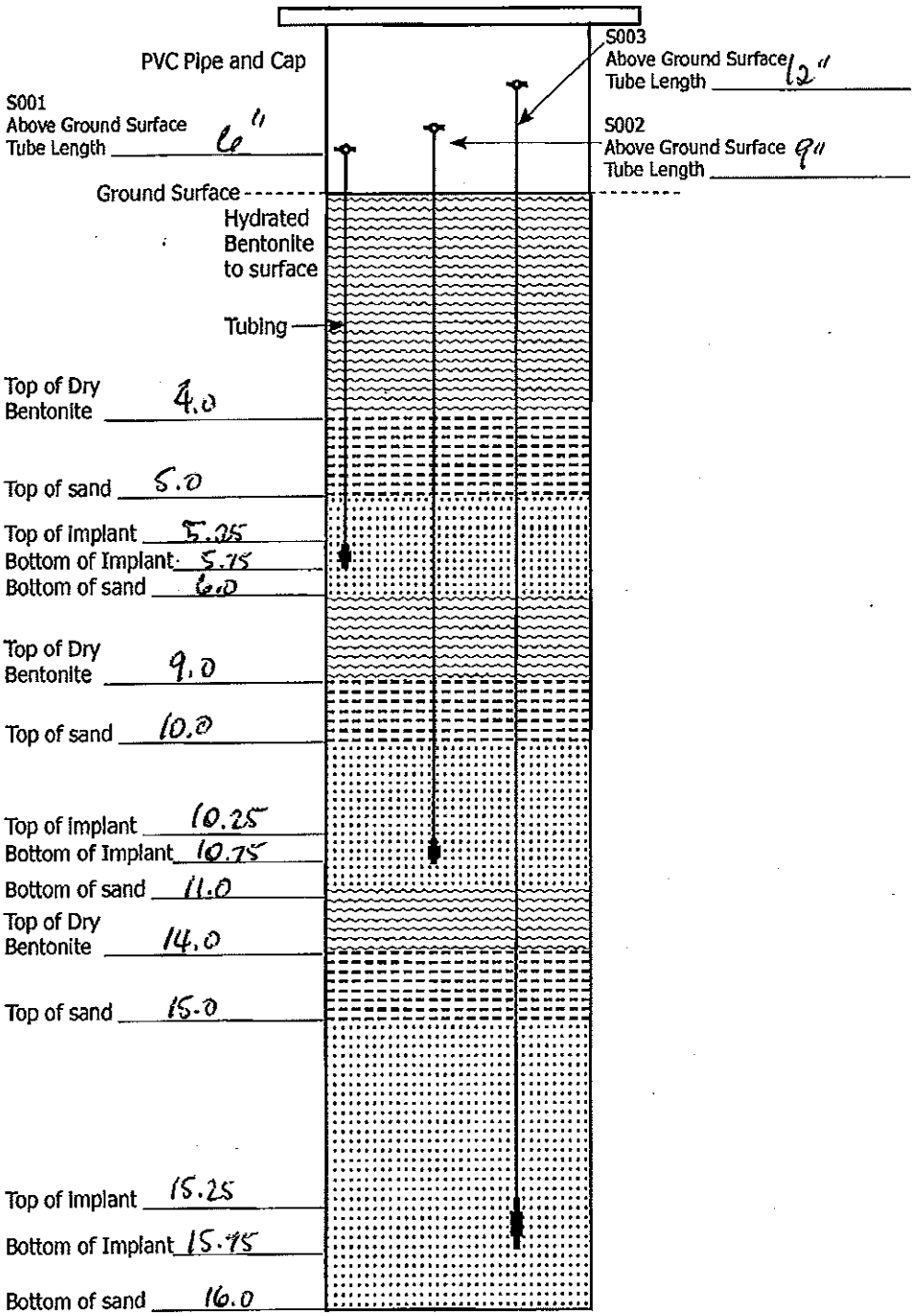
Multiple Soil Vapor Probe Construction Diagram

MWH

Probe ID/Soil ID: SBV-DG-534 | Project: DoE SV DG 2014 | Job #: 10503982
Site: SA 5B | Logged by: V. Vathanasen | Reviewed by:
Drilling Contractor: EST | Driller: Morgan Hughes | Rig Type/Method: Geoprobe 5400 / DP
Borehole TD: 21.0 | Borehole Diameter: 2.25" | Probe Completion Date/Time: 1300 / 6-2-



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Cemex

Dry Bentonite
Type: #8
Manufacturer: Cetco

Hydrated Bentonite
Type: #8
Manufacturer: Cetco

Notes:
1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

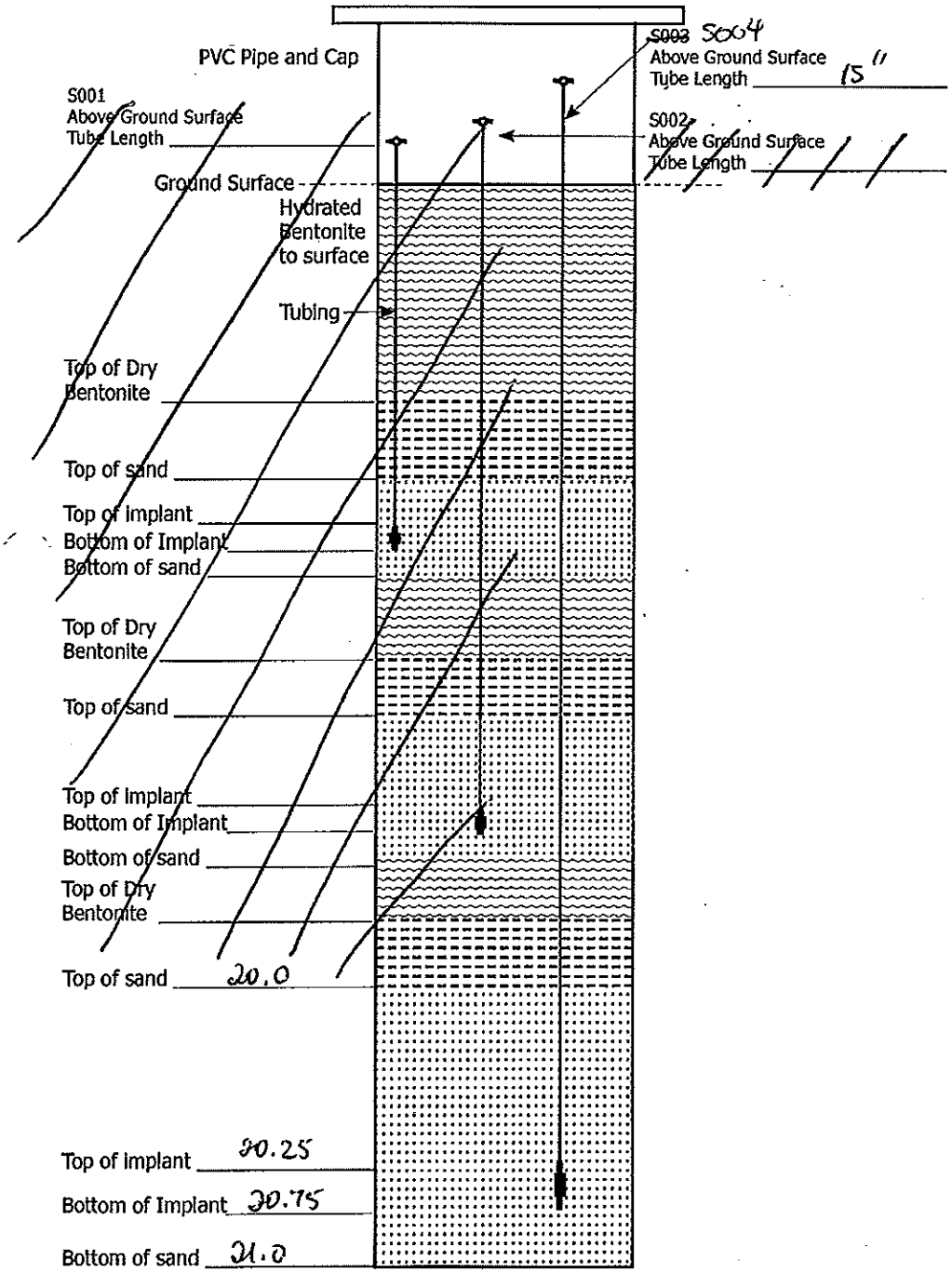
MWH

Multiple Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SBSV-DG-584
Site: SA 53
Drilling Contractor: EST
Borehole TD: 21.0

Project: Phase 3 DoE SV-DG
Logged by: V. Vathanasin
Driller: Morgan Hughes
Borehole Diameter: 8.25"

Job #: 10503982
Reviewed by:
Rig Type/Method: Geoprobe 5410 / DP
Probe Completion Date/Time: 1300 / 6-2-14



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: Clear

Sand Pack Specs
Grain Size: # 3
Manufacturer: Cemex

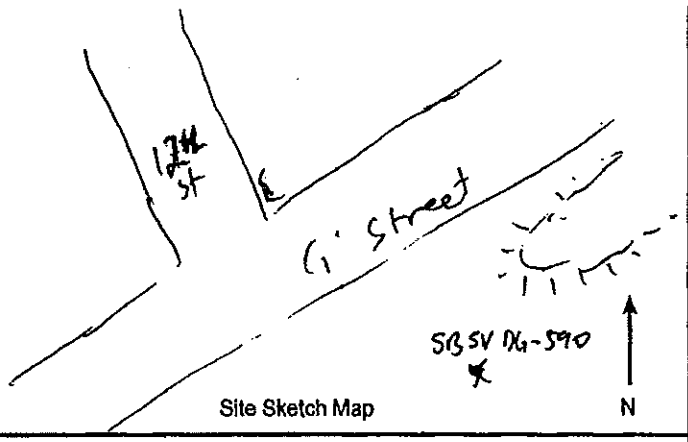
Dry Bentonite
Type: #8
Manufacturer: Cetco

Hydrated Bentonite
Type: #8
Manufacturer: Cetco

Notes:
1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

MWH



Site Sketch Map

Boring ID: SBSV DG-590 Sheet 1 of 1

Project: Phase 3 DOE SVDG 2014

Job #: 10SD [illegible] 30SW01 Site: SB

Logged By: [illegible] Reviewed By:

Drilling Contractor: EST Drillers Name: [illegible]

Drill Rig Type/Method: GEOPROBE 5400

Sampler Type: MACROCORE

Borehole Diam (inch): 2.25" Total Depth (ft bgs): 7.0'

Drill Bit Type: MACROCORE

Drill Start Time/Date: 02JUN14, 14:01 Drill Finish Time/Date: 02JUN14, 14:05

Soil Vapor ID: SBSV DG-590

Soil Boring Backfill Time/Date: N/A Backfill Material: N/A

Soil Vapor Well Completion Time/Date: 02JUN14; 14:12

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Soil Vapor Probe Depths (ft.bgs): 6.0 - 7.0' bgs

Surface Completion: soil vapor probe

Soil Vapor Well Detail Completed (yes/no)

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
								1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations					
								Surface Description: soil, mustard, grass					
		48"				0		0.0 - 1.0					
						1	SM	Silty sand (sm), brown (10YR 5/3) dry, very loose, predominant fine sand (70), some silt (25),	-	-	5	70	25
						2	SM	few medium sand (5). No stain, no odor, fill.					
						3		1.0 - 2.5					
		36"				4	SP	Silty sand (sm), yellowish brown (10YR 5/4), medium dense, dry, non plastic, predominant fine sand (65), some silt (25), and trace medium sand. No stain, no odor, fill	-	-	TR	65	35
						5							
						6							
					TOC	7		2.5 - 7.0 gravel					
								Poorly ~~sorted~~ sand (SP) yellowish brown (10YR 5/6) medium dense, moist. Predominant fine sand (50), some medium sand (25), few silt (10), few coarse sand (5). No stain, no odor. Native.	-	5	25	70	10
X	Refusal on sandstone bedrock					8							
X	TD ~ 7.0' bgs					9							

MWH

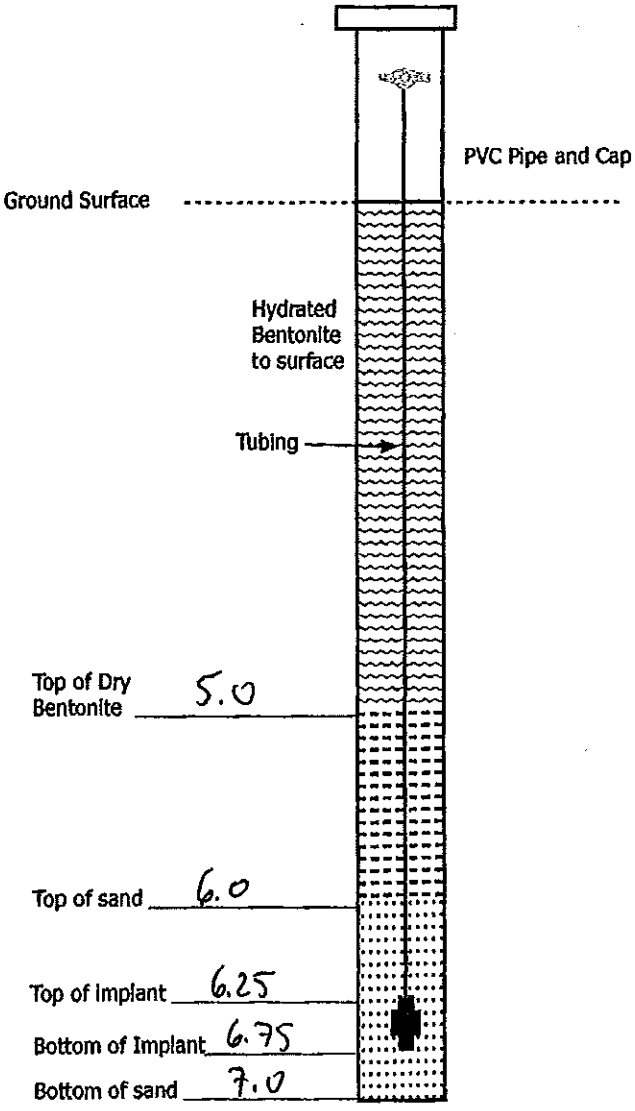
Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SB SV D1-590 Job #: 10503982.3050106/10503982.3060106 Project: Phase 3 DOE Data Gap Sampling 201

Site: SB Reviewed by: Logged by: Rob Ellis

Drilling Contractor: E&T Rig Type/Method: Geoprobe 5400 Driller: Marty Kellullen

Borehole TD: 7.0' bgs Probe Completion Date/Time: 12JUN14, 1412 Borehole Diameter: 2.25"



Vapor Implant Specs

Material: stainless steel

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: teflon

Diameter: 1/4"

Color: clear

Sand Pack Specs

Grain Size: #3

Manufacturer: Cemex

Dry Bentonite

Type: #8 crumble

Manufacturer: Cetco

Hydrated Bentonite

Type: #8 crumble

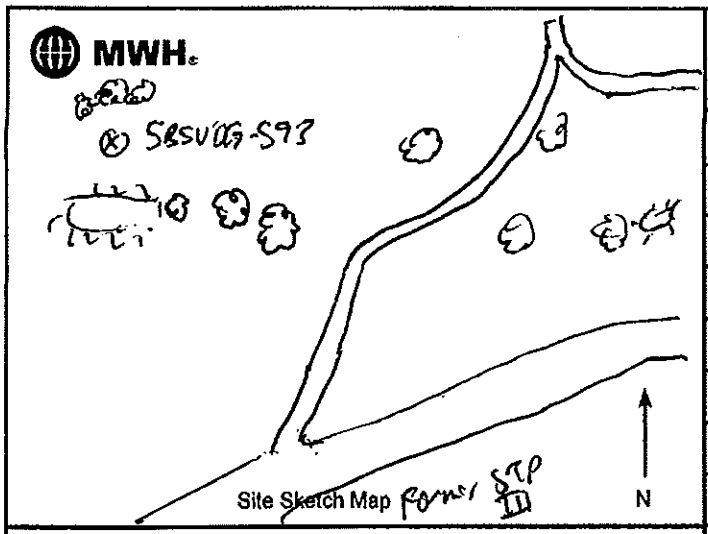
Manufacturer: Cetco

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH.



Site Sketch Map Former STP III

Boring ID: 5BSV DG-593	Sheet 1 of 1
Project: Phase 3 DOE SVDG 2014	
Job #: 1050 3982.3050106	Site: 5B
Logged By: Rob Ellis	Reviewed By:
Drilling Contractor: EST	Drillers Name: Marty Kalhulsen
Drill Rig Type/Method: Geoprobe 5400	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft bgs): 6.0'
Drill Bit Type: Macrocore	
Drill Start Time/Date: 10:50 03 JUN 14	Drill Finish Time/Date: 11:03 03 JUN 14
Soil Vapor ID: 5BSV DG-593	Soil Boring Backfill Time/Date: N/A — Backfill Material: N/A
Soil Vapor Well Completion Time/Date: 03JUN14, 11:18	Observations: burned debris @ surface ☒ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None throughout
Soil Vapor Probe Depths (ft.bgs): 5.0'-6.0' bgs	Surface Completion: SV Probe
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description
1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: flat, mustard

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
0.0 ppm		24"				0	Fill SM Fill	0.0 - 1.0 Silty sand (SM), dark brown (10YR 3/3), very loose, dry, predominant fine sand (60), some silt (30), few medium sand (10). No stain, no odor, but fragments of burned material (wood), lot of root/veg debris. Fill.	-	-	10	60	30
0.0 ppm		24"				4	SP	1.0 - 4.3					
						5 sharp	SP	poorly sorted sand (SP), dark yellow brown (10YR 4/6), loose, dry, predominant fine sand (75), little silt (15), few med sand (10), trace coarse sand. No stain, no odor, fill.	-	TR	10	75	15
						6		4.3 - 5.1					
						8		silty sand (SM), dark brown (10YR 3/3), dense, dry, nonplastic, mostly fine sand (60) some silt (40). No stain no odor, fill.	-	-	-	60	40
						9				-	15	75	10

TD = 6.0' bgs on sandstone bedrock.

Location moved 6' to the south from proposed location.

5.1 - 6.0 poorly graded sand (SP) olive yellow (2.5Y 4/6). Mostly fine sand (75) little medium sand, few silt (10) no stain, no odor native.

QA/QC
Surficial media boring log rev 2-25-2014

MWH

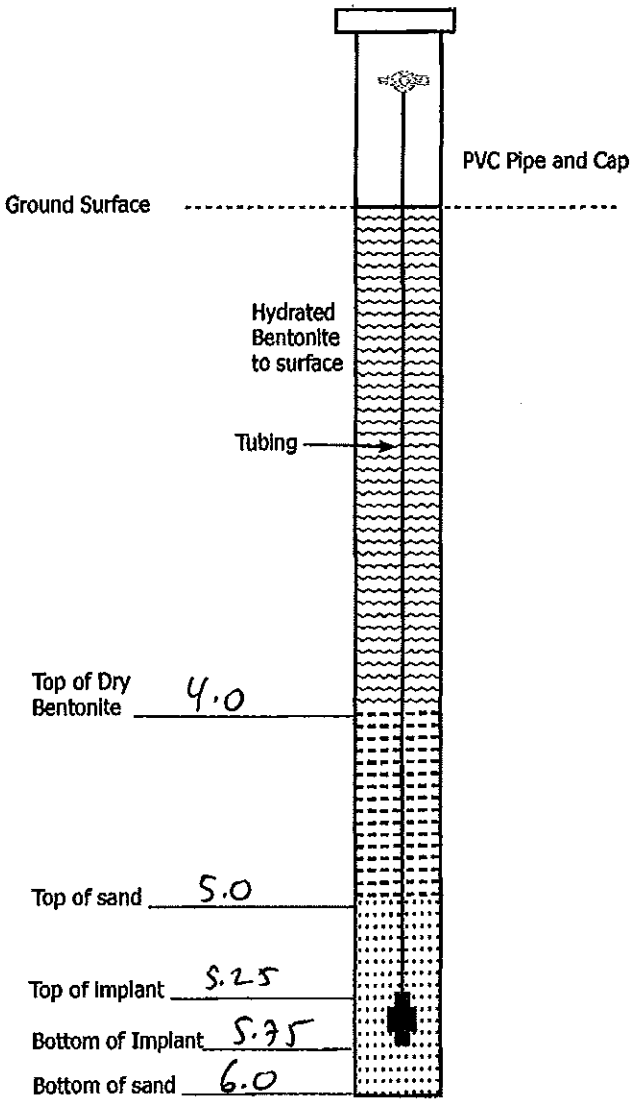
Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SBSV DG-593 | Job #: 10503982.3050106/10503982.3060106 | Project: Phase 3 DOE Data Gap Sampling 201

Site: SB | Reviewed by: | Logged by: ROBERTS

Drilling Contractor: EST | Rig Type/Method: Geoprobe 5400 | Driller: MARTY KILMULLEN

Borehole TD: 6.0' bgs | Probe Completion Date/Time: 03JUN14 | Borehole Diameter: 2.25"



Vapor Implant Specs

Material: stainless steel

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: teflon

Diameter: 1/4"

Color: clear

Sand Pack Specs

Grain Size: #3

Manufacturer: Comox

Dry Bentonite

Type: #8 crumbles

Manufacturer: Cetco

Hydrated Bentonite

Type: #8 crumbles

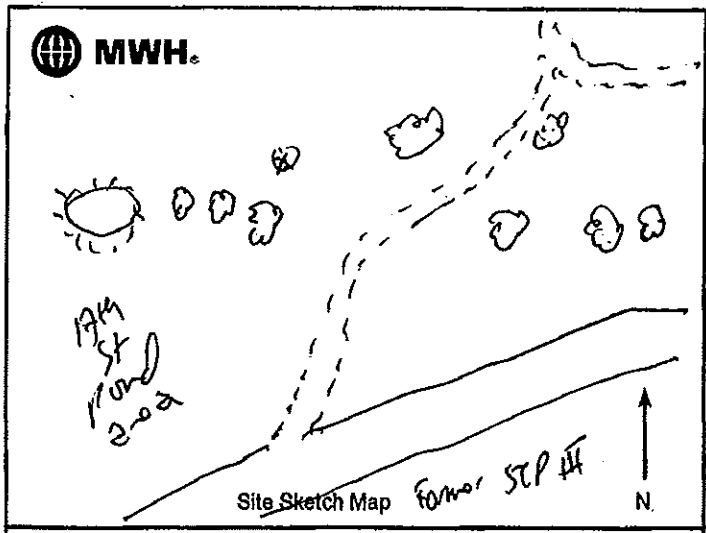
Manufacturer: Cetco

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH.



Boring ID: 5BSVDG-594	Sheet 1 of 1
Project: Phase 3 DOE SVDG 2014	
Job #: 10503982.3050106	Site: 5B
Logged By: RB Ellis	Reviewed By:
Drilling Contractor: EST	Drillers Name: Marty Kilhullen
Drill Rig Type/Method: Macrocore Geoprobe 5400	
Sampler Type: Macrocore	
Borehole Diam (inch) 2.25"	Total Depth (ft bgs) 6.0'
Drill Bit Type: Macrocore	
Drill Start Time/Date: 12:03 03 JUN 14	Drill Finish Time/Date: 12:08 03 JUN 14
Soil Vapor ID: 5BSVDG-594	Soil Boring Backfill Time/Date: N/A Backfill Material:
Soil Vapor Well Completion Time/Date: 03 JUN 14, 12:10	Observations: some pipe/brick, burned wood ☒ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): 5.0 - 6.0' bgs	Surface Completion: SV Probe
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description
1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Surface Description:	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
0.0 ppm		42"				0		0.0 - 4.0					
						1	SM	Silty sand (SM), brown (10YR 4/2)	-	5	10	55	30
								very loose, dry transitions to					
						2		Mod dense, dry at ~2.0'					
								with some mottled nodules / look					
						3		like decomposed sandstone fragments					
								Predominant fine sand (55), some					
						4		silt (30), few medium sand (10)					
0.0 ppm		24"					SP	and few coarse grains (5).					
						5		Some fragments of debris, burned					
								wood, clay pipe (?) up to 2mm. Aside					
					TD	6		from oxidation, no odor, no					
• TD = 6.0' bgs								stain, fill material.					
Refusal on sandstone								4.0 - 6.0					
bedrock						7		Poorly sorted sand (SP), dark yellow	-	TR	10	80	10
						8		brown (10YR 4/4), loose, dry. Mostly					
								fine sand (80), few medium sand and					
						9		silt (10% each), Trace coarse sand. No					
								stain, no odor. Fill material.					
								Bedrock @ 6.0' bgs, weathered					
								10YR 6/3 pale brown, M shore.					

