2) 1/2 gal bag, (1) 407 jar		
Geologist P. Seaman	Checked by/Date <i>[Signature]</i> 5/24/11		

Radiological Background (P10) 0.5 ppm, 15 cpm	Radiological Equipment Used MP R meter	PID Used Mini Rae 2000 (background = 0.5 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0.5			0.5	15	poorly graded sand w/ gravel, clay yellowish brown (10YR 4/6), moist, loose sand, ⁸⁰ ₂₀ (P2) medium sand, 5% silt, 15% asphalt/sandstone cobbles, no odor	SP	
					TD = 0.5' Groundwater not encountered		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 229 ^{cc} 287
Drilling Company Cascade	Driller H. Lopez	Ground Elevation NA	Total Drilled Depth 10'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1-19-11/1243	Date/Time Total Depth Reached 1-19-11/1358
Type of Sampling Device 1 3/4" macrocore	Samples Collected 2 1/2 gall bags, 1 8-oz jar (#20097) (1355)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/16/11		

Radiological Background: 0.2, 2.619, 54
 Radiological Equipment Used: Pancake meter, ~~probe~~ Downhole scanner
 PID Used: Mini Rae 2000 (Background = 0.2 ppm)

Depth Interval	Recovery	Radiological CPD	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
					Inches	(CPM)
0' - 1'		50	Sand with silt (10 YR, 4/6), 75% fine to medium grained subrounded sand, 20% silt, 5% gravel (concrete pieces, asphalt), dry, medium dense, no plasticity or hardness, no odor, trace rootlets in top 2".	SM	0.5	2680
1' - 2'		45		4113		
2' - 3'		30		4661		
3' - 4'		50		4801		
4' - 5'		70		4898		
5' - 6'		45	Silt with sand (10 YR, 3/4) dark brown, 80% silt, 20% fine grained subrounded sand, dry, medium stiff, very low plasticity, low hardness, no odor.	ML	4893	
6' - 7'		65		5043		
7' - 8'		70	Sand with silt (same as 0' - 2.5'):	SM	5076	
8' - 9'		70		5137		
9' - 10'		75		5117		
10' - 11'		65		5116		
11' - 12'		60			4964	
12' - 13'		65			4948	

Radiological Background 0.2, 2619, 54				Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 287	
Depth	Interval	Recovery	PTD	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
					Silt with sand (same as 2.5'-3')	ML	
			0.3	60	6.5'		5145
7'				70	Silt with fine sand (10 YR, 6/4), beige, 80% silt, 20% very fine subrounded sand, dry, soft, low hardness and plasticity, no odor.	ML	5119
				60			5354
8'				55			5411
				65			5540
9'				60	9'		5596
				80	Same as above, except dark brown (10 YR, 3/4) and medium stiff.		5729
10'				75			5856
					10' goal depth reached. no GW encountered		



BORING LOG

Project Name: SSFL Area IV Radiological Study		Project Number: EP9038.01.22.04.03		Subarea ID: 5b, Group 1		Location ID: 2888	
Drilling Company: HGL		Driller: D. Rivera		Ground Elevation: NA		Total Drilled Depth: 6.5	
Drilling Equipment: trowel/shovel		Borehole Diameter: NA		Date/Time Drilling Started: 12/10/09		Date/Time Total Depth Reached: 12/10/09	
Type of Sampling Device: trowel/shovel				Samples Collected: 20100, 0905 (2) 1/2 gal bag, (1) 4oz jar			
Geologist: P. Scream				Checked by/Date: [Signature] 5/16/11			
Radiological Background: 0.5 ppm, 288		Radiological Equipment Used: up R meter		PID Used: Mini Rae 2000 (Background = 0.5 ppm)			
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings (CPM)
0.5				0.5 13	poorly graded sand, dark yellowish brown (w/ 4/6), moist, loose sand, 95% med. sand, 5% silt, no odor	SP	
					TD = 0.5' Groundwater not encountered		

(p10)

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 289
Drilling Company HGL	Driller P. Skeath	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 2-11-11/0923	Date/Time Total Depth Reached 2-11-11/0935
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, + 4oz jar (#20101) (0935)		
Geologist C. Carmichael		Checked by/Date <i>[Signature]</i>	

Radiological Background 12	Radiological Equipment Used M R meter	PID Used Mini Rae 2000 (background=0.1 ppm)
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Depth	Interval	Recovery	PTD	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'					Sand with gravel (10 YR, 5/4), light brown, 85% fine to medium grained sand, 15% gravel (sandstone, gravel fill rock), dry, medium dense, no plasticity, hardness or odor.	SW		
					No groundwater encountered			

BORING LOG

Project Name: SSEL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID Sh, Group 1	Location ID 290				
Drilling Company HGL		Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'				
Drilling Equipment trowel/shovel		Borehole Diameter NA	Date/Time Drilling Started 12/10/10, 0840	Date/Time Total Depth Reached 12/10/10, 0850				
Type of Sampling Device trowel/shovel			Samples Collected 20103, 0845 (2) 1/2 gal bags					
Geologist P. Scam			Checked by/Date <i>[Signature]</i> 5/17/11					
Radiological Background 13 pp, 0.2 ppm		Radiological Equipment Used dp R meter	PID Used Mini Rae 2000 (Background=0.2 ppm)					
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			0.2	13	<p>poorly sorted sand w/ silt, ¹⁰ yellowish brown (W&S 16) dry, med. dense sand, 80% fine sand, 15% silt, 5% granite coarse gravel, no odor</p> <p>rd = 0.5'</p> <p>Groundwater not encountered</p> <p>1" of 3/4" granite gravel @ surface</p>	SP		



5B_291



BORING LOG

Sheet 1 of 1

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 291
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-9-10 12-9-10/1305	Date/Time Total Depth Reached 12-9-10/1326
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gal bags, 1 8-oz jar (#20104)(1325)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/17/11		

Radiological Background 0.2, 14	Radiological Equipment Used MP R meter	PID Used Mini Rae 2000 (Background = 0.2 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'			0.3	14	Gravelly sand with silt, (10YR, 4/4), brown, 60% fine to medium grained sand, 30% gravel (subangular, 1-2 inches), 10% silt, medium dense, dry. No GW encountered	SW	



BORING LOG

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID 5B/group 1	Location ID 292				
Drilling Company HGL		Driller D. R. V. W. W.	Ground Elevation NA	Total Drilled Depth 0.5				
Drilling Equipment trowel/shovel		Borehole Diameter NA	Date/Time Drilling Started 12/09/10, 10:05	Date/Time Total Depth Reached 12/09/10, 10:05				
Type of Sampling Device trowel/shovel			Samples Collected 20105, 10105 (2) 1/2 gal bags, (1) 4oz jar					
Geologist P. SKEARN			Checked by/Date [Signature] 5/17/11					
Radiological Background 14 ppb, 0.1 ppm		Radiological Equipment Used dp R meter		PID Used Mini Rae 2000 (Background = 0.4 ppm)				
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5			0.1	14	<p>silty sand w/ gravel, dark yellowish brown (10 YR 4/4), dry, ^{loose} soft, 30% silt, 50% fine sand, 20% non-named gravel, no color</p> <hr/> <p>T.D. 0.5 ft Groundwater not encountered 2" or 3/4" granite gravel on surface</p>	SM		



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5b, Group 1	Location ID 293
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/09/10, 0925	Date/Time Total Depth Reached 12/09/10, 0955
Type of Sampling Device trowel/shovel	Samples Collected 20108: 0950 (2) 1/2 gal bag, (1) 402 jar		
Geologist D. Rivera	Checked by/Date D. Rivera 5/17/11		

Radiological Background 15 ppb, 10.4 ppm	Radiological Equipment Used HP Meter	PID Used Mini Rae 2000 (Background = 0.4 ppm)
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ft Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5			0.4	15	sand w/ silt w/ gravel, clay yellowish brown (10% 3/6), dry, soft, 50% fine sand, 20% silt, 30% coarse gravel fill, no clay.	30"		
T.D. = 0.5' Groundwater not encountered 3/4" gravel (granite) layers @ surface 1" thick Asphalt chunks found in soil								

BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 294
Drilling Company HGL	Driller M. Hughes	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-8-10/1443	Date/Time Total Depth Reached 12-8-10/1600
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 1 8oz jar (#20110)(1455)		
Geologist C. Carmichael	Checked by/Date [Signature] 5/17/11		

Radiological Background (p) 0.7, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.7 cpm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'				0.7 13	Silty sand, (10 YR, 4/4), brown, 70% fine grained subrounded sand, 25% silt, 5% rock fragments (weathered sandstone and pea gravel), few rootlets, dry, loose. No GW encountered	SM	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 1	Location ID 294
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 10'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/20/11 / 0840	Date/Time Total Depth Reached 1/20/11 / 0848
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 10 20109 / time 0930 (2) 1/2 gallon bags / (1) 4 oz jar		
Geologist Stephanie Lapeyre Montoux	Checked by/Date TBJ 5/25/11		

Radiological Background 41 / 2590	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	34	0-8" SP SAND (yellowish brown 10YR 5/4)	SP	0.0 = 3002
			0.0	50	15% silt, 15% clay, 70% fine to med. graded sand plant material (roots), trace gravel-subangular low plasticity, loose, dry, very soft		0.5 = 4169
1.0			0.0	36	8"-1'1" SM silty sand (yellowish brown 10YR 5/6)	SM	1.0 = 4293
			0.0	79	1'1"-2'11" SP SAND (olive yellow 6/6)	SP	1.5 = 3986
			0.0	86	15% silt, 85% fine to med. graded sand trace gravel-subrounded non plastic, loose, dry		2.0 = 3931
			0.0	89			2.5 = 4019
3.0			0.0	75	2'11"-3'1" CLAY with silt (light olive brown 2.5Y 5/3)	CL	3.0 = 4351
			0.0	61	3'3"-3'8" sandy clay with silt (dark brown 7.5YR 3/3)	CL	3.5 = 4794
4.0			0.0	62	3'8"-6'7" silty SAND (brown 10YR 4/3)	SM	4.0 = 5013
			0.0	84	10% clay, 25% silt, 65% fine to coarse graded sand trace gravel-subangular low plasticity, very soft, loose, dry		4.5 = 4919
5.0			0.0	71			5.0 = 4781
			0.0	29			5.5 = 4859

Radiological Background 41 / 2590				Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 294			
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings		
							Inches	(CPM)	
			0.0	26		SM	6.0 =	4787	
			0.0	77	same as above		6.5 =	4807 4821	
7.0			0.0	35	6' 7" - 7' SM SANDS with silt trace gravel - subangular 20% silt, 70% fine to coarse grained sand (brown 4/3 10/4) 10% clay, low plasticity, very soft, loose, dry	SM	7.0 =	4567	
			0.0	36	7' - 9' 1" CL sandy CLAY with silt (dark brown 10/4R 3/3) 40% clay, 25% silt, 35% fine grained sand med. plasticity, firm-hard, trace gravel - sub angular	CL	7.5 =	4720	
8.0			0.0	43			8.0 =	4787	
			0.0	25			8.5 =	4707	
9.0			0.0	38	9' 1" - 9' 4" SM SANDS with silt trace gravel - subangular (dark brown 10/4R 3/3) 20% silt, 70% fine to coarse grained sand, 10% clay, low plasticity, very soft, loose, dry	SM	9.0 =	4597	
			0.0	37	9' 4" - 10' sandy CLAY with silt (dark brown 10/4R 3/3) 40% clay, 25% silt, 35% fine grained sand med. plasticity, firm, dry	CL	9.5 =	4880	
10.0			0.0	55			10 =	4918	
					TDS = 10" bgs NO GW encountered				



BORING LOG

Project Name: SSFL Area IV Radiological Study		Project Number: EP9038.01.22.04.03	Subarea ID: Sb, Group 2	Location ID: 295		
Drilling Company: HGL		Driller: D. F. W. R. C.	Ground Elevation: NA	Total Drilled Depth: 0.5'		
Drilling Equipment: trowel/shovel		Borehole Diameter: NA	Date/Time Drilling Started: 12/03/10, 1005	Date/Time Total Depth Reached: 12/20/10, 1005		
Type of Sampling Device: trowel/shovel			Samples Collected: 20012, 1005 1010 (2) 1/2 gal bags, (1) 4oz jar			
Geologist: P. S. S. C. A. M.			Checked by/Date: [Signature] 5/24/11			
Radiological Background: 14 CFR, 21 CFR		Radiological Equipment Used: MFR meter		PID Used: Mini Rae 2000 (Background=0.1 cpm)		
Depth & Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
0-5'			oil 14	sandy silt, dark yellowish brown (10YR 3/4), dry, soft, 60% silt, 30% fine sand, 10% clay; (non-negligible) rock fragments, few roots, no odor common	ml	
				TD = 0.5' Groundwater not encountered		

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID & Group 5B / 1		Location ID 295	
Drilling Company: Boart Longyear		Driller D. Hansen		Ground Elevation NA		Total Drilled Depth 10'	
Drilling Equipment Geoprobe 6600		Borehole Diameter 1 3/4"		Date/Time Drilling Started 1/18/11 / 0840		Date/Time Total Depth Reached 1/18/11 / 0900	
Type of Sampling Device 1 3/4" macrocore acetate liner				Samples Collected ID 2011 / 0935 (2) 1/2 gallon bags / (1) 4 oz. jar			
Geologist Stephanie Lepeyre Montrose				Checked by/Date 5/25/11 TAN			
Radiological Background 45 / 2544		Radiological Equipment Used Pancake / Downhole		PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)			
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	45	0-5" SM silty SAND (brown 10YR 5/3)	SM	0.0 = 3080
			0.0	56	med. trace gravel - subangular & sub rounded, low plasticity, soft, dry SM silty SAND with clay	SM	0.5 = 4478
1.0			0.0	75	5"-10" 15% clay, 25% silt, 60% fine to coarse grained sand, low plasticity, soft, brown dry 10"-2' ML sandy SILT with clay (dark yellowish 10YR 3/4)	ML	1.0 = 4833
			0.0	40	25% clay, 35% fine to coarse grained sand, 40% silt low plasticity, soft, dry	ML	1.5 = 5041
2.0			0.0	45	2'-2'5" SM silty SAND with silt (yellowish brown 10YR 5/6)	SM	2.0 = 5058
			0.0	45	20% silt, 80% fine to coarse grained sand loose, non plastic, dry	SM	2.5 = 5162
3.0			0.0	40	2'5" - 3'8" CL sandy CLAY with silt (brown 10YR 3/3)	CL	3.0 = 5701
			0.0	50	30% clay, 45% fine to medium grained sand, 25% silt, low to medium plasticity, firm, dry	CL	3.5 = 5149
4.0			0.0	85	3'8" - 4'4" SM silty SAND with clay (very dark brown 10YR 2/2)	SM	4.0 = 4971
			0.0	100	20% clay, 30% silt, 50% fine to medium grained sand, low plasticity, soft, dry	SM	4.5 = 4998
5.0			0.0	90	4'4" - 5' SM silty SAND with clay (dark yellowish brown 10YR 4/6)	SM	5.0 = 4797
			0.0	35	20% clay, 30% silt, 50% fine to medium grained sand, low plasticity, soft, dry	SM	5.5 = 4674
			0.0	35	5'-7'10" CL silty CLAY with sand (brown 10YR 4/3)	CL	5.0 = 4797
			0.0	35	45% clay, 25% fine to med. grained sand, 30% silt, med to high plasticity, hard, dry color change to (dark brown 10YR 3/3)	CL	5.5 = 4674

Radiological Background 45 2544				Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 295	
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings
							inches (CPM)
			0.0	65		CH	6.0 = 4611
			0.0	40	Same as above		6.5 = 4683
7.0			0.0	55			7.0 = 4672
			0.0	70			7.5 = 4707
8.0			0.0	90	7'10" - 7'11" SP SAND (light yellowish brown 104R 6/4) 15% silt, 85% fine to medium grained sand	SP	8.0 = 4845
			0.0	65	7'11" - 8'8" silty CLAY with sand (very dark brown 104R 2/2) 2/5 clay, 25% fine to med. grained sand 30% silt, med. to high plasticity, hard,	CL	8.5 = 4636
9.0			0.0	55	8'8" - 8'10" 2 color change Same as above to (black 104R 2/1) - no HC odor	CL	9.0 = 4739
			0.0	30	8'10" - 10' Same as above - color change to (dark brown 7.5YR 3/3)	CL	9.5 = 4812
10.0			0.0	80			10.0 = ---
TD = 10 ft bss NO GW encountered							

BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5b, Group 2	Location ID 296
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/08/10, 1100	Date/Time Total Depth Reached 12/08/10, 1110
Type of Sampling Device trowel/shovel	Samples Collected 2014, 1105 (2) 1/2 gal bags, (1) 4oz jar		
Geologist P. Secam	Checked by/Date <i>[Signature]</i> 5/24/11		

Radiological Background 15 mR, 0.1 ppm	Radiological Equipment Used M/R meter	PID Used Mini Rae 2000 (Background = 0.1 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5				0.1 15	<p>silty sand, dark yellowish brown (10YR 3/4) dry, soft, 70% fine sand, 30% silt common (non-reliable) ② gravel rock fragments, few rootlets, no odor</p> <hr/> <p>TD = 0.5' Groundwater not encountered</p>	SM		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B / 1	Location ID 296
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 10'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/18/11 / 1021	Date/Time Total Depth Reached 1/18/11 / 1033
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected ID 20113 / time 1110 (2) 1/2 gallon bags / (1) 4oz jar		
Geologist Stephanie Laporte Norstrom	Checked by/Date TRW 5/25/11		