QA/QC
Surficial media boring log rev 2-25-2014

MWH

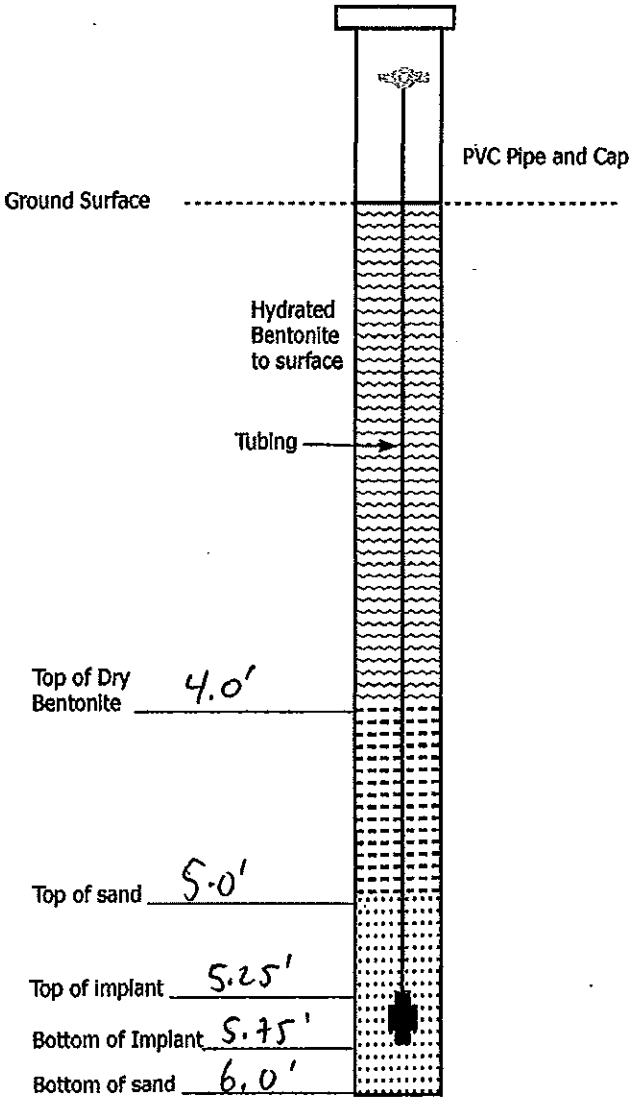
Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SBSV DG-594 | Job #: 10503982.3050106/10503982.3060106 | Project: Phase 3 DOE Data Gap Sampling 201

Site: SB | Reviewed by: | Logged by: Rob Ellis

Drilling Contractor: EST | Rig Type/Method: Geoprobe 5400 | Driller: Marty Kilhullen

Borehole TD: 6.0' bgs | Probe Completion Date/Time: 03JUN14 | Borehole Diameter: 2.25"



Vapor Implant Specs

Material: stainless steel

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: teflon

Diameter: 1/4"

Color: clear

Sand Pack Specs

Grain Size: #3 sand

Manufacturer: Cemex

Dry Bentonite

Type: #8 crumbles

Manufacturer: Cetco

Hydrated Bentonite

Type: #8 crumbles

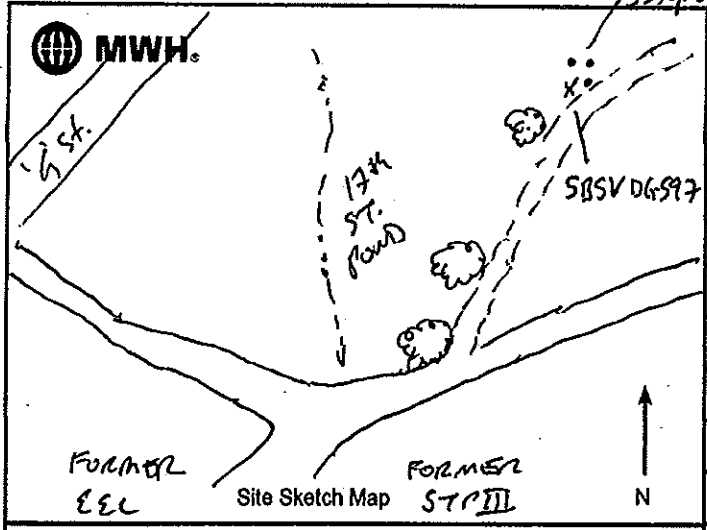
Manufacturer: Cetco

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH

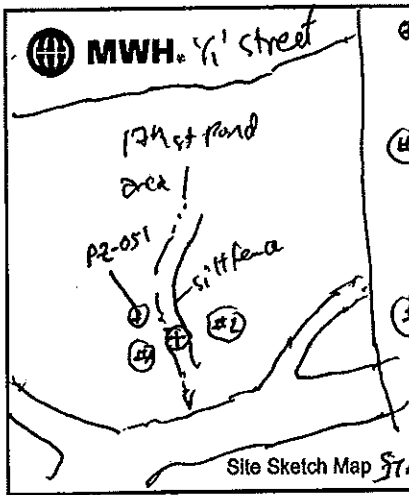


Site Sketch Map

Boring ID: SBSV DG-597	Sheet 1 of 1
Project: Phase 3 DOE SVDG 2014	
Job #: 10503982.B0SV106	Site: 5B
Logged By: RMB ELLIS	Reviewed By:
Drilling Contractor: EST	Drillers Name: MARTY KILHULLEN
Drill Rig Type/Method: Geoprobe 5400	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft bgs): 1.0'
Drill Bit Type: Macrocore	
Drill Start Time/Date: 0713 03 JUN 2014	Drill Finish Time/Date: 0815 03 JUN 2014
Soil Boring Backfill Time/Date: 0832 03 JUN 2014	Backfill Material: soil cuttings 03 JUN 2014
Soil Vapor ID: N/A	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Well Completion Time/Date: N/A	
Soil Vapor Probe Depths (ft.bgs): N/A	Surface Completion: none
Soil Vapor Well Detail Completed (yes/no) N/A	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0		Surface Description: Grasses + Erodium					
	X	12"	X				SM SP	0.0 - 0.5					
						1		Silty sand (SM), brown (10YR 5/3)	-	-	10	55	35
0.0 ppm	SVP-597 10 MP/Rem, 54 cpm							~~TD = 1.0' bgs~~ Very loose, dry, predominant fine sand (SF), some silt (35), few medium sand (10). No stain, no odor, No tile					
						2							
						3		0.5 - 1.0					
						4		Poorly graded sand (SP) pale brown (10YR 6/3). loose, dry. Predominant fine sand (SF), little medium sand (20), little coarse sand (4), few silt (10) no stain, no odor, No tile	-	15	20	55	10
						5							
						6							
						7		• TD = 1.0' bgs on sandstone bedrock (refusal).					
						8		• Backfilled w/ soil cuttings @ 08:32					
						9		• stepped out to N, NE, E ~ 18" to confirm refusal					

MWH. 1/1' street



Site Sketch Map STP III

⊕ SBSVDG599 primary - refusal at 0.5' bgs.
(#1) stepout 15' (W) into bank terrace w/ refusal 2.0' bgs
(#2) stepout 20' (E) into hummocky area.

N

Boring ID: SBSV_DG-599	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: SB
Logged By: ROBELLIS	Reviewed By:
Drilling Contractor: EST	Drillers Name: MORGAN HUGHES
Drill Rig Type/Method: HAND AUGER	
Sampler Type: BUCKET AUGER GRAB	
Borehole Diam (inch): 3.5"	Total Depth (ft.bgs): 9.0'
Drill Bit Type: BUCKET AUGER	
Drill Start Time/Date: 12:07 11JUN14	Drill Finish Time/Date: 12:32 11JUN14
Soil Boring Backfill Time/Date: N/A	Backfill Material:
Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None	
Surface Completion: SV probe	
Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None	

Soil Vapor ID: SBSV_DG-599

Soil Vapor Well Completion Time/Date: 11JUN14 ; 12:43

Soil Vapor Probe Depths (ft.bgs): 8.0-9.0' bgs

Soil Vapor Well Detail Completed (yes/no): attached

Soil Description: wild oats.

1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: hummocky, berms.

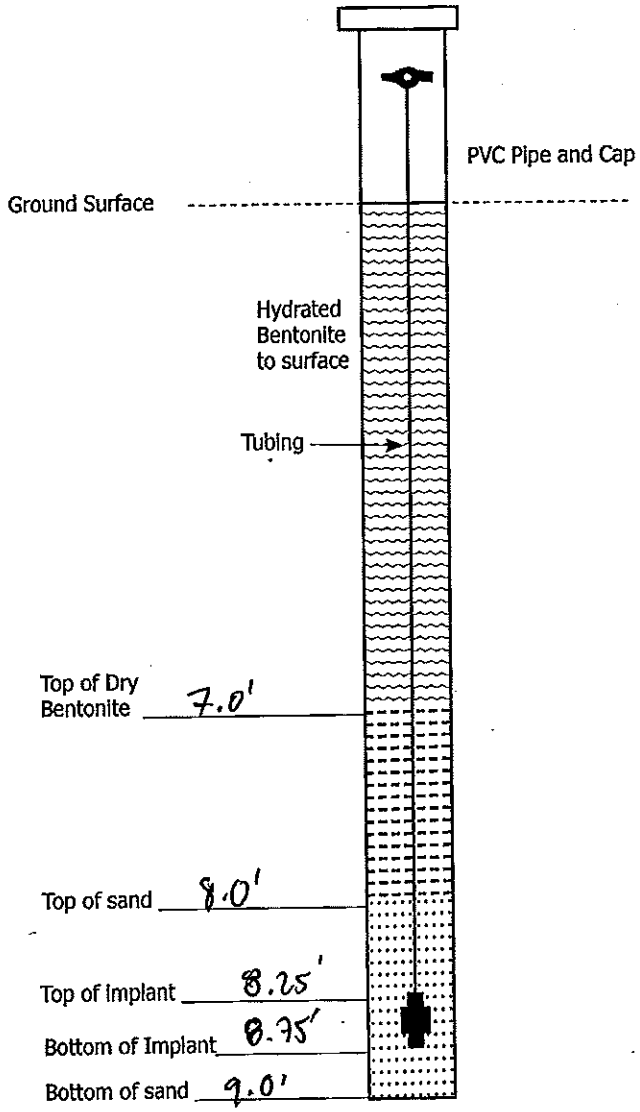
PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
		108"				0	SM	0.0-1.0 Silty sand (SM), grayish brown (10YR 5/2). very loose, dry, pervasive roots, more like A horizon. Mostly fine sand (60), some silt (30), few medium sand (10). No strain, no odor. Fill material	-	-	10	60	30
						1							
						2							
						3							
						4	SM	1.0-9.0 Silty sand (SM) dark yellowish brown (10YR 4/4). loose, slightly moist. Mostly fine sand (55). Some silt (35) and few medium sand. Silt fraction increases to ~40% at ~7.0' bgs., medium sand decreases.	-	-	10	55	35
						5							
						6							
						7			-	-	5	55	40
						8		TD = 9.0' bgs with refusal on sandstone bedrock					
						9		This is boring stepout location #2. (see map).					

QA/QC
Surficial media boring log rev 2-25-2014

MWH.

Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SBSV-DG-599
Job #: 10503982.3050105/10503982.3060105
Project: Phase 3 DOE Data Gap Sampling 201
Site: SB
Reviewed by:
Logged by: RWXELLIS
Drilling Contractor: EST
Rig Type/Method: HAND AUGER
Driller: MORGAN HUGHES
Borehole TD: 9.0' bgs
Probe Completion Date/Time: 11 JUN 14; 12:43
Borehole Diameter: 3.5" ~~[illegible]~~



Vapor Implant Specs
Material: stainless steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: teflon
Diameter: 1/4"
Color: clear

Sand Pack Specs
Grain Size: #3 sand
Manufacturer: Cemex

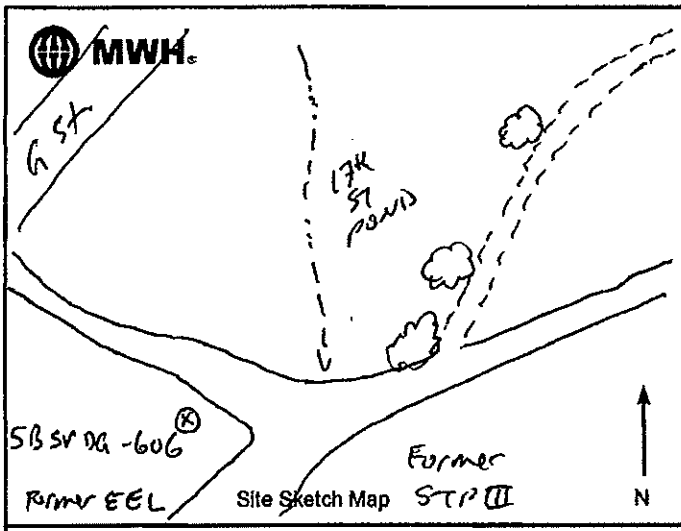
Dry Bentonite
Type: #8 crumbles
Manufacturer: Cetco

Hydrated Bentonite
Type: #8 crumbles
Manufacturer: Cetco

Notes:
1. Probes not drawn to scale.

FIGURE 4-1

MWH



Site Sketch Map

Boring ID: SB SV DG-606 Sheet 1 of 1

Project: Phase 3 DOE SVDG 2014

Job #: 105039982.2050106 Site: SB

Logged By: RWGillis Reviewed By:

Drilling Contractor: EST Drillers Name: MARTY KILHULLEN

Drill Rig Type/Method: Geoprobe 5400

Sampler Type: Macro core

Borehole Diam (inch): 2.25" Total Depth (ft.bgs): 6.5'

Drill Bit Type: Macro core

Drill Start Time/Date: 08:34 03JUN2014 Drill Finish Time/Date: 08:36 03JUN2014

Soil Vapor ID: SB SV DG-606

Soil Boring Backfill Time/Date: N/A Backfill Material: N/A

Soil Vapor Well Completion Time/Date: 03JUN14 ; 08:40

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Soil Vapor Probe Depths (ft.bgs): 5.5' - 6.5'

Surface Completion: SV probe

Soil Vapor Well Detail Completed (yes/no)

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
								Surface Description: grasses, mustard					
0.0 ppm		48"				0	fl, sm	0.0 - 2.5 Silty sand (sm), dark yellowish brown (10YR4/4) very loose, dry. Predominant fine sand (65), some silt (30), few medium sand (5), No stain, no odor. Fill.	-	-	5	65	30
						1							
						2							
						3	sp	2.5 - 4.0 Poorly sorted sand (SP). dark yellowish brown (10YR4/4). med. dense, dry. Predominant fine sand (70), silt (15), few medium sand (10), few coarse sand (5). Transitions to dark yellowish brown (10YR4/6) at 3.0' bgs. No stain, no odor, Fill	-	5	10	70	15
0.0 ppm		30"				4	sp						
						5							
						6							
						7							
TD = 6.5' bgs refusal on bedrock						8		4.0 - 6.5' Poorly sorted sand (SP). light olive brown (2.5Y 5/6). Predominant fine sand (65), little med sand / silt (15% each), few coarse sand. Some fragments of white (caliche?). effervesce No stain, no odor. Native	-	5	15	65	15
						9							

QA/QC

MWH

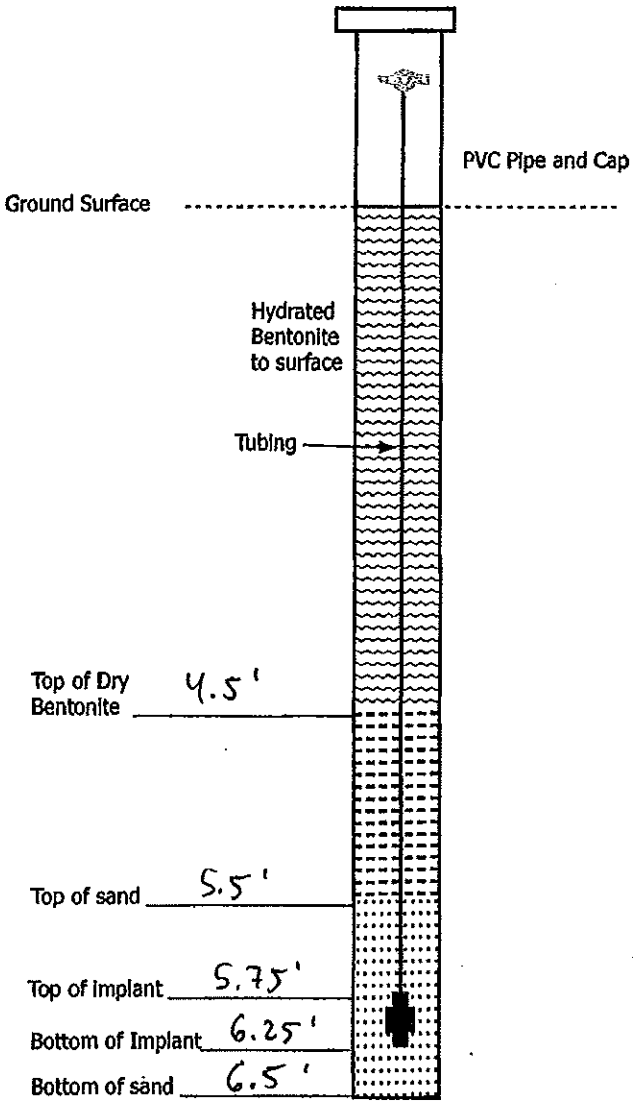
Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SB SV DG-606 | Job #: 10503982.3050106/10503982.3060106 | Project: Phase 3 DOE Data Gap Sampling 201

Site: SB | Reviewed by: | Logged by: RWB ELLIS

Drilling Contractor: EST | Rig Type/Method: Geoprobe 5400 | Driller: MARTY KILLMULLEN

Borehole TD: 6.5' bgs | Probe Completion Date/Time: 03 JUN 2014 08:40 | Borehole Diameter: 2.25"



Vapor Implant Specs

Material: stainless steel

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: teflon

Diameter: 1/4"

Color: clear

Sand Pack Specs

Grain Size: #3

Manufacturer: Cemex

Dry Bentonite

Type: #8 crumbles

Manufacturer: Cetco

Hydrated Bentonite

Type: #8 crumbles

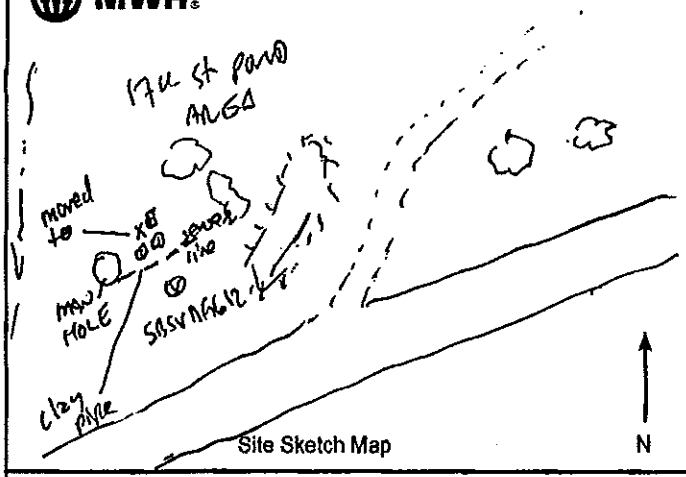
Manufacturer: Cetco

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH.



Site Sketch Map

Boring ID: SBSV DG-612	Sheet 1 of 1
Project: Phase 3 DOE SVDG 2014	
Job #: 10503982.3050106	Site: SB
Logged By: Rob Ellis	Reviewed By:
Drilling Contractor: EST	Drillers Name: Marty Kulhullen
Drill Rig Type/Method: Geoprobe 5400	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 5.5'
Drill Bit Type: Macrocore	
Drill Start Time/Date: 13:52 03 JUN 14	Drill Finish Time/Date: 14:02 03 JUN 14
Soil Vapor ID: SB SV DG-612	Soil Boring Backfill Time/Date: N/A
Backfill Material: N/A	
Soil Vapor Well Completion Time/Date: 03 JUN 14, 14:20	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): 4.5 - 5.5'	Surface Completion: SV probe
Soil Vapor Well Detail Completed (yes/no) attached	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

Surface Description: clay pipe debris, sewer.

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
0.0 ppm		42"				0		0.0 - 5.5'					
						1		Silty sand (SM) brown (10YR 4/3)	5	5	10	50	30
								very loose, dry for the first					
						2		few inches transitioning to					
							SM	loose/med dense to 5.5'.					
						3		Mostly fine sand (50), some silt					
								(30), few medium sand (10),					
						4		and few coarse sand/gravels					
0.0 ppm		18"						(5% ead). Gravels consist of					
						5		sandstone fragments and					
						TD		1-2 base gravels at 3.5' bgs.					
						6		Color change at 1.0' bgs to					
	Moved location							dark yellowish brown (10YR 4/4),					
	10' to the (N)					7		to TD. 3" lite yellow brown (2.5					
								Y 6/3) sand lens at 3.2' bgs.					
						8		No stain, no odor. Fill					
								material.					
						9		TD = 5.5' bgs, refusal on					
								sandstone bedrock.					

QA/QC
Surficial media boring log rev 2-25-2014

MWH

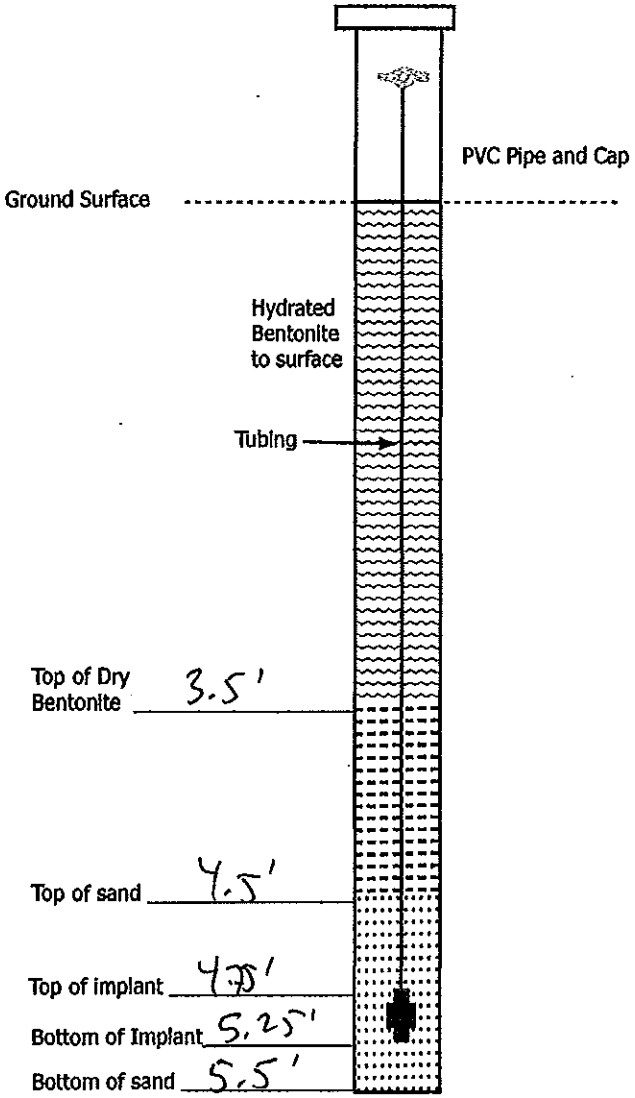
Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SBSV DG-612 Job #: 10503982.3050106/10503982.3080106 Project: Phase 3 DOE Data Gap Sampling 201

Site: SB Reviewed by: _____ Logged by: RWS Ellis

Drilling Contractor: EST Rig Type/Method: Geoprobe 5400 Driller: MARTY KILMARLEN

Borehole TD: 5.5' bgs Probe Completion Date/Time: 03JAN14, 14:20 Borehole Diameter: 2.25"



Vapor Implant Specs

Material: stainless steel

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: tefton

Diameter: 1/4"

Color: clear

Sand Pack Specs

Grain Size: #3 Sand

Manufacturer: Colorex

Dry Bentonite

Type: #8 crumbles

Manufacturer: Cetco

Hydrated Bentonite

Type: #8 crumbles

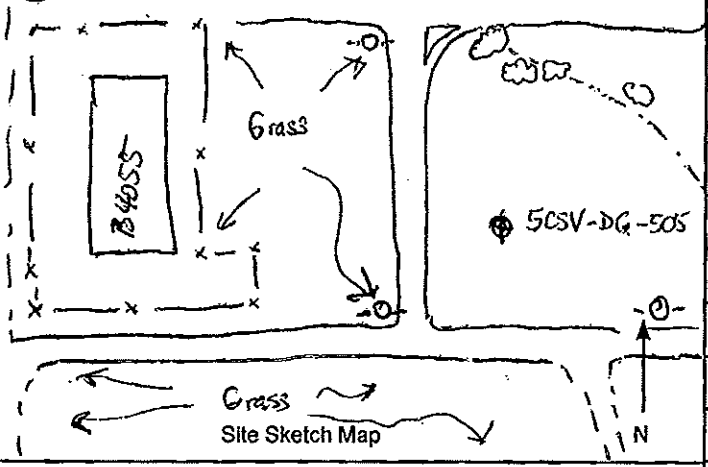
Manufacturer: Cetco

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH



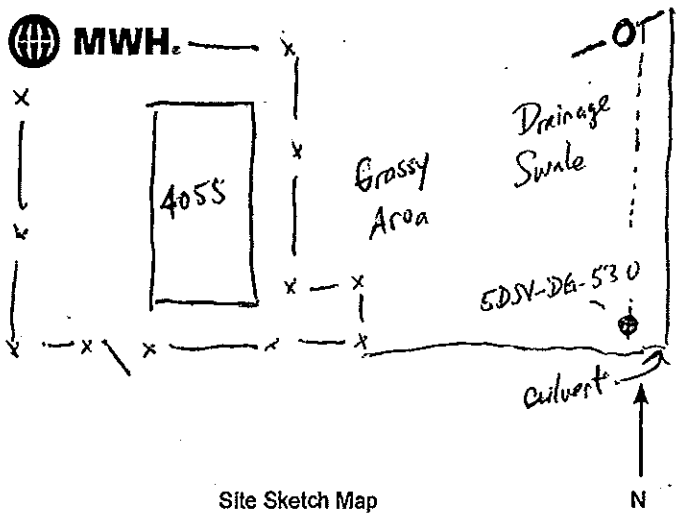
Site Sketch Map

Boring ID: 5CSV-DG-505	Sheet 1 of 2		
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014			
Job #: 10503982.3050105/ 10503982.3060105	Site: SA 5C		
Logged By: V. Vathanasin	Reviewed By:		
Drilling Contractor: EST	Drillers Name: Morgan Hughes		
Drill Rig Type/Method: Geoprobe 5400 / DP			
Sampler Type: Macrocore			
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 16.0		
Drill Bit Type: Macrocore			
Drill Start Time/Date: 1345 / 5-27-14	Drill Finish Time/Date: 1420 / 5-27-14		
Soil Vapor ID: 5CSV-DG-505	Soil Boring Backfill Time/Date: N/A	Backfill Material: N/A	
Soil Vapor Well Completion Time/Date: 1505 / 5-27-14	Observations: ☐ Debris ☒ Staining ☐ Odors ☐ Groundwater ☐ None		
Soil Vapor Probe Depths (ft.bgs): 5.0-6.0, 10.0-11.0, 15.0-16.0	Surface Completion: Soil vapor probes		
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None		