Radiological Background 41 / 2575	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
				55	0'-3" SM SAND with silt 10% clay, 20% silt, 70% fine to coarse grained sand; trace gravel - sub-rounded, loose, non plastic, dry (yellowish brown 10YR 5/6)	SM	0.0 = 3314
				60	3"-11" SM silty SAND 10% clay, 30% silt, 60% fine to med. grained sand; trace gravel - sub-rounded, loose, non plastic, dry (dark yellowish brown 10YR 4/4)	SM	0.5 = 4595
1.0				68	med. grained sand, non plastic, soft, dry (dark yellowish brown 10YR 4/4)		1.0 = 4835
				73	1'-1'2" silty SAND 15% clay, 50% fine to coarse grained sand 35% silt, low plasticity, soft, dry, dense, trace gravel - subangular (brown 10YR 4/3)	SM	1.5 = 4902
					1'-1'2" - concrete debris - same as above		
					Same as above		
2.0				49	2'-4"-3'-4" sandy SILT 10% clay, 50% silt, 40% fine to med. grained sand (brown 10YR 4/3)	ML	2.0 = 4904
				58	concrete debris, low plasticity, soft, dry trace gravel - subangular		2.5 = 4885
3.0				59			3.0 = 4805
				62	3'-4"-3'-10" red concrete		3.5 = 4374
4.0				68	3'-10"-4'-5" SM silty SAND 10% clay, 30% silt, 60% fine to med. grained sand (light gray 2.5Y 7/2)	SM	4.0 = 4794
				57	trace gravel - subangular, non plastic, loose, dry very soft		4.5 = 4810
5.0				55	4'-5"-5' SM silty SAND 30% silt, 15% clay, (dark yellowish brown 10YR 4/4)	SM	5.0 = 4889
				30	55% fine to med. grained sand, low plasticity, soft, dry, dense		
					5'-5'-4" SM silty SAND 10% clay, 30% silt, 60% fine to coarse grained sand, low plasticity, soft, dense, dry (brown 10YR 4/3)	SM	5.5 = 4781
					5'-4"-5'-10" SP SAND 20% silt, 80% fine to coarse grained sand, (yellowish brown 10YR 5/6) SP		
					trace gravel - subangular, non plastic, loose, dry		
					5'-10"-7'-2" ML sandy SILT (dark brown 10YR 3/3) ML		

Radiological Background				Project Name	Project Number	Location	
41 2575				SSFL Area IV Radiological Study	EP9038.01.22.04.03	296	
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole
							Gamma Readings
							Inches (CPM)
			0.0	46	Same as above	ML	6.0 = 4835
			0.0	55			6.5 = 4898
7.0			0.0	66			7.0 = 4861
			0.0	69	7'2" - 7'11" silty SAND (light olive brown) 2.5% silt, 10% clay, 85% fine to coarse grained sand low plasticity, soft, dense, dry	SM	7.5 = 5146
8.0			0.0	78	7'11" - 10' SM silty SAND with clay (Very dark grayish brown) 55% fine to coarse grained sand, 20% clay, 25% silt, low plasticity, soft, dense, dry, greenish gray staining, trace gravel - subangular & subrounded, no odor	SM	8.0 = 4985
			0.0	51	Same as above		8.5 = 5098
9.0			0.0	99			9.0 = 5107
			0.0	103			9.5 = 5133
10.2			0.0	89	TD = 10 ft bgs NO GW encountered		10 = 5016

BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, Group 1	Location ID 297
Drilling Company HGL	Driller C. Knight	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-8-10 / 0924	Date/Time Total Depth Reached 12-8-10 / 0930
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 1 8-oz jar (#20116)(0930)		
Geologist C. Carmichael	Checked by/Date JAD 5/17/11		

(CPD) Radiological Background 0.0, 13 uR/h Radiological Equipment Used up R meter PID Used Mini Rae 2000 (Background = 0.0 ppm)

Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'				0.1 14	Gravelly sand, (10 YR, 4/3), 65% fine to medium-grained subrounded sand, 30% pea gravel (asphalt, fill), 5% silt, few rootlets, moist, loose, piece of sandbag debris found. No groundwater encountered.	SW		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 1	Location ID 297
Drilling Company Bort Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 8ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 12/15/10 1450	Date/Time Total Depth Reached 12/15/10 1458
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20115-152 (2) 1/2 yellow bags; (1) 402 jar		
Geologist I. Stone	Checked by/Date <i>[Signature]</i> 5/17/11		

Radiological Background 47 / 2556	Radiological Equipment Used Pancake / Downhole	PID Used mini RAE 2000	(Background 0.8 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings
							Inches 10.5' = 2527 (CPM)
1			0.8	29	Silty sand, Dark Yellowish brown (3/4 10YR) 60% fine grained sand, 38% silt, 5% clay, dry, med dense, no odor or staining. some mottling, trace fine gravel.	SM	2876
			0.9	51			4291
			0.9	72			4949
			0.9	58			5099
2			0.9	38	Sandy silt, Very dark brown (2/2 10YR) 65% silt, 35% fine grained sand, 5% clay dry, low toughness, low-med strength, low plasticity, no odor or staining ^{FS} few weathered sand nodules, trace gravel	ML	5131
			0.9	52			4960
			0.9	69			5021
3			0.9	65	odor and staining from 4'-6.25'		5178
			1.0	80			5219
			1.0	47			5091
4			1.0	77			4777
			0.9	82			4804
			0.9	73			4852

Radiological Background				Project Name	Project Number	Location	
47 / 2556				SSFL Area IV Radiological Study	EP9038.01.22.04.03	297	
Depth	Interval	Recovery	PTD	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings
							Inches
			0.9	73	Same as above.		4852
			6.9	51	Silty Clay, Very dark grayish brown (3/2 10YR) 70% clay, 30% silt, dry, med stiff, med tough, med strength, med. plasticity. no odor or skinning, some mottling	CL	4692
7			0.7	45			4617
			0.9	75	SAND w/ silt, light yellowish brown (4/1 2.5 YR) 90% fine sand, 10% silt, dry, loose.	SP	4798
			0.9	74	Clay Silty Clay, see clay layer above increasing stiffness w/ depth	CL	4781
					TD = 8 ft log no gw encountered		
9							
10							

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 298				
Drilling Company HGL		Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.6'				
Drilling Equipment trowel/shovel		Borehole Diameter NA	Date/Time Drilling Started 1-5-11/1553	Date/Time Total Depth Reached 1-5-11/1559				
Type of Sampling Device trowel/shovel			Samples Collected 2 1/2 gall bags (#20118) (1557)					
Geologist C. Carmichael			Checked by/Date <i>[Signature]</i> 5/17/11					
Radiological Background (RAD) 0.1, 12		Radiological Equipment Used up R meter		PID Used Mini Rae 2000 (Background = 0.1 ppm)				
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			0.1	13	← asphalt Silt with sand and rock fragments (10 VR, 3/6), reddish brown, 60% silt, 25% rock fragments (pea gravel and asphalt), medium stiff, moist, no odor. 15% sand	ML		
No groundwater encountered.								

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 1	Location ID 298			
Drilling Company Bort Longyear		Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 10 ft			
Drilling Equipment Geoprobe 6600		Borehole Diameter 1 3/4"	Date/Time Drilling Started 12/15/10 1315	Date/Time Total Depth Reached 12/15/10 1325			
Type of Sampling Device 1 3/4" macrocore acetate liner			Samples Collected 2017-1335 (2) 1/2 gallon bags; (1) 4oz jar				
Geologist I. Stone			Checked by/Date [Signature] 5/17/11				
Radiological Background 44 / 2557		Radiological Equipment Used Paracore / Downhole		PID Used Mini RAE 2000 (Bkgd: 0.7 ppm)			
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches +0.5' = 2412 (CPM)
1			0.7 37		Gravelly SAND, Brown (4/3 1042) 70% fine-med sand, 30% gravel (fine), dry, loose	SP	2895
			0.7 62		Silty SAND, Dark Brown (3/4 7.54R) 65% fine sand, dry, 35% silt, dry, med. dense, no odor or staining.	SM	4346
2			0.7 49				5044
			0.7 67				5109
3			0.7 86		55% fine sand, 45% silt		5157
			0.7 42				5124
4			0.8 75		SANDY SILT, Black (2/1 104R) 70% silt, 30% fine sand, low toughness, low strength, stained, no odor	ML	5151
			0.8 64				4969
5			0.8 81		Silty SAND, Black (2/104R) Greenish Gray (5/54 GLEY2) 70% sand (fine), 30% silt, med density, no odor; staining; wood scraps @ 4.5 (odor)	SM	5050
			0.8 56		SAND w/silt, Dark Greenish Gray (4/564 GLEY) 90% fine sand, 10% silt, dry, loose, no odor; stained	SP	5092
6			0.8 81				5465
			0.7 54		SAND, Greenish Gray (5/56 GLEY1) 95% fine sand, 5% silt, dry, loose, no odor; stained	SP	5315
			0.7 36				5511

Radiological Background 44/2557				Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 298	
Depth	Interval	Recovery	PID	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole
							Gamma Readings (CPM)
7			0.7	36	Silty SAND, Dark Greenish Gray (4/10Y 6LE1) 70% fine sand, 30% silt, ^{dry} Slightly moist, low dense, no odor, stained to approx. 8ft bgs	SM	5511
			0.7	52			5635
			0.7	27			5752
			0.7	33			5479
8			0.7	92	few roots color change (staining stops) Dark yellowish brown (4/6 10YR) otherwise same as above	SP	5575
			0.8	65	5465		
9			0.8	31			5396
			0.8	40	SAND, light yellowish brown (6/4 2.5YR) dry - slightly moist, not dry look - 95% sand fine, 5% silt.		5253
10			0.8	52	TD = 10ft bgs no gw encountered	SP	NM



BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 2	Location ID 299
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-10-10/1040	Date/Time Total Depth Reached 12-10-10/1051
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20173) (1050)		
Geologist C. Carmichael	Checked by/Date [Signature] 5/17/11		

Radiological Background D-0, 13	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background=0.0cpm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'				0.014	Sandy silt, (10 YR, 4/4) brown, 75% silt, 25% fine grained sand, common rootlets, loose, dry, very low plasticity. No GW encountered	ML	



BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 2	Location ID 300
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-10-10/1108	Date/Time Total Depth Reached 12-10-10/1111
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bag (#20175)(1110)		
Geologist C. Carmichael	Checked by/Date [Signature] 5/17/11		

Radiological Background (PID) 0.0, 12	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background=0.0cpm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			0.0	13	Clayey silt with sand, (10 YR, 4/2), brown, 60% silt, 35% clay, 5% fine grained subrounded sand, medium stiff, dry, common rootlets. No Gw encountered	ML		

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 3	Location ID 301
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-13-10/0856	Date/Time Total Depth Reached 12-13-10/0859
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gallon bags (#20209) (0858)		
Geologist C. Carmichael	Checked by/Date JMS Dr 5/17/11		

Radiological Background (P) 0.0, 14 Radiological Equipment Used: up R meter PID Used: Mini Rae 2000 (Background = 0.0 ppm)

Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'				0.0 14	Sandy silt, (10 YR, 4/3), brown, 70% silt, 30% sand - fine grained, subrounded, soil is interlayered with thin beds (1-2 inches) of siltstone and sandstone, dry, medium dense, rootlets common. No Gw encountered	ML	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B 3	Location ID 301
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 8.5 ft
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/13/11 0829	Date/Time Total Depth Reached 1/13/11 0840
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 20208 ~ 0910 (2) 1/2 gallon bags		
Geologist I. Stone	Checked by/Date <i>[Signature]</i> 5/17/11		

Radiological Background 49 / 2582	Radiological Equipment Used Pancake / Downhole	PID Used MiniRAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches</small>
			0.0	26	Sandy silt, Dark yellowish brown (4/4 10YR) 70% silt, 20% fine sand, 10% clay, dry low tough, low strength, low med plasticity trace gravel, trace roots	ML	3051
			0.0	57			4464
1			0.0	68			5087
			0.0	72			5173
2			0.0	91			5568
			0.0	59	Clayey silt, Brown (4/3 10YR) 60% silt, 30% clay, 10% sand, dry, low strength, low tough, med. plasticity, no odor or staining. trace gravel.	ML	5631
3			0.0	75			5716
			0.0	68			5726
4			0.0	78	Sandy silt, Dark yellowish brown (4/6 10YR) 70% silt, 20% fine sand, 10% clay, dry, trace gravel, low tough, low strength, low med plasticity, no odor or staining.	ML	5736
			0.0	91			5575
5			0.0	82			5472
			0.0	83			5128
6			0.0	79	- Same as above		4926

Project Name: SSFL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID: 5B, group 6	Location ID: 302
Drilling Company: HGL	Driller: H. Thompson	Ground Elevation: NA	Total Drilled Depth: 0.5'
Drilling Equipment: trowel/shovel	Borehole Diameter: NA	Date/Time Drilling Started: 12-15-10/0940	Date/Time Total Depth Reached: 12-15-10/0946
Type of Sampling Device: trowel/shovel	Samples Collected: 2 1/2 gall bags (#20329) (0945)		
Geologist: C. Carmichael	Checked by/Date: <i>[Signature]</i> 5/17/11		

Radiological Background: (P) 0.0, 14	Radiological Equipment Used: up R meter	PID Used: Mini Rae 2000 (background=0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'			0.0	14	<p>Gravelly sand with silt, (10XR, 5/3), reddish brown, 70% fine grained subrounded sand, 20% gravel (fill pea gravel and asphalt pieces), 10% silt, moist, medium dense.</p> <p>Top 2" is asphalt.</p> <p>No groundwater encountered.</p>	SP-SM	

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID SB, Group 6	Location ID 303
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/15/10, 0935	Date/Time Total Depth Reached 12/15/10, 0945
Type of Sampling Device trowel/shovel	Samples Collected 20330, 0940 (2) 1/2 gal bags		
Geologist D. Seaman	Checked by/Date [Signature] 5/17/11		

Radiological Background 15 nR, 0.00ppm	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.00ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'					asphalt			
0.5'			0.3	15	clayey silt, ^{w/ sand} very dark grey (10YR 3/1) with 85% moist, med. stiff, 15% fine sand, 30% clay, 55% silt, no odor			
					to 0.5 GW & (no GW encountered)			



5B_304



BORING LOG

Sheet 1 of 1

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 8	Location ID 304
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-16-10/1258-1457	Date/Time Total Depth Reached 12-16-10/1307 ^{ec} 1501
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gallon bags (#20508) (1500)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/17/11		

Radiological Background D.O., 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background=0.2ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings <small>(CPM)</small>
0.5'			0.0	14	Silt with sand, (10YR, 4/4), brown, 85% silt, 15% fine grained, subrounded sand, dry, soft, common rootlets, no odor. No groundwater encountered.	ML		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B group 8	Location ID 304
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 410
Drilling Equipment: Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 3-9-11 11:50	Date/Time Total Depth Reached 3-9-11 12:25
Type of Sampling Device: 1 3/4" macrocore acetate liners	Samples Collected 20507 (1200) 20578 VAB (1200) (2) 1/2 gallon bags + 4oz jar 20579 Field MT 20580 MS (1200)		
Geologist C. Knight	Checked by/Date <i>[Signature]</i> 4/14/11		

Radiological Background 41 / 2482	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
			0.0	60	surface: natural soil + grass		10.5' 2340 3083
0.5		0.0	70		Sandy S.H.; Dark yellowish brown (10YR 4/6), moist, medium stiff, no odor, 10% clay, 35% fine sand, 55% silt, trace rootlets near surface; cohesive, low plasticity	ML	4298
1.0		0.0	60				4601
		0.0	45				4751
2.0		0.0	50				5169
		0.0	45		2' 7" Clay; dark grayish brown (2.5Y 4/2), moist, stiff, no odor, 10% silt, 10% fine sand, 80% clay, cohesive, med. plasticity	CL	5690
3.0		0.0	50				6238
		0.0	55		3" - 3.5" siltstone; light yellowish brown (2.5Y 6/4), moist, very stiff, no odor, 3.5" - 4" sandstone; yellowish brown (10YR 5/8), moist, hard, no odor, medium and fine sand; iron oxide staining	BS MS	6574
4.0		0.0	50				6464
					4.0' Refusal on sandstone/siltstone bedrock		
					No GW encountered		
5.0							



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5b, Group 8	Location ID 305
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/16/10, 1445	Date/Time Total Depth Reached 12/16/10, 1455
Type of Sampling Device trowel/shovel	Samples Collected DUPS: 20532 (MS), 20530 (lab), 20531 (field - no fine) 20510, 1450 (2) 1/2 gal bags		
Geologist P. Secan	Checked by/Date <i>[Signature]</i> 5/24/11		

Radiological Background 15 n.e. 10.0 ppm	Radiological Equipment Used MP R meter	PID Used Mini Rae 2000 (background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5				15	silt, dark yellowish brown (10 YR 3/6), dry, soft, 80% silt, 15% sand, 5% clay, few rootlets, no odor			
TD 0.5'					NO GW			

BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 306
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-9-10/0923	Date/Time Total Depth Reached 12-9-10/0940
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 1 8-oz jar (#20120) (0940)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/17/11		

Radiological Background 0.2, 13	Radiological Equipment Used M/R meter	PID Used Mini Rae 2000 (background=0.2 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'			0.2	14	Silty sand with gravel, (10 YR, 4/4), brown, 60% fine to medium grained, subrounded sand, 30% silt, 10% gravel (0.5-2 inch) (weathered sandstone/siltstone, fill rocks), dry, loose, few rootlets. no Gw encountered	SM	

BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID Sb, Group 1	Location ID 307
Drilling Company HGL	Driller D. Rivera	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/03/10, 1410	Date/Time Total Depth Reached 12/04/10, 1420
Type of Sampling Device trowel/shovel	Samples Collected 20121, 1415 (2) 1/2 gal begs (1) 4 oz jar		
Geologist P. Succam	Checked by/Date <i>[Signature]</i> 5/24/11		

Radiological Background 14 mR, 0.3 ppm (PID)	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.3 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5				0.3 15	<p>silty sand, dark yellowish brown (10YR 4/6) clay, 50% silt, 35% silt, 65% fine sand, ^{common} gravel non-fragile rock fragments, few roots. (80)</p> <hr/> <p>FD = 0.5'</p> <p>Groundwater not encountered</p>	SM		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 1	Location ID 307
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 15'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/21/11 / 1312	Date/Time Total Depth Reached 1/21/11 / 1340
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected ID 20122 / 1435 / ID 20593 / 1440 (2) 1/2 gallon bags / (2) 4 oz jars (10-15')		
Geologist Stephanie Louise Montrose	Checked by/Date TBW 5/25/11		