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
								Surface Description: Gravel base and weeds.					
						0	SM	Silty Sand (SM), brown (10YR 4/3), loose, dry, fine sand, non-plastic silt, no odors or stains, fill	-	-	-	60	40/
			NONE			1							
							ML		-	-	-	TR	90/10
						2		Silt w/ clay (ML), dark yellowish brown (10YR 4/4), stiff, dry, non-plastic silt, clay, trace fine sand, white <1mm nodules, med. cementation, no odors, fill					
0.0						3							
						4							
							ML	~~Silt with Sand~~ Sandy Silt (ML), mottled light yellowish brown (10YR 6/4) and very pale brown (10YR 8/2), low plasticity silt, coarse to fine sand (~~Strong~~ VW), Strong weathering, fill.	-	10	10	15	65/
			NONE			5							
						6							
						7		@7' 9mm wide band of weathered material very pale brown (10YR 8/2)					
						8							
			NONE				SM	Silty Sand w/ clay (10YR 5/4) yellowish brown, dense, dry, fine sand, non-plastic fines, white (10YR 8/1) streaks,	-	-	-	70	20/10
						9							

cont. next

MWH



Site Sketch Map

Boring ID: 5DSV-DG-530	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5D
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 6.0
Drill Bit Type: Macrocore	
Drill Start Time/Date: 0942 / 5-23-14	Drill Finish Time/Date: 0955 / 5-23-14
Soil Vapor ID: 5DSV-DG-530	Soil Boring Backfill Time/Date: N/A Backfill Material: N/A
Soil Vapor Well Completion Time/Date: 1003 / 5-23-14	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): 5.0 - 6.0	Surface Completion: Soil vapor probe
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description
1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: Near culvert

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Silty Sand (SM), brown (10YR 4/3), med. dense, dry, non-plastic silt, fine sand, grass roots, fill, no odors or stains	-	-	-	60	40/
		38"	NONE			1							
						2		color changes to brownish yellow (10YR 6/6), loose					
						3							
0.0						4		w/ Sand					
							ML	Silt (ML), brownish yellow (10YR 6/6), soft, dry, non-plastic silt, fine sand, no odors or stains, fill.	-	-	-	30	70/
		18"	NONE			5	SM	Silty Sand (SM), yellowish brown (10YR 5/6), loose, dry, fine sand, non-plastic silt, native soil.	-	-	-	60	40
0.0						6	Br	@6' Sandstone, weathered					
						7							
						8		TD = 6.0 ft, refusal on bedrock, install probe @ 5.0-6.0					
						9							

MWH

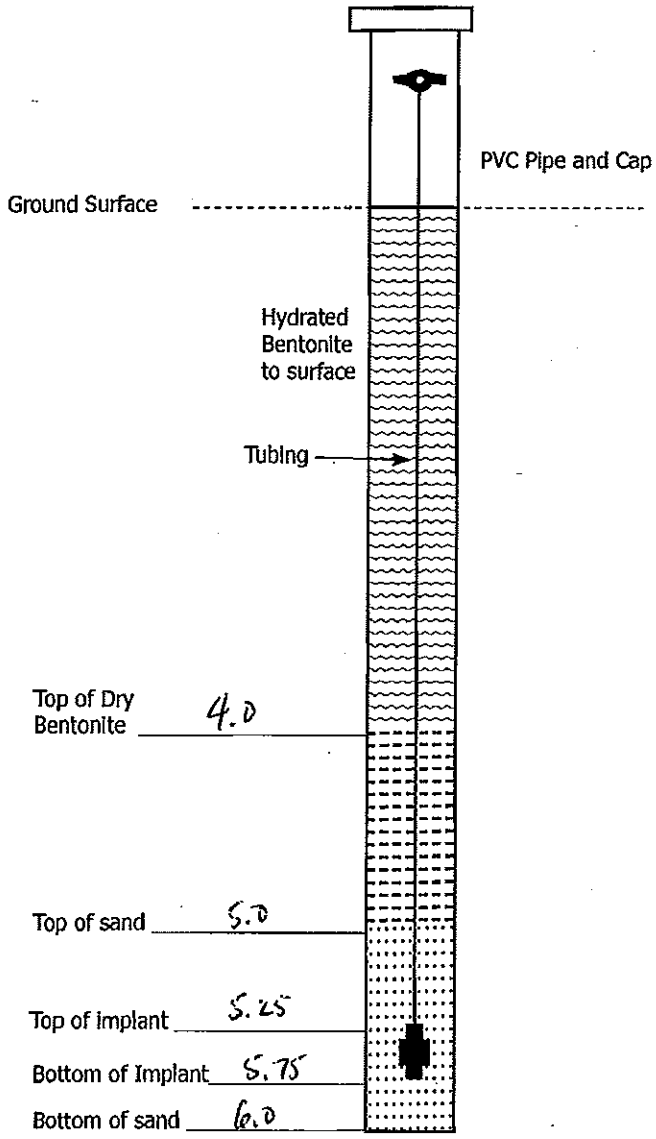
Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SDSV-DG-530 | Job #: 10503982.3050105/10503982.3060105 | Project: Phase 3 DOE Data Gap Sampling

Site: SD | Reviewed by: | Logged by: V. Vatharasin

Drilling Contractor: EST | Rig Type/Method: Geoprobe 5400/DP | Driller: Morgan Hughes

Borehole TD: 6.0 | Probe Completion Date/Time: 1003 /5-23-14 | Borehole Diameter: 2.25"



Vapor Implant Specs

Material: Stainless Steel

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: Teflon

Diameter: 1/4"

Color: Clear

Sand Pack Specs

Grain Size: #3

Manufacturer: Cemex

Dry Bentonite

Type: #8

Manufacturer: Cetco

Hydrated Bentonite

Type: #8

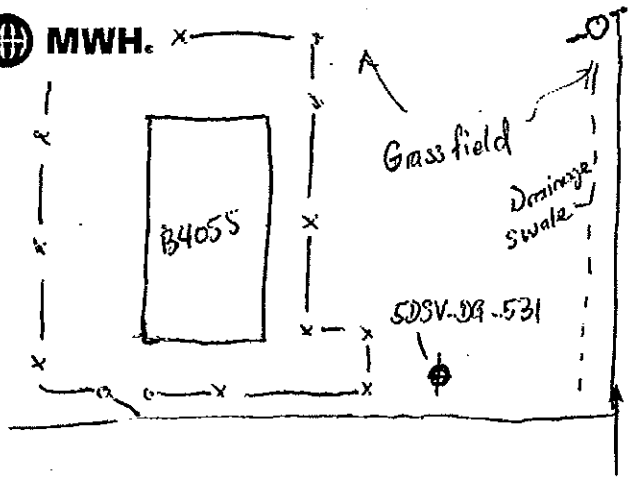
Manufacturer: Cetco

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH.



Site Sketch Map

Boring ID: 5DSV-DG-531	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5D
Logged By: V. Vathanesin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 6.0
Drill Bit Type: Macrocore	
Drill Start Time/Date: 0855 / 5-23-14	Drill Finish Time/Date: 0911 / 5-23-14
Soil Vapor ID: 5DSV-DG-531	Soil Boring Backfill Time/Date: N/A
Soil Vapor Well Completion Time/Date: 0922 / 5-23-14	Backfill Material: N/A
Soil Vapor Probe Depths (ft.bgs): 5.0 - 6.0	Observations: ☐ Debris ☒ Staining ☐ Odors ☐ Groundwater ☐ None
Soil Vapor Well Detail Completed (yes/no)	Surface Completion: Soil Vapor probe
	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description
1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

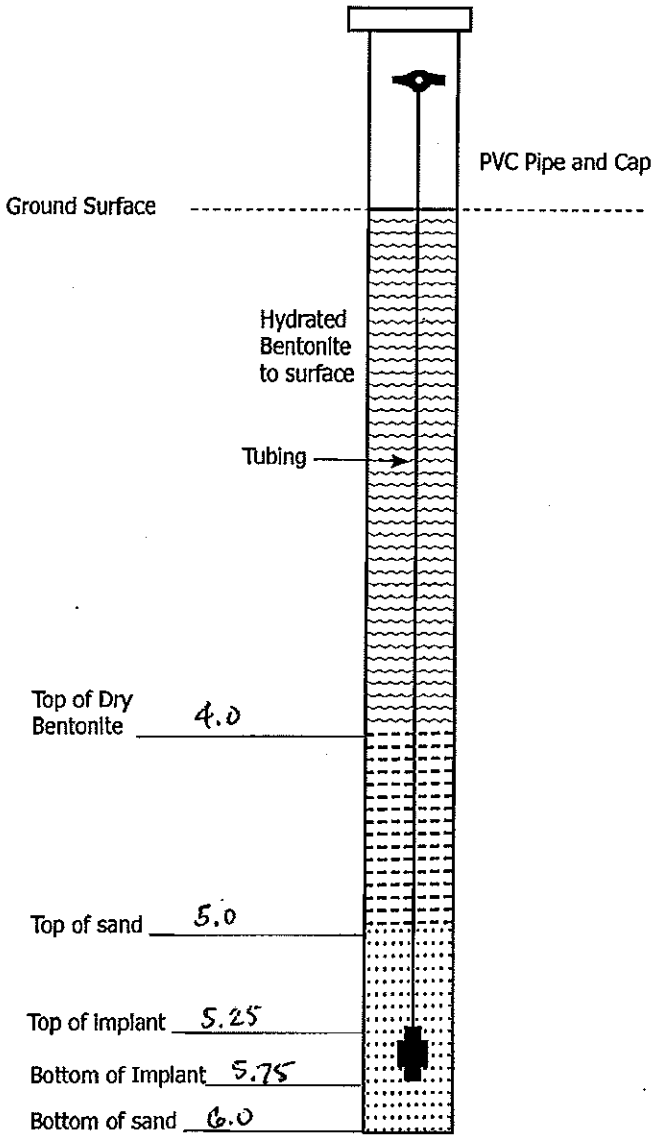
Surface Description: Grassy area E. of 4055

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Silty Sand (sm), yellowish brown (10YR 5/4), loose, dry, fine sand, non-plastic	-	-	-	60	40/
						1	ML	silt, no odors or stains, fill.	-	-	-	15	85/
		33"				2		@ 1.1' Silt (ML) with sand, dark yellowish brown (10YR 4/4), stiff, dry,					
0.0						3		non-plastic silt, fine sand, no stains or odors, fill					
						4		Grades to Sandy Silt, light yellowish brown (10YR 6/4), fill	-	-	-	30	70/
		24"				5							
0.0						6	SM	Silty Sand (sm), brownish yellow (10YR 6/6),	-	-	-	60	40/
							Bd	loose, dry, fine sand, non-plastic silt, native soil					
						7		@ 6' Sandstone, ~~refusal~~ weathered					
						8		TD = 6.0, refusal on ~~sandstone~~ bedrock, install probe @ 5.0 - 6.0					
						9							

Single Soil Vapor Probe Construction Diagram

MWH

Probe ID/Soil ID: SDSV-DG-531
Job #: 10503982.3050105/10503982.3060105
Project: Phase 3 DOE Data Gap Sampling
Site: SD
Reviewed by:
Logged by: V. Vathanaan
Drilling Contractor: EST
Rig Type/Method: Geoprobe 5400 / DP
Driller: Morgan Hughes
Borehole TD: 6.0
Probe Completion Date/Time: 0922 / 5-23-14
Borehole Diameter: 2.25"



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: ~~1/4"~~ Teflon
Diameter: 1/4"
Color: Clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Cemex

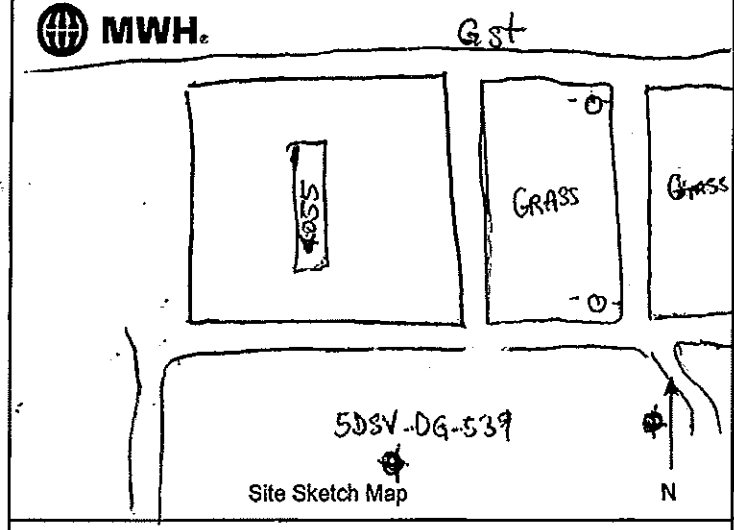
Dry Bentonite
Type: #8
Manufacturer: Cetco

Hydrated Bentonite
Type: #8
Manufacturer: Cetco

Notes:
1. Probes not drawn to scale.

FIGURE 4-1

MWH.



Site Sketch Map

Boring ID: 5DSV-DG-539	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5D
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 9.5
Drill Bit Type: Macrocore	
Drill Start Time/Date: 1125 / 5-23-2014	Drill Finish Time/Date: 1145 / 5-23-2014
Soil Vapor ID: 5DSV-DG-539	Soil Boring Backfill Time/Date: N/A — Backfill Material: N/A
Soil Vapor Well Completion Time/Date: 1201 / 5-23-14	Observations: ☐ Debris ☒ Staining ☐ Odors ☐ Groundwater ☐ None
Soil Vapor Probe Depths (ft.bgs): 4.5-5.5, 8.5-9.5	Surface Completion: Soil vapor probes
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description: 1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (lines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Surface Description:	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
						0	SM-GW	Silty Sand w/ Gravel (SM-GW), dark yellowish brown (10YR 4/4), loose, dry, fine sand, non plastic silt, fine angular gravel, fill	5	-	-	55	40
		34"	NONE			1	ML		5	-	-	30	65
		~~48"~~	V.V			2		Silt w/ sand and gravel (ML), dark yellowish brown (10YR 4/4), med stiff, dry, silt and fine sand, fine gravel, fill	-				
						3		5.5'-6.0' (V.V)					
						4	~~GW~~	~~@1.5-2.0'~~ Well Graded Gravel (GW), light gray (10YR 7/1) to grayish brown (10YR 5/2), friable, dry, fine to coarse gravel with, sandy matrix, fill					
		48"	NONE			5	GW		~~60~~ 70	20	10	5	
						6	SM	Silty Sand (SM), yellowish brown (10YR 5/6), loose, dry, fine sand, low-plasticity silt, possibly native soil, light gray weathering (10YR 7/2) streaks.	-	-	-	60	40
						7							
						8							
		18"	NONE			9							
@3							Br	@ 9.5 - Sandstone, weathered					

TD = 9.5', Refusal on bedrock, set probes at 4.5-5.5 and 8.5-9.5

QA/QC
Surficial media boring log rev 2-25-2014

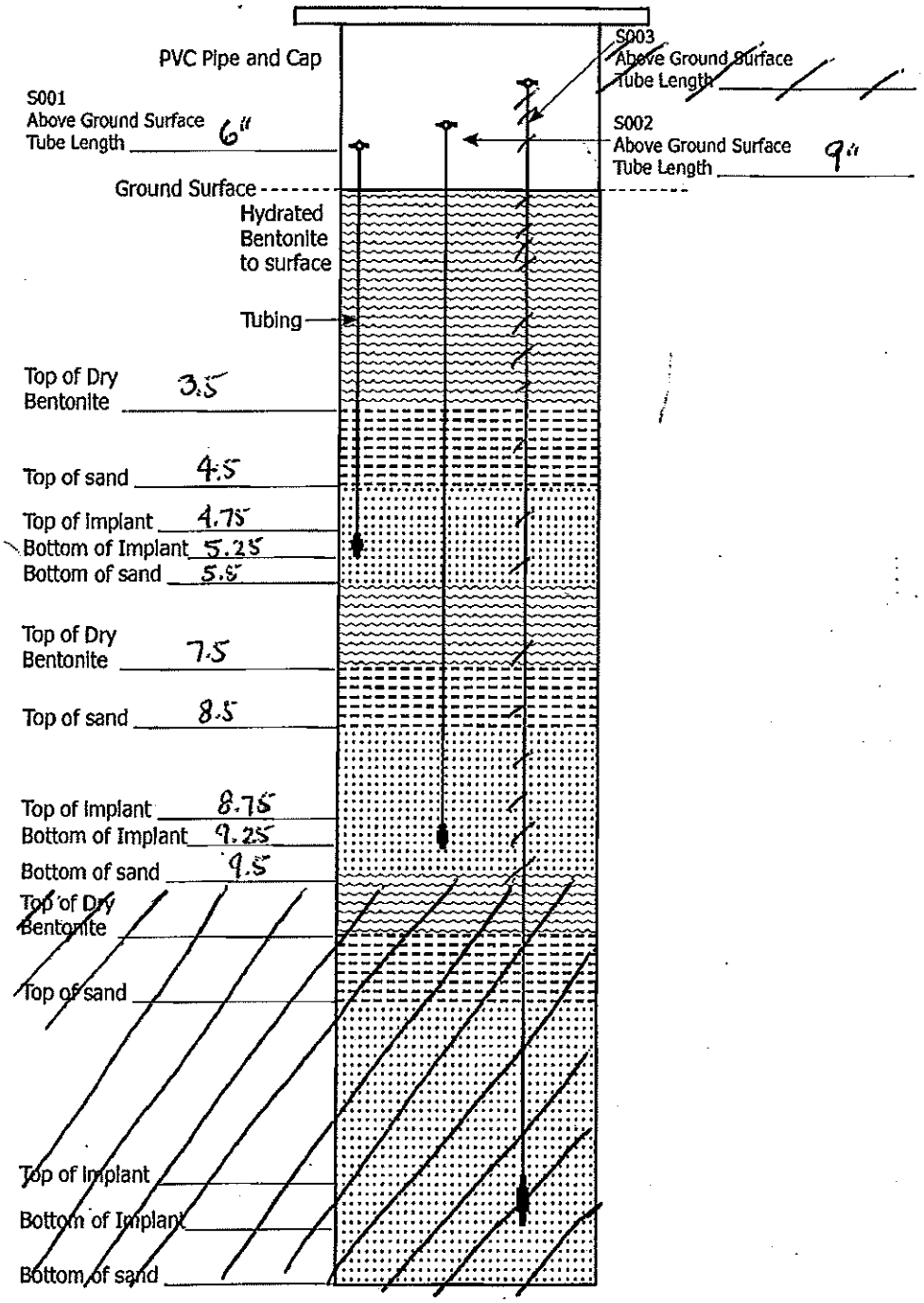
Multiple Soil Vapor Probe Construction Diagram

MWH

Probe ID/Soil ID: SDSV-DG-539
Site: SASD
Drilling Contractor: EST
Borehole TD: 9.5

Project: Phase 3 DoE SV DG
Logged by: V. Vathanasin
Driller: Morgan Hughes
Borehole Diameter: 2.25"

Job #: 10503982
Reviewed by:
Rig Type/Method: Geoprobe 5400/DP
Probe Completion Date/Time: 1201/5-23-14



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: Clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Comerf

Dry Bentonite
Type: #8
Manufacturer: Cetco

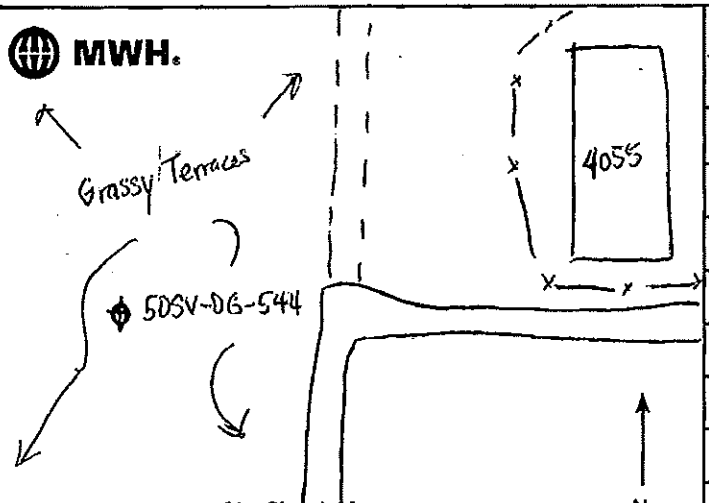
Hydrated Bentonite
Type: #8
Manufacturer: Cetco

Notes:

1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

MWH.



Site Sketch Map

Boring ID: SDSV-DG-544 Sheet 1 of 2

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: SA 5D

Logged By: V. Vathanam Reviewed By:

Drilling Contractor: EST Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5400 / DP

Sampler Type: Macrocore

Borehole Diam (inch): 2.25" Total Depth (ft.bgs): 11.0

Drill Bit Type: Macrocore

Drill Start Time/Date: 1130 / 5-22-14 Drill Finish Time/Date: 1150 / 5-22-14

Soil Vapor ID: SDSV-DG-544

Soil Boring Backfill Time/Date: N/A Backfill Material: N/A

Soil Vapor Well Completion Time/Date: 1205 / 5-22-14

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Soil Vapor Probe Depths (ft.bgs): 4.5-5.5, 10-11.0

Surface Completion: Soil vapor probe

Soil Vapor Well Detail Completed (yes/no)

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Estimated % of Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
								Surface Description: Graded backfill					
						0	ML	Silt (ML) (V.F.), yellowish brown (10YR 5/4), stiff, dry, non-plastic silt, some grass roots, no stains or odors, fill	-	-	-	-	100/
		45"				1							
			NONE			2	CL	Silty Clay (CL), pale brown (10YR 6/3), stiff, moist, low to medium plasticity clay, silt, no odors or stains, fill	-	-	-	-	40/60
						3							
							ML	Silt w/Sand (ML), light yellowish brown (10YR 6/4), stiff, dry, non-plastic silt, fine sand, fill	-	-	-	15	85/
						4							
						5		(CL)					
							CL	Clay, brown (10YR 4/3), stiff, moist, medium plasticity clay, no stains or odors, fill					
		46"	NONE			6							
						7	ML	Sandy Silt (ML), yellowish brown (10YR 5/4), med. stiff, dry, low plasticity silt, fine to medium sand, no odors or stains, fill	-	-	10	25	65/
						8							
						9							
		36"	NONE				SM	Silty Sand (SM), brownish yellow (10YR 6/6), loose, dry, fine sand, non-plastic	-	-	-	70	30/

(cont. next page →)

Boring ID: 5DSV-DG-544 Project: DoE Phase 3 DG SV 2014 Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						10		→ silt, ~~sm~~ yellowish brown (10YR 5/8)					
						11	Br	non staining, native soil					
								Sandstone					
						12		TD = 11.0 ft. refusal on bedrock;					
								Install vapor probes at 4.5-5.5					
						3		and ~~10~~ 10.0-11.0					
						4							
						5							
						6							
						7							
						8							
						9							
						0							
						1							
						2							
						3							
						4							
						5							
						6							
						7							
						8							
						9							

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

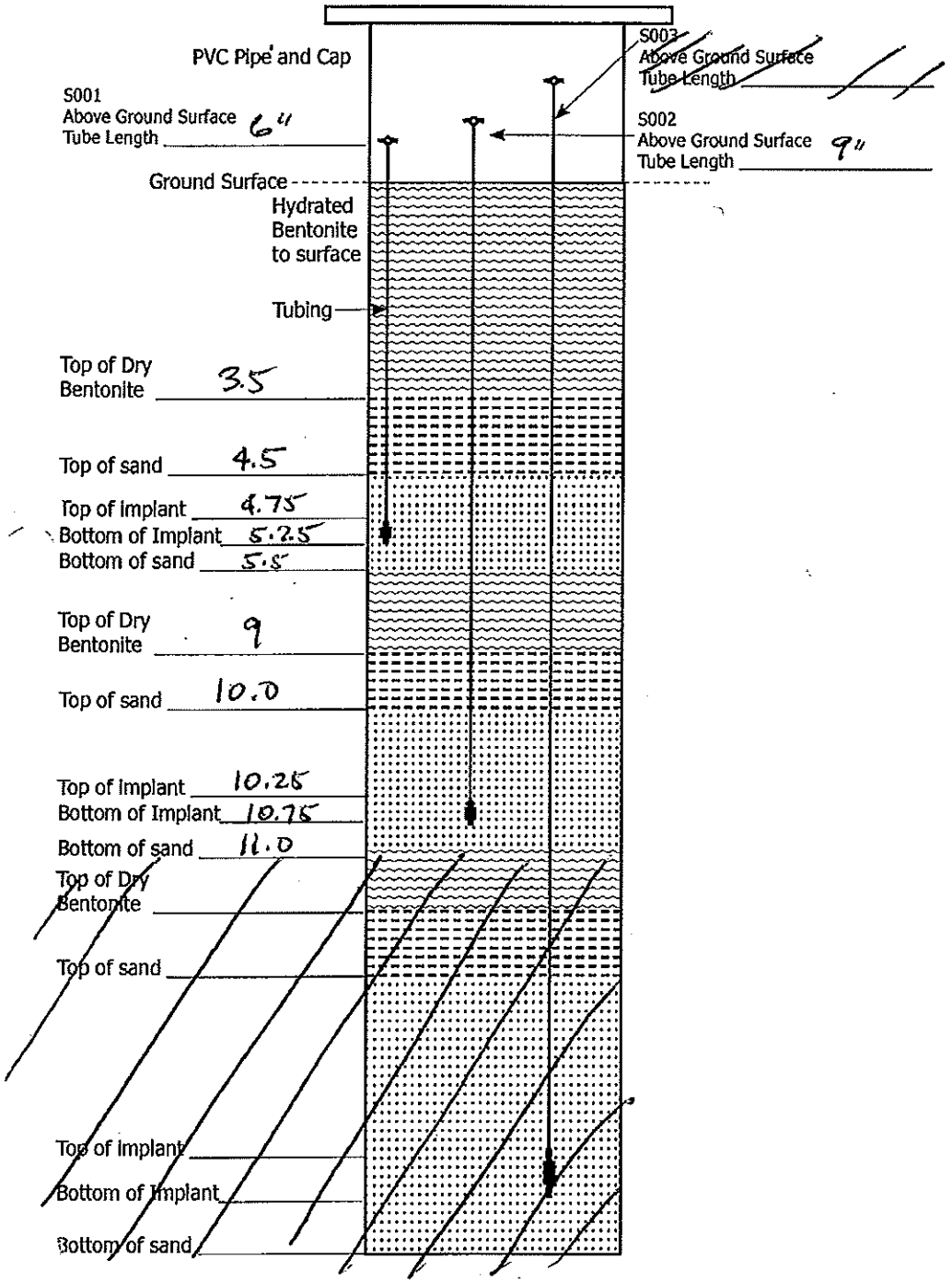
Multiple Soil Vapor Probe Construction Diagram

MWH

Probe ID/Soil ID: SD3V-DG-544
Site: ~~BASD~~ (V.) SD
Drilling Contractor: EST
Borehole TD: 11.0

Project: Phase 3 DOE SVDG
Logged by: V. Vathanasin
Driller: Morgan Hughes
Borehole Diameter: 2.25"

Job #: 10503982
Reviewed by:
Rig Type/Method: Geoprobe 5400 / DP
Probe Completion Date/Time: 1205 / 5-22-1



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: Clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Cemex

Dry Bentonite
Type: #8
Manufacturer: Cetco

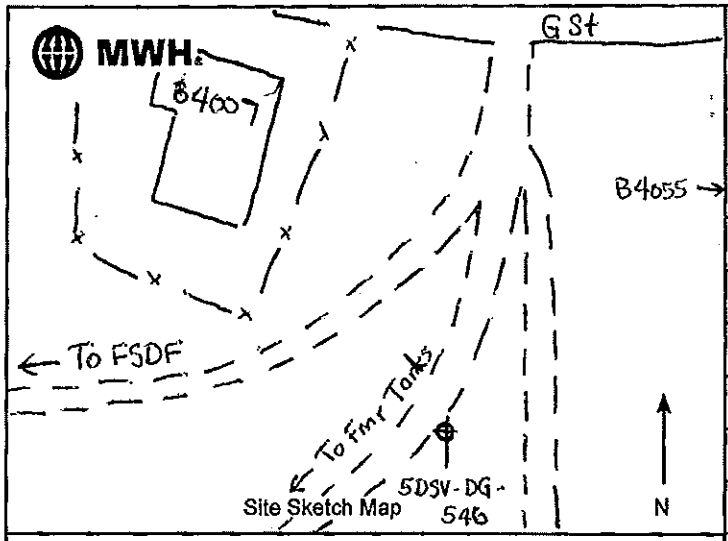
Hydrated Bentonite
Type: #8 ~~Cet~~
Manufacturer: Cetco

Notes:

1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

MWH



Site Sketch Map

Boring ID: 5DSV-DG-546 Sheet 1 of 2

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3060105/ 10503982.3060105 Site: 5D

Logged By: V. Vathanasin Reviewed By:

Drilling Contractor: EST Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 7 5400 / DP

Sampler Type: Macrocore

Borehole Diam (inch): 2.25" Total Depth (ft.bgs): 17.0

Drill Bit Type: Macrocore

Drill Start Time/Date: 0955 / 5-27-14 Drill Finish Time/Date: 1101 / 5-27-14

Soil Vapor ID: 5DSV-DG-546

Soil Boring Backfill Time/Date: N/A Backfill Material: N/A

Soil Vapor Well Completion Time/Date: 1145 / 5-27-14

Observations: ☐ Debris ☒ Staining ☐ Odors ☐ Groundwater ☐ None

Soil Vapor Probe Depths (ft.bgs): 5.0-6.0, 10.0-11.0, 16.0-17.0

Surface Completion: Soil vapor probes

Soil Vapor Well Detail Completed (yes/no)

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description
1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: Adjacent to Gas Pipeline Pipeline Rd

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Estimated % of Sand: Gravel	Coarse	Medium	Fine	Silt/clay
						0	ML	Silt (ML), brown (10YR4/3), stiff, dry, non-plastic silt, few roots, white nodules, fill (reworked native soil), no odors or stains,	--	-	-	-	100/
		36"				1							
						2							
						3							
						4							
						5	CL	Clay (CL), very dark grayish brown (10YR 3/2), stiff, moist, medium plasticity clay, no dilatency, high strength & toughness, fill grades to Sandy Clay, fill - color changes to yellowish brown (10YR 5/6)	-	-	-	-	100
		48"			11:03	6.0			-	-	-	25	100
		SVL-5460-SA5D			dashed line	6	CL						
						7							
						8		@8.5 grades w/ fine to coarse sand, highly weathered sand fragments, fill {(light gray 10YR 7/2)}	-	10	10	15	65
						9							

QA/QC

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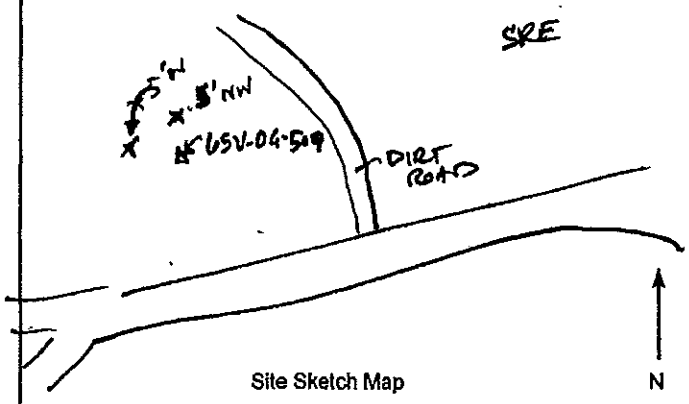
MWH

2-STEPOUTS:
-5'NW
-5'W



Site Sketch Map

Boring ID: GSV-DG-509	Sheet 1 of 2
Project: Phase 3 DOE Data Gap Sampling 2014	
Job #: 10503982.3050106 / 10503982.3060106	Site: SAG 6
Logged By: ANDREW RAYNE	Reviewed By:
Drilling Contractor: EST	Drillers Name: MARTIN KILLMULLEN
Drill Rig Type/Method: GEOPROBE 3400 / DP	
Sampler Type: MACROCORE	
Borehole Diam (inch): 2.25"	Total Depth (ft bgs):
Drill Bit Type: MACROCORE	
Drill Start Time/Date: 0755 6/9/14	Drill Finish Time/Date: 0910 6/9/14
Soil Vapor ID: GSV-DG-509	Soil Boring Backfill Time/Date:
Soil Vapor Well Completion Time/Date: ~~AB 0915~~ 6/9/14	Backfill Material:
Soil Vapor Probe Depths (ft.bgs): 5, 10, 15, 20 (5-6, 10-11, 15-16, 20-21)	Observations: ☒ Debris ☐ Staining ☐ Odors ☐ Groundwater ☐ None
Soil Vapor Well Detail Completed (yes/no)	Surface Completion: SOIL VAPOR PROBE
	Type of Refusal: CONCRETE/WEATHERED BR? ☒ Bedrock ☒ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description / Surface Description	Gravel / Rocks	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0		SILTY SAND (SM) DRY TO SLT. MOIST, YELLOWISH BROWN (10YR 5/4) TO DARK YELLOWISH BROWN; LOOSE FINE TO CS SAND, SATOSR, DEBRIS, CONCRETE, ASPHALT, W/ SM W/ GRAVEL/DEBRIS.	15	15	25	25	20
		48"	—	N/A NONE		2		FILL MATERIAL; SAME, GREY (10YR 6/1) AND WHITE (10YR 8/1) CONCRETE, DARK GRAYISH BROWN SOIL NEAR ASPHALT (10YR 4/2). 0.0 PPM PID. ~15% DEBRIS.					
						4		SAA (SM) - FILL	15	15	25	25	20
		48"	—	N/A NONE		6							
						8		SAA (SM); MOD DENSE TO LOOSE. - FILL; INCREASE CONCRETE/ASPHALT DEBRIS TO 20%.	25	10	25	25	20
		48"											

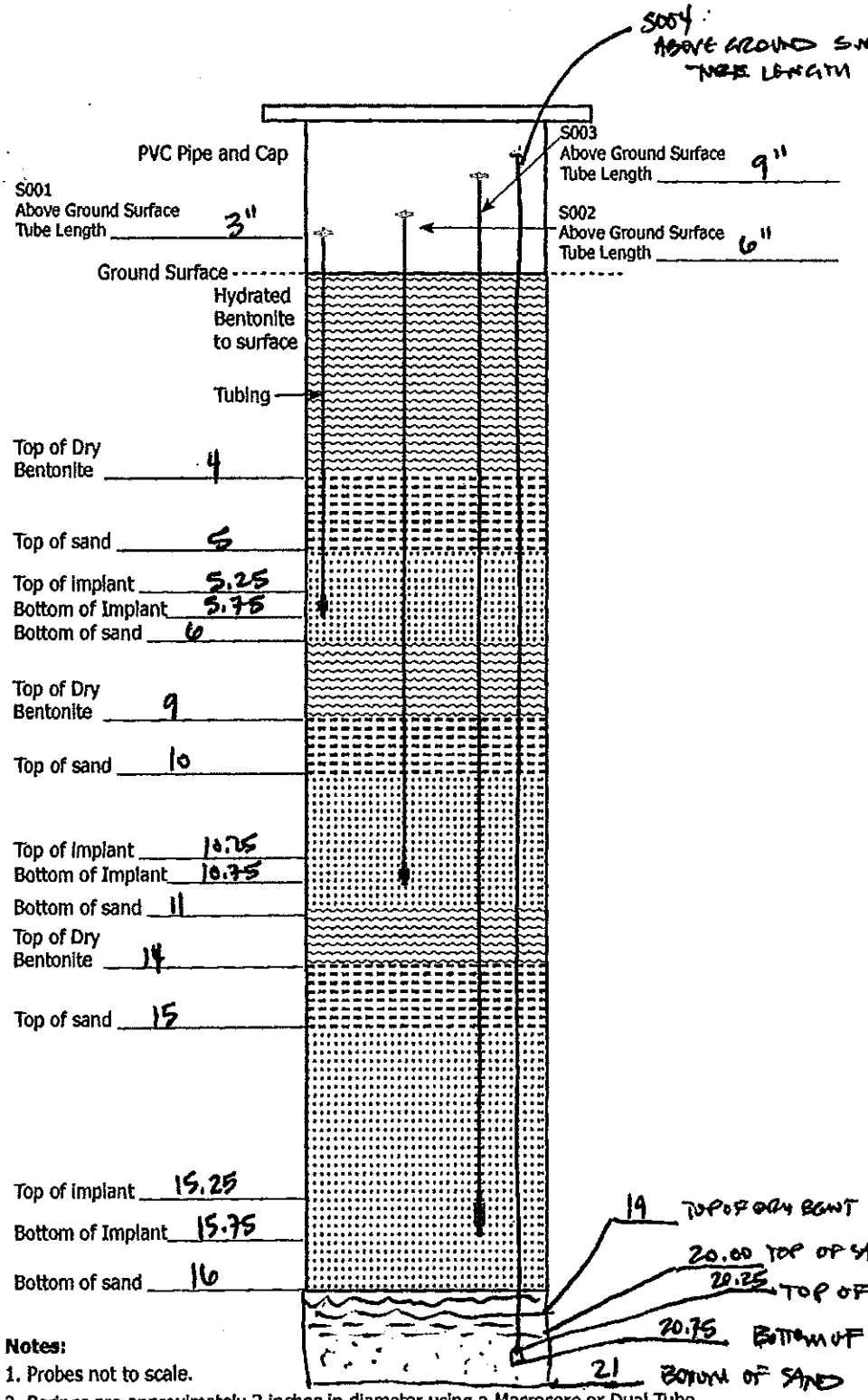
Boring ID: GSV-DG-509 Project: SOIL VAPOR PROBE INSTALLATION Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description: FILL TO 21' (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations	Gravel/Debris	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
				N/A		10		SAA (SM); INCREASE ASPHALT/CONCRETE TO 20%	20	10	25	25	20
0.0		48"	—	NONE	—			- FILL					
						11							
						12							
								SAA (SM); MED. DENSE TO LOOSE.	10	15	35	25	20
				N/A				- FILL					
0.0		24"	—	NONE	—	13							
				N/A		14							
0.0		24"	—	NONE	—								
						15							
						16		SAA (SM); MED DENSE.	10	15	35	25	20
						17							
				N/A									
0.0		48"	—	NONE	—	18							
						19							
						20							
				N/A				SAA (SM); PIECES OF GRAVEL ~ 1/4" - 1/2"	10	15	35	25	20
0.0		12"	—	NONE		21		DIA.; POTENTIAL WITHD BEDROCK @ 21' BGS					
								COULD ALSO BE GRAVELLY PIECES BROKEN UP					
						22		BY DP. RIG.					
								TD = 21'					
						23							
								REFUSAL @ 21' ON GRAVEL DEBRIS OR					
								POTENTIAL BEDROCK/LITHIFIED.					
						24		- INSTALL NESTED PROBES 20-21, 15-16,					
								10-11, 5-6 @ 0915.					
						5							
						6							
						7							
						8							
						9							

MWH

Multiple Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: GSV-DG-S09
Site: SA 6
Drilling Contractor: EST
Borehole TD: 21' BGS.
Project: Phase 3 DOE Data Gap Sampling 2014
Logged by: Andrew Rayne
Driller: Martin Kilhullen
Borehole Diameter: 2.25"
Job #: 10503982.3050105/10503982.3060105
Reviewed by:
Rig Type/Method: Geoprobe 5400 / DP
Probe Completion Date/Time: 6/9/14 0915



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: Clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Cemex

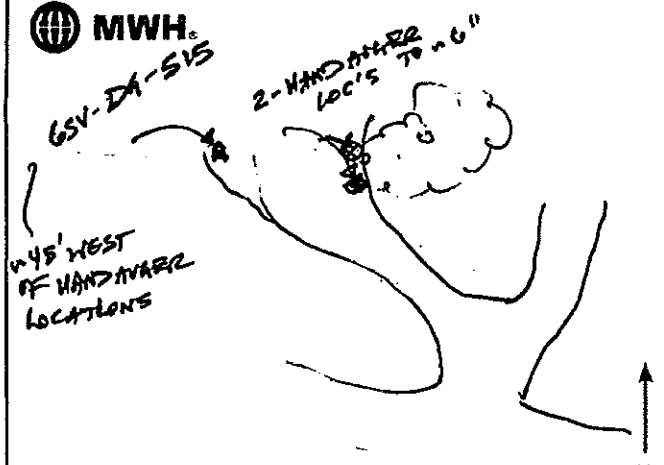
Dry Bentonite
Type: #8
Manufacturer: CETCO

Hydrated Bentonite
Type: #8
Manufacturer: CETCO

Notes:
1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

MWH



Site Sketch Map

Boring ID: GSV-DG-515 Sheet 1 of 1

Project: Phase 3 DOE Data Gap Sampling 2014

Job #: 10503982.3050106 / 10503982.3060106 Site: SA 6

Logged By: ARAUNG Reviewed By:

Drilling Contractor: EST Drillers Name: MARTIN KILLINGSON

Drill Rig Type/Method: GEOPROBE 5410 / D.P.

Sampler Type: NO SAMPLING / DUAL TUBE SY SYSTEM

Borehole Diam (inch): 2.25" Total Depth (ft bgs): 8.9'

Drill Bit Type: MARO CORE

Drill Start Time/Date: 1100 6/9/14 Drill Finish Time/Date: 1130 6/9/14

Soil Vapor ID: GSV-DG-515

Soil Boring Backfill Time/Date: N/A Backfill Material: ~~GRAVEL~~ (A)

Soil Vapor Well Completion Time/Date: 1130 6/9/14

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Soil Vapor Probe Depths (ft.bgs): 7.9-8.9 ~~7"3/4" - 8'3/4"~~ (A)

Surface Completion: SOIL VAPOR PROBE

Soil Vapor Well Detail Completed (yes/no) ~~7.75 - 8.75~~ (A)

Type of Refusal: ☐ Bedrock ☐ Debris ☐ Gravel ☒ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
								Surface Description: 3/4" GRAVEL					
0.0	X	3	—	N/A	—	0	GP	APPROX 3" OF 3/4" GRAVEL ON SURFACE TO 3" BGS.	100	—	—	—	—
				NONE			SM		10		10	55	25
						1		SILTY SAND (SM) DRY, LOOSE, BROWN (10YR 4/3), FINE TO MED SAND, RNED. FINE, APPROX 3" TO 8"; FILL MATERIAL; ~10% GRAVEL.					
						2							
						3		- HAND AUGER ~5' WEST OF STAKED LOC. - REFUSAL @ 8" → SRP TO NORTH ~3' - REFUSAL @ 6" W/ HAND AUGER.					
						4		- MOB. GEOPROBE TO AREA AND LOCATE SOIL VAPOR PROBE LOCATION ~45' WEST OF HAND AUGER LOCATIONS.					
						5							
						6		- DIRECTIT (A) GEOPROBE W/ DUAL CORE SYSTEM TO INSTALL PROBE; DEPTH OF REFUSE W/ DUAL CORE => 8.9' ~~8'3/4"~~ BGS. (A)					
						7		- INSTALL SV PROBE ~~7'3/4" - 8'3/4"~~ (A) ~~7.75' - 8.75'~~ (A) - NO SAMPLING 7.9'-8.9'					
						8							
						9							

QA/QC

Surficial media boring log rev 2-25-2014

Single Soil Vapor Probe Construction Diagram

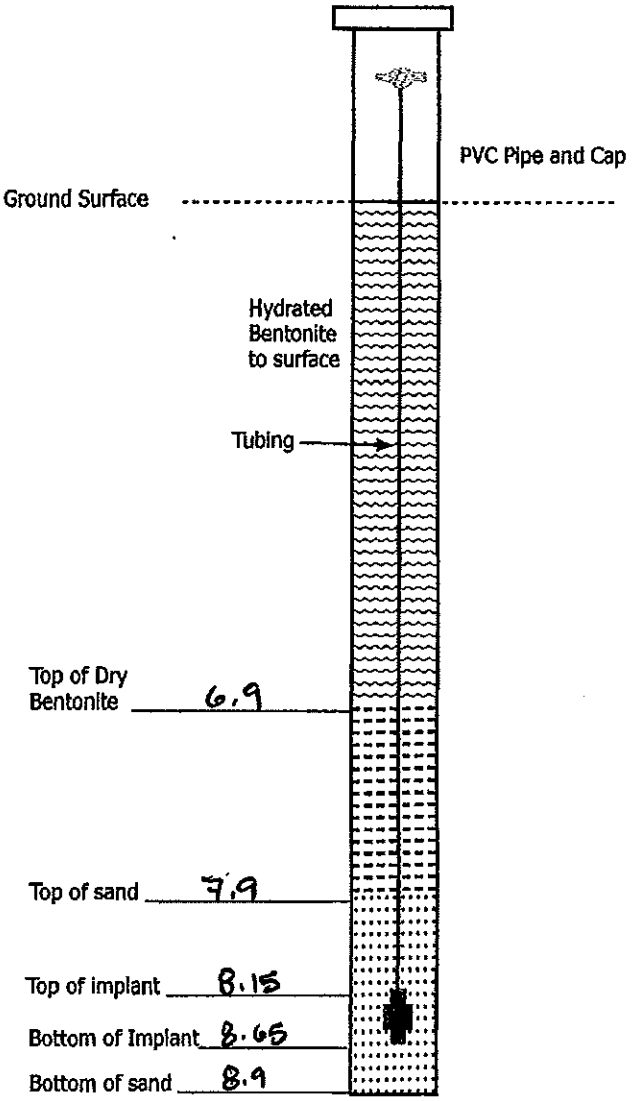
MWH

Probe ID/Soil ID: GSI-DA-SV5 | Job #: 10503982.3050106/10503982.3060106 | Project: Phase 3 DOE Data Gap Sampling 20

Site: SA 6 | Reviewed by: | Logged by: ANDREW PAYNE

Drilling Contractor: EST | Rig Type/Method: GEOPROBE 5400 / D.P. | Driller: MARTIN KILHOLLEN

Borehole TD: 8.9' | Probe Completion Date/Time: 6/9/14 1130 | Borehole Diameter: 2.25"



Vapor Implant Specs

Material: STAINLESS STEEL

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: TEFLON

Diameter: 1/4"

Color: CLEAR

Sand Pack Specs

Grain Size: #3

Manufacturer: CEMEX

Dry Bentonite

Type: #8

Manufacturer: CETCO

Hydrated Bentonite

Type: #8

Manufacturer: CETCO

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH

Boring ID: GSV-DG-528 | Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 | Site: SA 6

Logged By: ANDREW AMING | Reviewed By:

Drilling Contractor: | Drillers Name: MARTIN KILMARLEN

Drill Rig Type/Method: GEOPROBE 5400 / D.P.

Sampler Type: MACROCORE

Borehole Diam (inch): 2.25" | Total Depth (ft.bgs): 7'

Drill Bit Type: MACROCORE

Drill Start Time/Date: 1400 / 6/9/14 | Drill Finish Time/Date: 1420 / 6/9/14

Soil Vapor ID: GSV-DG-528

Soil Boring Backfill Time/Date: N/A | Backfill Material: N/A

Soil Vapor Well Completion Time/Date: 1430 6/9/14

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

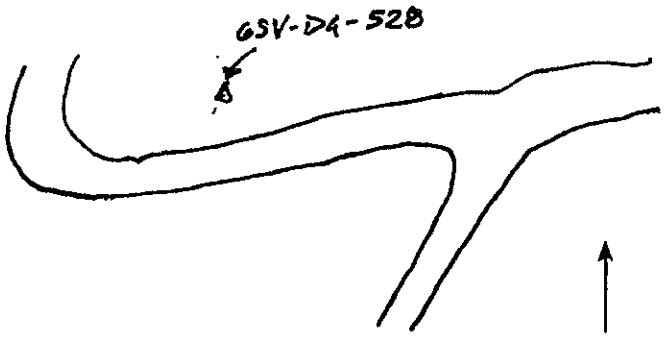
Soil Vapor Probe Depths (ft.bgs): 5.5 - 6.5'

Surface Completion: SOIL VAPOR PROBE

Soil Vapor Well Detail Completed (yes/no)

Type of Refusal: SS/SH
☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Site Sketch Map



PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0		Surface Description: GRASSES, SHRUBS					
0.0		40"	—	N/A NONE	—	1		SILTY SAND (SM), DRY, BROWN (10YR4/3), LOOSE, FINE TO MED SND, SUBANGULAR TO SUBROUNDED, TRACE COARSE SND; FILL MATERIAL; TRACE ROOTS.	—	5	25	45	25 → 20
						2							
						3							
						4	SP-SM	SAND W/ SILT (SP-SM), DRY, YELLOWISH BROWN (10YR5/4), FINE SND; SUBANGULAR TO SUBROUNDED, NATIVE ALLUVIUM.	—	—	10	75	15
						5							
0.0		36"	—	N/A NONE	—	6		WEATHERED SS/SH; DRY, PALE BROWN (10YR6/3) TO BROWN (10YR5/3), FINE SND, SUBROUNDED, WEAK FOLIATE.	—	—	—	60	40 → 40
						7	SS/SH					60	40
						8		TD = 7'; REFUSAL @ 7'					
								INSTAL SV PROBE @ 5.5-6.5					
						9		GSV-DG-528 @ 1430					

Soil Description
1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

MWH

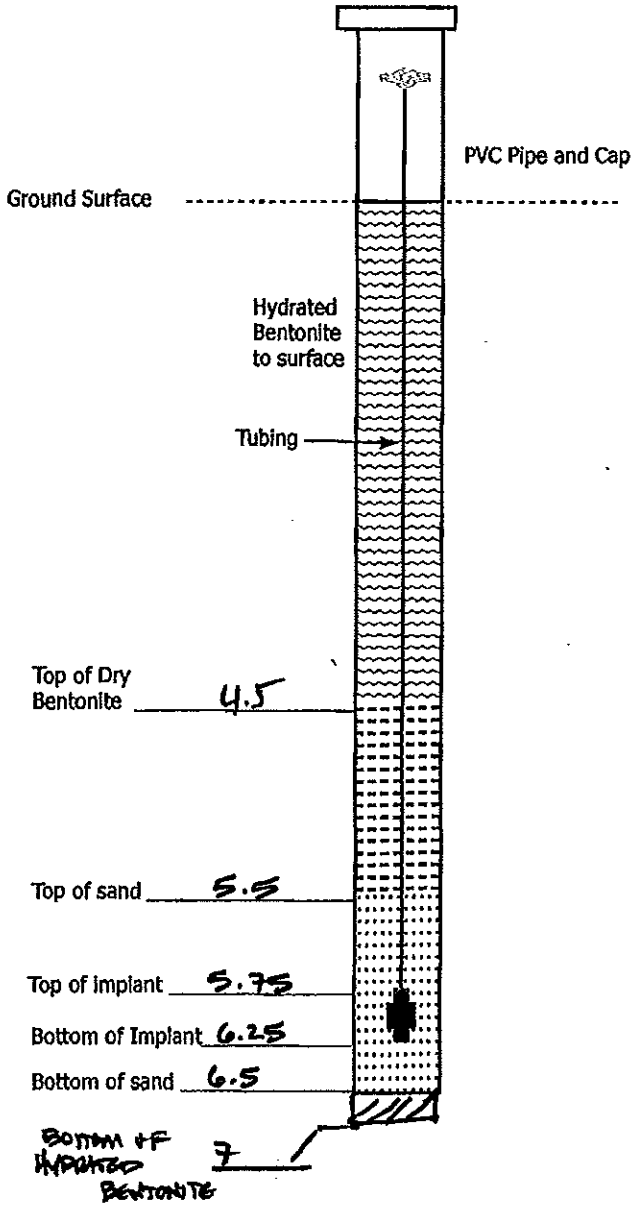
Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: GSV-DH-528 | Job #: 10503982.3050106/10503982.3060106 | Project: Phase 3 DOE Data Gap Sampling 20

Site: SA 6 | Reviewed by: | Logged by: ANDREW PAYNE

Drilling Contractor: EST | Rig Type/Method: GEOPROBE 6400 / D.P. | Driller: MARTIN KILMURRAY

Borehole TD: 7' | Probe Completion Date/Time: 6/9/14 1430 | Borehole Diameter: 2.25"



Vapor Implant Specs

Material: STAINLESS STEEL

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: TEFLON

Diameter: 1/4"

Color: CLEAR

Sand Pack Specs

Grain Size: #3

Manufacturer: CEMEX

Dry Bentonite

Type: #8

Manufacturer: CETCO

Hydrated Bentonite

Type: #8

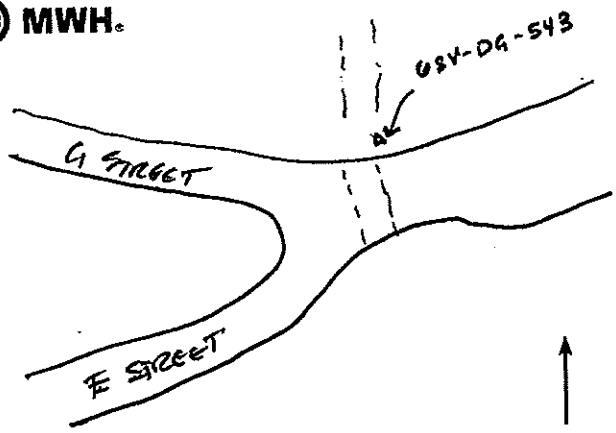
Manufacturer: CETCO

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH.