Radiological Background 67 / 7686	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	105	0-7" SM silty SAND (light olive brown 2.5Y 5/4)	SM	0.0 = 3353
			0.0	91	15% clay, 25% silt, 60% fine-coarse grained sand trace gravel - subangular low plasticity, very soft, dry		0.5 = 4245
1.0			0.0	82	7" ML sand, SILT with clay (brown 10YR 4/3)	ML	1.0 = 4766
			0.0	65	40% silt, 25% clay, 35% fine-med grained sand low plasticity, soft, dry		1.5 = 5098
			0.0	76	1'10"-2' SP SAND non plastic, loose, dry (dark yellowish brown 10YR 4/4) 15% silt, 85% fine to coarse grained sand trace gravel - subangular 4/4	SP	2.0 = 5076
2.0			0.0	76	2'-2'4" ML sand, SILT with clay (brown 10YR 4/3)	ML	
			0.0	60	2'4"-2'8" SP SAND (dark yellowish brown 10YR 4/4) 15% silt, 85% fine to coarse grained sand, (primarily fine grained sand) trace gravel - sub angular non plastic, very loose, dry	SP	2.5 = 5030
			0.0	69	2'8"-3' SC clayey SAND (dark brown 10YR 3/5) 30% clay, 15% silt, 55% fine-med grained sand low plasticity, soft, dry	SC	3.0 = 4913
3.0			0.0	73	3'4" SC clayey SAND (dark brown 10YR 3/5) 25% clay, 10% silt, 65% fine-med grained sand low plasticity, soft, dry	SC	3.5 = 5012
			0.0	84	4'4"-4'7" SM silty SAND (very dark grayish brown) 10% clay, 30% silt, 60% fine-coarse grained sand low plasticity, soft, dry	SM	4.0 = 5083
			0.0	52	4'7"-5'16" SC clayey SAND (very dark gray 10YR 3/1) 30% clay, 15% silt, 55% fine-med grained sand med. plasticity, soft-dry firm	SC	4.5 = 5056
5.0			0.0	66			5.0 = 4928
			0.0	89	5'6"-6'1" CL sandy CLAY with silt (dark grayish brown 10YR 4/2) 40% clay, 25% silt, 35% fine-med grained sand med. plasticity, firm, dry	CL	5.5 = 5099

Radiological Background					Project Name	Project Number	Location
67 / 2686					SSFL Area IV Radiological Study	EP9038.01.22.04.03	307
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole
							Gamma Readings
							Inches (CPM)
			00	67	same as above		6.0 = 4761
			00	71	6'1" - 6'6" CL sandy CLAY (dark yellowish brown 10YR 4/4) 45% clay 15% silt, 40% fine grained sand mod. plasticity (firm - hard clay)	SC	6.5 = 4907
7.0			00	54	6'6" - 10'5" CH CLAY with sand with silt	CH	7.0 = 4880
			00	60	60% clay, 20% fine grained sand		7.5 = 4792
8.0			00	62	20% silt high plasticity, hard, dry, no odor		8.0 = 4912
			00	74			8.5 = 4628
			00	83			9.0 = 4734
9.0			00	88	Same as above		9.5 = 4648
10.0			00	81			10.0 = 4827
			00	65	10'5" - 10'8" same as above - color change (dark yellowish brown 10YR 4/4)	CH	10.5 = 4883
11.0			00	92	10'8" - 11' color change to (black 10YR 2/1)	CH	11.0 = 4639
					11' - 11'5" color change to black 10YR 2/1	CH	
					(brown 10YR 4/5)	CH	
			00	84	11'5" - 11'7" color change to (black 10YR 2/1)	CH	11.5 = 4611
12.0			00	96	11'7" - 12'8" color change to very dark grayish trace coarse grained sand (brown 10YR 3/2)	CH	12.0 = 4519
			00	65	12'8" - 13'3" color change to (very dark grey) trace coarse grained sand (10YR 3/1)	CH	12.5 = 4751
13.0			00	40			13.0 = 4616

Radiological Background 67 2686				Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 307	
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings
							Inches (CPM)
			0.0	40	same as above		13 = 4616
			0.0	28	13'3" - 15' CL sandy CLAY with silt (brown 10R) 4/3 50% clay, 20% silt, 30% fine-med. grained sand gray staining, no odor med-high plasticity, hard, dry	CL	13.5 = 4677
14			0.0	81			14 = 4648
			0.0	65			14.5 = 4816
			0.0	72			15 = 4525
15			0.0	72			
					TD = 15' bgs NO GW encountered		

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, Group 1	Location ID 308
Drilling Company HGL	Driller D. RIVERA	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12/08/10, 1140	Date/Time Total Depth Reached 12/08/10, 1150
Type of Sampling Device trowel/shovel	Samples Collected 20124, 1145 (2) 1/2 gal bags, (1) 4 oz jar		
Geologist P. SWEAN	Checked by/Date <i>[Signature]</i> 5/24/11		

Radiological Background 0.1 ppm, 15 mc	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.1 ppm)
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Depth & Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0-0.5			0.1 15	sandy silt, dark greyish brown (10YR 4/4), dry, soft, 45% fine sand, 55% silt, common gravel rock fragments, few rootlets, no other	ml		
<p>TD = 0.5'</p> <p>Groundwater not encountered</p>							

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 1	Location ID 308
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 15'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 1/21/11 / 0900	Date/Time Total Depth Reached 1/21/11 / 0925
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected ID 20123 / time 1040 / ID 20594 / time 1045 (4) 1/2 gallon bags / (2) 4 oz jars (1-5' + 10-15')		
Geologist Stephanie Lapierre Montrose	Checked by/Date TBW 5/25/11		

Radiological Background 43 / 2638	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches + 0.5 = 2724 (CPM)
			0.0	48	0-3" SC SAND with clay (yellowish brown 10UR 5/4) 20% clay, 10% silt, 70% fine to coarse grained sand low plasticity, very soft, dry	SC	0.0 = 4295
			0.0	72	3"-8" SW SAND (brown 10UR 4/3) non plastic, loose, dry 15% silt 5% gravel subangular 80% fine to coarse grained sand	SW	0.5 = 4551
1.0			0.0	97	8"-2'6" SC SAND with clay (brown 10UR 4/3)	SC	1.0 = 4598
			0.0	77	60% fine-coarse grained sand, 20% clay, 15% silt 5% gravel - subangular + subrounded loose, dry, low plasticity		1.5 = 4738
2.0			0.0	67			2.0 = 4921
			0.0	57	2'5" wood		2.5 = 4949
			0.0	45	2'6"-4'4" SP SAND (very dark grayish brown) 10% clay, 15% silt, 75% fine-coarse grained sand trace gravel - subrounded + subangular moist, dense, low plasticity, very soft	SP	3.0 = 4960
3.0			0.0	56	3'10"-4'1" same as above - wet		3.5 = 5047
4.0			0.0	82	4'1"-4'4" same as above - moist		4.0 = 4873
			0.0	46	4'4"-5' NO Recovery		4.5 = 5129
5.0			0.0	60	5'-5'3" SM silty sand (dark grayish brown 10UR 4/2) 10% clay, 25% silt, 65% fine-red grained sand low plasticity, very soft, dry	SM	5.0 = 4956
			0.0	93	5'3"-5'9" SC clayey sand (brown 10UR 4/2) 25% clay, 20% silt, 55% fine to coarse grained sand low plasticity, soft, dry	SC	5.5 = 4845
					5'7"-5'9" SW SAND (yellow 10UR 7/6) 5% gravel, 10% silt, 85% fine to coarse grained sand non loose, dry	SW	
					5'9"-6'2" SC clayey sand with silt (brown 10UR 4/2) 25% clay, 20% silt, 55% fine-coarse grained sand low plasticity, soft, dry	SC	

Radiological Background 43 / 2638				Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 308		
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
			0.0	84	Same as above	SC	6" =	4853
	6'2" - 7'		0.0	99	SC SAND with clay (very dark gray 5Y 3/1) 20% clay, 10% silt, 70% fine-coarse grained sand low plasticity, very soft, dense, dry	SC	6.5" =	4926
	6'4" -				green staining			
7.0	7' - 9'6"		0.0	62	SC clayey SAND with silt (very dark gray 2.5Y 3/1) (greenish staining throughout, no odor)	SC	7.0" =	5203
			0.0	49	25% clay, 20% silt, 55% fine-med. grained sand, low plasticity, soft, dry		7.5" =	5164
8.0			0.0	85			8.0" =	5089
			0.0	97			8.5" =	5100
			0.0	90			9.0" =	5112
			0.0	78	9'6" - 10' No recovery		9.5" =	5122
10.0			0.0	61	10' - 11'6" SC clayey SAND with silt (very dark gray 2.5Y 3/1) 25% clay, 20% silt, 55% fine-med. grained sand, low plasticity, soft, dry green staining throughout, no odor	SC	10.0" =	4987
			0.0	46			10.5" =	5256
11.0			0.0	70	11'6" - 11'8" SM SAND with silt (very dark gray 5Y 3/1) 10% clay, 20% silt, 70% fine-coarse grained sand trace gravel-sub rounded, low plasticity, very soft, loose, dry	SM	11" =	5226
			0.0	59			11.5" =	5197
12.0			0.0	83	11'8" - 12'6" SC clayey SAND with silt (very dark gray 2.5Y 3/1) 25% clay, 20% silt, 55% fine-med. grained sand, low plasticity, soft, dry		12" =	5261
			0.0	65	12'6" - 12'10" SM SAND with silt (very dark gray 5Y 3/1) 10% clay, 20% silt, 70% fine-coarse grained sand, trace gravel-sub rounded & sub angular, low plasticity, very soft, loose, dry	SM	12.5" =	5322
13.0			0.0	75	12'9" - 12'10" SC SAND with silt (very dark grayish brown) 25% clay, 15% silt, 60% fine-med. grained sand	SC	13" =	5241
					Same as above			
					12'10" - 13'6" SC clay SAND (very dark grayish brown) 25% clay, 15% silt, 60% fine-med. grained sand			

Radiological Background					Project Name	Project Number	Location
43 / 2638					SSFL Area IV Radiological Study	EP9038.01.22.04.03	308
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings
							Inches (CPM)
			0.0	75	same as above	SC	13 = 5241
			0.0	44	13'6" - 13'10" SC clayey sand (Very dark gray) 5.4 31		13.5 = 5320
14			0.0	83	14'1" 25% clay, 10% silt, 65% fine-med. grained sand low plasticity, soft clay	SC	14. = 5265
			0.0	91	14'1" - 14'4" Sandstone (GLE4 1 7.1 - light greenish gray) fine-med. grained sand		14.5 = 5171
15			0.0	87	14'4" - 15' no average SC clayey sand (dark gray) 5.4 41 41 25% clay, 10% silt, 65% fine-med. grained sand low plasticity, soft, dry	SC	15 = 5208
<p>TD = 15'</p> <p>Water encased = 3'10" - 4'1"</p>							



BORING LOG

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 309
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-14-10/1318	Date/Time Total Depth Reached 12-14-10/1321
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20126) (1320)		
Geologist C. Carmichael	Checked by/Date 5/17/11		

Radiological Background (S) 0.0, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0.5'				0.0 15	Gravelly sand, (10 YR, 5/3), beige, 65% fine grained subrounded sand, 35% gravel (sandstone and fill pea gravel), dry, dense. Top 2" is gravel. No Gw encountered	SM SW	



BORING LOG

Project Name: SSEL Area JV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 310
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-14-10/1335	Date/Time Total Depth Reached 12-14-10/1336
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20128) (1335)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/17/11		

Radiological Background 0.0, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background=0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'				0.0 14	Gravelly sand, (10 YR, 5/3), beige, 65% fine grained subrounded sand, 35% gravel (fill pea gravel and sandstone rock fragments, dry, medium dense. no gw encountered	SW GM		



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 311
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-14-10/1402	Date/Time Total Depth Reached 12-14-10/1404
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20130) (1405)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/17/11		

Radiological Background (PID) 0.0, 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			0.0	14	Gravelly sand, (10 YR, 5/4), light brown, 65% fine grained subrounded sand, 35% gravel (fill pea gravel and sandstone rock fragments), dry, medium dense No GAO encountered	SM SW		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 312
Drilling Company HGL	Driller H. Thompson	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 12-14-10/1420	Date/Time Total Depth Reached 12-14-10/1426
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags (#20131) (425)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/17/11		

Radiological Background (90) 0.0, 13	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			0.0	13	<p>S^{sc} Gravelly sand, (10 YR, 5/3), light brown, 70% fine grained subangular sand, 30% gravel (fill) and rock fragments of sandstone, dry, dense, no odor.</p> <p>No groundwater reached.</p>	SM SW		



5B_313



BORING LOG

Sheet 1 of 2

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 1	Location ID 313
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 10'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2/8/11 / 1317	Date/Time Total Depth Reached 2/8/11 / 1327
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected (2) 1/2 gallon bags / (1) 4 oz. jar	ID 2000720851 / firm; 1415	
Geologist Stephanie Lepore Nottrose	Checked by/Date TRJ 5/18/11		

Radiological Background 54 / 2339	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkqd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches ±0.5= 2546 (CPM)
				65	0-9" SM silty SAND (light yellowish brown) $Q_{254} 2.54 6/4$ plant material (roots + grass)	SM	0.0= 3272
				70	25% silt, 75% fine - coarse grained sand trace gravel - subangular, non-plastic, dense, dry		0.5= 4166
				47	9.4"-9.5" 45% clay, 20% silt, 25% fine grained sand, med-high plasticity, hard CL sandy clay	CL	1.0= 4333
				63	9.5"-19" SM silty SAND (light yellowish brown) $2.54 6/4$ 25% silt, 75% fine - coarse grained sand trace gravel - subangular, trace concrete debris non-plastic, dense, dry	SM	1.5= 4416
				81	19"-2' SP SAND → 90% fine coarse sand (brownish yellow) $1042 6/6$ 20% silt, 90% fine coarse grained sand, med-high plasticity, hard	SP	2.0= 4434
				70	2'-2'1" CL CLAY 45% clay, 20% silt, 25% fine grained sand CL CLAY med-high plasticity, hard	CL	2.5= 4488
				70	2'1"-2'2" SP SAND 90% silt, 90% fine - coarse grained sand SP SAND non-plastic, loose, dry (light olive brown) $2.54 5/4$	SP	2.5= 4488
				85	2'2"-2'8" SM silty SAND (light olive brown) $2.54 5/4$ 15% clay, 25% silt, 10% fine - coarse grained sand low plasticity, soft, dry	SM	3.0= 4656
				67	2'8"-3'5" SC SAND with clay (olive brown) $2.54 4/3$ 20% clay, 15% silt, 65% fine - med. grained sand low plasticity, soft, dry	SC	3.5= 4549
				58	3'5"-4'6" SC CLAY SAND 3'6"-3'9" pea gravel (granitic) (light yellowish brown) $2.54 6/3$ 30% clay, 15% silt, 55% fine - coarse grained sand concrete debris med. plasticity, firm, dry	SC	4.0= 4584
				51	4'6"-5'1" SP SAND (very dark greyish brown) $2.54 3/2$ 4'9" concrete debris 10% silt, 90% fine - coarse grained sand, trace gravel non-plastic, loose, dry	SP	4.5= 4585
				57	5'-5'7" SM silty SAND w/ clay (very dark greyish brown) $2.54 3/2$ 10% plasticity, soft, dry, concrete debris 20% clay, 30% silt, 50% fine - coarse grained sand, trace gravel non-plastic, loose, dry	SM	5.0= 4677
				47	5'7"-5'9" CL sandy CLAY (dark greyish brown) $2.54 4/2$ 40% clay, 15% silt, 45% fine - med. grained sand, med plasticity, hard, dry	CL	5.5= 4681
					5'9"-7'0" SM silty SAND with clay (very dark greyish brown) $2.54 3/2$ 20% clay, 30% silt, 50% fine - coarse grained sand, low plasticity, soft, dry		

Radiological Background					Project Name	Project Number	Location	
54 / 2339					SSFL Area IV Radiological Study	EP9038.01.22.04.03	313	
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
6.5			0.0	60	6' ^{face} red concrete debris - same as above		6.0 = 4751	
			0.0	52	SM silty sand (very dark grayish brown) 2.5 3/2 20% clay, 30% silt, 50% fine-coarse grained sand, low plasticity, soft, dry	SM	6.5 = 4765	
			0.0	49	6'11"-7' concrete debris			
7.0			0.0	49	7'-9'2" SM silty sand (very dark grayish brown 2.5 3/2) 20% clay, 30% silt, 50% fine-coarse grained sand, low plasticity, soft, dry	SM	7.0 = 4864	
			0.0	41			7.5 = 4766	
8.0			0.0	45	concrete debris		8.0 = 4642	
			0.0	52			8.5 = 4801	
9.0			0.0	50	9'-9'2" SP SAND (light olive brown 2.5 5/4) 15% silt, 85% fine-coarse grained sand, trace gravel - subangular, non plastic, loose, dry. (light dark grayish brown 2.5 3/2)	SP	9.0 = 5037	
			0.0	56	SM silty sand 20% clay, 30% silt, 50% fine-coarse grained sand, low plasticity, soft, dry	SM	9.5 = 4827	
10.0			0.0	52	9'7"-10' SP SAND concrete debris (light olive gray) 5 6/2 10% silt, 90% fine-coarse grained sand, loose, dry	SP	10 = 4809	
					10' red concrete debris			
					TD = 10' bgs			
					No GW encountered			



5B_314



BORING LOG

Sheet 1 of 1

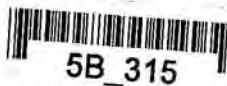
Project Name: SSEL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID 5B, group 1		Location ID 314	
Drilling Company HGL		Driller P. Skeath		Ground Elevation NA		Total Drilled Depth 0.5'	
Drilling Equipment trowel/shovel		Borehole Diameter NA		Date/Time Drilling Started 2-9-11/0904		Date/Time Total Depth Reached 2-9-11/0920	
Type of Sampling Device trowel/shovel				Samples Collected 2 1/2 gall bags, 14-oz jar (#20683) (0920)			
Geologist C. Carmichael				Checked by/Date <i>[Signature]</i> 5/17/11			
Radiological Background 14		Radiological Equipment Used M R meter		PID Used Mini Rac 2000 (Background = 0.2 ppm)			
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole
							Inches
0.5'			0.2	15	Silty sand, (10 YR, 5/4), light brown, 65% fine to medium grained subrounded sand, 30% silt, 5% large 2"-5" rock fragments, trace rootlets, dry, medium dense, no plasticity or hardness, no odor. No groundwater encountered.	Sm	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 1	Location ID 314
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 6'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2/8/11 / 1512	Date/Time Total Depth Reached 2/8/11 / 1520
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected (2) 1/2 gallon bags	20603 / 1 hr 20687 / (1) 40% jar	1555
Geologist Stephanie Lapere Montrose	Checked by/Date [Signature] 5/19/11		

Radiological Background SB / 2744	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkqd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
			0.0	63	0-1'4" SP SAND (yellow 10YR 7/6)	SP	0.0=	2633
			0.0	57	10% silt, 10% clay, 80% fine-coarse grained sand, low plasticity, very soft, dry		0.5=	3721
1.0			0.0	65	concrete debris, trace gravel - subangular		1.0=	4235
			0.0	63	1'4"-2'3" ML sandy SILT w/ clay (yellow 10YR 7/6)	ML	1.5=	4301
			0.0	80	20% clay, 40% silt, 40% fine-coarse grained sand trace gravel - subangular building material debris, concrete debris		2.0=	4259
2.0			0.0	82	2'3"-4'8" SP SAND (brown 10YR 4/3)	SP	2.5=	4411
			0.0	82	15% clay, 15% silt, 70% fine-coarse grained sand, trace gravel - subangular		3.0=	4475
3.0			0.0	64	red concrete debris throughout, and grey concrete debris throughout		3.5=	4578
			0.0	65	low plasticity, soft, dry		4.0=	4364
4.0			0.0	67			4.5=	4486
			0.0	52			5.0=	4860
5.0		NR	0.0	68	4'8"-5' No Recovery			
			0.0	48	5-6'1" SC SAND w/ clay (dark brown 10YR 3/3)	SC	5.5=	4806
					15% silt, 20% clay, 65% fine-coarse grained sand			
					low plasticity, soft, dry, trace gravel - subangular			

Radiological Background					Project Name	Project Number	Location
53 / 2744					SSFL Area IV Radiological Study	EP9038.01.22.04.03	314
Depth	Interval	Recovery	PTD	Radiological	Description <small>(include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings
							Inches
6.0			0.0	51	6' same as above	SC	6.0 = 4596
			0.0	46	6'1" - 6'9" SP SAND (yellow 10YR 7/8) 10% silt, 90% fine-coarse grained sand non plastic, loose, dry	SP	6.5 = 4528
7.0					TD = 6'6" bgs (refusal) NO GW encountered		7.0 = (S)
8.0							
9.0							
10.0							



5B_315



BORING LOG

Sheet 1 of 1

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 315
Drilling Company HGL	Driller P. Skeath	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 2-8-11/1628	Date/Time Total Depth Reached 2-8-11/1637
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 1 4-oz jar (#20673)(1635)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/17/11		

Radiological Background 15 uR/hr	Radiological Equipment Used uR meter	PID Used Mini Rae 2000 (Background = 0.1 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'				0.114	Silty sand with gravel (10 VR, 4/4), brown, 55% fine grained subrounded sand, 30% silt, 15% gravel (sandstone, siltstone, fill gravel), dry, few rootlets, medium dense, no plasticity or hardness, no odor.	SM		
No groundwater encountered.								