Site Sketch Map

Boring ID: 6SV-DG-543	Sheet 1 of 2
Project: Phase 3 DOE Data Gap Sampling 2014	
Job #: 10503982.3050106 / 10503982.3060106	Site: SA 6
Logged By: ANDREW PAYNE	Reviewed By:
Drilling Contractor: EST	Drillers Name: MARTIN KILHULLEN
Drill Rig Type/Method: GEOPROBE 5400 / D.P.	
Sampler Type: MACROCORE	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 9.0
Drill Bit Type: MACROCORE	
Drill Start Time/Date: 0803 6/11/14	Drill Finish Time/Date: 0825 6/11/14
Soil Vapor ID: 6SV-DG-543	Soil Boring Backfill Time/Date: N/A — Backfill Material: N/A
Soil Vapor Well Completion Time/Date: 6/11/14 0830	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): 7.5-8.5'	Surface Completion: SV PROBE
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description: 1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: ROAD SIDE, GRASSES, SOME ROAD BASE GRAVEL ½" DIA

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
						0	SM	SILTY SAND (SM), DRY TO MOIST, BROWN (10YR 4/4) TO STRONG BROWN (7.5 4/6), FILL,	5	–	35	40	20
0.0		48"	–	N/A NME	–	1–2		FINE TO MED. SAND, SA TO SR, TRACE PEA SIZE ASPHALT. FILL MAT'L; NO ODOR. LOOSE TO MED DENSE.					
						3							
						4	SM	@ 4.5' INCREASE SILT/FINES TO 25%; (SM) SILTY SAND, MOIST, FINE TO MED. SA TO SR,	–	–	35	40	25
0.0		48"	–	N/A NME	–	5–6		NATIVE; BROWN TO YELLOWISH BROWN (10YR 5/4), STRG BROWN OXIDATION (7.5YR 4/6); ALLUVIUM. LOOSE TO MED. DENSE.					
						7	SM	@ 6.5-7 INCREASE SILT/FINES TO CLAYEY FINES ~30%; NATIVE ALLUVIUM. MED DENSE.	–	–	30	40	30
0.0		12"	–	N/A NME	–	8–9	SP-SM	SAND W/SILT (SP-SM), DRY TO MOIST, YELLOWISH BRN (10YR 5/4), OXIDATION; NATIVE ALLUVIUM. FINE TO MED SAND; SA TO SR. LOOSE.					
						9		WEATHERED SS/SH BEDROCK, DRY TO MOIST, YELLOWISH BRN (10YR 5/4), FINE TO MED, ANG TO SR, WEAK, FRIABLE, SH IS GRAYISH BRN (10YR 5/4)	–	–	30	65	5

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Boring ID: GSI-DA-543 Project: SV PROBE INSTALL DA AREA IV Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
		12"				10		REFUSAL @ 9'					
								TD = 9'					
						11		- SV PROBE INSTALLED @ 7.5-8.5' @ 0830					
						12		- BENTONITE FROM 8.5-9' (R)					
						3							
						4							
						5							
						6							
						7							
						8							
						9							
						0							
						1							
						2							
						3							
						4							
						5							
						6							
						7							
						8							
						9							

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

REFUSAL @ 9' TO 9-12" INTERVAL

MWH

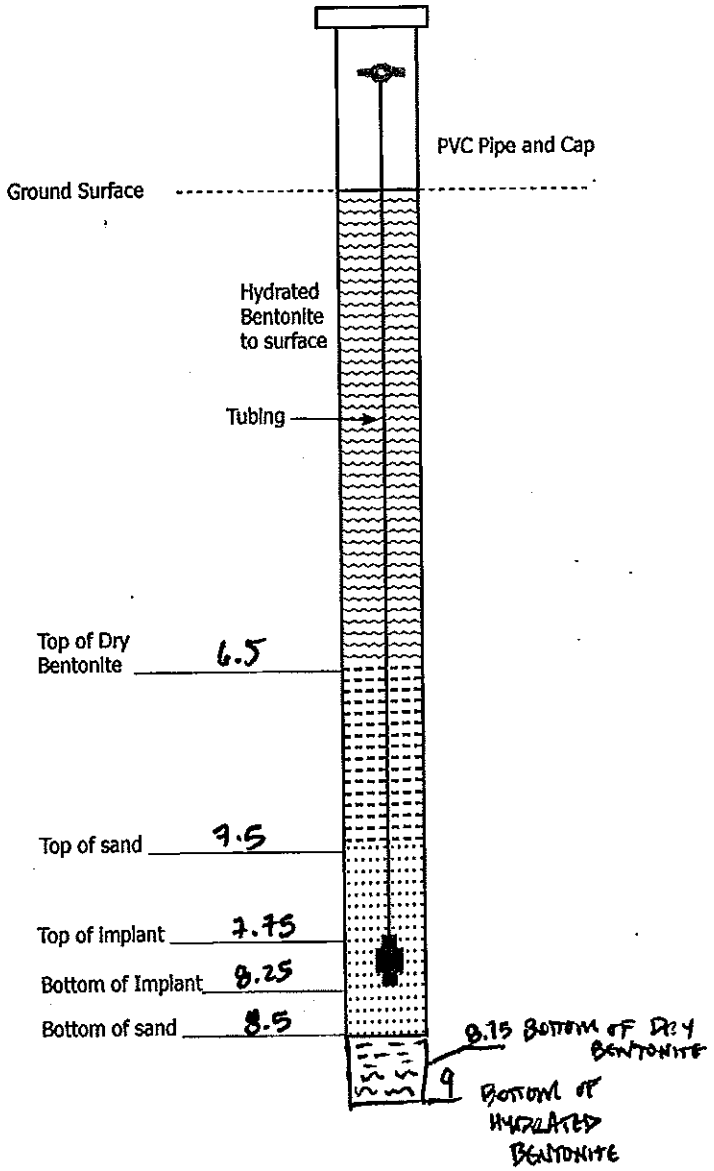
Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: GSV-DP-543 | Job #: 10503982.3050105/10503982.3060105 | Project: Phase 3 DOE Data Gap Sampling 2014

Site: SA 6 | Reviewed by: | Logged by: ANDREW BOYNE

Drilling Contractor: EST | Rig Type/Method: GEOPROBE 6400 / D.P. | Driller: EST - MARTIN WILHELM

Borehole TD: 9' | Probe Completion Date/Time: 6/11/14 0830 | Borehole Diameter: 2.25"



Vapor Implant Specs

Material: STAINLESS STEEL

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: TEFLON

Diameter: 1/4"

Color: CLEAR

Sand Pack Specs

Grain Size: #3

Manufacturer: CEMEX

Dry Bentonite

Type: #8

Manufacturer: CETCO

Hydrated Bentonite

Type: #8

Manufacturer: CETCO

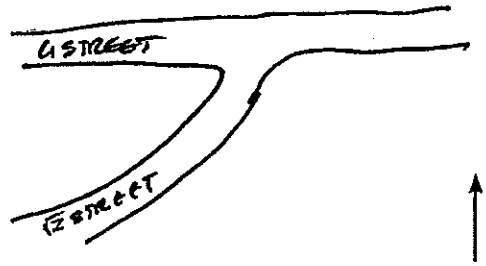
Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH

GSV-DA-544



Site Sketch Map

Boring ID: GSV-DA-544	Sheet 1 of 2
Project: Phase 3 DOE Data Gap Sampling 2014	
Job #: 10503982.3050106 / 10503982.3060106	Site: SA 6
Logged By: ANDREW PAYNE	Reviewed By:
Drilling Contractor: EST	Drillers Name: MARTIN KILLINGSWORTH
Drill Rig Type/Method: 5400 GEOPROBE / D.P.	
Sampler Type: MACROCORE	
Borehole Diam (inch): 2.25"	Total Depth (ft bgs): 14'
Drill Bit Type: MACROCORE	
Drill Start Time/Date: 0705 6/10/14	Drill Finish Time/Date: 0820 6/10/14
Soil Vapor ID: GSV-DA-544	Soil Boring Backfill Time/Date: N/A
Soil Vapor Well Completion Time/Date: 6/10/14	Backfill Material: N/A
Soil Vapor Probe Depths (ft.bgs):	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Well Detail Completed (yes/no)	Surface Completion: SOIL VAPOR PROBE
	Type of Refusal: SS / ENCOUNTERED ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description / Surface Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	SILTY SAND (SM), DRY, LOOSE, BROWN (10YR 4/3) TO DARK YELLOWISH BROWN (10YR 4/4), FINE TO MED SAND, SUBANG-SUBRND, TRACE COARSE SAND, ROOTS IN UPPER 2'; NATIVE SOIL/ALLUVIUM.	–	5	15	55	25
0.0		42"	–	N/A NONE	–	1							
						2							
						3							
						4							
						5	SP-SM	SAND W/ SILT (SP-SM), FINE TO MEDIUM, SAND, YELLOWISH BROWN (10YR 5/4), DRY, LOOSE TO MED DENSE, SAND IS ANGULAR TO SUBRNDED; SOME COARSE SAND.	–	10	25	50	15
0.0		48"	–	N/A NONE	–	6							
						7							
						8							
						9							
0.0		48	–	N/A NONE	–								

Boring ID: GSV-DG-544 Project: SV PROBE INSTALLATION Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
								1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations					
0.0		48"	—	N/A NONE	—	0	SP-SM	CONT SP-SM TO 10.5' BGS					
						1	SS WEATHERED	(SS) WEATHERED SS BEDROCK, FINE TO MEDIUM SAND, DRY, PALE BROWN (10YR 6/3), SOME YELLOWISH BROWN OXIDATION (10YR 5/8); FRIABLE WEAK, DRY/ICED LOOSE FROM 10.5-12; FROM 12-14 SOME PIECES OF SS ~ 1/4" DIAM.; NATIVE WEATHERED SS.	—	—	25	70	5
						2							
0.0		24"	—	N/A NONE	—	3							
						4							
						5		TD = 14'; REFUSAL @ 14'					
						6		SET SV PROBES @ 5-6, 10-11; @ 0830					
						7							
						8							
						9							
						0							
						1							
						2							
						3							
						4							
						5							
						6							
						7							
						8							
						9							

MWH.

Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: ~~GSV-544~~ GSV-DG-544

Site: SA 6

Drilling Contractor: EST

Borehole TD: 14'

Job #: 10503982.3050105/10503982.3060105

Reviewed by:

Rig Type/Method: GEOPROBE 5400 / D.P.

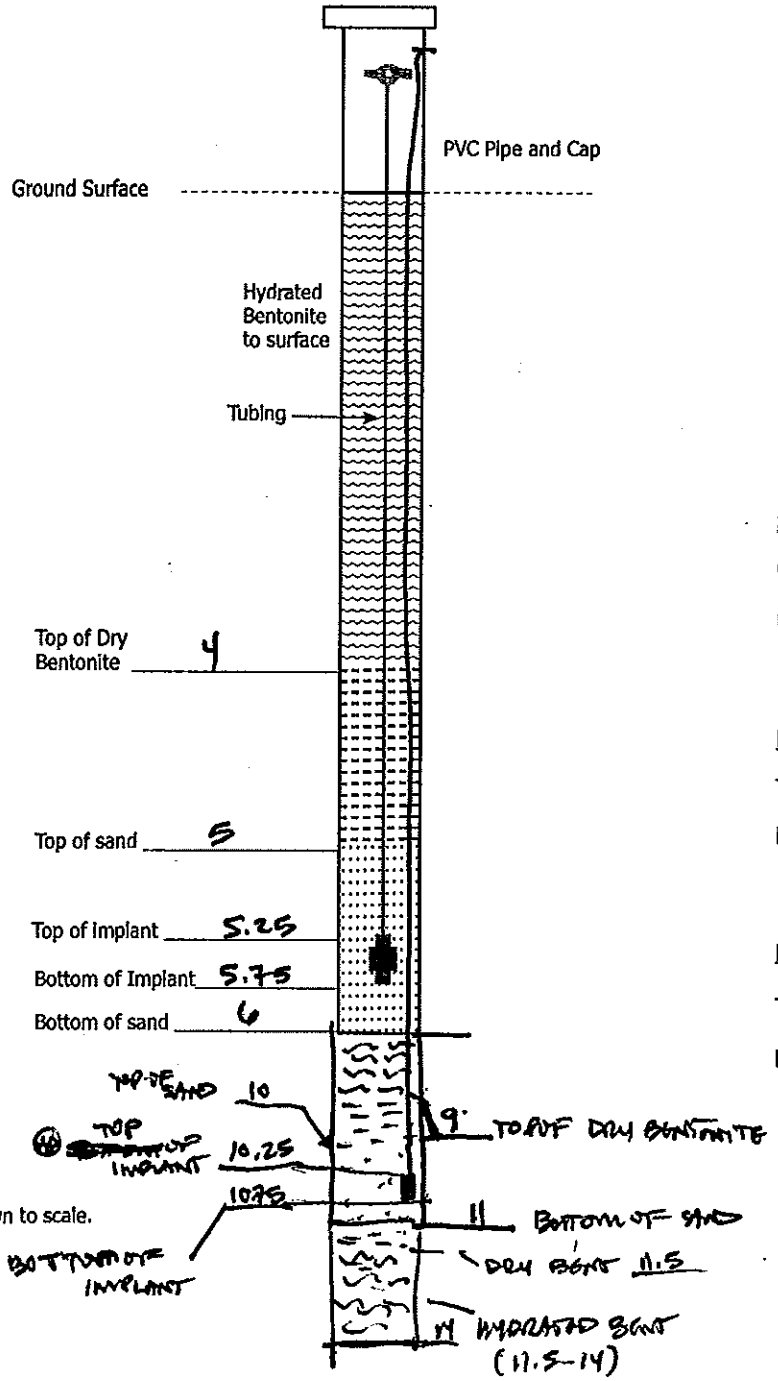
Probe Completion Date/Time: 6/10/14 0830

Project: Phase 3 DOE Data Gap Sampling 2014

Logged by: ANDREW PAYNE

Driller: MARTIN KILHYUGN

Borehole Diameter: 2.25"



Vapor Implant Specs

Material: STAINLESS STEEL

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: TEFLON

Diameter: 1/4"

Color: CLEAR

Sand Pack Specs

Grain Size: #3

Manufacturer: CEMEX

Dry Bentonite

Type: #8

Manufacturer: CETCO

Hydrated Bentonite

Type: #8

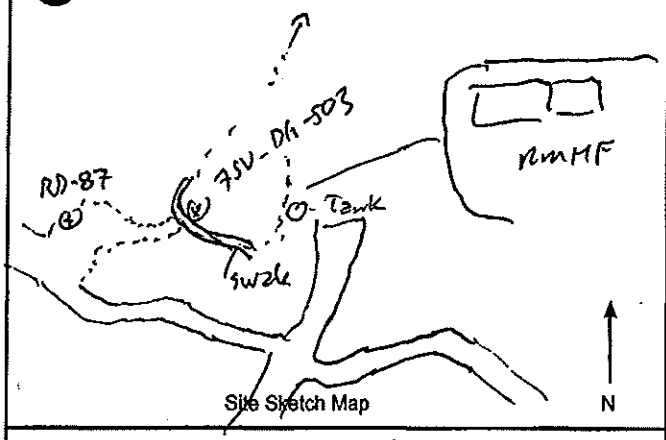
Manufacturer: CETCO

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH.



Site Sketch Map

Boring ID: 7SV-DG-503	Sheet 1 of 2
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 7
Logged By: ROBELLIS	Reviewed By:
Drilling Contractor: EST	Drillers Name: MORGAN HUGHES
Drill Rig Type/Method: Geoprobe 5400	
Sampler Type: MACROCORE	
Borehole Diam (inch): 2.25'	Total Depth (ft.bgs): 14.0'
Drill Bit Type: MACROCORE	
Drill Start Time/Date: 08:20 10 JUN 14	Drill Finish Time/Date: 09:07 10 JUN 14
Soil Vapor ID: 7SV_DG-503	Soil Boring Backfill Time/Date: N/A — Backfill Material: N/A
Soil Vapor Well Completion Time/Date: 10 JUN 14, 7-8 09:00, 12-13 09:35	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): 7.0'-8.0'; 12.0'-13.0'	Surface Completion: Sv probe
Soil Vapor Well Detail Completed (yes/no) attached.	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description: verba santa, coyote bush.

1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: (E) edge of concrete swale

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
0.0 ppm		48"				0	GW	0.0-0.9 Well graded gravel (GW), white (10YR 8/1). Loose, dry. Some coarse sand, little gravel, medium/fine sand (20% each). Few silt (10). No stain, no odor, fill. under concrete swale; + gravel bag remnant.	20	30	20	20	10
0.0 ppm		40"				4	SP-SM	0.9-9.5 Poorly sorted sand with silt (SP-SM) light yellowish brown (10YR 6/4). Loose, dry. Mostly fine sand (75), little silt (20), few medium sand (5), trace coarse sand. No stain, no odor. Disturbed native soil as fill.	-	TR	5	75	20
0.0 ppm		48"				8	SM	9.5-10.2 Silty sand (SM). dark yellowish brown (10YR 3/4). Very loose, dry. Mostly fine (60), little silt (30), few medium (10). No stain, no odor. Native soil.	-	-	10	60	30

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Boring ID: 7SV-DH-503 Project: Phase 3 DOE SVDG 2014 Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						10	SM	10.2 – 14.0					
						11		Poorly graded sand (SP) dark yellowish brown (10YR 4/4), loose, dry. Mostly fine sand (70), little medium (15), few silt (10), few coarse, no stain, no odor. Native	–	5	15	70	10
		24"				12	SP						
						13		– Shale bed ≈ 2.5" thick at 13.2' bgs; weathered bedrock at 13.4' bgs to TD.					
					TD	14	SM						
						5		TD = 14.0' w/ refusal on bedrock sandstone.					
						6							
						7		2 probes set.					
						8		Moved stake approximately 30–40' west of staked location along swale on west side of basin.					
						9							
						0							
						1							
						2							
						3							
						4							
						5							
						6							
						7							
						8							
						9							

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (Fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

MWH

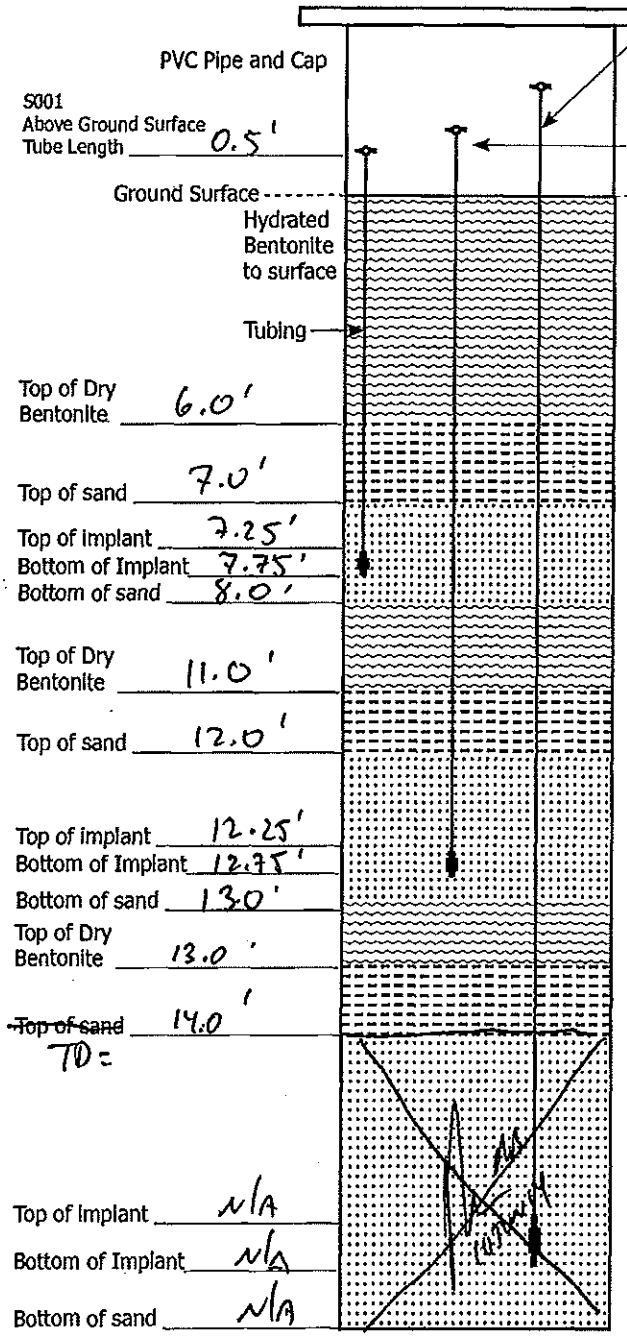
Multiple Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: 7SV_DG-503 | Project: Phase 3 DOE SVMA 2014 | Job #: 10503982.3050105

Site: 7 | Logged by: RUSSELLS | Reviewed by: _____

Drilling Contractor: EST | Driller: MORGAN | Rig Type/Method: Geoprobe 5400

Borehole TD: 14.0' bgs | Borehole Diameter: 2.25" | Probe Completion Date/Time: 10JUN14. shallow 09:30, deep 09:35



Vapor Implant Specs

Material: stainless steel

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: teflon

Diameter: 1/4"

Color: clear

Sand Pack Specs

Grain Size: #3 sand

Manufacturer: Cemex

Dry Bentonite

Type: #8 crumbles

Manufacturer: Cetco

Hydrated Bentonite

Type: #8 crumbles

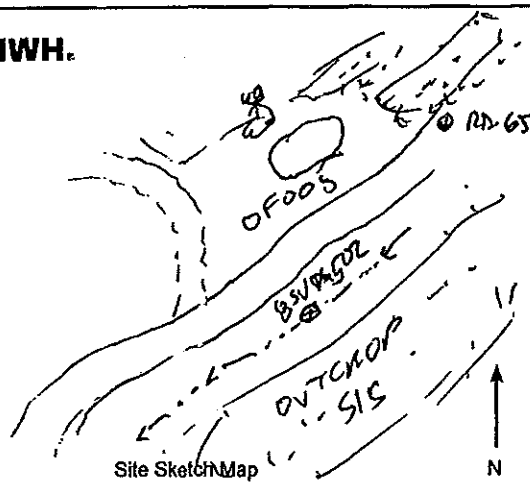
Manufacturer: Cetco

Notes:

1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

MWH



Site Sketch Map

Boring ID: SSV_DG-502 Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: 8

Logged By: RM Ellis Reviewed By:

Drilling Contractor: EST Drillers Name: MORGAN HUGHES

Drill Rig Type/Method: ~~Hand~~ MACROCORE Geoprobe 5400

Sampler Type: MACROCORE

Borehole Diam (inch): 2.25" Total Depth (ft bgs): 5.45'

Drill Bit Type: MACROCORE

Drill Start Time/Date: 12 JUN 14 11:20 Drill Finish Time/Date: 12 JUN 14 11:25

Soil Vapor ID: SSV_DG-502

Soil Boring Backfill Time/Date: N/A Backfill Material: N/A

Soil Vapor Well Completion Time/Date: 12 JUN 14; 12:00

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☑ None

Soil Vapor Probe Depths (ft bgs): 4.45' – 5.45'

Surface Completion: SV Probe

Soil Vapor Well Detail Completed (yes/no) attached

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description mustard, mild odor

1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: shelves. clayey sand

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
		32"				0	SM SC	Silty sand (SM) - Silty clay (SC). Yellowish brown (10YR 5/4) with yellowish brown oxide mottled stains (10YR 5/6). Moist, fine sand and clay (silt) mix, non plastic, low to high medium dry strength, slow dilatancy, No stain, no odor. Fill.	-	-	10	50/55	40-45
		23"				5		TD = 5.45' w/ refusal on sandstone bedrock					
						6							
						7							
						8							
						9							

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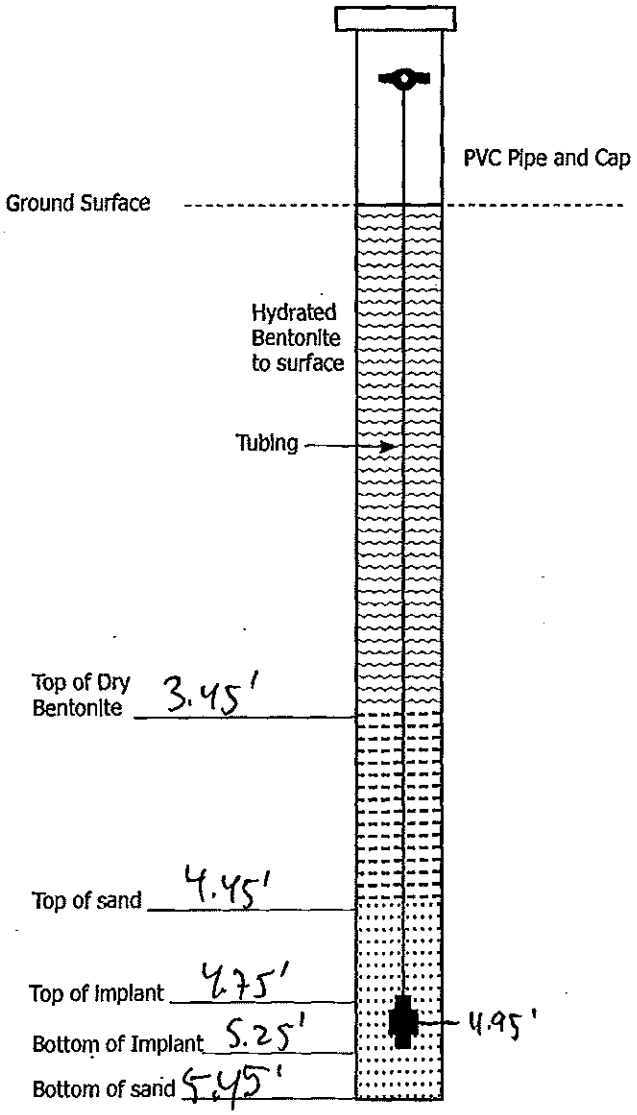
MWH.

Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: 8SV_DG-502
Job #: 10503982.3050105/10503982.3060105
Project: Phase 3 DOE Data Gap Sampling 2
Site: 8
Reviewed by:
Logged by: Robbins
Drilling Contractor: EST
Rig Type/Method: Geoprobe 5400
Driller: Morgan Hughes
Borehole TD: 5.45' bgs
Probe Completion Date/Time: 12JUN14; 12:00
Borehole Diameter: 2.25"



Vapor Implant Specs
Material: stainless steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: teflon
Diameter: 1/4"
Color: clear

Sand Pack Specs
Grain Size: #3 Sand
Manufacturer: Cemex

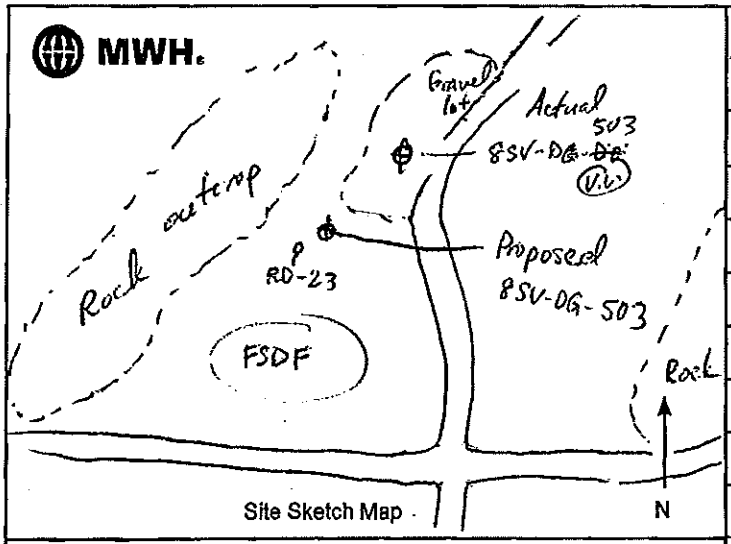
Dry Bentonite
Type: #8 crumbles
Manufacturer: Cetco

Hydrated Bentonite
Type: #8 crumbles
Manufacturer: Cetco

Notes:
1. Probes not drawn to scale.

FIGURE 4-1

MWH



Site Sketch Map

Boring ID: SSV-DG-503	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: SA 8
Logged By: V. Vathavasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macro core.	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 5.5
Drill Bit Type: Macro core	
Drill Start Time/Date: 0748 / 5-20-14	Drill Finish Time/Date: 0815 / 5-20-14
Soil Vapor ID: SSV-DG-503	Soil Boring Backfill Time/Date: Backfill Material:
Soil Vapor Well Completion Time/Date: 0841 / 5-20-14	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): 4.5-5.5	Surface Completion: Soil Vapor Probe
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ☐ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☒ None

Soil Description
1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: ~~Grass, near RD-23 well cluster~~ Gravel (V.V.)

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
0.0						0	SM	* Location moved 60' NE	-	-	-	60	40/
						1		Silty Sand (SM), very pale brown (10YR 7/4), loose, dry, fine sand, non-plastic silt, no stains, no odors, fill.					
		48"	NONE			2	ML	Silt w/ Sand (ML), dark yellowish brown (10YR 4/4), stiff, slightly moist, low plasticity silt, fine sand	-	-	-	15	85/
0.0						3							
						4	SM	Silty Sand (SM), yellowish brown (10YR 5/4), fine sand, silt, med dense, flint & moisture, fill	-	-	-	65	35
		15"	NONE			5							
0.1							SP		-	-	-	100	TR
						6		Poorly Graded Sand (SP), light yellowish brown (10YR 6/4), loose, dry, fine sand, trace silt, native soil, no stains or odors.					
						7							
						8		@5.5' Sandstone, weathered.					
						9		TD = 5.5', refusal on bedrock. Installed vapor probe at 4.5-5.5'. Backfilled original boring with cuttings					

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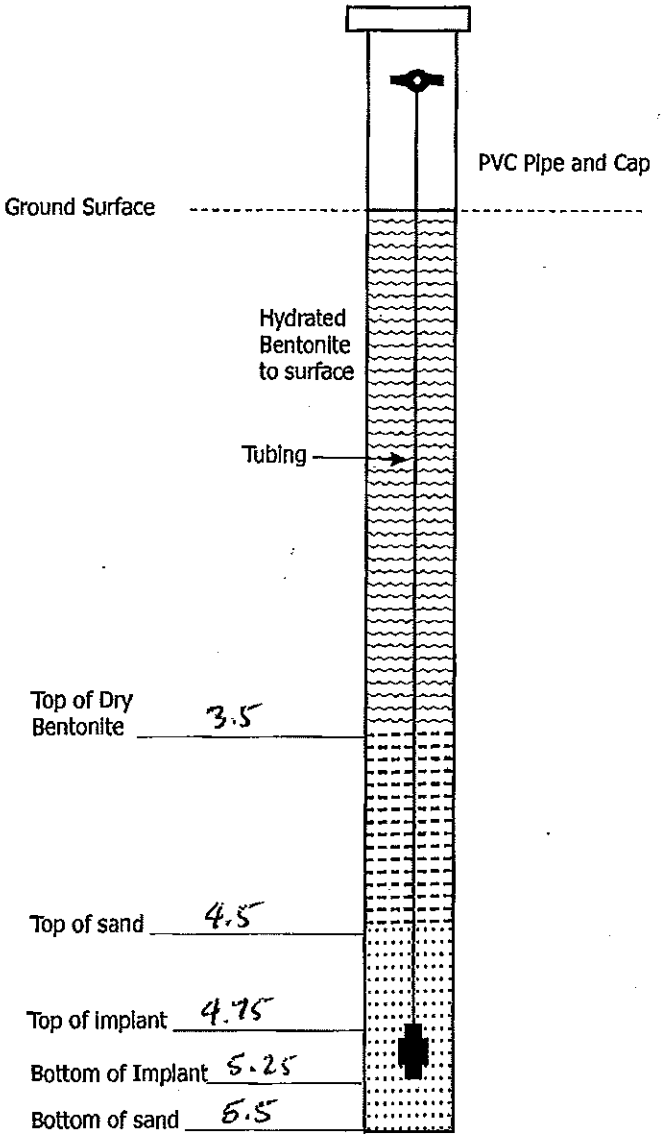
MWH

Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SSV-DG-503
Job #: 10503982.3050105/10503982.3060105
Project: Phase 3 DOE Data Gap Sampling
Site: SA 8
Reviewed by:
Logged by: V. Vathanasin
Drilling Contractor: ESD
Rig Type/Method: Geoprobe 5400 / DP
Driller: Morgan Hughes
Borehole TD: 5.5
Probe Completion Date/Time: 0841 / 5-20-14
Borehole Diameter: 2.25"



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: Clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Cemex

Dry Bentonite
Type: #8
Manufacturer: Cetco

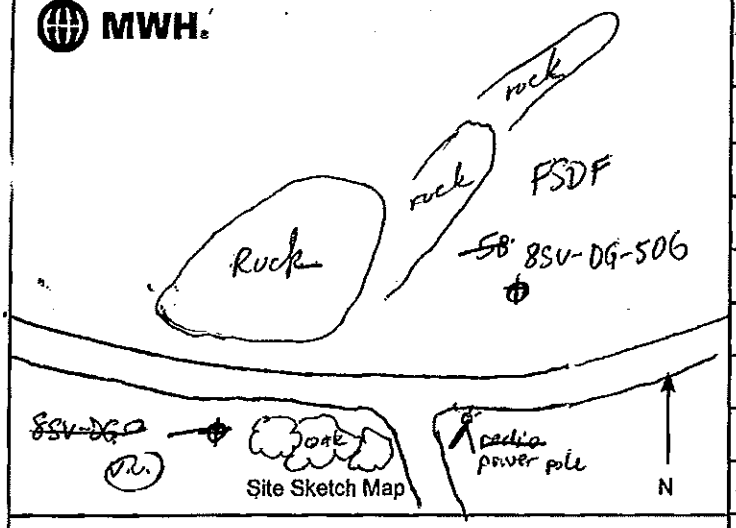
Hydrated Bentonite
Type: #8
Manufacturer: Cetco

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH.



Site Sketch Map

Boring ID: 8SV-DG ~~515~~ V.V.	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: Subarea 8
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 8.0
Drill Bit Type: Macrocore	
Drill Start Time/Date: 0845/5-16-14	Drill Finish Time/Date: 0916 /5-16-14
Soil Vapor ID: 8SV-DG-506	Soil Boring Backfill Time/Date: N/A — Backfill Material: N/A
Soil Vapor Well Completion Time/Date:	Observations: ☐ Debris ☒ Staining ☐ Odors ☐ Groundwater ☐ None
Soil Vapor Probe Depths (ft.bgs): 7.0-8.0	Surface Completion: Soil Vapor Probe
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☒ None

Soil Description

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

Surface Description: Veg Cleared, ~4' NW of EPA#58

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
						0	SM	Silty sand (SM), light yellowish brown (10YR 6/4), med. dense, dry, fine sand, non-plastic silt, no stain or odors, fill	-	-	-	60	40
		48"	NONE			1	ML	Clayey Silt (ML), light yellowish brown (10YR 6/4), med. stiff, dry, low plasticity clay and silt, "platy" structure, slight brownish yellow staining (10YR 6/8), no odor, fill	-	-	-	-	65/35
0.0						2							
						3							
						4							
		48"	NONE			5							
						6							
						7							
0.0						8		@ grades to med-plasticity clay.					
							Br	Shale Bedrock; hard, fissile, inter-bedded sandstone and shale.					
						9		TD=8.0 ft. refusal on bedrock, install vapor probe at 7.0-8.0. May encounter low flow when collecting sample					

QA/QC
Surficial media boring log rev 2-25-2014

Single Soil Vapor Probe Construction Diagram

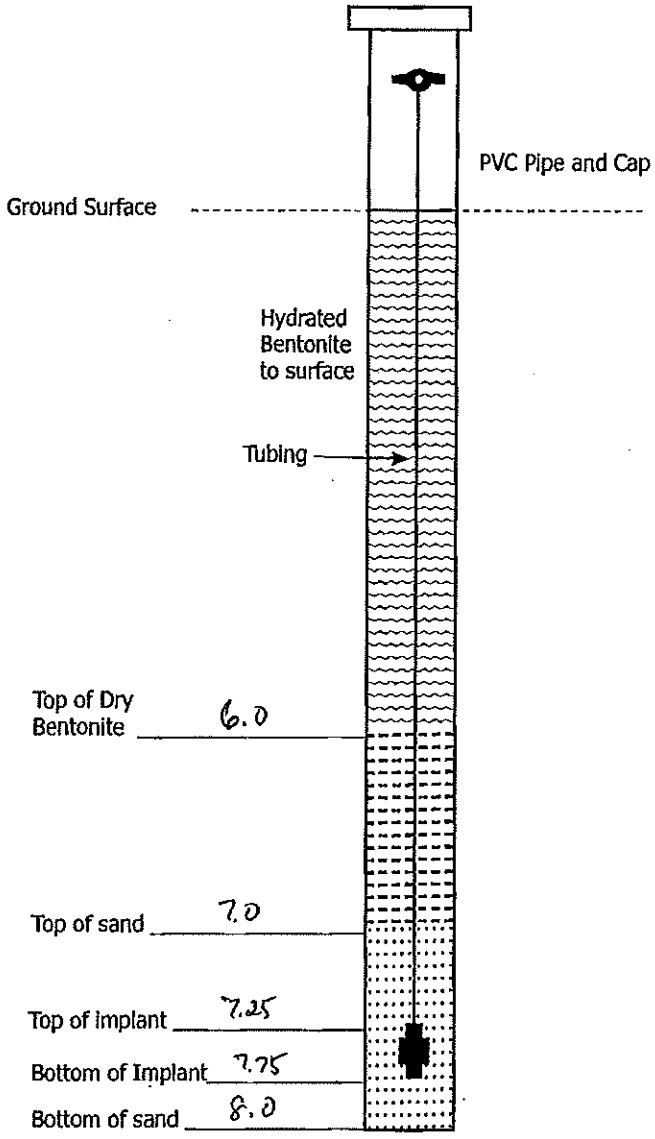
MWH

Probe ID/Soil ID: SSV-DG-506 | Job #: 10503982.3050105/10503982.3060105 | Project: Phase 3 DOE Data Gap Sampling 2

Site: SA8 | Reviewed by: | Logged by: Van Vatharasin

Drilling Contractor: EST | Rig Type/Method: Geoprobe 5400/DP | Driller: Morgan Hughes

Borehole TD: 8.0 | Probe Completion Date/Time: 0930/5-16-14 | Borehole Diameter: 2.25"



Vapor Implant Specs

Material: Stainless Steel

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: Teflon

Diameter: 1/4"

Color: Clear

Sand Pack Specs

Grain Size: #3

Manufacturer: Cemex

Dry Bentonite

Type: #8

Manufacturer: Cetco

Hydrated Bentonite

Type: #8

Manufacturer: CETCO

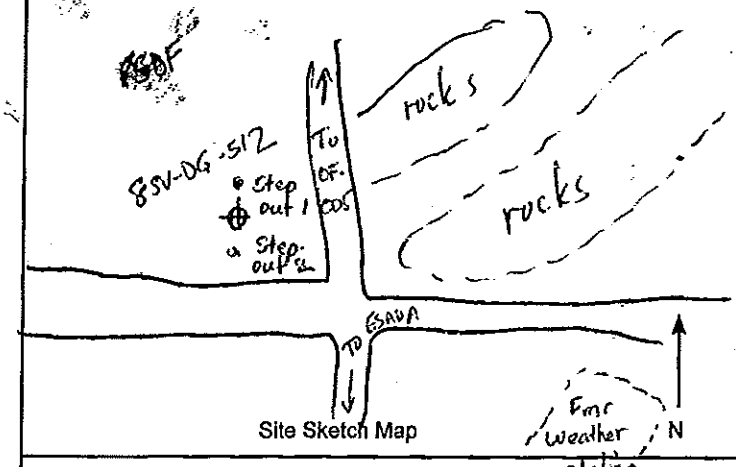
Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH.

Boring ID: SSV-DG512	Sheet 1	of 1	
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014			
Job #: 10503982.3050105/ 10503982.3060105	Site: SA 8		
Logged By: V. Vathanasin	Reviewed By:		
Drilling Contractor: EST	Drillers Name: Morgan Hughes		
Drill Rig Type/Method: Geoprobe 5400 / DP			
Sampler Type: Macrocore			
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs):	9.0	
Drill Bit Type: Macrocore			
Drill Start Time/Date: 0940 / 5-19-14	Drill Finish Time/Date: 1045 / 5-19-14		
Soil Vapor ID: SSV-DG-512	Soil Boring Backfill Time/Date: N/A	Backfill Material: N/A	
Soil Vapor Well Completion Time/Date: 1110/ 5-19-2014	Observations: ☒ Debris ☐ Staining ☐ Odors ☐ Groundwater ☐ None		
Soil Vapor Probe Depths (ft.bgs): 8.0-9.0	Surface Completion: Soil vapor probe		
Soil Vapor Well Detail Completed (yes) no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None		



Soil Description
1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: Mustard

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	ML	Silt w/ sand (ML), brown (10YR 5/3), med. stiff, dry, non-plastic silt, fine sand, few roots, fill, no odors or stains.	-	-	-	15	85
		36"		APNE	-	1							
						2		color changes to light yellowish brown (10YR 6/4)					
						3							
0.4						4							
						5		* Note: TD = 9.0 ft, refusal on Sandstone (bedrock), install vapor probe at 8.0-9.0 bgs. Stepped out twice to avoid asphalt debris. Install probe in southernmost boring					
		48"				6							
						7		@9' Sandstone, weathered.					
0.5						8		@8.2' Asphalt (Stepped out twice to avoid debris. No asphalt ~~5~~ 4' south)					
		12"		NONE		9	SP SM Br	@8.5' Poorly graded Sand w/ Silt (SP-SM), yellow (10YR 7/6), loose, dry, fine sand,	-	-	-	85	15

V.V.

QA/QC

MWH

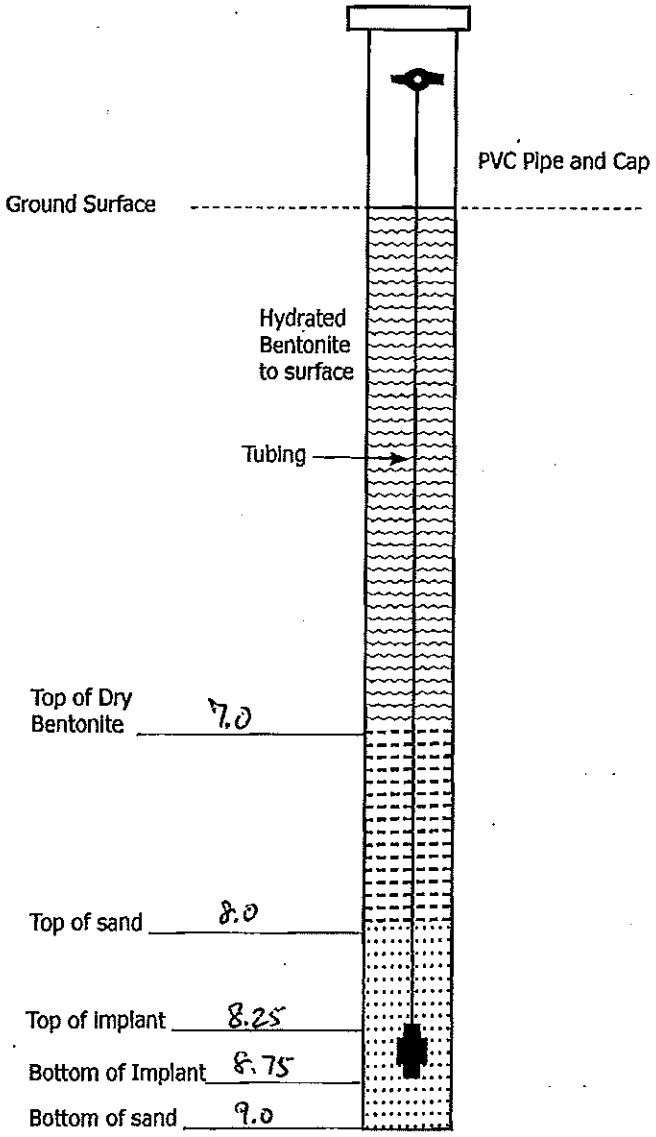
Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SSV-DG-S12 | Job #: 10503982.3050105/10503982.3060105 | Project: Phase 3 DOE Data Gap Sampling 2

Site: SA 8 | Reviewed by: | Logged by: Van Vathanasin

Drilling Contractor: EST | Rig Type/Method: Geoprobe 5400/DP | Driller: Morgan Hughes

Borehole TD: 9.0 | Probe Completion Date/Time: 1110/5-19-2014 | Borehole Diameter: 2.25"



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: Clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Cemex

Dry Bentonite
Type: #8
Manufacturer: CETCO

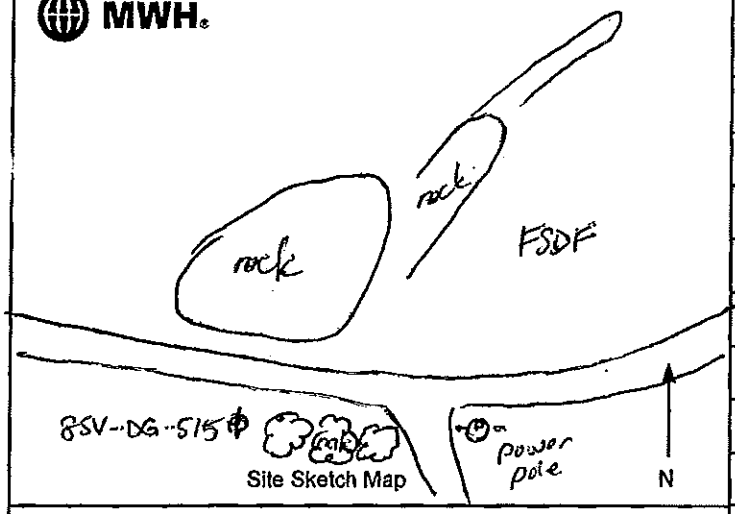
Hydrated Bentonite
Type: #8
Manufacturer: CETCO

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH



Site Sketch Map

Boring ID: SSV-DG-515	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: Subarea 8
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 7.0
Drill Bit Type: Macrocore (V.V.)	
Drill Start Time/Date: 5-16-14 / 0745	Drill Finish Time/Date: ~~08~~ 0812 / 5-16-14
Soil Vapor ID: SSV-DG-515	Soil Boring Backfill Time/Date: N/A
Soil Vapor Well Completion Time/Date: 0830 / 5-16-14	Backfill Material: N/A
Soil Vapor Probe Depths (ft.bgs): 6.0-7.0 ft	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Well Detail Completed (yes/no)	Surface Completion: Soil Vapor probe
	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	ML	Surface Description: Grass					
								Silt w/ sand (ML), brownish yellow (10YR 6/6), loose, dry, non-plastic silt, no odors or stain, fill fine sand	-	-	-	~~2~~ 10 (V.V.)	~~100~~ 90
		48"	NONE			1							
						2							
0.0						3							
						4							
		16"				5		@4.5 - color changes to yellow (10YR 7/6), platy ~~fab~~ texture, some white (10YR 8/1) patches.					
		18"	NONE			6							
0.0						7	Br	Sandstone, weathered, Chatsworth Fm.					
						8		TD=7.0', refusal on sandstone bedrock, install vapor probe 6.0-7.0 ft. bgs. Possible low flow due to silt content					
						9							