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B / 1	Location ID 315
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 4ft. (4')
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2/10/11 / 1017	Date/Time Total Depth Reached 2/10/11 / 1023
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected (2) 1/2 gallon bags (1) 4 oz. jar		ID 20074 / Lm 1045
Geologist Stephanie Lepeque Montrose	Checked by/Date [Signature] 5/18/11		

Radiological Background 30 / 2024	Radiological Equipment Used Pancake / Downhole	PID Used MiniRAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	59	0-3" SM silty SAND 30% silt, 10% clay, 60% fine coarse grained sand trace gravel - subangular & subrounded low plasticity, very soft, dry	SM	0.0 = 2047
			0.0	45	3"-1'6" ML sandy SILT 15% clay, 45% silt, 40% fine coarse grained sand low plasticity, soft, dry	ML	0.5 = 3416
			0.0	58	trace asphalt & concrete debris, trace gravel - subangular		1.0 = 3891
			0.0	48	1'6"-3'1" SC SAND with clay (brown 10YR 4/3)	SC	1.5 = 4230
			0.0	53	20% clay, 15% silt, 65% fine coarse grained sand low plasticity, soft, dry		2.0 = 4950
			0.0	58	trace concrete debris, trace asphalt debris trace gravel - subangular		2.5 = 5171
			0.0	70	3'1"-4'0" SM silty SAND 35% silt, 15% clay, 50% fine-med. grained sand low plasticity, soft, dry	SM	3.0 = 5097
			0.0	63	trace gravel - subangular & subrounded		3.5 = 5238
			0.0	69	4'-4'2" SP SAND 15% silt, 85% fine-med. grained sand non plastic, indurated, compacted, dry	SP	4.0 = 5204
					TD = 4' bgs (refused) (recovery = 4'2") No GW encountered		



5B_316



BORING LOG

Sheet 1 of 1

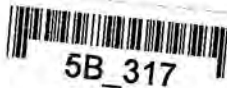
Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID 5B, group 1		Location ID 316	
Drilling Company HGL		Driller P. Skeath		Ground Elevation NA		Total Drilled Depth 0.5'	
Drilling Equipment trowel/shovel		Borehole Diameter NA		Date/Time Drilling Started 2-8-11/1557		Date/Time Total Depth Reached 2-8-11/1610	
Type of Sampling Device trowel/shovel		Samples Collected 2 1/2 gall bags, 1 4-oz jar (#20695) (1610)					
Geologist C. Carmichael		Checked by/Date					
Radiological Background 4.48/hr @ 1 ft			Radiological Equipment Used 4" R meter			PID Used Mini Rae 2000 (background=0.1ppm)	
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole
							Inches
0.5'				0.114	Gravelly sand with silt, (10 YR, 4/4), brown, 55% fine to medium grained sand, 30% gravel (fill rock, sandstone, concrete), 15% silt, few rootlets, dry, medium dense, no plasticity or hardness, no odor. No groundwater encountered	SW	

Project Name: SSFL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID & Group: 5B / 1	Location ID: 316
Drilling Company: Boart Longyear	Driller: D. Hansen	Ground Elevation: NA	Total Drilled Depth: 5'6"
Drilling Equipment: Geoprobe 6600	Borehole Diameter: 1 3/4"	Date/Time Drilling Started: 2/9/11 / 1043	Date/Time Total Depth Reached: 2/9/11 / 1050
Type of Sampling Device: 1 3/4" macrocore acetate liner	Samples Collected: 10 20696 / 1mc 1125 (2) 1/2 gallon bags / (1) 4oz jar		
Geologist: Stephanie Lepore-Hamrose		Checked by/Date: TDW 5/25/11	

Radiological Background: 42 / 2572	Radiological Equipment Used: Pancake / Downhole	PID Used: Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings		
							Inches	+ 0.5 = 2569 (CPM)	
			0.0	66	0-6" SP SAND 10% clay, 15% silt, 75% fine coarse grained sand low plasticity, very soft, dry	SP	0.0 = 3035		
			0.0	80	6"-1'11" SM silty SAND with clay (light yellowish brown) 20% clay, 30% silt, 50% fine coarse grained sand, trace gravel - sub angular & sub rounded	SM	0.5 = 4082		
			0.0	110	concrete debris		1.0 = 3971		
			0.0	95	low plasticity, soft, dry		1.5 = 4087		
			0.0	100	1'11"-4' SM silty SAND with clay (brown 10YR 4/3) 20% clay, 30% silt, 50% fine coarse grained sand, trace gravel - sub angular & sub rounded	SM	2.0 = 4451		
			0.0	85	concrete debris		2.5 = 5140		
			0.0	90	low plasticity, soft, dry		3.0 = 5040		
			0.0	86	3'1" concentration of asphalt & concrete debris		3.5 = 5054		
			0.0	86	Same as above - SM silty SAND with clay	SM	4.0 = 5180		
			0.0	100	4'-4'2" SP SAND 10% clay, 15% silt, 75% fine coarse grained sand (yellow 10YR 7/6) low plasticity, very soft, dry	SP	4.5 = 5476		
			0.0	90	4'2"-4'4" SAND stone fine coarse grained sand (yellow 10YR 7/6) dense				
			0.0	85	4'4"-5' SP SAND 10% clay, 15% silt, 75% fine coarse grained sand (yellow 10YR 7/6) low plasticity, very soft, dry, loose	SP	5.0 = 5683		
			0.0	82	5'-5'2" SM silty SAND 15% clay, 60% fine grained sand, low plasticity, soft, dry	SM			
			0.0	82	5'2"-5'3" CL (same clay) (light bluish gray GLEY 2 7/1 10S) 40% clay, 15% silt, 45% fine grained sand, low plasticity, hard	CL			
			0.0	82	5'3"-5'6" SM silty SAND 25% silt, 15% clay, 60% fine grained sand, interbedded silt low plasticity, soft, dry	SM	5.5 = 6050		
TD = 5'6"									
NO GW encountered									

Project Name: SSEL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 317				
Drilling Company HGL		Driller P. Skeath	Ground Elevation NA	Total Drilled Depth 0.5'				
Drilling Equipment trowel/shovel		Borehole Diameter NA	Date/Time Drilling Started 2-9-11/0928	Date/Time Total Depth Reached 2-9-11/0940				
Type of Sampling Device trowel/shovel		Samples Collected 2 1/2 gall bags, 14-oz jar (# 20670) (0940)						
Geologist C. Carmichael		Checked by/Date <i>[Signature]</i> 5/17/11						
Radiological Background 12		Radiological Equipment Used up R meter		PID Used Mini Rae 2000 (background = 0.1 ppm)				
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'				0.1.12	Gravelly sand with silt, (10 YR, 5/4), light brown, 55% fine to medium grained sand, 30% gravel (sandstone, fill gravel, concrete, asphalt), 15% silt, dry, medium dense, no plasticity or hardness, no odor. No groundwater encountered.	SW		



BORING LOG

Sheet 1 of 1

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 1	Location ID 317
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 3'10"
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2/10/11 / 1121	Date/Time Total Depth Reached 2/10/11 / 1123
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 10 20671 / 1150 (2) 1/2 gallon bags / (1) 4oz jar		
Geologist Stephane Lepere-Morhox	Checked by/Date 5/25/11 TSW		

Radiological Background 63 / 2563	Radiological Equipment Used Paracate / Downhole	PID Used Mini RAE 2000 (Bkqd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	60	0-7" SM silty sand (light yellowish brown) 35% silt, 10% clay, 60% fine-coarse grained sand 2.5Y 6/3	SM	0.0 = 2573
			0.0	65	Sand, trace gravel - subangular & subrounded, low plasticity, soft, dry		0.5 = 3576
			0.0	55	7"-1'1" ML sandy silt (light yellowish brown 2.5Y 6/3) 15% clay, 45% silt, 40% fine-coarse grained sand low plasticity, soft, dry	ML	1.0 = 4019
			0.0	63	trace gravel - subangular & subrounded asphalt & concrete debris throughout		1.5 = 4353
			0.0	65	7'11" concrete debris		2.0 = 4674
			0.0	74	1'12" - 3'2" SC clayey sand (dark yellowish brown) 30% clay, 15% silt, 55% fine-coarse grained sand 10YR 4/4 2'6" - asphalt chunk low plasticity, soft, dry	SC	2.5 = 5194
			0.0	80	trace gravel - subangular asphalt & concrete debris throughout		3.0 = 5182
			0.0	94	3'2" - 3'5" asphalt		3.5 = 5140
			0.0	95	3'11" - 4' sandstone fine-med. grained sand (yellow 10YR 7/6)		4.0 = 5154
			0.0	95	4'-4'13" SP SAND (yellowish brown 10YR 5/4) 15% silt, 85% fine-med. grained sand, loose, dry	SP	4.0 = 5154
					TD = 3'10" bgs (refused)		
					(recovery = 4'3" bgs)		
					No Gw encountered		

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 318
Drilling Company HGL	Driller P. Skeath	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 2-9-11/ 1050	Date/Time Total Depth Reached 2-9-11/ 1100
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 1 4-oz jar (# 20667)(1100)		
Geologist C. Carmichael	Checked by/Date JMS 5/17/11		

Radiological Background 12	Radiological Equipment Used w/ R meter	PID Used Mini Rae 2000 (Background=0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'			0.0	13	Silty sand with gravel, (10 VR, 5/4), light brown, 55% fine grained sand, 30% silt, 15% gravel (fill rock, asphalt, sandstone), dry, medium dense, no plasticity or hardness, no odor. (Top 2" is gravel) No groundwater encountered.	SS SM		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B / 1	Location ID 318
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 3'6"
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2/14/11 / 0913	Date/Time Total Depth Reached 2/14/11 / 0915
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected (2) 1/2 gallon bags / (1) 4oz. jar		Time 0940
Geologist Stephen's Lopez Martinez	Checked by/Date 5/25/11 TSW		Lab Dup 20569 Field Dup 20570 Matrix Spike 20571 (Time = 0940) (FD = no time)

Radiological Background 32 / 2501	Radiological Equipment Used Pancake / Downhole	PID Used MiniRAE 2000 (Bkgd: 0.1 ppm)
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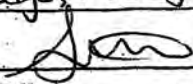
Depth Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches +0.5 = 2360 (CPM)
0-3"	0.2	48	48	SP silty sand 30% silt, 15% clay, 55% fine-coarse grained sand, low plasticity, (light yellowish brown soft, dry 2.54 6/4)	SP	0.0 = 2642
3"-1'6"	0.2	51	51	ML sandy SILT with clay 20% clay, 45% silt, 35% fine-coarse grained sand, low plasticity, soft, dry (light olive-brown 2.54 5/4)	ML	0.5 = 3312
1'6"-2'	0.2	49	49	ML sandy SILT with clay 40% silt, 20% clay, 40% fine-coarse grained sand, low plasticity, soft, dry (dark grayish brown trace per grain 2.54 4/2)	ML	1.0 = 4010
2'-2'4"	0.2	57	57	SP SAND 5% silt, 95% fine-coarse grained sand, loose, dry (yellow 104R 7/6)	SP	1.5 = 4775
2'4"-2'8"	0.2	56	56	ML sandy SILT with clay 40% silt, 20% clay, 40% fine-coarse grained sand, low plasticity, soft, dry (dark grayish brown 2.54 4/2)	ML	2.0 = 5388
2'8"-2'11"	0.2	63	63	CL sandy CLAY 45% clay, 15% silt, 40% fine-coarse grained sand, med. high plasticity, hard, dry (light olive brown 2.54 5/3)	CL	2.5 = 5306
2'11"-3'3"	0.2	61	61	ML sandy SILT with clay 40% silt, 20% clay, 40% fine-coarse grained sand, low plasticity, soft, dry (dark grayish brown 2.54 4/2)	ML	3.0 = 5255
3'3"-3'6"	0.2	70	70	SP SAND 10% silt, 90% fine-med grained sand, loose, dry (yellow 104R 7/6)	SP	3.5 = 5209
				TD = 3'6" (refusal) (Antic. recovery = 4' bgs) No Gw encountered		4.0 = 5200

Project Name: SSEL Area JV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 319			
Drilling Company HGL		Driller P. Skeath	Ground Elevation NA	Total Drilled Depth 0.5'			
Drilling Equipment trowel/shovel		Borehole Diameter NA	Date/Time Drilling Started 2-9-11/1023	Date/Time Total Depth Reached 2-9-11/1040			
Type of Sampling Device trowel/shovel		Samples Collected 2 1/2 gall bags, 14-oz jar (#20692)(1040)					
Geologist C. Carmichael		Checked by/Date <i>[Signature]</i> 5/17/11					
Radiological Background 12		Radiological Equipment Used w/ R meter		PID Used Mini Rae 2000 (Background = 0.0 ppm)			
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0.5'					<p>Top 2" is fill gravel. Sandy silt, (10 YR, 4/3), brown, 70% silt, 30% fine to medium grained sand, trace gravel, dry, medium stiff, no plasticity, very low hardness, no odor.</p> <p>No groundwater encountered.</p>	ML	

Project Name: SSEL Area IV Radiological Study	Project Number EP9938.01.22.04.03	Subarea ID & Group SB / 1	Location ID 319
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2/10/11 1441	Date/Time Total Depth Reached 2/10/11 1450
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 10 20693 / time 1520 (2) 1/2 gallon bags / (1) 4oz jar		
Geologist Stephanie Lepeux-Montrose	Checked by/Date S/25/11		

Radiological Background 51 / 2139	Radiological Equipment Used Pancake / Downhole	PID Used MiniRAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches +0.5 = 2328 (CPM)
			0.0	75	0-1" pea gravel (granitic & quartzite)		0.0 = 3437
			0.0	90	1" - 1'4" SL clayey SAND (olive yellow 2.5Y 6/6)	SL	0.5 = 4146
			0.0	88	25% clay, 15% silt, 60% fine - coarse grained sand trace gravel - subangular low plasticity, soft, dry asphalt & concrete debris throughout		1.0 = 4302
			0.0	70	1'4" - 3' ML sandy SILT with clay (dark yellowish brown 10YR 4/4)	ML	1.5 = 4967
			0.0	63	25% clay, 35% silt, 40% fine - coarse grained sand trace gravel - subangular low plasticity, soft, dry asphalt & concrete debris throughout		2.0 = 5267
			0.0	59			2.5 = 5437
			0.0	45	3' - 4'9" SP SAND (yellowish brown 10YR 5/6)	SP	3.0 = 5302
			0.0	52	10% silt, 90% fine - coarse grained sand non plastic, loose, dry		3.5 = 5351
			0.0	75	4' same as above - color change to (light olive brown 2.5Y 5/4)		4.0 = 5365
			0.0	77			4.5 = 5591
			0.0	120	4'9" - 5' Sandstone (pale yellow 2.5Y 7/3) fine - coarse grained		5.0 = - - -
					TD = 5' bgs (refusal) NO GW encountered		

Project Name: SSEL Area IV Radiological Study		Project Number EP9038.01.72.04.03		Subarea ID 5B, group 1		Location ID 320	
Drilling Company HGL		Driller P. Skeath		Ground Elevation NA		Total Drilled Depth 0.5'	
Drilling Equipment trowel/shovel		Borehole Diameter NA		Date/Time Drilling Started 2-9-11/1357		Date/Time Total Depth Reached 2-9-11/1411	
Type of Sampling Device trowel/shovel				Samples Collected 2 1/2 gall bags, 14-oz jar (#20659)(1410)			
Geologist C. Carmichael				Checked by/Date  5/17/11			
Radiological Background 12		Radiological Equipment Used up R meter			PID Used Mini Rae 2000 (Background = 0.0 ppm)		
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0.5'			0.0	14	<p>2" of gravel on top.</p> <p>Sandy silt with gravel, (10 YR, 5/4), light brown, 55% silt, 30% fine grained sand, 15% gravel (fill rock, brick, asphalt, concrete), dry, stiff, no plasticity, hardness or odor.</p> <p>No groundwater encountered.</p>	ML	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B / 1	Location ID 320
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 7' 7"
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2/14/11 / 1120	Date/Time Total Depth Reached 2/14/11 / 1128
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 10 20060 / Am 1155 (2) 1/2 gallon bags / (1) 4oz jar		
Geologist Stephanie Lepere Nottme	Checked by/Date TOW 5/28/11		