Single Soil Vapor Probe Construction Diagram

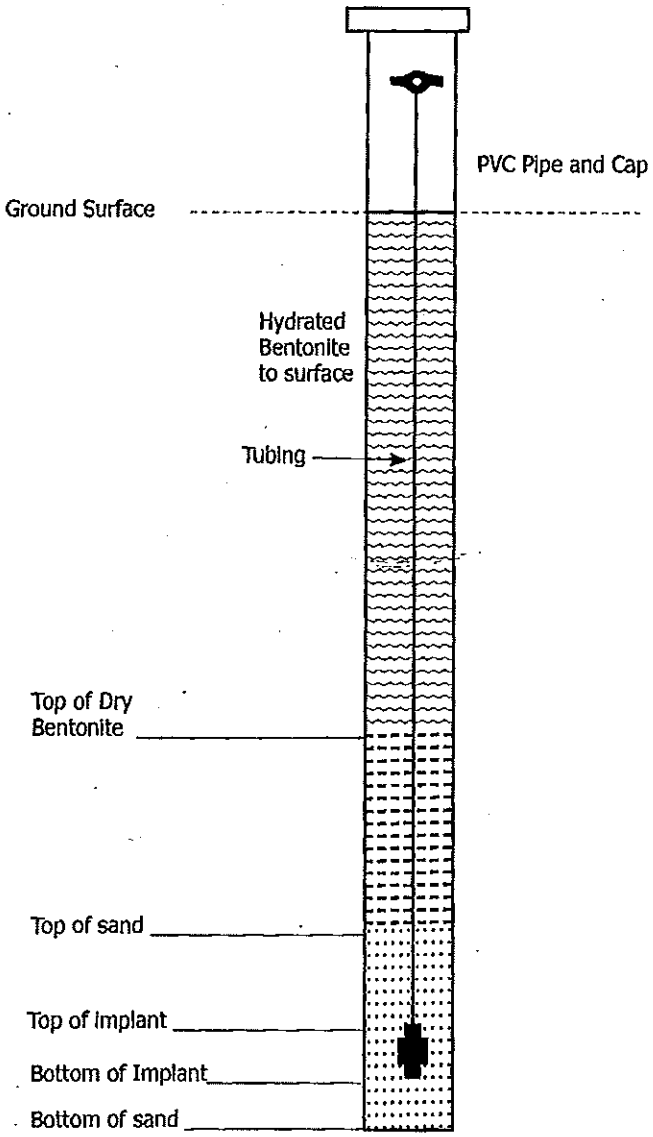
MWH

Probe ID/Soil ID: SSV-DG-S15 | Job #: 10503982.3050105/10503982.3060105 | Project: Phase 3 DOE Data Gap Sampling 2

Site: SA8 | Reviewed by: | Logged by: V. Vathanasin

Drilling Contractor: EST | Rig Type/Method: Geoprobe 5400/DP | Driller: Morgan Hughes

Borehole TD: 7.0 | Probe Completion Date/Time: 0830 / 5-16-14 | Borehole Diameter: 2.25"



Vapor Implant Specs

Material: Stainless Steel

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: Teflon

Diameter: 1/4"

Color: Clear

Sand Pack Specs

Grain Size: #3

Manufacturer: Cemex

Dry Bentonite

Type: #8

Manufacturer: CETCO

Hydrated Bentonite

Type: #8

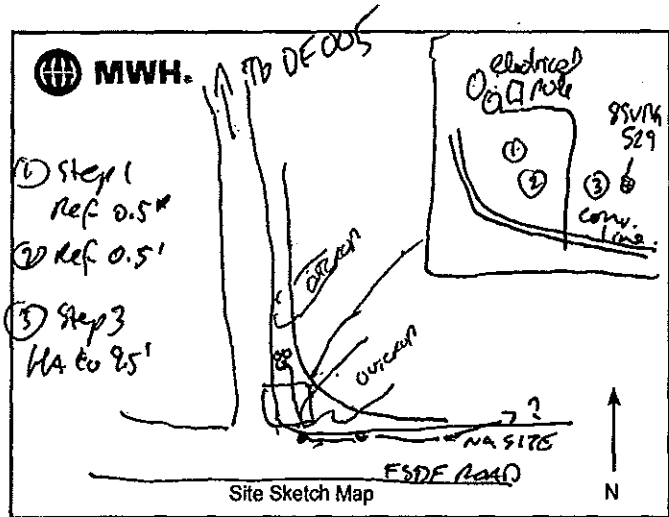
Manufacturer: CETCO

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH



Site Sketch Map

Boring ID: SSV-DG-529 Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: 8

Logged By: ROB ELLIS Reviewed By:

Drilling Contractor: EST Drillers Name: MORGAN HUGHES

Drill Rig Type/Method: HAND AUGER

Sampler Type: BUCKET AUGER GRAB

Borehole Diam (inch): 3.5" Total Depth (ft.bgs): 9.5'

Drill Bit Type: BUCKET AUGER

Drill Start Time/Date: 12 JUN 14 13:20 Drill Finish Time/Date: 12 JUN 14 13:45

Soil Vapor ID: SSV-DG-529

Soil Boring Backfill Time/Date: N/A Backfill Material: N/A

Soil Vapor Well Completion Time/Date: 12 JUN 14 ; 14:00

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Soil Vapor Probe Depths (ft.bgs): 4.5-5.5 ; 8.5-9.5

Surface Completion: SV probe

Soil Vapor Well Detail Completed (yes/no) Yes sealed

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description: wildroot, grasses

1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: generally flat between outcrops

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
0.0		9.5				0		0.0 - 2.5					
Mor						1	SM	Silty sand (SM) dark yellow brown (10YR 4/4), Mostly fine sand (60), some silt (30), few medium sand (10), dry, loose, No stain, no odor, Fill.	-	-	10	60	30
						2							
						3		2.5 - 9.0					
						4		Silty sand (SM) dark yellow brown (10YR 4/6), dry, med-dense. Mostly fine sand (55), some silt (35), few medium sand (10), No stain, no odor, Fill.					
						5	SM						
						6							
						7		9.0 - 9.5					
						8		Poorly sorted sand (SP), light yellowish brown (10YR 6/4), Slightly moist, loose, Mostly fine sand (80), few silt/med sand (10% each), No stain, no odor, native soil some oxide staining	-	-	10	80	10
						9	SP						
							BR	TD = 9.5' bgs at refusal on weathered bedrock sandstone					

QA/QC

Subsidial media boring log rev 2-25-2014

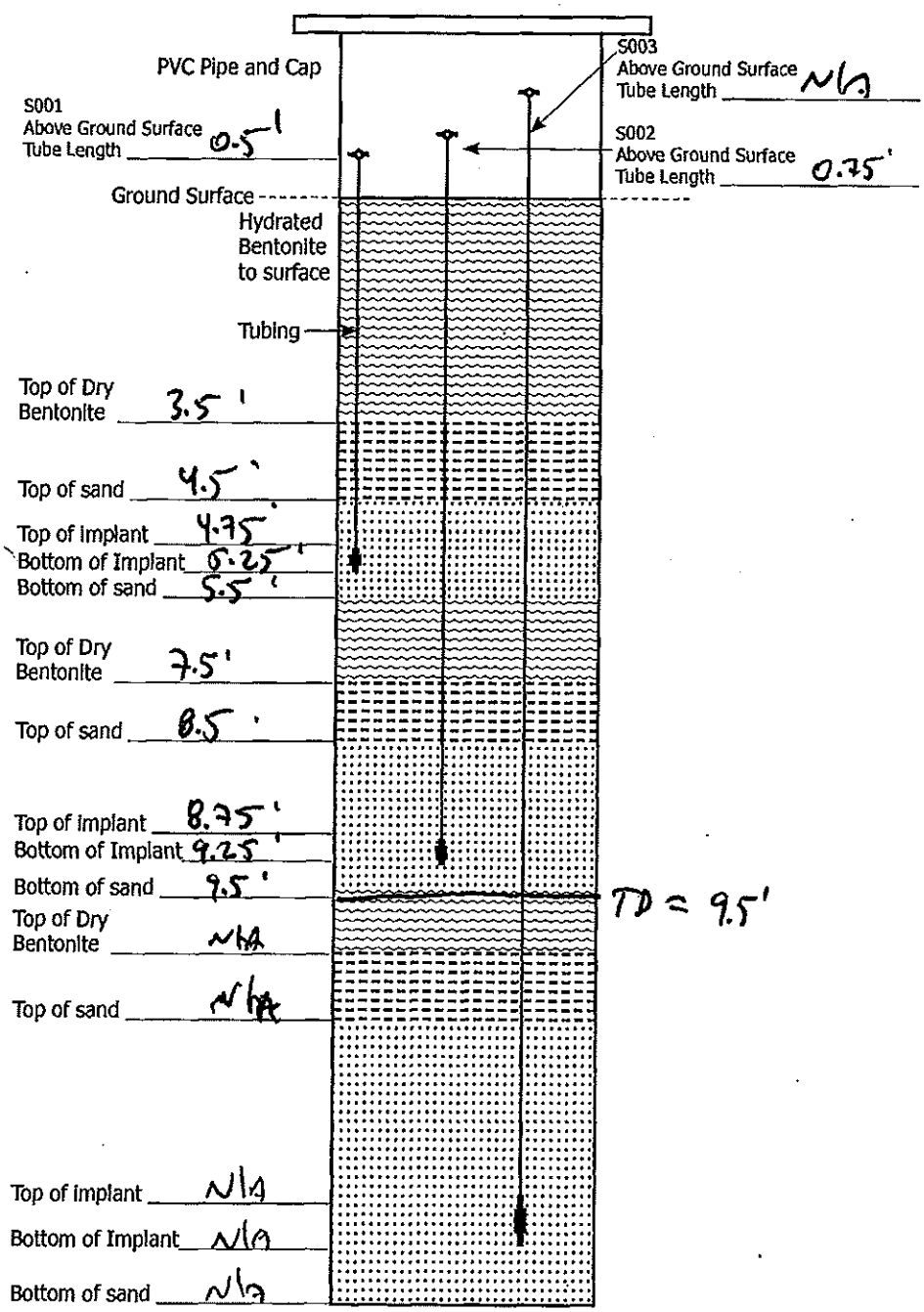
MWH.

Multiple Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: 8SV_DG-S29
Site: 8
Drilling Contractor: EST
Borehole TD: 9.5' bgs

Project: Phase 3 DDE SVDG 2014
Logged by: [illegible]
Driller: [illegible]
Borehole Diameter: 3.5"

Job #: 10503982.3050105
Reviewed by:
Rig Type/Method: HAND AUGER
Probe Completion Date/Time: 12JUN14; 14:00



Vapor Implant Specs

Material: stainless steel
Length: 6"
Diameter: 3/8"

Tubing Specs

Material: teflon
Diameter: 1/4"
Color: clear

Sand Pack Specs

Grain Size: #3 sand
Manufacturer: Cemex

Dry Bentonite

Type: #8 crumbles
Manufacturer: Cetco

Hydrated Bentonite

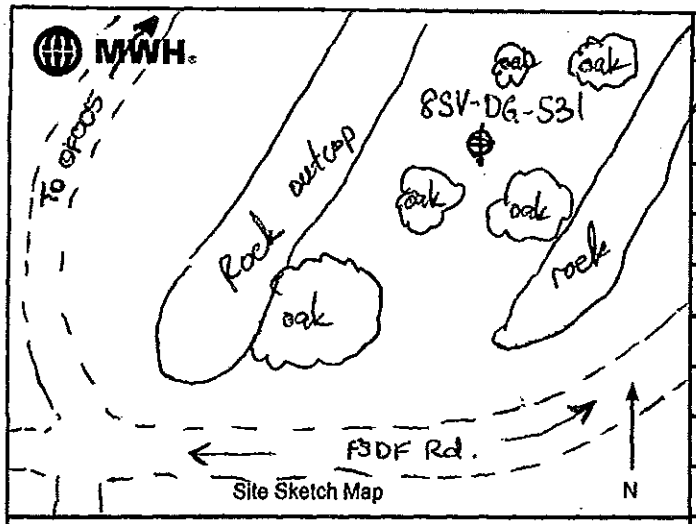
Type: #8 crumbles
Manufacturer: Cetco

Notes:

1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

MWH



Site Sketch Map

Boring ID: 8SV-DG-531 Sheet 1 of 1

Project: Phase 3 DOE Data Gap Sampling 2014

Job #: 10503982.3050106 / 10503982.3060106 Site: SA 8

Logged By: V. Vathanasin Reviewed By:

Drilling Contractor: EST Drillers Name: Marty Killuhen

Drill Rig Type/Method: Hand Auger

Sampler Type: Grab

Borehole Diam (inch): 3.25" Total Depth (ft bgs): 5.5'

Drill Bit Type: Standard auger bucket

Drill Start Time/Date: 1042 / 6-12-14 Drill Finish Time/Date: 1112 / 6-12-14

Soil Vapor ID: 8SV-DG-531

Soil Boring Backfill Time/Date: N/A Backfill Material: N/A

Soil Vapor Well Completion Time/Date: 1130 / 6-12-14

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Soil Vapor Probe Depths (ft.bgs): 4.5 - 5.5

Surface Completion: Soil vapor probe

Soil Vapor Well Detail Completed (yes/no)

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description
1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: Small valley, grassy

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Silty Sand (sm), dark yellowish brown (10YR 4/4), med. dense, dry, fine sand, non-plastic silt, white calcite nodules (<1mm), no odor or staining, native	–	–	–	60	40/
						1							
						2							
						3							
						4		@4' color changes to yellowish brown (10YR 5/6), grades w/ clay, root fragment	–	–	–	60	30/10
						5							
						6	Br	Shale, weathered, brownish yellow oxidation (10YR 6/8), platy.					
						7		TD = 5.5', hand auger refusal on bedrock, bottom vapor probe 4.5-5.5'					
						8							
						9							

MWH

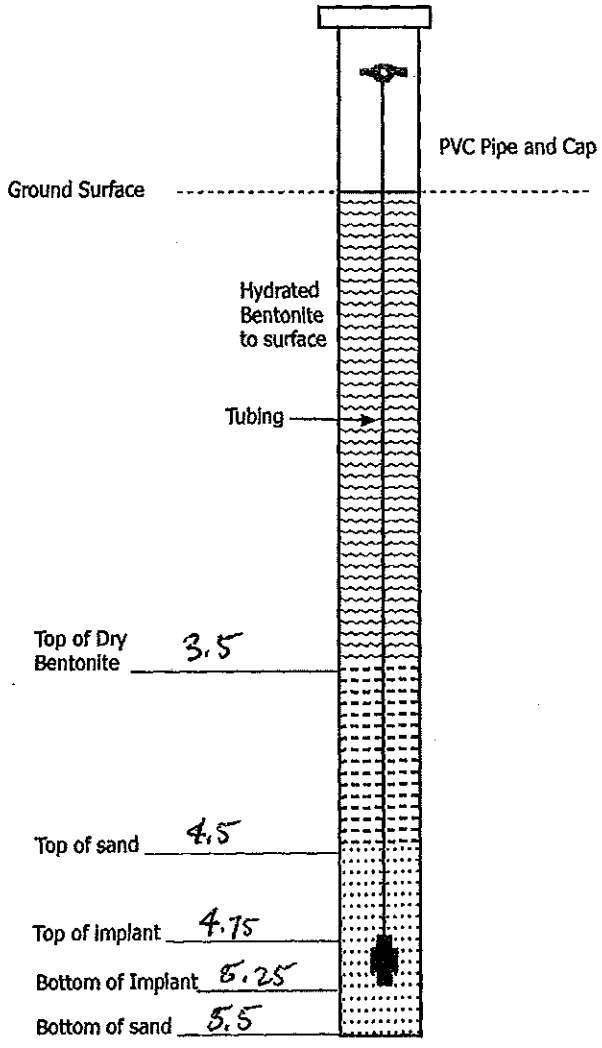
Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SSV-DG-531 | Job #: 10503982.3050105/10503982.3060105 | Project: Phase 3 DOE Data Gap Sampling 2014

Site: SA 8 | Reviewed by: | Logged by: V. Vathanasin

Drilling Contractor: EST | Rig Type/Method: Hand Auger | Driller: Marty Kilvelen

Borehole TD: 5.5 | Probe Completion Date/Time: 1130/6-12-14 | Borehole Diameter: 3.25"



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Cemex

Dry Bentonite
Type: #8
Manufacturer: Cetco

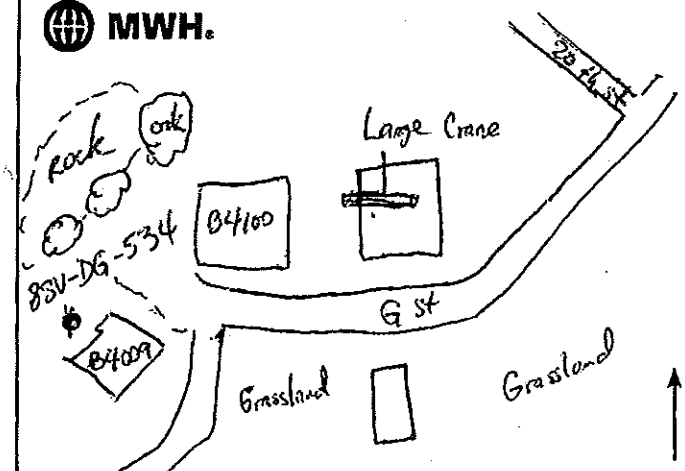
Hydrated Bentonite
Type: #8
Manufacturer: Cetco

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH.



Site Sketch Map

Boring ID: 8SV-DG-534	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: SA 8
Logged By: V. Vatharasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macro core	
Borehole Diam (inch) 2.25"	Total Depth (ft.bgs) 7.0
Drill Bit Type: Macrocore	
Drill Start Time/Date: 0903 / 5-20-14	Drill Finish Time/Date: 0936 / 5-20-14
Soil Vapor ID: 8SV-DG-534	Soil Boring Backfill Time/Date: N/A — Backfill Material: N/A
Soil Vapor Well Completion Time/Date: 0950 / 5-20-14	Observations: ☒ Debris ☐ Staining ☐ Odors ☐ Groundwater ☐ None
Soil Vapor Probe Depths (ft.bgs): 6.0 - 7.0'	Surface Completion: Vapor Probe
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

Surface Description: Asphalt

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
						0	AF	4" Asphalt	TR	-	-	65	35%
							SM	Silty Sand (SM), yellowish brown (10YR 5/6), med. dense, ~~dry~~ (V.V.) faint moisture, fine sand, low plasticity silt, trace fine angular gravel (base), no stains or odors, fill					
		26"	NONE			1							
						2							
						3		* Base gravel @ 4" to 7" caving into boring and preventing recovery					
0.0						4							
						5							
		3"				6							
						7	SP	Poorly graded Sand (SP) - Poor Recovery, observed residue					
							Br	Shale, partially weathered bedrock.					
						8		TD = 7.0', refusal on shale. Hole collapsed to 5.5 after tripping out and two ~~app~~ (VV) attempts to clear debris/gravel was unsuccessful. Drill large bore hole w/ disposable point 1-ft					
						9							

N and install probe 6.0 - 7.0'; however, there

Single Soil Vapor Probe Construction Diagram

MWH

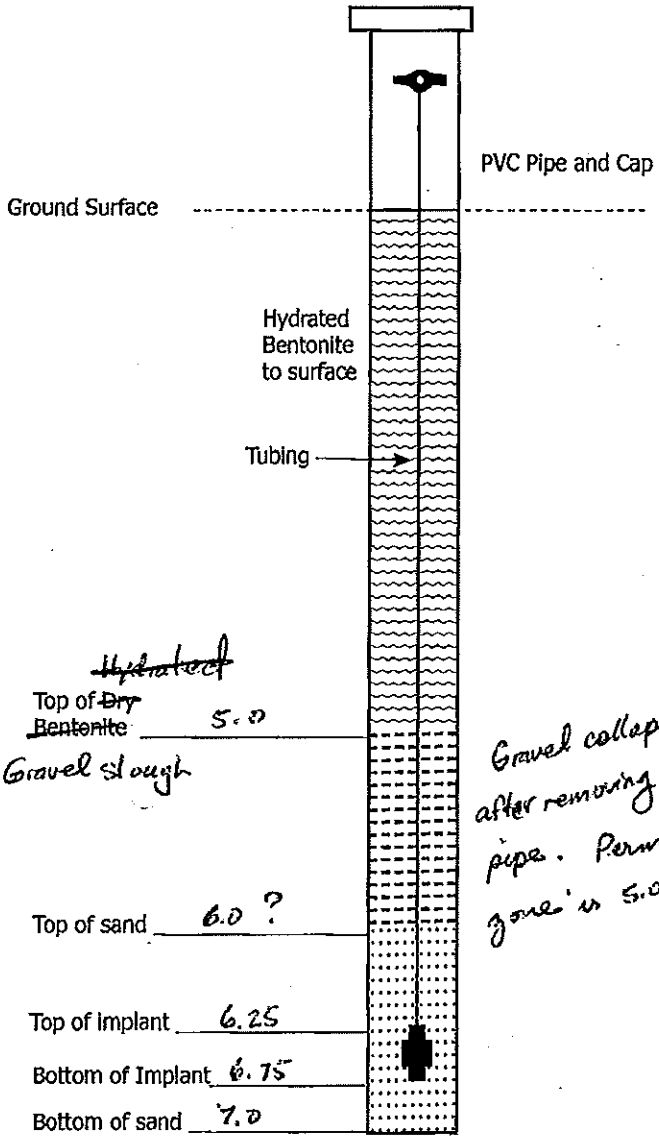
Probe ID/Soil ID: SSV-DG-534 | Job #: 10503982.3050105/10503982.3060105 | Project: Phase 3 DOE Data Gap Sampling

Site: SA 8 | Reviewed by: | Logged by: V. Vathanasin

Drilling Contractor: EST | Rig Type/Method: Geoprobe 5400/DP | Driller: Morgan Hughes

Borehole TD: 7.0 | Probe Completion Date/Time: 0950 / 5-20-14 | Borehole Diameter: 1.5"

Install probe w/ large bore



Gravel collapsed after removing large bore pipe. Permeable zone is 5.0-7.0

Vapor Implant Specs

Material: Stainless Steel

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: Teflon

Diameter: 1/4"

Color: Clear

Sand Pack Specs

Grain Size: #3

Manufacturer: Cemex

Dry Bentonite

Type: #8

Manufacturer: CETCO

Hydrated Bentonite

Type: #8

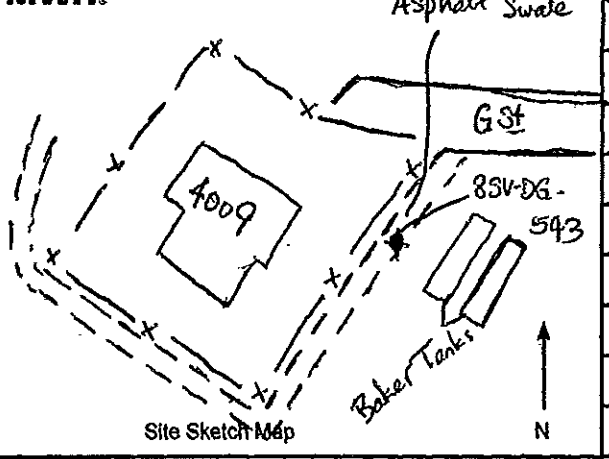
Manufacturer: CETCO

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH



Site Sketch Map

Boring ID: BSV-DG-543 Sheet 1 of 1

Project: Phase 3 DOE Data Gap Sampling 2014

Job #: 10503982.3050106 / 10503982.3060106 Site: SA 8 (V.V)

Logged By: V. Vathanasin Reviewed By:

Drilling Contractor: EST Drillers Name: Pedro Garcia

Drill Rig Type/Method: Hand auger

Sampler Type: Grab-

Borehole Diam (inch): 3.25" Total Depth (ft bgs): 7.25

Drill Bit Type: Standard bucket auger

Drill Start Time/Date: 0930 / 6-12-14 Drill Finish Time/Date: 1004 / 6-12-14

Soil Vapor ID: BSV-DG-543

Soil Boring Backfill Time/Date: N/A Backfill Material: N/A

Soil Vapor Well Completion Time/Date: 1010 / 6-12-14

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Soil Vapor Probe Depths (ft.bgs): 6.25' - 7.25'

Surface Completion: Soil vapor probe

Soil Vapor Well Detail Completed (yes/no)

Type of Refusal: ☐ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

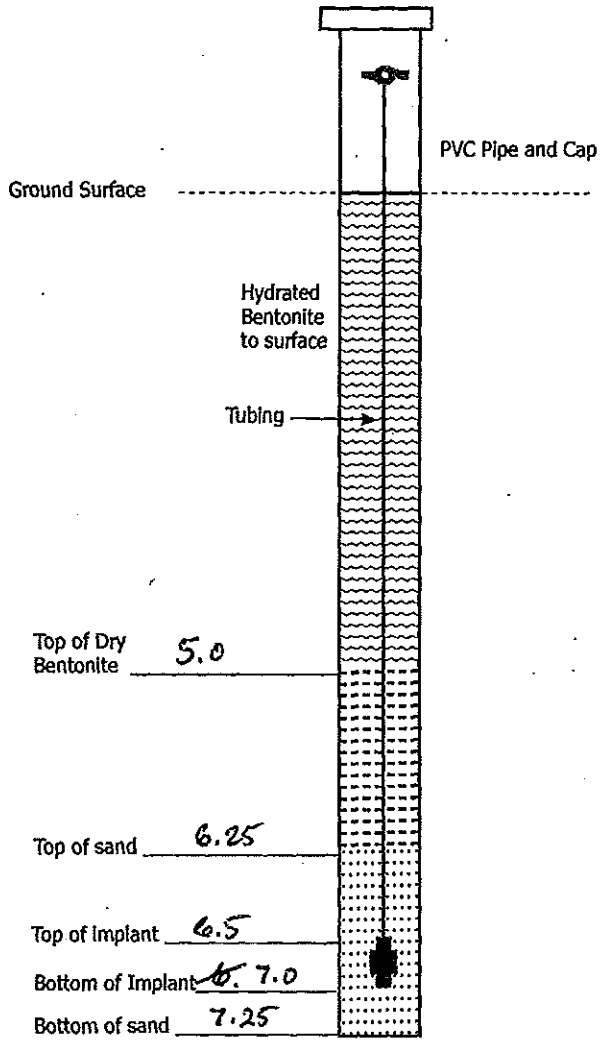
PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	CL	Surface Description: In drainage E. of 4009, E. bank. 2" Asphalt	-	-	-	25	75
						1		Sandy Clay (CL), yellowish brown (10YR 5/4), med stiff, moist, med. plasticity clay, fine sand, no stains or odors, disturbed soil (fill).					
						2							
						3		@3' color changes to yellowish brown (10YR 6/8)					
						4							
0.0						5		Grades w/ calcite cement					
						6	SP-SM	Poorly Graded Sand w/ Silt (SP-SM), brownish yellow (10YR 6/6), loose,	-	-	-	90	10
						7		dry., fine sand, non-plastic silt, no stains or odors, native soil					
						8	Br	Sandstone, weathered					
0.0						9		TD= 7.25', refusal on bedrock. Install vapor probe @ 6.25-7.25'. Probe set on E. bank of drainage. HDPE pipe in middle of drainage cannot be moved.					