Radiological Background 48 / 2422	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkqd: 0.2 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
					SP SAND		
	0-9"		0.2	60	Surface - pea gravel (light yellowish brown 2.5Y 6/3) 15% clay, 5% gravel - sub angular & sub rounded, 10% silt, 7% fine - coarse grained sand Very soft, low plasticity, dry	SP	0.0 = 2453
	8"-1'		0.2	49	asphalt SP SAND (yellowish brown 10YR 5/4) 10% silt, 80% fine - coarse grained sand Very soft, dry, trace gravel - sub angular & sub rounded	SP	0.5 = 3519
	1'-1'3"		0.2	36	SW SAND (light yellowish brown 2.5Y 6/3) 5% silt, 95% fine - coarse grained sand Very loose, dry	SW	1.0 = 4323
	1'3"-2'2"		0.2	58	CL sandy CLAY (dark brown 10YR 4/3) 40% clay, 15% silty 45% fine - med. grained sand high plasticity, hard, dry	CL	1.5 = 4493
	2'2"-2'11"		0.2	67	SW SAND (yellowish brown 10YR 5/4) 15% silt, 85% fine - coarse grained sand, trace gravel - sub rounded, loose, dry	SW	2.0 = 4609
	2'11"-3'4"		0.2	59	ML sand, SILT with clay (brownish yellow 10YR 6/6) 30% clay, 35% silt, 35% fine - med. grained sand med. plasticity, hard, dry	ML	3.0 = 4801
	3'4"-5'		0.2	89	SANDSTONE - (brownish yellow 10YR 6/6) interbedded with clay/slate layers (grayish brown 10YR 5/2)	SL	3.5 = 4946
			0.2	110	compacted / indurated		4.0 = 5361
			0.2	84	loose soil surrounding above: SL clayey sand 20% silt, 30% clay, 50% fine - med. grained sand w/ silt low plasticity, soft, dry		4.5 = 5725
	5'-6'7"		0.2	76	Same as above		5.0 = 6089
	6'7"-6'10"		0.2	46	Same as above pea gravel mixed in (5'-5'10")		5.5 = 5800
					Same as above - no pea gravel		

Radiological Background					Project Name	Project Number	Location
48 2422					SSFL Area IV Radiological Study	EP9038.01.22.04.03	320
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings
							Inches (CPM)
			0.2	52	Same as above	SC	6.0 = 5800
			0.2	67			6.5 = 5784
7.0			0.2	76	6'7" - 7'4" SW SAND (yellowish brown 10YR 5/4) 15% silt, 85% fine - coarse grained sand very loose, dry, trace gravel - subangular & subrounded	SW	7.0 = 5995
			0.2	62	6'10" QUARTZITE ROCK		
			0.2	62	7'4" - 7'7" SANDSTONE (white 10YR 8/1)		7.5 = 5694
8.0					TD = 7'7" bgs (refused)		8.0 = <u> </u>
9.0					NO GW encountered		



5B_321



BORING LOG

Sheet 1 of 1

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 321
Drilling Company HGL	Driller P. Skeath	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 2-10-11/0907	Date/Time Total Depth Reached 2-10-11/0920
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 14-oz jar (#20679) (0920)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/17/11		

Radiological Background 14	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (background=0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'			0.0	14	Silty sand with gravel, (10 YR, 6/4), light brown, 50% fine to medium grained sand, 35% silt, 15% gravel (fill rock, asphalt, sandstone/siltstone), dry, medium dense, no plasticity, hardness or odor. No groundwater encountered.	SM	

Project Name: SSEL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID & Group: S3 / 1	Location ID: B21
Drilling Company: Boart Langyear	Driller: D. Hansen	Ground Elevation: NA	Total Drilled Depth: 4'
Drilling Equipment: Geoprobe 6600	Borehole Diameter: 1 3/4"	Date/Time Drilling Started: 2/17/11 / 1204	Date/Time Total Depth Reached: 2/17/11 / 1209
Type of Sampling Device: 1 3/4" macrocore acetate liner	Samples Collected ID 20680 / time = 1230 / 20577 (2) 1/2 gallon bags / (1) 4oz jar / DUPS: 20575 20576 time = 1230 FD = no time		
Geologist: Stephanie Lepore Montrose	Checked by/Date: 5/25/11 TBL		

Radiological Background: 52 / 2338	Radiological Equipment Used: Pancake / Downhole	PID Used: Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches + 0.5 = 2339 (CPM)
	0-1		47		SW SAND (brown 10YR 4/3)	SW	0.0 = 2708
			51		5% silt, 90% fine-coarse grained sand, very loose, dry		0.5 = 4220
			40		5% gravel - subangular to subrounded 9"-10" CL SANDY CLAY 10"-12" SW SAND 12"-13" asphalt	CL	1.0 = 4643
	1'3" - 2'5"		54		SP SAND (dark yellowish brown 10YR 4/4)	SP	1.5 = 5036
			65		10% clay, 10% silt, 80% fine-coarse grained sand, loose, dry asphalt debris		2.0 = 5342
	2'3" color change -		66		(yellowish brown 10YR 5/4)		2.5 = 5880
	2'5" - 3'		65		CL SANDY CLAY (light olive brown 2.5Y 5/3)	CL	3.0 = 5978
			70		50% clay, 50% fine grained sand high plasticity, hard, dry	SC	3.5 = 6068
	3'-3'5"		68		SP SAND (yellow 10YR 7/6)	SP	4.0 = 6278
					5% silt, 95% fine-med. grained sand interstratified (compacted), clay slate = (brownish yellow 10YR 6/6)		4.5 =
					Slate clay layer interbedded throughout plant material (wood and roots) in slate layering (plant slate layering = dark brown 10YR 3/3)		
	TD = 4' bgs (refused)						
	[4'6" recovery]						
	NO GW encountered						

Note: found copper wiring with black outer insulation in cores used for DUPS (found while breaking up soil - unknown depth)

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 322
Drilling Company HGL	Driller P. Skeath	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 2-10-11/0925	Date/Time Total Depth Reached 2-10-11/0938
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 1 4-oz jar (#20654) (0938)		
Geologist C. Carmichael	Checked by/Date [Signature] 5/17/11		

Radiological Background 14	Radiological Equipment Used w/ R meter	PID Used Mini Rae 2000 (Background = 0.9ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'			0.0	14	Silty sand with gravel, (10 YR, 4/6), reddish brown, 50% fine to medium grained sand, 35% silt, 15% gravel (fill rock, sandstone), dry, medium dense, no plasticity, hardness or odor. No groundwater encountered.	SM		

Project Name: SSEL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID & Group: SB / 1	Location ID: 322
Drilling Company: Boart Longyear	Driller: D. Hansen	Ground Elevation: NA	Total Drilled Depth: 4'
Drilling Equipment: Geoprobe 6600	Borehole Diameter: 1 3/4"	Date/Time Drilling Started: 2/17/11 1450	Date/Time Total Depth Reached: 2/17/11 1459
Type of Sampling Device: 1 3/4" macrocore acetate liner	Samples Collected 10 20655 / Lm: 1520 (2) 1/2 gallon bags / (1) 4oz jar		
Geologist: Stephane Lepeyre Maitrose	Checked by/Date: TRW 5/25/11		

Radiological Background: SI / 2416	Radiological Equipment Used: Pancake / Downhole	PID Used: Mini RAE 2000 (Bkqd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches</small>
	0-7"		0.0	54	SM silty SAND 10% clay, 25% silt, 65% fine coarse grained sand (yellowish brown 10YR 5/6) non-low plasticity, dense, dry, very soft, trace gravel	SM	0.0 = 2801
	7"-10"		0.0	59	SC SAND with clay 20% clay, 10% silt, 70% fine coarse grained sand (dark yellowish brown 10YR 4/4) soft, dry	SC	0.5 = 4190
	10"-1'1"		0.0	76	SW SAND 5% silt, 95% fine - coarse grained sand (light yellowish brown) trace gravel - subrounded, very loose, dry, trace gravel - subangular	SW	1.0 = 4425
	1'1"-2'3"		0.0	51	SC clayey SAND (Strong brown 7.5YR 4/6)	SC	1.5 = 4807
			0.0	55	25% clay, 10% silt, 65% fine - coarse grained sand low plasticity, soft, dry		2.0 = 5183
	2'3"-3'5"		0.0	82	SP SAND (brownish yellow 10YR 6/6)	SP	2.5 = 5289
			0.0	82	10% silt, 90% fine - med grained sand 100%, dry, non plastic		3.0 = 5242
	3'5"-3'11"		0.0	90	SP SAND 15% clay, 10% silt, 75% fine - med grained sand (brownish yellow 10YR 6/8) slate clay layers interbedded low plasticity, dense, dry	SP	3.5 = 5377
	3'11"-4'		0.0	65	SP SAND 5% silt, 95% fine - med grained sand, very loose, dry (very pale brown 10YR 7/4)	SP	4.0 = 5515
					TD = 4' bgs refusal		4.5 = Q
					No GW encountered		5.0 = Q
							5.5 = Q

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 323
Drilling Company HGL	Driller P. Skeath	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 2-9-11/1510	Date/Time Total Depth Reached 2-9-11/1523
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 1 4-oz jar (#20656) (1522)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/17/14		

Radiological Background 12	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background = 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0.5'			0.0	12	2" of gravel on top. Silty sand with gravel, (10 YR, 4/4), brown, 55% fine grained sand, 30% silt, 15% gravel (fill rock, asphalt), dry, dense, no plasticity, hardness or odor.	SM	
No groundwater encountered							

Project Name: SSFL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID & Group: SB / 1	Location ID: 323
Drilling Company: Boart Longyear	Driller: D. Hansen	Ground Elevation: NA	Total Drilled Depth: 12' 3"
Drilling Equipment: Geoprobe 6600	Borehole Diameter: 1 3/4"	Date/Time Drilling Started: 2/14/11 / 1530	Date/Time Total Depth Reached: 2/14/11 / 1555
Type of Sampling Device: 1 3/4" macrocore acetate liner	Samples Collected: 10 20657 / 1106 1640 (2) 1/2 gallon bags / (1) 402, Jan		
Geologist: Stephanie Lapeyre-Hartrose	Checked by/Date: [Signature] 5/18/11		

Radiological Background: 44 / 2402	Radiological Equipment Used: Pacate / Downhole	PID Used: Mini RAE 2000 (Bkgd: 0.2 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.2	44	0'-1" pea gravel		0.0 = 2392
			0.2	54	1"-10" SP SAND 10% silt, 15% clay, 75% fine (yellowish brown 10YR 5/6) coarse grained sand asphalt debris trace gravel - sub angular & sub rounded low plasticity, soft, dry	SP	0.0 = 2577 0.5 = 3908
1.0			0.2	49	10"-3'1" SW SAND (pale brown 10YR 6/3)	SW	-1.0 = 4025
			0.2	48	10% silt, 90% fine - coarse grained sand very loose, dry		1.5 = 4061
2.0			0.3	58	trace gravel - sub angular & sub rounded		2.0 = 4152
			0.3	39			2.5 = 4128
3.0			0.3	46			3.0 = 4245
			0.3	56	3'8"-4'3" CL sandy CLAY with silt (brown 10YR 4/3) 35% clay, 30% silt, 35% fine-coarse grained sand 3'2" asphalt debris med. plasticity, hard, dry	CL	3.5 = 4561
4.0			0.3	63		CL	4.0 = 4777
			0.3	56	4'3"-5' NO Recovery		4.5 = 4970
5.0			0.3	52	5'-6'1" ML sandy SILT with clay (dark yellowish brown 10YR 4/4)	ML	5.0 = 4891
			0.3	68	25% clay, 40% silt, 35% fine-coarse grained sand low plasticity, soft, dry		5.5 = 4910
			0.3	66			6.0 = 4914

Radiological Background				Project Name	Project Number	Location	
44 / 2402				SSFL Area IV Radiological Study	EP9038.01.22.04.03	323	
Depth	Interval	Recovery	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
						Inches	(CPM)
				Same as above			
				6'1" - 7'3" SM SAND silty SAND (dark brown 1042 3/3) 25% silt, 75% fine-coarse grained sand trace gravel - subangular & subrounded piece of sandstone, trace asphalt debris 100% dry	SM	6.0 = 4914	
				7'3" - 7'5" asphalt & concrete debris / surrounding material same as above		6.5 = 4544	
7.0				7'5" - 8'10" SM silty SAND (dark yellowish brown 1042 3/4) 10% clay, 30% silt, 60% fine-coarse grained sand 7'10" concrete debris - same as above low plasticity, soft, dry	SM	7.0 = 4374	
				8'2" concrete debris - same as above		7.5 = 4641	
				8'10" - 10' No Recovery		8.0 = 4641	
						8.5 = 4579	
9.0						9.0 = 4177	
						9.5 = 4406	
10.0				10' - 10'6" SC SAND with clay (Brown 1042 4/3) 20% clay, 10% silt, 70% fine-coarse grained sand low plasticity, soft, loose, dry, trace gravel - subangular & subrounded	SC	10.0 = 4279	
				Concrete		10.5 = 4071	
11.0						11.0 = 3933	
				11'6" - 12'3" SP SAND (yellow 1042 7/6) 10% silt, 90% fine-med. grained sand very loose, dry	SP	11.5 = NR	
12.0						12.0 = NR	
				TD = 12'3" (refusal)		12.5 = NR	
13.0				NO GW encountered			

Project Name: SSEL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID 5B, group 1		Location ID 324	
Drilling Company HGL		Driller P. Skeath		Ground Elevation NA		Total Drilled Depth 0.5'	
Drilling Equipment trowel/shovel		Borehole Diameter NA		Date/Time Drilling Started 2-9-11/1423		Date/Time Total Depth Reached 2-9-11/1436	
Type of Sampling Device trowel/shovel				Samples Collected 2 1/2 gall bags, 14-oz jar (#20664) (1435)			
Geologist C. Carmichael				Checked by/Date <i>[Signature]</i> 5/17/11			
Radiological Background 12		Radiological Equipment Used up R meter		PID Used Mini Rae 2000 (Background = 0.0 ppm)			
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'			0.1 0.0 ca	12	2" of gravel on top. Silty sand with gravel, (10 VR, 5/3), light brown, 50% fine grained sand, 35% silt, 15% gravel (fill rock, sandstone, asphalt, concrete), dry, dense, no plasticity, hardness or odor.	SM	
No groundwater encountered.							

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B / 1	Location ID 324
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 9'
Drilling Equipment: Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2/14/11 / 1347	Date/Time Total Depth Reached 2/14/11 / 1409
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 10 20665 / time 1435 (2) 1/2 gallon bags / (1) 4oz jar		
Geologist Stephanie Lepore Austin	Checked by/Date JRW 5/18/11		

Radiological Background 46 / 2065	Radiological Equipment Used Pancake / Downhole	PID Used MiniRAE 2000 (Bkqd: 0.1 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.1	60	0-4" SP SAND 10% silt, 85% fine-coarse grained sand, 5% gravel-subangular & subrounded (light olive brown 2.5Y 5/3)	SP	+0.5 = 2273 0.0 = 2311
			0.1	58	4"-1'1" ML sandy SILT with clay (yellowish brown 10YR 5/4)	ML	0.5 = 2868
			0.1	52	20% clay, 40% silt, 40% fine-coarse grained sand trace gravel-subangular & subrounded		1.0 = 3722
			0.1	75	low plasticity, soft, dry trace pea gravel		1.5 = 4209
			0.1	57	1'1"-2'6" SC clayey sand with silt (dark yellowish brown 10YR 4/4)	SC	2.0 = 4363
			0.1	58	20% silt, 25% clay, 55% fine-coarse grained sand trace gravel-subangular & subrounded, low plasticity, soft interbedded silt/clay layers, trace pea gravel		2.5 = 4662
			0.1	41	2'6"-5' SC SAND with clay (yellowish brown 10YR 5/4)	SC	3.0 = 5243
			0.1	54	20% clay, 10% silt, 70% fine-coarse grained sand, trace gravel-subangular asphalt debris, trace pea gravel		3.5 = 5247
			0.1	48	low plasticity, very soft, dry		4.0 = 5190
			0.1	75	Same as above		4.5 = 5330
			0.1	65	5'-6'6" ML sandy SILT (yellowish brown 10YR 5/6)		5.0 = 5169
			0.1	32	5'3"- asphalt debris and pea gravel 15% clay, 45% silt, 40% fine-coarse grained sand trace gravel-subangular & subrounded	ML	5.5 = 5164
					low plasticity, soft, dry		

Radiological Background 46 / 2065				Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 324	
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches (CFM)</small>
			0.1	54	Same as above.	ML	6.0 = 5726
			0.1	55	6'6" - 6'8" SC clayey SAND (yellowish brown 10YR 5/6) 30% clay, 15% silt, 55% fine - coarse grained sand	SC	6.5 = 5078
7.0			0.1	71	6'8" - 7'3" ML siltstone: plasticity, firm, dry (yellowish brown) 15% clay, 45% silt, 40% fine - coarse grained sand 10YR 5/6 trace gravel - silt angular + subrounded, low plasticity, soft, dry	ML	7.0 = 5063
			0.1	59	7'3" - 7'7" SP SAND (yellow 10YR 7/6) 10% silt, 90% fine - med. grained sand weathered bedrock - sandstone interbedded with clay/slate layering	SP	7.5 = 5038
8.0			0.1	67	7'7" - 9' SP SAND (yellow 10YR 7/6) 10% silt, 90% fine med. grained sand	SP	8.0 = ---
			0.1	60	8'1" Same as above - color change - (very pale brown) 10YR 7/4		8.5 = ---
9.0			0.1	66			9.0 = ---
					TD = 9' bgs (refusal) No GW encountered		
10.0							

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 325
Drilling Company HGL	Driller P. Skeath	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 2-9-11/1445	Date/Time Total Depth Reached 2-9-11/1458
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 14-oz jar (# 2066e1) (1458)		
Geologist C. Carmichael	Checked by/Date <i>[Signature]</i> 5/17/11		

Radiological Background 13	Radiological Equipment Used up R meter	PID Used Mini Rae 2000 (Background=0.0ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches (CPM)</small>
0.5'			0.012		Silty sand, (10 VR, 4/4), light brown, 65% fine to medium grained sand, 25% silt, 10% gravel (fill rock, siltstone/sandstone), dry, medium dense, no plasticity, hardness or odor. No groundwater encountered.	SM	

Project Name: SSEL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 1	Location ID 325
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 5'
Drilling Equipment: Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2/15/11 / 0940	Date/Time Total Depth Reached 2/15/11 / 0947
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected ID 20062 / time 1015 (2) 1/2 gallon bags / (1) 4oz. jar		
Geologist Stephanie Louise Montrose	Checked by/Date TBS 5/25/11		

Radiological Background 39 / 2351	Radiological Equipment Used Pancake / Downhole	PID Used MiniRAE 2000 (Bkqd: 0.7 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.9	25	0'-4" SP SAND 15% silt, 85% fine coarse grained sand (light yellowish brown 2.5Y 6/4) trace gravel - subangular & subrounded, very loose, dry	SP	0.0 = 2943
			0.9	44	4"-10" SM silty SAND with clay (olive brown 2.5Y 4/3) 20% clay, 25% silt, 55% fine coarse grained sand	SM	0.5 = 3783
			0.9	42	10"-1' pea gravel trace gravel - subangular, low plasticity soft, dry		1.0 = 3995
			0.9	41	1'-1'9" SC clay SAND with silt (light olive brown 2.5Y 5/3) 30% clay, 20% silt, 50% fine coarse grained sand med. plasticity, firm, dry asphalt debris, concrete debris	SC	1.5 = 4206
			0.9	40	1'9"-3' SC SAND with clay (brown 10YR 4/3) 20% clay, 10% silt, 70% fine coarse grained sand low plasticity, soft, dry asphalt debris, concrete debris	SC	2.0 = 5107
			0.9	48			2.5 = 5086
			0.9	52	3'-3'8" SM silty SAND with clay (dark yellowish brown 10YR 4/4) 20% clay, 25% silt, 55% fine coarse grained sand asphalt debris, low plasticity, soft, loose, dry	SM	3.0 = 5705
			0.9	53	3'8"-4'6" SP SAND (light olive brown 2.5Y 5/3)		3.5 = 5098
			0.9	59	15% clay, 15% silt, 70% fine coarse grained sand low plasticity, soft, dry trace gravel - sub rounded	SP	4.0 = 5153
			0.9	78	4'6"-4'10" SM silty SAND with clay (yellowish brown 10YR 5/6) 20% clay, 30% silt, 50% fine coarse grained sand piece of sandstone, low plasticity, soft, dry	SM	4.5 = 5137
			0.9	78	4'10"-5' SP SAND 10% silt, 90% fine med. grained sand very loose, dry (brownish yellow 10YR 6/6)	SP	5.0 = 4964
					TD = 5' bgs (refusal)		
					NO GW encountered		

Project Name: SSEL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 326				
Drilling Company HGL		Driller P. Skeath	Ground Elevation NA	Total Drilled Depth 0.5'				
Drilling Equipment trowel/shovel		Borehole Diameter NA	Date/Time Drilling Started 2-9-11/1118	Date/Time Total Depth Reached 2-9-11/1130				
Type of Sampling Device trowel/shovel		Samples Collected 2 1/2 gall bags, 1 4-oz jar (# 20689) (1130)						
Geologist C. Carmichael		Checked by/Date JMO 5/17/11						
Radiological Background @ 12 14		Radiological Equipment Used w/ R meter		PID Used Mini Rae 2000 (Background = 0.0 ppm)				
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Inches	Borehole Gamma Readings (CPM)
0.5'			0.0	13	2" of gravel on top. Sandy silt with gravel, (10 YR, 4/3), brown, 55% silt, 30% fine to medium grained sand, 15% gravel (fill rock, asphalt, concrete, brick), trace wire pieces, dry, medium stiff, no plasticity or hardness, no odor. No groundwater encountered.	ML		

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group SB / 1	Location ID 326
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 19'6"
Drilling Equipment: Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2/9/11 1400	Date/Time Total Depth Reached 2/9/11 1425
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected ID 20690 (1-5) / time: 1550 (2) 1/2 gallon bags / (1) 4oz jar ID 20691 (15-20)		
Geologist Stephanie Lapeyre Montrose	Checked by/Date		

Radiological Background 52 / 2386	Radiological Equipment Used Pancake / Downhole	PID Used Mini RAE 2000 (Bkqd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches FO.5=2389 (CPM)
			0.0	70	0-3" pea gravel (surface) - granite + quartzite		0.0 = 2674
			0.0	80	3"-14" SM SAND with silt (yellowish brown 10YR 5/6)	SM	0.5 = 4095
			0.0	60	10% clay, 20% silt, 70% fine-coarse grained sand low plasticity, very soft, dry, loose, trace gravel subangular		1.0 = 4644
			0.0	52	1'4" - 3'6" SW SAND (light yellowish brown 2.5Y 6/3)	SW	1.5 = 4355
			0.0	72	10% silty, 90% fine-coarse grained sand, trace gravel - subangular + subrounded non plastic, very loose, dry		2.0 = 4099
			0.0	66			2.5 = 4172
			0.0	85			3.0 = 4178
			0.0	50	3'6" - 3'9" CL sandy CLAY w/silt (dark yellowish brown 10YR 4/4)	CL	3.5 = 4223
			0.0	51	3'9" - 4' SW SAND (light yellowish brown 2.5Y 6/3)	SW	4.0 = 4313
			0.0	51	4' - 4'4" CL sandy CLAY w/silt (dark yellowish brown 10YR 4/4)	CL	4.5 = 4377
			0.0	65	4'4" - 5' NO Recovery		5.0 = 4496
			0.0	78			5.5 = 4694
			0.0	80	5' - 8'1" CL sandy CLAY w/silt (dark yellowish brown 10YR 4/4)	CL	
					45% clay, 20% silt, 35% fine grained sand Med. plasticity, hard, dry trace gravel - subangular		

Radiological Background				Project Name	Project Number	Location	
52 / 2386				SSFL Area IV Radiological Study	EP9038.01.22.04.03	326	
Depth	Interval	Recovery	PTD	Radiological	Description	USCS Symbol	Borehole Gamma Readings
					(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)		Inches (CPM)
			0.0	78			6.0 = 4810
			0.0	69			6.5 = 4857
7.0			0.0	63			7.0 = 4870
			0.0	74	Same as above		7.5 = 5092
8.0			0.0	57			8.0 = 5035
			0.0	56	8'1" - 8'8" SP SAND (yellowish brown 10YR 5/4) 15% silt, 85% fine-coarse grained sand, trace gravel - sub angular large piece of plastic, non plastic, loose, dry	SP	8.5 = 4927
9.0			0.0	62	8'8" - 9'4" Concrete debris		9.0 = 5729
			0.0	60	9'4" - 10' No Recovery		9.5 = 5729
10.0			0.0	60	10' - 10'10" SP SAND (light gray 5Y 7/2) 15% silt, 85% fine-coarse grained sand concrete debris, non plastic, loose, dry trace gravel - sub angular	SP	10 = 4534
			0.0	70	10'10" - 11'1" Concrete debris		10.5 = 4141
11.0			0.0	85	11'1" - 11'7" SC clayey SAND w/silt (brown 10YR 4/3) 30% clay, 20% silt, 50% fine-med. grained sand med. plasticity, firm, dry	SC	11 = 4267
			0.0	66	11'7" Concrete debris		11.5 = 4440
12.0			0.0	73	11'8" - 11'10" SC clayey SAND w/silt (dark gray 5Y 4/1) 30% clay, 20% silt, 50% fine-med grained sand med. plasticity, firm, dry	SC	12 = 4426
			0.0	62	11'10" - 14'5" SC clayey SAND w/silt (brown 10YR 4/3) 30% clay, 20% silt, 50% fine-med. grained sand, med. plasticity, firm, dry	SC	12.5 = 4562
13.0			0.0	54			13 = 4759

Radiological Background 52 / 2386				Project Name SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Location 326	
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol Inches	Borehole Gamma Readings (CPM)
			0.0	64	Same as above	SC	13.5 = 4722
14.0			0.1	57			14 = 4833
		NR	0.0	54	14'5" - 15'		14.5 = 4906
		NR	0.0	55	15' - 15'7" SP SAND (light brownish gray) 2.5% 6/2	SP	15.0 = 4902
15			0.0	52	45% silt, 85% fine - coarse grained sand trace gravel - subangular non plastic, loose, dry, concrete debris		15.5 = 4788
16			0.0	48	15'7" - 17'8" ML sandy silt with clay (yellowish brown) 10% 5/4		16 = 4899
			0.0	55	25% clay, 40% silt, 35% fine - med. grained sand	ML	16.5 = 4977
17			0.0	73	low - med plasticity, firm, dry trace gravel - subangular trace concrete debris		17 = 4924
			0.0	59			17.5 = 4904
18			0.0	58	17'8" - 18'11" SW SAND (yellowish brown 10% 5/4) 15% silt, 80% fine - coarse grained sand concrete debris, 5% gravel - subangular	SW	18 = 4836
			0.0	60	metal wire, non plastic, loose, dry		18.5 = 4782
19			0.0	72	18'11" - 19' SP SAND (pale brown 10% 3/4) 10% silt, 90% fine - med grained sand, non plastic, loose, dry	SP	19 = 4839
		NR	0.0	64	19' - 19'6" NO Recovery		19.5 = 4796
20					TD = 19'6" bgs (refused) NO GW encountered		20 = ②

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID 5B, group 1		Location ID 327	
Drilling Company HGL		Driller P. Skeath		Ground Elevation NA		Total Drilled Depth 0.5'	
Drilling Equipment trowel/shovel		Borehole Diameter NA		Date/Time Drilling Started 2-8-11/1535		Date/Time Total Depth Reached 2-8-11/1546	
Type of Sampling Device trowel/shovel				Samples Collected 2 1/2 gall bags, 1 4-oz jar (#20676)(1545)			
Geologist C. Carmichael				Checked by/Date <i>[Signature]</i> 5/17/11			
Radiological Background 5 MP/AS mce		Radiological Equipment Used MP R meter		PID Used Mini Rae 2000 (Background=0.1 ppm)			
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0.5'			0.1	15	Gravelly sand with silt, (10YR, 5/4), light brown, 55% fine to medium grained subrounded sand, 30% gravel (asphalt, sandstone, concrete, siltstone), dry, medium dense, no plasticity or hardness, no odor. 15% silt @	SP SW	
					No groundwater encountered.		

Project Name: SSEL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID & Group: SB / 1	Location ID: 327
Drilling Company: Boart Longyear	Driller: D. Hansen	Ground Elevation: NA	Total Drilled Depth: 5'
Drilling Equipment: Geoprobe 6600	Borehole Diameter: 1 3/4"	Date/Time Drilling Started: 2/15/11 / 1100	Date/Time Total Depth Reached: 2/15/11 / 1105
Type of Sampling Device: 1 3/4" macrocore acetate liner	Samples Collected 10 20677 / time 1130 (2) 1/2 gallon bags / (1) 4oz jar		
Geologist: Stephanie Lynn Norstrom	Checked by/Date: TJS 5/25/11		

Radiological Background: 47 / 2869	Radiological Equipment Used: Pancake / Downhole	PID Used: MiniRAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	57	0-3" SP SAND 15% silt, 85% fine-coarse grained sand, very loose, dry (pale brown 10YR 6/3)	SP	0.0 = 2641
			0.0	50	3"-8" SC SAND with clay 25% clay, 10% silt, 75% fine-coarse grained sand (dark brown 10YR 3/3) low-med. plasticity, soft, dry, trace gravel-subangular	SC	0.5 = 3569
			0.0	38	8"-1'4" SC clayey SAND 10% silt, 65% fine-coarse grained sand (light olive brown 10YR 5/3) 25% clay, concrete debris, trace gravel-subangular low-med. plasticity, soft, dry	SC	1.0 = 4072
			0.0	44	1'4"-1'8" SP SAND 10% silt, 90% fine-coarse grained sand (dark brown 10YR 3/3) 1'6"-1'8" building material debris, plastic, asphalt debris trace gravel-subrounded & subangular very loose, dry	SP	1.5 = 4172
			0.0	44	1'8"-2'7" SC clayey SAND 30% clay, 10% silt, 60% fine-coarse grained sand (dark yellowish brown coarse 10YR 4/6) med. plasticity, firm, dry	SC	2.0 = 4535
			0.0	49	2'7"-3'11" SP SAND 10% clay, 15% silt, 75% fine-coarse grained sand (yellowish brown 10YR 5/6) 100% clay, 15% silt, 40% fine-coarse grained sand high plasticity, hard, dry	SP	2.5 = 4915
			0.0	72	3'11"-4'2" CL sandy CLAY 45% clay, 15% silt, 40% fine-coarse grained sand high plasticity, hard, dry	CL	3.0 = 5126
			0.0	76	4'2"-5' SP SAND 10% silt, 10% clay, 80% fine-coarse grained sand (dark yellowish brown coarse 10YR 4/6) trace gravel-subrounded, pieces of sandstone 100% clay	SP	3.5 = 5026
			0.0	67	4'9" concrete debris, mast piece of plastic	SP	4.0 = 5142
			0.0	55	5'-5'2" SP SAND 10% silt, 90% fine-med. grained sand (brownish yellow 10YR 6/6) very loose, dry	SP	4.5 = 5122
			0.0	67	5'-5'2" SP SAND 10% silt, 90% fine-med. grained sand (brownish yellow 10YR 6/6) very loose, dry	SP	5.0 = 5054
					TD = 5' bgs (refusal)		
					No GW encountered recovery to 5'2"		



BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 328
Drilling Company HGL	Driller P. Skeath	Ground Elevation NA	Total Drilled Depth 0.5'
Drilling Equipment trowel/shovel	Borehole Diameter NA	Date/Time Drilling Started 2-8-11/1511	Date/Time Total Depth Reached 2-8-11/1522
Type of Sampling Device trowel/shovel	Samples Collected 2 1/2 gall bags, 1 4oz jar (#20645)(1520)		
Geologist C. Carmichael	Checked by/Date [Signature] 5/17/11		

Radiological Background 15.4 pCi/l	Radiological Equipment Used M/R meter	PID Used Mini Rae 2000 (Background=0.1 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
0.5'			0.1	15	Gravelly sand with silt, 60% fine grained sand, 30% gravel (sandstone, fill and concrete), 15% silt, dry, no plasticity or hardness, no odor, few rootlets. (10VR, 5/4) No groundwater encountered.	SP	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B / 1	Location ID 328
Drilling Company: Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 4'6"
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2/9/11 / 0900	Date/Time Total Depth Reached 2/9/11 / 0908
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected (2) 1/2 gallon bags / (1) 4oz jar	ID 20646	Time 0950
Geologist Stephen Lepore Nantux	Checked by/Date 5/25/11 RBW		

Radiological Background 49 / 2421	Radiological Equipment Used Pancake / Downhole	PID Used MiniRAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	55	0-4" SM SAND with silt (yellowish brown 10YR 5/4) 10% clay, 20% silt, 70% fine coarse grained sand (concrete debris), low plasticity, very soft, dry	SM	0.0 = 2815
			0.0	48	4"-1'1" ML sandy SILT with (dark grayish brown 10YR 4/2) clay low plasticity, soft, dry, concrete debris, trace gravel-subangular	ML	0.5 = 4236
1.0			0.0	62	1'1" slate - (grayish green 6.5Y 4/1 4/2)		1.0 = 4575
			0.0	67	1'2"-3'1" ML sandy SILT (dark grayish brown 10YR 4/2)	ML	1.5 = 4379
2.0			0.0	58	15% clay, 40% silt, 45% fine-coarse grained sand, low plasticity, soft, dry		2.0 = 4522
			0.0	70	concrete debris, trace gravel-subangular		2.5 = 4822
3.0			0.0	80	3'1"-3'7" ML sandy SILT (dark brown 10YR 3/3) 15% clay, 40% silt, 45% fine-coarse grained sand low plasticity, soft, dry	ML	3.0 = 5079
			0.0	90	concrete debris, trace gravel-subangular		3.5 = 5172
4.0			0.0	83	3'7"-4'10" ML sandy SILT (yellowish brown 10YR 5/4)	ML	4.0 = 4989
			0.0	95	15% clay, 40% silt, 45% fine-coarse grained sand low plasticity, soft, dry		4.5 = 5021
					concrete debris, trace gravel-subangular		
5.0					4'10"-5' SANDSTONE (yellow 10YR 8/6) fine-coarse grained		
					TD = 4'6" (refusal)		
					(Note: unable to widen borehole for downhole gamma logging past 4'6", absolute refusal at 5' bgs)		



5B_329



BORING LOG

Sheet 1 of 1

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID 5B, group 1		Location ID 329	
Drilling Company HGL		Driller P. Skeath		Ground Elevation NA		Total Drilled Depth 0.5'	
Drilling Equipment trowel/shovel		Borehole Diameter NA		Date/Time Drilling Started 2-10-11/0947		Date/Time Total Depth Reached 2-10-11/1000	
Type of Sampling Device trowel/shovel				Samples Collected 2 1/2 gall bags, 1 4-oz jar (# 20707) (1000)			
Geologist C. Carmichael				Checked by/Date ASW 5/17/11			
Radiological Background 13		Radiological Equipment Used up R meter		PID Used Mini Rac 2000 (Background = 0.07ppm)			
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'				0.016	Silty sand with gravel, (10 yr, 4/6), reddish-brown, 55% fine to medium grained sand, 30% silt, 15% gravel (sandstone, fill rock), dry, dense, no plasticity, hardness or odor. (2" of gravel on top) No groundwater encountered.	SM	

Project Name: SSFL Area IV Radiological Study	Project Number EP9038.01.22.04.03	Subarea ID & Group 5B / 1	Location ID 329
Drilling Company Boart Longyear	Driller D. Hansen	Ground Elevation NA	Total Drilled Depth 5'
Drilling Equipment Geoprobe 6600	Borehole Diameter 1 3/4"	Date/Time Drilling Started 2/15/11 / 1343	Date/Time Total Depth Reached 2/15/11 / 1350
Type of Sampling Device 1 3/4" macrocore acetate liner	Samples Collected 10 20708 / Inc: 1415 (2) 1/2 gallon bags / (1) 4 oz. jar		
Geologist Stephanie Lepera Munsie	Checked by/Date		

Radiological Background 49 / 2178	Radiological Equipment Used Pancake / Downhole	PID Used MiniRAE 2000 (Bkqd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Inches	Borehole Gamma Readings +0.5= (CPM)
			0.0	53	0-3" SP SAND 15% silt, 85% fine-coarse grained sand (light olive brown 2.5Y 6/3) 5% gravel - subangular & subrounded, very loose, dry	SP	0.0 =	3537
			0.0	55	3'-1'4" SP SAND (dark yellowish brown 10YR 4/6)	SP	0.5 =	4568
			0.0	51	15% clay, 10% silt, 75% fine-coarse grained sand trace gravel - subangular, low plasticity, soft, dry trace sandstone indurated sand		1.0 =	4642
			0.0	82	1'4"-1'9" SW SAND (light yellowish brown 2.5Y 6/3) 10% silt, 90% fine-coarse grained sand trace gravel - subrounded, well graded	SW	1.5 =	4467
			0.0	66	1'9" asphalt debris		2.0 =	5111 4776
			0.0	66	1'10"-4'2" SM silty SAND with clay (dark brown 10YR 3/3)	SM	2.0 =	5111 4776
			0.0	75	20% clay, 25% silt, 55% fine-coarse grained sand low plasticity, soft, dry		2.5 =	5036 5111
			0.0	65	2'4" - slate layer		3.0 =	5089 5036
			0.0	93	SM - Same as above	SM	3.5 =	5205 5089
			0.0	76			4.0 =	5227 5205
			0.0	67	4'2"-4'10" SP SAND (Brownish yellow 10YR 6/6)	SP	4.5 =	5227
			0.0	68	10% silt, 90% fine-med. grained sand very loose, dry		5.0 =	5078
			0.0	68	4'10"-5' NO Recovery			
					TD = 5' bgs (refused) NO GW encountered			



5B_330



BORING LOG

Sheet 1 of 1

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID 5B, group 1		Location ID 330	
Drilling Company HGL		Driller P. Skeath		Ground Elevation NA		Total Drilled Depth 0.5'	
Drilling Equipment trowel/shovel		Borehole Diameter NA		Date/Time Drilling Started 2-10-11/1007		Date/Time Total Depth Reached 2-10-11/1020	
Type of Sampling Device trowel/shovel				Samples Collected 2 1/2 gall bags, 1 4-oz jar (# 20704) (1020)			
Geologist C. Carmichael				Checked by/Date <i>[Signature]</i> 5/17/11			
Radiological Background 14		Radiological Equipment Used up Rater		PID Used Mini Rae 2000 (Background=0.0ppm)			
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings (CPM)
0.5'			0.0	14	Sand with rock fragments and silt, (10YR, 6/3), light brown, 65% fine to medium grained sand, 30 ²⁰ % rock fragments (sandstone, concrete, asphalt), 15% silt, dry, dense, no plasticity, hardness or odor. No groundwater encountered.	SW	

Project Name: SSEL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID & Group: SB / 1	Location ID: 330
Drilling Company: Boart Longyear	Driller: D. Hansen	Ground Elevation: NA	Total Drilled Depth: 3'
Drilling Equipment: Geoprobe 6600	Borehole Diameter: 1 3/4"	Date/Time Drilling Started: 2/15/11 1520	Date/Time Total Depth Reached: 2/15/11 1528
Type of Sampling Device: 1 3/4" macrocore acetate liner	Samples Collected: 10 20705 / 1 km 1545 (2) 1/2 gallon bags / (1) 4oz. jar		
Geologist: Stephanie Lepeye Montrose	Checked by/Date:		

Radiological Background: SO / 2775	Radiological Equipment Used: Pancake / Downhole	PID Used: MiniRAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description	USCS Symbol	Borehole Gamma Readings
					(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)		Inches
			0.0	45	SP SAND 15% silt, 80% fine-coarse grained sand 5% gravel - subangular, subrounded, very loose, dry (pale brown 10YR 6/3)	SP	+0.5 = 2595 (CPM)
			0.0	58	3'-9" SP SAND 10% silt, 15% clay, 75% fine-coarse grained sand, low plasticity (yellowish brown 10YR 5/4)	SP	0.0 = 3084
			0.0	73	9"-1' SP SAND rust at 9" 15% clay, 10% silt, 75% fine-coarse grained sand very low plasticity, dense, dry (yellowish brown 10YR 5/4)	SP	0.5 = 4631
1.0			0.0	73	1'-1'8" SP SAND (brown 10YR 4/3)	SP	1.0 = 5011
			0.0	85	10% silt, 10% clay, 80% fine-coarse grained sand trace gravel - subangular, very low plasticity, dense, dry (yellow 10YR 7/6)	SP	1.5 = 5109
			0.0	80	1'8"-2'2" SP SAND 10% silt, 90% fine-coarse grained sand loose, dry, rust staining	SP	2.0 = 5062
2.0			0.0	88	2'2"-2'11" SC SAND with clay 20% clay, 10% silt, 70% fine grained sand moist low plasticity, soft, moist, dense	SC	2.5 = 4871
3.0			0.0	78	2'11"-3'2" SP SAND rust staining (brownish yellow 10YR 6/6) 10% silt, 90% fine-med. grained sand very dense, indurated, dry	SP	3.0 = 4780
					TD = 3' bgs (refusal) (3'2" recovery)		
					No GW encountered		



BORING LOG

Project Name: SSEL Area IV Radiological Study		Project Number EP9038.01.22.04.03	Subarea ID 5B, group 1	Location ID 331			
Drilling Company HGL		Driller P. Skeath	Ground Elevation NA	Total Drilled Depth 0.5'			
Drilling Equipment trowel/shovel		Borehole Diameter NA	Date/Time Drilling Started 2-10-11/1033	Date/Time Total Depth Reached 2-10-11/1046			
Type of Sampling Device trowel/shovel		Samples Collected 2 1/2 gall bags, 1 4-oz jar (# 20651) (1045)					
Geologist C. Carmichael		Checked by/Date 5/17/11					
Radiological Background 13		Radiological Equipment Used up R meter		PID Used Mini Rac 2000 (Background = 0.0 ppm)			
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches (CPM)</small>
0.5'			0.0	14	<p>2" of gravel on top.</p> <p>Silty sand with gravel, (10 YR, 5/6), reddish brown, 55% fine to medium grained sand, 30% silt, 15% gravel (gravel fill, sandstone), dry, dense, no plasticity, hardness or odor.</p> <p>No groundwater encountered.</p>	SM	

Project Name: SSEL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID & Group: SB / 1	Location ID: 331
Drilling Company: Boart Longyear	Driller: D. Hansen	Ground Elevation: NA	Total Drilled Depth: 4'
Drilling Equipment: Geoprobe 6600	Borehole Diameter: 1 3/4"	Date/Time Drilling Started: 2/17/11 1101	Date/Time Total Depth Reached: 2/17/11 1106
Type of Sampling Device: 1 3/4" macrocore acetate liner	Samples Collected: 10 2065Z / KMC (2) 1/2 gallon bags / (1) 4 oz. jar		1130
Geologist: Stephen Lepore Montrose	Checked by/Date: ASD 5/18/11		

Radiological Background: 51 / 2307	Radiological Equipment Used: Pancake / Downhole	PID Used: MiniRAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings +0.5 = 2401 Inches (CPM)
			0.0	SZ	SM silt SAND 0-3" 30% silt, 70% fine coarse ground sand (yellowish brown 2.5Y) 10% gravel - subangular & subrounded, very loose, dry	SM	0.0 = 2940
			0.10	71	ML SANDY SILT 3'-11" 10% clay, 45% silt, 45% fine med. ground sand (yellowish brown 10YR 5/4) low plasticity, very soft, dry, trace gravel - subangular	ML	0.5 = 4528
1.0			0.0	58	SW SAND 11"-1'2" 5% silt, 5% gravel - subangular & subrounded (dark yellowish brown 10YR 5/4) 90% fine coarse ground sand, trace gravel, dry	SW	1.0 = 4684
			0.0	53	1'2"-1'3" asphalt		
			0.0	53	1'3"-2'1" SM silt SAND (dark yellowish brown 10YR 5/4)	SM	1.5 = 4942
2.0			0.0	55	15% clay, 25% silt, 60% fine med. ground sand low plasticity, very soft, dry, trace gravel - subangular		2.0 = 5263
			0.0	65	SP SAND 2'1"-3'2" 15% silt 85% fine coarse ground sand (yellowish brown 10YR 5/8) non-plastic, dense	SP	2.5 = 5060
3.0			0.0	63	asphalt debris surrounding core		3.0 = 5015
			0.0	47	3'2"-4' SP SAND (yellow 10YR 7/6) 10% silt, 90% fine coarse ground sand	SP	3.5 = 4960
4.0			0.0	40	non-plastic, loose, dry		4.0 = 4858
					TD = 4' bgs (refusal)		
					No GW encountered		



BORING LOG

Sheet 1 of 1

Project Name: SSFL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID: 5B, group 1	Location ID: 332
Drilling Company: HGL	Driller: P. Skeath	Ground Elevation: NA	Total Drilled Depth: 0.5'
Drilling Equipment: trowel/shovel	Borehole Diameter: NA	Date/Time Drilling Started: 2-10-11/1420	Date/Time Total Depth Reached: 2-10-11/1445
Type of Sampling Device: trowel/shovel	Samples Collected: OVPs: 20568 (MS), 20566 (lab), 20567 (field - no time) 2 1/2 gall bags, 14-oz jar (#20701) (1440)		
Geologist: C. Carmichael	Checked by/Date: <i>[Signature]</i> 5/17/11		

Radiological Background: 14	Radiological Equipment Used: up R meter	PID Used: Mini Ra2 2000 (Background 20.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings	
							Inches	(CPM)
0.5'				0.0 14	4" of asphalt on top. Sand with silt, (10YR, 4/3), brown, 80% medium to coarse grained sub- rounded sand, 15% silt, 5% small gravel (asphalt, fill rock), moist, medium dense, no plasticity, hardness or odor. No groundwater encountered.	SW		

Project Name: SSEL Area IV Radiological Study	Project Number: EP9038-01-22-04-03	Subarea ID & Group: SB / 1	Location ID: 332
Drilling Company: Boart Longyear	Driller: D. Hansen	Ground Elevation: NA	Total Drilled Depth: 7'
Drilling Equipment: Geoprobe 6600	Borehole Diameter: 1 3/4"	Date/Time Drilling Started: 2/16/11 / 1454	Date/Time Total Depth Reached: 2/16/11 / 1503
Type of Sampling Device: 1 3/4" macrocore acetate liner	Samples Collected: 10 20702 / Time: 1530 (2) 1/2 gallon bags / (1) 4 oz jar		
Geologist: Stephan Lepere Montrose	Checked by/Date: HFW 5/18/11		

Radiological Background: 46 / 2475	Radiological Equipment Used: Paracat / Downhole	PID Used: MiniRAE 2000 (Bkgd: 0.10 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, micrology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Inches + 0.5 = 2305 (CPM)
0-1'		no recovery			previously excavated during surface soil sampling (See surface soils team boring log)		0.0 = 2406 0.5 = 2900
1.0	1'-1'1"		48		asphalt debris		1.0 = 3808
1.0	1'1"-1'9"		63		SC SAND with clay (brown 10YR 4/3) 15% silt, 20% clay, 65% fine-med. graded sand low plasticity, very soft dense	SC	1.5 = 4914
2.0	1'9"-1'10"		52		SP SAND 5% silt, 95% fine-med. graded sand (brownish yellow 10YR 6/6)	SP	2.0 = 4761
2.0	1'10"-2'5"		52		SC SAND with clay (brown 10YR 4/3) 15% silt, 20% clay, 65% fine-med. graded sand, dry trace concrete debris, low plasticity, very soft dense	SC	2.5 = 4787
3.0	2'5"-2'7"		55		asphalt		
3.0	2'7"-3'		50		SP SAND (brown 10YR 4/3) 15% clay, 10% silt, 75% fine-coarse graded sand, clay trace gravel-sub angular, low plasticity, very dense	SP	3.0 = 4935
3.0	3'-3'2"				asphalt		
4.0	3'2"-3'5"		45		SP SAND 15% clay, 10% silt, 75% fine (brown 10YR 4/3) coarse gravel-sub angular, very dense, dry, low plasticity	SP	3.5 = 4882
4.0	3'5"-3'9"				SP SAND 75% fine-coarse graded (yellowish brown 10YR 5/4) 15% clay, 10% silt, trace gravel-sub angular, low plasticity, very dense, dry	SP	
4.0	3'9"-4'3"		51		asphalt		4.0 = 4833
4.0	4'3"-5'		54		NO Recovery		4.5 = 4865
5.0	5'-5'5"		45		SP SAND 75% fine-coarse (yellowish brown 10YR 5/4) 15% clay, 10% silt, trace gravel-sub angular low plasticity, very dense, dry	SP	5.0 = 4642
5.0	5'5"-5'7"		45		SC SAND with clay, very soft, dense (brown 10YR 4/3) 15% silt, 20% clay, 65% fine-med. graded sand, low plasticity, dry	SC	5.5 = 4851
5.0	5'7"-7'				SP SAND (brownish yellow 10YR 6/6) 5% silt, 95% fine-med. graded sand, very loose, dry	SP	
	5'7"-6'2"				asphalt debris on outside of core		

Radiological Background					Project Name	Project Number	Location
46 / 2475					SSFL Area IV Radiological Study	EP9038.01.22.04.03	332
Depth	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole
							Gamma Readings (CPM)
			6.0	58	Same as above	SP	6.0 = 5235
			0.0	68			6.5 = 5050
70			0.0	50			7.0 = 5192
					TD = 7' bgs (refusal) No Gw encountered		



5B_333



BORING LOG

Sheet 1 of 1

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID 5B, group 1		Location ID 333	
Drilling Company HGL		Driller P. Skeath		Ground Elevation NA		Total Drilled Depth 0.5'	
Drilling Equipment trowel/shovel		Borehole Diameter NA		Date/Time Drilling Started 2-10-11/1300		Date/Time Total Depth Reached 2-10-11/1320	
Type of Sampling Device trowel/shovel				Samples Collected 2 1/2 gall bags, 1 4-oz jar (#20648)(1315)			
Geologist C. Carmichael				Checked by/Date 5/17/11			
Radiological Background 14		Radiological Equipment Used w/ R meter			PID Used Mini Rae 2000 (Background = 0.0 ppm)		
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'			0.0	14	4" of asphalt on top. Sand with silt, (10 VR, 4/4), brown, 80% medium to coarse grained subrounded sand, 20% silt, moist, loose, no plasticity, hardness or odor. No groundwater encountered.	SM	

Project Name: SSEL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID & Group: SB 11	Location ID: 333
Drilling Company: Boart Langyear	Driller: D. Hansen	Ground Elevation: NA	Total Drilled Depth: 16' 0" (5')
Drilling Equipment: Geoprobe 6600	Borehole Diameter: 1 3/4"	Date/Time Drilling Started: 2/16/11 / 1133	Date/Time Total Depth Reached: 2/16/11 / 1148
Type of Sampling Device: 1 3/4" macrocore acetate liner	Samples Collected: 10 20649 / AWC: (1210) 1210 1210 (2) 1/2 gallon bags / (1) 4oz jar		
Geologist: Stephen C. Lyons	Checked by/Date: JBN 5/10/11		

Radiological Background: 45 / 2380	Radiological Equipment Used: Pancake / Downhole	PID Used: MiniRAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	48	0-3" asphalt		0.0 = 3473
			0.0	58	3"-10" SP SAND (brown 10YR 4/3) 10% clay, 10% silt, 80% fine-med. grained sand low plasticity, dense, dry, trace asphalt throughout	SP	0.5 = 4531
			0.0	57	10"-1' SP SAND (yellow 10YR 7/6) 5% silt, 95% fine-med. grained sand, very loose, dry	SP	1.0 = 4653
			0.0	64	1'-2'2" SP SAND (brown 10YR 4/3) 10% clay, 10% silt, 80% fine-med. grained sand, low plasticity, dense, dry trace asphalt throughout	SP	1.5 = 4645
			0.0	63	2'2"-2'4" asphalt		2.0 = 5140
			0.0	76	2'4"-2'6" SP SAND (brown 10YR 4/3) 10% clay, 10% silt, 80% fine-med. grained sand trace asphalt throughout, low plasticity, dense, dry	SP	2.5 = 5218
			0.0	85	2'6"-3'1" SC clayey SAND 40% clay, 10% silt, 50% fine grained sand slaty, layering inter-bedded, med. plasticity, hard, dry	SC	3.0 = 5857
			0.0	80	3'1"-3'8" SP SAND (yellow 10YR 7/6) 5% silt, 95% fine-med. grained sand very loose, dry	SP	3.5 = 6484
			0.0	60	3'8"-5' NO Recovery		4.0 = 5970
			0.0	72			4.5 = 4613
			0.0	88			5.0 = 4677
					TD = 5' (refusal) NO GW encountered		5.5 = ()

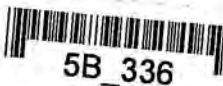
Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID 5B, group 1		Location ID 334	
Drilling Company HGL		Driller P. Skeath		Ground Elevation NA		Total Drilled Depth 0.5'	
Drilling Equipment trowel/shovel		Borehole Diameter NA		Date/Time Drilling Started 2-10-11/1450		Date/Time Total Depth Reached 2-10-11/1500	
Type of Sampling Device trowel/shovel				Samples Collected 2 1/2 gall bags, 1 4-oz jar (# 20686) (1500)			
Geologist C. Carmichael				Checked by/Date [Signature] 5/17/11			
Radiological Background 13		Radiological Equipment Used up R meter		PID Used Mini Rae 2000 (Background = 0.0 ppm)			
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>Inches (CPM)</small>
0.5'				0.0 13	Silty sand, (10 YR, 4/4), brown, 65% fine to coarse grained subrounded sand, 30% silt, 5% gravel (large fill rock, asphalt), moist, medium dense, no hardness, plasticity or hardness ^{cl} odor. No groundwater encountered.	SM	

Project Name: SSFL Area IV Radiological Study		Project Number EP9038.01.22.04.03		Subarea ID 5B, group 1		Location ID 335	
Drilling Company HGL		Driller P. Skeath		Ground Elevation NA		Total Drilled Depth 0.5'	
Drilling Equipment trowel/shovel		Borehole Diameter NA		Date/Time Drilling Started 2-10-11/1329		Date/Time Total Depth Reached 2-10-11/1341	
Type of Sampling Device trowel/shovel				Samples Collected 2 1/2 gall bags, 1 4-oz jar (#20698)(1340)			
Geologist C. Carmichael				Checked by/Date <i>[Signature]</i> 5/17/11			
Radiological Background 14		Radiological Equipment Used up R meter		PID Used Mini Rae 2000 (Background=0.0 ppm)			
Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings <small>(CPM)</small>
0.5'			0.0	15	Sand with silt, (10 VR, 4/4), brown, 85% medium to coarse grained sand, 15% silt, moist, medium dense, trace rock fragments (asphalt, fill rock), no hardness, plasticity or odor. No groundwater encountered.	cc SW	

Project Name: SSFL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID & Group: SB / 1	Location ID: 335
Drilling Company: Boart Longyear	Driller: D. Hansen	Ground Elevation: NA	Total Drilled Depth: 3'
Drilling Equipment: Geoprobe 6600	Borehole Diameter: 1 3/4"	Date/Time Drilling Started: 2/16/11 / 0947	Date/Time Total Depth Reached: 2/16/11 / 0954
Type of Sampling Device: 1 3/4" macrocore acetate liner	Samples Collected: ID 20699 / time 1040 (2) 1/2 gallon bags / (1) 4 oz jar		
Geologist: Stephane Lepage Montrose	Checked by/Date: TJD 5/18/11		

Radiological Background: 50 / .2357	Radiological Equipment Used: Pacate / Downhole	PID Used: Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches (CPM)
			0.0	73	0'-2" asphalt		+ 0.5 = 2412 (CPM)
			0.0	66	2"-9" SL sand with clay (yellowish brown 10YR 5/6) 25% clay, 5% silt, 75% fine-med. grained sand	SC	0.0 = 2747 0.5 = 4481
			0.0	50	9"-2'4" SP SAND (brownish yellow 10YR 6/8) 10% clay, 10% silt, 80% fine-med. grained sand	SP	1.0 = 5393 1.5 = 5855
			0.0	41	1'9"-2'4" asphalt debris on outside of core	SP	2.0 = 6086
			0.0	67	2'4"-3' SP SAND (yellow 10YR 7/6) 5% silt, 95% fine-med. grained sand very loose, dry, non plastic	SO	2.5 = 5932 3.0 = 5768
			0.0	50	TD = 3' bgs (refusal) NO Gas encountered		3.5 = 5 4.0 = 0 4.5 = 8 5.0 = 8 5.5 = 8



BORING LOG

Sheet 1 of 1

Project Name: SSFL Area IV Radiological Study	Project Number: EP9038.01.22.04.03	Subarea ID & Group: 5B 1	Location ID: 336
Drilling Company: Boart Longyear	Driller: D. Hansen	Ground Elevation: NA	Total Drilled Depth: 5'
Drilling Equipment: Geoprobe 6600	Borehole Diameter: 1 3/4"	Date/Time Drilling Started: 2/17/11 / 0834	Date/Time Total Depth Reached: 2/17/11 / 0840
Type of Sampling Device: 1 3/4" macrocore acetate liner	Samples Collected 1) 20710 / N/A 0905 2) 1/2 gallon bags / 1) 402.0 g		
Geologist: Stephanie Leporey-Monrose	Checked by/Date: 5/25/11 TOW		

Radiological Background: 43 / 2426	Radiological Equipment Used: Pancake / Downhole	PID Used: Mini RAE 2000 (Bkgd: 0.0 ppm)
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Depth	Interval	Recovery	PID	Radiological	Description <small>(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)</small>	USCS Symbol	Borehole Gamma Readings Inches <small>(CPM)</small>
			0.0	65	0-3" asphalt		+0.5 = 2411 (CPM)
			0.0	78	3"-1'9" SC SAND with clay (dark brown 10YR 3/3)	SC	0.0 = 3239 0.5 = 4398
			0.0	59	20% clay, 10% silt, 70% fine-med. grained sand low plasticity, very soft, dense, dry trace gravel - subangular		1.0 = 4784
			0.0	81	1'9"-2'5" SP SAND (brownish yellow 10YR 6/6)	SP	1.5 = 5049
			0.0	66	10% clay, 15% silt, 75% fine-med. grained sand piece of sandstone (1/2 in.) trace gravel - subangular & subrounded, low plasticity, very soft, dry	SP	2.0 = 5036
			0.0	50	2'5"-3'3" SC SAND with clay (very dark grayish brown 3/2)	SC	2.5 = 5150
			0.0	71	20% clay, 10% silt, 70% fine-med. grained sand low plasticity, very soft, trace gravel - subrounded, moist, dense	SC	3.0 = 5356
			0.0	77	3'3"-3'4" slate layer (yellow 10YR 7/6)		
			0.0	77	3'4"-4' SM SAND with silt (yellowish brown 10YR 5/8)	SM	3.5 = 5355
			0.0	65	10% clay, 20% silt, 70% fine-med. grained sand non plastic, trace gravel subrounded, loose, dry	SM	4.0 = 5157
			0.0	54	4'-4'11" SP SAND 10% silt, 90% fine-med. grained sand, very loose (yellow 10YR 7/6) 4'1"-5' NO RECOVERY dry (yellow 10YR 7/6)	SP	4.5 = 4904
			0.0	57	TO = 5' bgs (refuse) NO GW encountered		5.0 = 4802

Project Name: SSFL Area IV Radiological Study		Project Number: EP038.01.22.04.03		Subarea: SB	Group: 1	Location ID: 338	
Drilling Company: Bort Longyear		Driller: Don Hansen		Ground Elevation: NA		Total Depth Drilled: 8'2" ft bgs.	
Drilling Equipment: Geoprobe 6600		Borehole Diameter: 1.75 inches		Date/Time Drilling Started: 9-13-11 0800		Date/Time Total Depth Reached: 9-13-11 0920	
Type of Sampling Device: 1.75 inch Macrocore				Samples Collected: One 1/2 Gallon Bag (Approx 8 lbs.) 20712 (0820)			
Geologist: C.Knight				Checked By / Date: Sue Ann Robbins-Hellman 11/2/11			
Radiological Background: 13AR/2561/40		Radiological Equipment Used: Micro R / Downhole / Pancake Meters		PID Used: Mini Rae 2000 - Background: 0.0 ppm			

Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description	USCS Symbol	Feet bgs.	Borehole Gamma Readings (CPM)
			0.0	59	Surface: Asphalt			2653
			0.4	60	3" Asphalt			2925
0.5			0.0	54	Fill: Silty Sand: Yellowish brown (10YR 5/6), moist, medium dense, no odor, 25% silt, 5% coarse, 10% medium sand, 60% fine sand, mottled, trace asphalt	AF/SM		4463
1.0			0.0	66				5034
			0.0	66				5127
2.0			0.0	57				5490
			0.0	67	2'4"			5635
			0.0	65	Fill: Sandy silt with gravel: Dark yellowish brown (10YR 4/4), moist, medium stiff, no odor, 10% angular sandstone gravel (fine), 25% fine sand, 5% clay, 60% silt, non cohesive, low plasticity, low toughness	AF/ML		5300
3.0			0.0	66	3'5"			4864
			0.0	64	Concrete with silt: 85% concrete debris, 15% silt (yellowish brown - 10YR 5/4), silt is moist, medium stiff, no odor	AF/Concrete		4773
4.0			0.0	59	4'6"			4695
			0.0	60	No Recovery			4613
5.0			0.0	45	5'4" concrete with silt: Same as Above	AF		4813
			0.0	52	Fill: Silty silt: Dark yellowish brown (10YR 4/4), moist, stiff, no odor, 5% coarse sand, 10% medium sand, 15% fine sand, 70% silt, trace fine pea size gravel, non cohesive, low plasticity, low toughness	AF		4749
6.0			0.0		asphalt debris			

Project Name: SSFL Area IV Radiological Study		Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 1	Location ID: 338		
Radiological Background: 13, R/2561/40		Radiological Equipment Used: Micro R / Downhole / Pancake Meters		PID Used: Mini Rae 2000 - Background: 0.0 ppm			
Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
6.0			0.0	52	contact 6.0'		4749
			0.0	56	Fill: well graded sand: yellowish brown (10YR 5/4), dry, dense, no odor, 50% fine sand, 30% medium sand, 15% coarse sand, sub rounded grains of sand, 5% fine gravel, trace concrete debris	AF SW	4457
7.0			0.0	47			4471
			0.0	63	trace asphalt		4525
8.0			0.0	59	7'9" weathered sandstone bedrock: yellow (10YR 8/6), dry, dense, no odor, mechanically weathered to SP, fine grained sandstone, siltstone last 3" of boring	BS 10%	NM
					Refusal on sandstone/siltstone at 8'2"		
					No GW encountered		
					Note: Refusal met on an additional boring next to this one at 7'9" on sandstone		
9.0							
10.0							
11.0							
12.0							
13.0							

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: <u>8</u> Group: <u>1</u>	Location ID: 339
Drilling Company: <u>Boart</u> <u>Boat Longyear</u>	Driller: Don Hansen	Ground Elevation: NA	Total Depth Drilled: 10.0 ft bgs.
Drilling Equipment: Geoprobe 6600	Borehole Diameter: 1.75 inches	Date/Time Drilling Started: 9-14-11 0915	Date/Time Total Depth Reached: 9-14-11 1015
Type of Sampling Device: 1.75 inch Macrocore	Samples Collected: One 1/2 Gallon Bag (Approx 8 lbs.)	+8oz Jar 20716 (0925)	
Geologist: <u>C. Knight</u>	Checked By / Date: <u>[Signature]</u> 11-2-11		

Radiological Background: <u>13MR/2663/53</u>	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 2000 - Background: <u>0.0</u> ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description	USCS Symbol	Borehole Gamma Readings Feet bgs. +0.5' 3100 (CPM)
			0.0	48	Surface: Soil and grass		3972
0.5			0.0	52	Fill: Silty Sand: Light yellowish brown (2.5Y 6/4), dry, medium dense, no odor, 25% silt, 5% subangular gravel, 5% medium sand, 65% fine sand, mottled	AF/SM	4901
1.0			0.0	58	1/2" Sandstone gravel ~ 1.5" diameter		5056
			0.0	60			5036
2.0			0.0	52			4762
			0.0	54	2'6" Fill: Poorly graded sand with silt: Pale yellow (5Y 7/3), dry, medium dense, no odor, 10% silt, 90% fine sand, trace fine gravel, mottled	AF/SP	4699
3.0			0.0	60			4874
			0.0	65	3'3" Fill: Clayey Sand: Brown (10YR 4/3), moist, medium dense, no odor, 5% subangular fine gravel, 5% silt, 30% clay, 5% medium sand, 55% fine sand, extremely mottled	AF/CL	4507
4.0			0.0	62			4859
			0.0	59			4937
5.0			0.0	58			4968
			0.0	57			4929
6.0			0.0	85			5034

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 1	Location ID: 340
Drilling Company: Bort Longyear	Driller: Don Hansen	Ground Elevation: NA	Total Depth Drilled: 10.0 ft bgs.	
Drilling Equipment: Geoprobe 6600	Borehole Diameter: 1.75 inches	Date/Time Drilling Started: 9-14-11 0738	Date/Time Total Depth Reached: 9-14-11 0850	
Type of Sampling Device: 1.75 inch Macrocore	Samples Collected: + 802 jar One 1/2 Gallon Bag (Approx 8 lbs.)		20715 (0750)	
Geologist: C. Knight	Checked By / Date: Judith Robbins Feldman 11/2/11			

Radiological Background: MAR 2726 / 50	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 2000 - Background: 0.0 ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description	USCS Symbol	Feet bgs.	Borehole Gamma Readings (CPM)
			0.0	67	surface: soil and grass			3030
0.5			0.0	66	Fill: Silty Sand with clay; Olive yellow (2.54 6/6) dry, medium dense, no odor, 10% clay, 35% silt, 5% subangular gravel, 5% coarse sand, 10% medium sand, 35% fine sand, mottled, trace concrete	AF / SM		3632
1.0			0.0	76				4779
			0.0	57	1'7" - concrete debris			4959
2.0			0.0	62	2'2" clay pocket 2" thick			4861
			0.0	50	2'5" - concrete debris			4552
3.0			0.0	40				4571
			0.0	75	3'2" ^{w/ silt} ^(CK) Fill: Sandy Clayey Sand: Brown (10YR 2 4/3), moist, medium dense, no odor, 35% clay, 15% silt, 5% fine subangular gravel, 5% coarse sand, 10% medium sand, 30% fine sand, some concrete debris, mottled, pockets of straight clay	AF / SC		4538
4.0			0.0	68				4786
			0.0	63				4880
5.0			0.0	75	large concrete debris 1 3/4" diameter			4735
			0.0	75				4663
6.0			0.0	84				4957
			0.0					4964

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B 22	Group: 1	Location ID: 341
Drilling Company: Bort Longyear	Driller: Don Hansen	Ground Elevation: NA	Total Depth Drilled: 10.0 ft bgs.	
Drilling Equipment: Geoprobe 6600	Borehole Diameter: 1.75 inches	Date/Time Drilling Started: 9-13-11 1048	Date/Time Total Depth Reached: 9-13-11 1215	
Type of Sampling Device: 1.75 inch Macrocore	Samples Collected: One 1/2 Gallon Bag (Approx 8 lbs.) + 8oz Jar, 207/3 (1100)		Checked By / Date: Andrea Robbins Feldman 11/2/11	
Geologist: C. Knight		PID Used: Mini Rae 2000 - Background: 0.0 ppm		

Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description	USCS Symbol	Feet bgs.	Borehole Gamma Readings (CPM)
					(Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)			
					Surface: soil and grass			3233
			0.0	54	Fill: Artificial Fill			3564
0.5			0.0	65	Fill: Silty Sand with gravel; light yellowish brown (2.5 Y 6/4), moist, medium dense, no odor, 5% coarse sand, 10% medium sand, 25% silt, 50% fine sand, 10% subangular fine gravel (fill rock), trace concrete and asphalt, mottled	AF/SM		4636
1.0			0.0	67			1	4825
			0.0	66				4963
2.0			0.0	72			2	4935
			0.0	68	2 7" pea gravel (trace)			
			0.0	68	2 10" medium gravel			
			0.0	75	Same as above: Silty Sand with gravel	AF/SM		4448
3.0			0.0	75			3	4979
			0.0	92	3 2" w/ gravel			
			0.0	92	Fill: Clayey Sand: Olive brown (2.5 Y 4/3), moist, medium dense, no odor, 30% clay, 5% silt, 10% fine subangular gravel and concrete, 5% coarse sand, 10% medium sand, 40% fine sand, mottled	AF/SC		4922
4.0			0.0	81	3 8" trace concrete		4	5137
			0.0	76				5179
5.0			0.0	63	5' angular sandstone cobble/mechanically weathered		5	5025
			0.0	68	Fill: Same as above: Clayey Sand w/ gravel	AF/SC		4947
6.0			0.0	73			6	5050

Project Name:		Project Number:		Subarea:	Group:	Location ID:	
SSFL Area IV Radiological Study		EP038.01.22.04.03		SB	i	341	
Radiological Background:			Radiological Equipment Used:			PID Used:	
13mR/2825/65			Micro R / Downhole / Pancake Meters			Mini Rae 2000 - Background: 0.0 ppm	
Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Feet bgs. (CPM)
6.0			0.0	73	Same as above! Fill: Clayey Sand with gravel true fine angular concrete debris	AF SC	6 5050
			0.0	76			5150
7.0			0.0	68	> 0"		7 5129
			0.0	70	Fill: Sandy Clay with silt and gravel: Dark brown (10YR 3/3), medium stiff, moist, no odor, 20% fine sand, 10% sub angular fine gravel and concrete debris, 10% silt, 60% clay, medium plasticity, medium toughness, cohesive, mottled	AF CL	8 5251
8.0			0.0	91			8 5096
			0.0	65			5063
9.0			0.1	66	9" concrete debris		9 5052
			0.0	45			5051
10.0			0.0	57	10' 0" true fine gravel and concrete debris		10 4992
					Total Depth 10.0' bgs No GW encountered		
11.0							
12.0							
13.0							



Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: <u>5B</u> <u>ck</u>	Group: <u>1</u>	Location ID: <u>342</u>
Drilling Company: <u>Boart</u> <u>Boart Longyear</u>	Driller: Don Hansen	Ground Elevation: NA	Total Depth Drilled: <u>10.0</u> ft bgs.	
Drilling Equipment: Geoprobe 6600	Borehole Diameter: 1.75 inches	Date/Time Drilling Started: <u>9/13/11</u> <u>1355</u>	Date/Time Total Depth Reached: <u>9/13/11</u> <u>1610</u>	
Type of Sampling Device: 1.75 inch Macrocore	Samples Collected: One 1/2 Gallon Bag (Approx 8 lbs.) <u>20714</u> (<u>1410</u>)			
Geologist: <u>C. Knight</u>	Checked By / Date: <u>C. Knight</u> <u>11-2-11</u>			

Radiological Background: <u>15mR/2742</u> / <u>160</u>	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 2000 - Background: <u>0.0</u> ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description	USCS Symbol	Feet bgs.	Borehole Gamma Readings (CPM)
			0.0	66	surface: soil and grass		10.5'	3023
0.5			0.0	82	Fill: Silty Sand with gravel: Yellowish brown (10YR 5/4), moist, medium dense, no odor, 20% silt, 10% subangular fine gravel (fill rock), 5% coarse sand, 15% medium sand, 50% fine sand, mottled	AF		4079
			0.0	86		5" Asphalt debris ~ 2" thick layer	SM	
1.0			0.0	78				4851
			0.0	63	Same as above			4917
2.0			0.0	58		AF		4903
			0.0	65	2.8" Fill: Clayey Sand with gravel: Olive brown (2.5Y 4/3), moist, ^{medium dense} no odor, 30% clay, 5% silt, 10% fine subangular gravel, 5% coarse sand, 15% medium sand 35% fine sand, mottled	AF		4572
			0.0	58		3' 1" pocket of SP (~1" thick)	SC	
3.0			0.0	62	- trace red ^{crushed} concrete - 1/8" diameter			5039
			0.0	72				4948
4.0			0.0	74	4.8" Asphalt debris ~ 2" thick			4945
			0.0	65				4995
5.0			0.0	74				5048
			0.0	70		AF		4811
6.0			0.0	70		SC		4889

Project Name: SSFL Area IV Radiological Study		Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 1	Location ID: 342		
Radiological Background: 15AR/2742/60		Radiological Equipment Used: Micro R / Downhole / Pancake Meters		PID Used: Mini Rae 2000 - Background: 0.6 ppm			
Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
6.0			0.0	70	Same as above	Af/SC	4889
			0.0	92			5220
7.0			0.0	78	Fill? Sandy clay with silt; Dark brown (10YR 3/3), moist, medium stiff, to stiff, no odor, 20% fine sand, 5% subangular fine gravel, 10% silt, 65% clay, cohesive, medium plasticity, medium toughness, mottled	Af/CL	4986
			0.0	65			5156
8.0			0.0	86	8'0" concrete debris		5110
			0.0	85			5134
9.0			0.0	75	9'2" Asphalt debris		5169
			0.0	87			5181
10.0			0.0	95	Same as above	Af/CL	5285
					10'0"		
					Total Depth 10.0' bgs		
					No GW encountered		
11.0							
12.0							
13.0							