QA/QC
Surficial media boring log rev 2-25-2014

MWH

Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SSV-DG-543
Job #: 10503982.3050105/10503982.3060105
Project: Phase 3 DOE Data Gap Sampling 2014
Site: SA 8
Reviewed by:
Logged by: V. Vathanasri
Drilling Contractor: EST
Rig Type/Method: Hand auger
Driller: Pedro Garcia
Borehole TD: 7.25
Probe Completion Date/Time: 1010 / 6-12-14
Borehole Diameter: 3.25"



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Cemex

Dry Bentonite
Type: #8
Manufacturer: Cetco

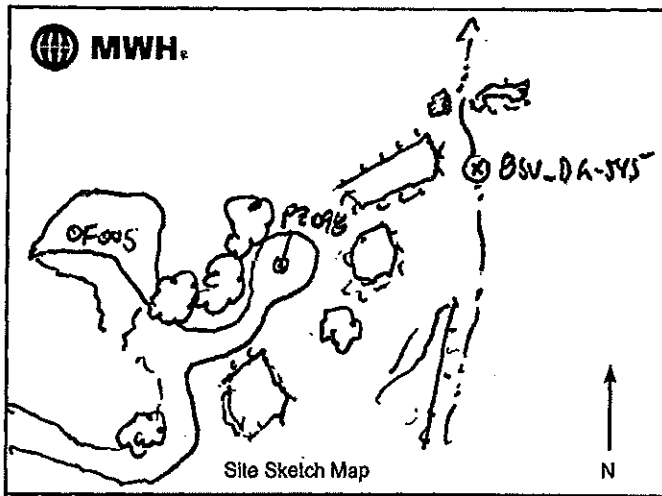
Hydrated Bentonite
Type: #8
Manufacturer: Cetco

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH



Site Sketch Map

Boring ID: SSV_DG-545 Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: 8

Logged By: ROB ELLIS Reviewed By:

Drilling Contractor: EST Drillers Name: MORGAN HUMMER

Drill Rig Type/Method: HAND AUGER

Sampler Type: BUCKET AUGER GRAB

Borehole Diam (inch): 3.5" Total Depth (ft.bgs): 7.8'

Drill Bit Type: BUCKET AUGER

Drill Start Time/Date: 12 JUN 14 ; 08:10 Drill Finish Time/Date: 12 JUN 14 ; 08:24

Soil Vapor ID: SSV_DG-545

Soil Boring Backfill Time/Date: N/A Backfill Material: N/A

Soil Vapor Well Completion Time/Date: 12 JUN 14 ; 08:30

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Soil Vapor Probe Depths (ft.bgs): 6.75' – 7.75'

Surface Completion: SV PROBE

Soil Vapor Well Detail Completed (yes/no) attached.

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description passive vapor, yerba santa.

1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: in thalweg; grassy

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
0.0 ppm		7.8'				0	SM	0.0 – 3.5 silty sand (SM) dark yellowish brown (10YR 4/4). Slightly moist, loose. Mostly fine sand (55), some silt (35), few coarse & medium sand (5%rnd.). No stain, no odor. Native.	–	5	5	55	35
						1							
						2							
						3							
						4	SP SM	3.5 – 7.75 poorly sorted sand with silt (SP-SM), yellowish brown (10YR 5/6). Loose, slightly moist. Mostly fine sand (65), little silt (25), few med. sand (10). No stain, no odor. Native soil.	–	–	10	65	25
						5							
						6							
						7	SP	7.75 – 7.8 Weathered sandstone bedrock, fine. medium grained, highly weathered (WX); weak (R2), soft (H6) oxide staining. brownish yellow overall (10YR 6/6)					
						8							
						9							
								TD = 7.8' bgs w/ refusal on weathered sandstone					

QA/QC

Subsidial media boring log rev 2-25-2014

Single Soil Vapor Probe Construction Diagram

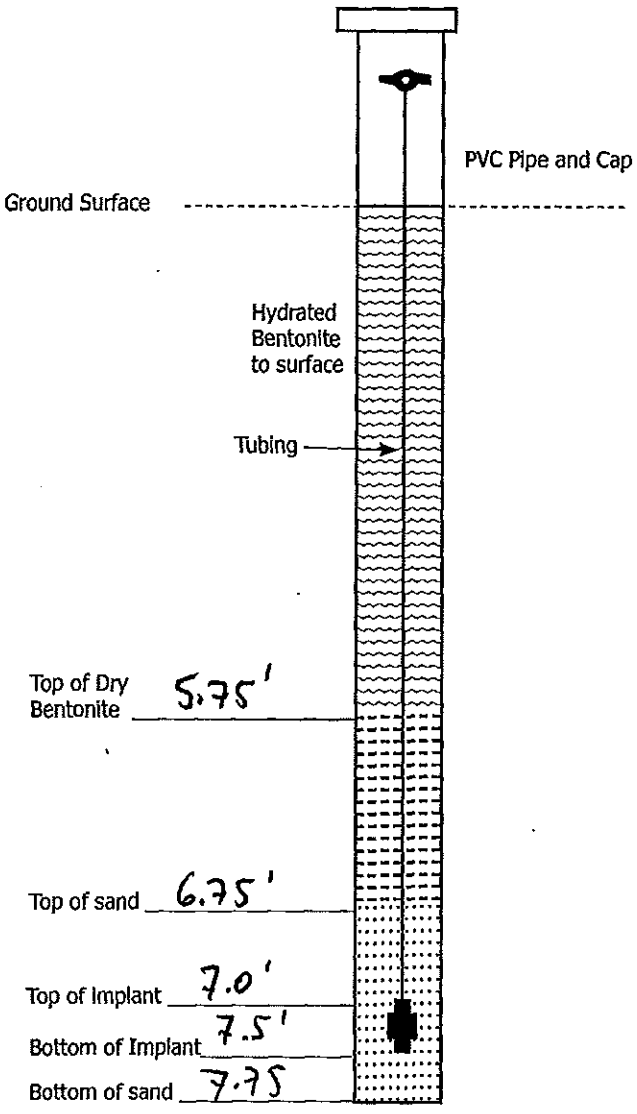
MWH

Probe ID/Soil ID: SSV_DH-545 | Job #: 10503982.3050105/10503982.3060105 | Project: Phase 3 DOE Data Gap Sampling 20-

Site: 8 | Reviewed by: | Logged by: RBEllis

Drilling Contractor: EST | Rig Type/Method: HAND AUGER | Driller: MORGAN HUGHES

Borehole TD: 7.8' bgs | Probe Completion Date/Time: 12JAN13, 08:30 | Borehole Diameter: 3.5"



Vapor Implant Specs
Material: stainless steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: teflon
Diameter: 1/4"
Color: clear

Sand Pack Specs
Grain Size: #3 sand
Manufacturer: Cemex

Dry Bentonite
Type: #8 crumbles
Manufacturer: Cetco

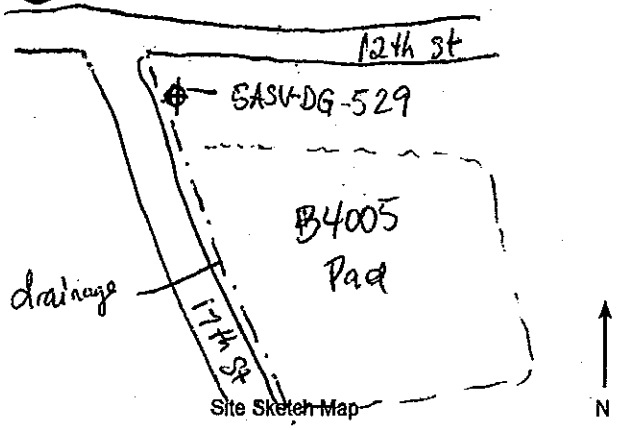
Hydrated Bentonite
Type: #8 crumbles
Manufacturer: Cetco

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH.



Site Sketch Map

Boring ID: SASV-DG-529 Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: 5A

Logged By: V. Vathanasin Reviewed By:

Drilling Contractor: EST Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5400/DP

Sampler Type: Macrocore

Borehole Diam (inch): 2.25" Total Depth (ft bgs): 4.5

Drill Bit Type: Macrocore

Drill Start Time/Date: 1430/6-5-2014 Drill Finish Time/Date: 1445/6-5-2014

Soil Vapor ID: N/A

Soil Boring Backfill Time/Date: 1507/6-5-14 Backfill Material: Soil cuttings.

Soil Vapor Well Completion Time/Date: N/A

Observations: ☐ Debris ☒ Staining ☐ Odors ☐ Groundwater ☐ None

Soil Vapor Probe Depths (ft.bgs): N/A

Surface Completion: None

Soil Vapor Well Detail Completed (yes/no)

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geolog's Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
								Surface Description: E. side of asphalt swale					
						0	SW-GW	Asphalt 2" (V.V)	15	10	25	50	TR/
						1		Well Graded Sand w/ Gravel & brownish yellow (10YR 6/6) with black (10YR 2/1)	-	-	25	50	25
		48"				2	SM	~~asphalt~~ (V.V) asphalt/tar staining, fill 0.15' - 1.0', Asphalt - black (10YR 2/1) fine to coarse sand, fine gravel					
						3		Silty Sand (SM), brownish yellow (10YR 6/8), loose, dry, fine-to					
		6"			15:04	4	SP	medium sand, non-plastic silt, no odors, slight asphalt stain (very	-	-	15	85	-
SVL-529-SASA-SE-						5		dark grayish brown (10YR 3/2)), fill					
			4.0-4.5			6		Poorly Graded Sand (SP), brownish					
						7		yellow (10YR 6/8), loose, dry, fine					
						8	BR	sand and medium sand, weak oxidation (reddish yellow (5YR 6/8)), native soil					
						9		- Sandstone, weathered					
								TD=4.5, refusal on bedrock,					
								Collected encores for VOC analyses					

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Stephen Meyer

Sample ID SVL-529-SA5A-SB-4.0-4.5 Date/Time 6/5/14 1504

Matrix (circle one): (Soil) Sediment Water

Start Depth 4.0

End Depth 4.5

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler Same as above

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present: Yes (No)

2. Percentage Fill (%): 0

3. Fill Description (circle all that apply)

Asphalt	Metal	Plastic
Concrete	Wood	Glass
Igneous/Metamorphic Gravel		N/A
Other: N/A		

Is Staining Present Yes (No)

Color: brownish yellow (10YR 6/8)

Odor

1. Odor Strength (circle one): (None) Slight Strong

2. Odor Description (circle one): Organic Petroleum Chemical (N/A) Other: _____

Moisture Condition (circle one): (Dry) Moist Wet

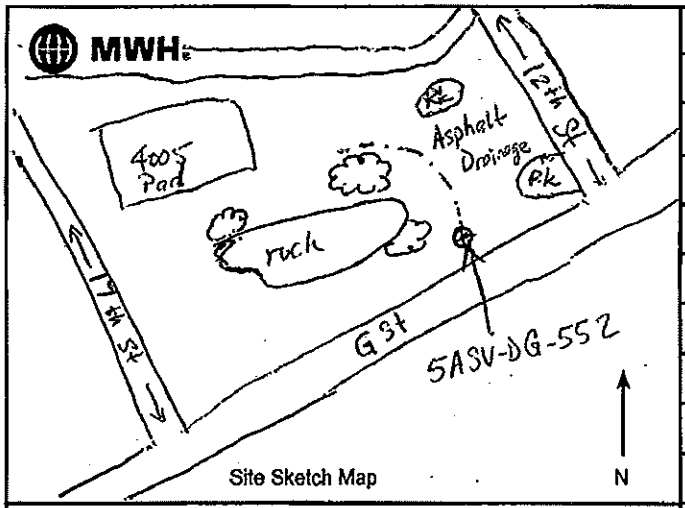
PG Signature: [signature] PG Registration #: 7735

Additional Comments: T.D = 4.5

12 µR 0.0 = PID 60 cpm

NA – Not Applicable

MWH



Site Sketch Map

Boring ID: 5ASV-DG-552 Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: 5A

Logged By: V. Vathanasin Reviewed By:

Drilling Contractor: EST Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5400 / DP

Sampler Type: Macrocore

Borehole Diam (inch): 2.25" Total Depth (ft.bgs): 8.75

Drill Bit Type: Macrocore

Drill Start Time/Date: 1109 / 6-5-2014 Drill Finish Time/Date: 1130 / 6-5-2014

Soil Vapor ID: N/A

Soil Boring Backfill Time/Date: 1145 / 6-5-14 Backfill Material: Soil Cuttings

Soil Vapor Well Completion Time/Date: N/A

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Soil Vapor Probe Depths (ft.bgs): N/A

Surface Completion: None

Soil Vapor Well Detail Completed (yes/no)

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Surface Description: @ End on drainage, graded. Silty Sand (sm), yellowish brown (10YR 5/6), loose, dry, fine sand, silt, non-cohesive, fill, no stains, no odors.	-	-	-	60	40/
		48"	X		11:38	1							
						2							
		SVL-552-5A5A-					CL	Silty Clay (CL), yellowish brown (10YR 5/6), soft, dry, low to med. plasticity clay, possible weathered bedrock.	-	-	-	-	30/90
			SB-1.5-2.0			3							
						4							
		24"				5	WBR	color changes to brownish yellow (10YR 6/6). wet (V.V.) weathered shale.	-	-	-	-	10/90
						6							
		24"				7							
						8							
		18"											
						9	Br	TD = 8.75, drilled into weathered bedrock. Collect soil samples above weathered bedrock @ 1.5-2.0.					

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Stef Mysell

Sample ID SVL-552-SA5A-SB-1.5-2.0 Date/Time 6/5/14 / 11:38

Matrix (circle one): (Soil) Sediment Water

Start Depth 1.5

End Depth 2.0

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		(SM)	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes) No

2. Percentage Fill (%) 100

3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel ~~N/A~~

Other Disturbed native soil

Is Staining Present Yes (No)

Color yellowish brown (10YR 5/6)

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature _____ **PG Registration #** 7735

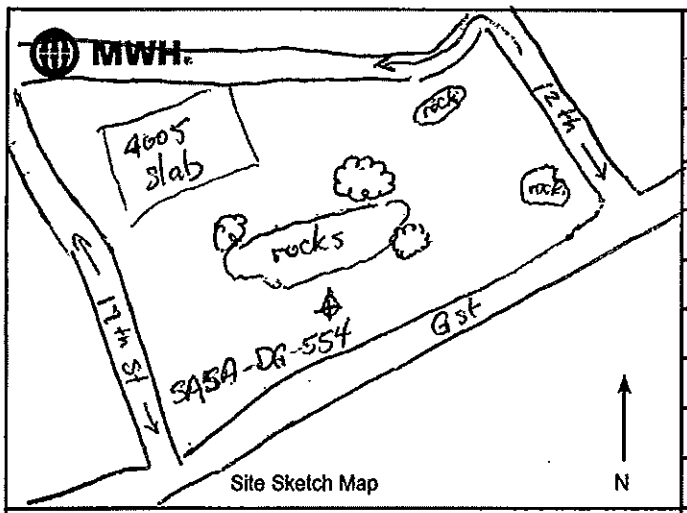
Additional Comments TD 8.75 ft

PID = 0.0 ppm

12 uR

32 cpm

MWH



Site Sketch Map

Boring ID: SASV-DG-554 Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: 5A

Logged By: V. Vathanasin Reviewed By:

Drilling Contractor: EST Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5400 / DP

Sampler Type: Macrocore

Borehole Diam (inch): 2.25" Total Depth (ft.bgs): 2.0

Drill Bit Type: Macrocore

Drill Start Time/Date: 1210/6-5-2014 Drill Finish Time/Date: 1225/6-5-2014

Soil Vapor ID: N/A

Soil Boring Backfill Time/Date: 1245/6-5-14 Backfill Material: Native soil

Soil Vapor Well Completion Time/Date: N/A

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Soil Vapor Probe Depths (ft.bgs): N/A

Surface Completion: None

Soil Vapor Well Detail Completed (yes/no)

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Surface Description: Mustard and grass.					
	X	24"				1		Silty Sand (SM), yellowish brown (10YR 5/4), loose, dry, fine sand, silt, non-plastic, roots, fill	-	-	-	60	40
0.0	X		X		12:46	2		@ 0.5' color changes to brownish yellow (10YR 6/6) fill.					
SVL-554-SASA-SB-1.5-2.0						3	Br	@ 2.0 Weathered Sandstone, fine grained matrix.					
						4		TD = 2.0. Refusal on bedrock. Drilled 2 add'l borings to confirm shallow refusal w/ similar results.					
						5		Collect soil sample @ 1.5-2.0 for VOCs analyses.					
						6		No vapor probes installed.					
						7							
						8							
						9							

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By

Sample ID SVL-554-SASA-SB-1.5-2.0 Date/Time 6-5-2014 / 12:46

Matrix (circle one): (Soil) Sediment Water

Start Depth 1.5

End Depth 2.0

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH ≤ 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH ≤ 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		(SM)	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes) No

2. Percentage Fill (%) 100

3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel N/A

Other Disturbed native soil

Is Staining Present Yes (No)

Color Brownish Yellow (10YR 6/6)

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature [signature] **PG Registration #** 7735

Additional Comments TD = 2.0 ft

PID = 0.0 ppm

12 uR

48 cpm

MWH

Boring ID: SASV-DG-566 Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: SA

Logged By: V. Vathanasin Reviewed By:

Drilling Contractor: EST Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5400 / DP

Sampler Type: Macro core

Borehole Diam (inch): 2.25" Total Depth (ft.bgs): 3.5

Drill Bit Type: Macrocore

Site Sketch Map — N

Drill Start Time/Date: 1245 / 6-4-14 Drill Finish Time/Date: 1300 / 6-4-14

Soil Vapor ID: N/A Soil Boring Backfill Time/Date: 1325 / 6-4-14 Backfill Material: Soil cuttings

Soil Vapor Well Completion Time/Date: N/A Observations: ☐ Debris ☒ Staining ☐ Odors ☐ Groundwater ☐ None

Soil Vapor Probe Depths (ft.bgs): N/A Surface Completion: None

Soil Vapor Well Detail Completed (yes/no) Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Surface Description: Removed Silty Sand (SM), yellowish brown (10YR 5/4), loose, dry, fine sand, med sand, non-plastic silt, fill, no stains or odors.	-	-	20	45	35/
		42"				1	SW-GW	Well Graded Sand with Gravel (SW-GW), mottled brown (10YR 4/3) and gray (10YR 6/1), loose, dry, fine to coarse sand, angular fine rock fragment gravel,	20	10	30	40	TR
						2							
0.0			X		13:16	3	SP		-	-	-	100	-
SVL-566-SA5A-SB-3.0-3.5						4	Bf	fill, dark brown (10YR 3/3) stains. Poorly Graded Sand (SP), brownish yellow (10YR 6/8), loose, dry, fine sand, very dark grayish brown (10YR 3/2) streaks, native soil, no odors.					
						5							
						6							
						7		TD = 3.5, refusal on bedrock, no probes installed. Collect encore at 3.0-3.5.					
						8							
						9							

QA/QC

Surficial media boring log rev 2-25-2014

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By: [signature]

Sample ID: SVL-566-SASA-SB-3.0-3.5 Date/Time: 6-4-2014 / 13:15

Matrix (circle one): (Soil) Sediment Water

Start Depth: 3.0

End Depth: 3.5

Depth Units (circle one): Inches (Feet)

Check if Composite: ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID: None

Field Geologist: Van Vathanasin

Sampler:

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. **Is Fill Material Present** Yes (No)
2. **Percentage Fill (%)** 0

3. **Fill Description (circle all that apply)**

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present (Yes) No

Color brownish yellow (10YR 6/8)

Odor

1. **Odor Strength (circle one)**

(None) Slight Strong

2. **Odor Description (circle one)**

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature [signature] **PG Registration #** 7735

Additional Comments TD = 35

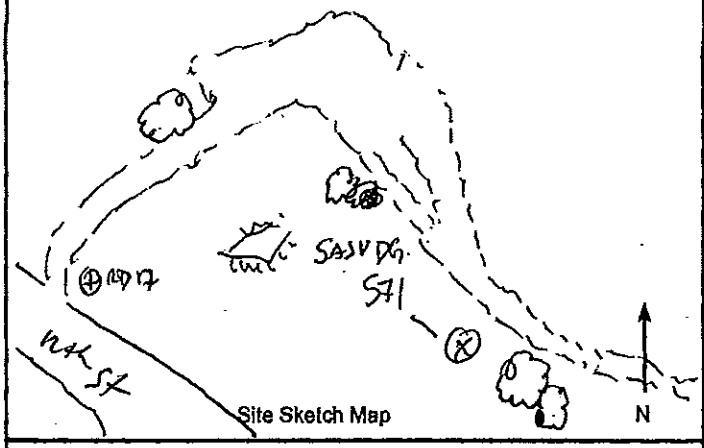
PID = 0.0 ppm

12.uR

54 cpm

NA – Not Applicable

MWH.



Site Sketch Map

Boring ID: SASV DG-571	Sheet 1 of 1
Project: Phase 3 DOE SVDG 2014	
Job #: 10503892.3060106	Site: SA
Logged By: [illegible]	Reviewed By:
Drilling Contractor: EST	Drillers Name: MARTY KILHOLLEN
Drill Rig Type/Method: Geoprobe 5400	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft bgs): 3.0'
Drill Bit Type: Macrocore	
Drill Start Time/Date: 11:14 04JUN2014	Drill Finish Time/Date: 11:20 04 JUN 2014
Soil Vapor ID: N/A	Soil Boring Backfill Time/Date: 12:35 04 JUN 2014
Soil Vapor Well Completion Time/Date: N/A	Backfill Material: soil cuttings, hydrated bent.
Soil Vapor Probe Depths (ft.bgs): N/A	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Well Detail Completed (yes/no) N/A	Surface Completion: Backfilled hole / bent
	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

Surface Description: mulch / mustard, flax

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
0.0 ppm		36"				0		0 - 2.2					
						1	SM	Silty sand (sm), Brown (10YR 4/3)	-	-	5	60	35
								very loose for first foot, then					
						2		loose, dry. mostly fine sand					
			X				SM	(60), some silt (35), few medium					
						3		sand (5). No stain, no odor					
	SVL-571-SASA-SB-2.5-3.0 @ 11:26							Fill material, some fine					
						4		roots in first 18".					
0.0 ppm	13 µRem, 42 cpm							2.2 - 3.0					
						5		Silty sand (sm), light yellow	-	-	10	60	30
								brown (10YR 6/4). loose, dry					
						6		mostly fine sand (60), some					
								silt (30), few medium sand (10).					
						7		No stain, no odor, Native.					
						8		. TD = 3.0' bgs w/ refusal					
								on sandstone bedrock.					
						9		. Backfilled w/ soil cuttings					
								@ 12:35					

QA/QC
Surficial media boring log rev 2-25-2014

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Jeff Myers

Sample ID SVL-571-SASA-SB-2.5-3.0 Date/Time 04JUN14, 11:26

Matrix (circle one): (Soil) Sediment Water

Start Depth 2.5'

End Depth 3.0'

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist RM Ellis

Sampler RM Ellis

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	✓
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		(SM)	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				CH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. **Is Fill Material Present** Yes (No)
2. **Percentage Fill (%)** 0
3. **Fill Description (circle all that apply)**

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present Yes (No)

Color 10YR 6/4 light yellowish brown

Odor

1. **Odor Strength (circle one)**

(None) Slight Strong

2. **Odor Description (circle one)**

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature [signature] **PG Registration #** 7755

Additional Comments collected 1-4oz jar + 3 encores

13.1 Rem, 42 cpm, 0.0 ppm. TD = 3.0' bgs

MWH

Boring ID: SASV-DG-574 | Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 | Site: SA

Logged By: V. Vathanasin | Reviewed By:

Drilling Contractor: EST | Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5400 / DP

Sampler Type: Macrocore

Borehole Diam (inch): 2.25" | Total Depth (ft.bgs): 2.0

Drill Bit Type: Macrocore

Drill Start Time/Date: 1055/6-4-14 | Drill Finish Time/Date: 1105/6-4-14

Soil Boring Backfill Time/Date: 1118/6-4-14 | Backfill Material: Soil cuttings

Site Sketch Map — N

Soil Vapor ID: N/A

Soil Vapor Well Completion Time/Date: N/A

Soil Vapor Probe Depths (ft.bgs): N/A

Soil Vapor Well Detail Completed (yes/no)

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Surface Completion: None

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Silty Sand (sm), dark yellowish brown (10YR 4/4), loose, dry, fine sand, non-plastic silt, roots, no odors and no stains, fill.	–	–	–	75	25
0.0	X	18"	X		1110	1							
						2							
SVL-574-SA	SA		SB	1.5-2.0			Bt	Sandstone, weathered.					
						3							
						4		TD = 2.0 ft, refusal on bedrock, no probes installed; collect soil samples for VOC analyses at 1.5-2.0					
						5							
						6							
						7							
						8							
						9							

Soil Description: 1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: Filled in between rock outcrops

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By [signature]

Sample ID SVL-574-SA5A-SB-1.5-2.0 Date/Time 6-4-14 / 11:10

Matrix (circle one): Soil (circled) Sediment Water

Start Depth 1.5

End Depth 2.0

Depth Units (circle one): Inches Feet (circled)

Check if Composite ☐

Collection Method (circle one): DPT (circled) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): N (circled) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		(SM)	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				CH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes) No

2. Percentage Fill (%) 100

3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel N/A

Other Locally Re-worked native soil

Is Staining Present Yes (No)

Color Dark Yellowish Brown (10YR 4/4)

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature Mike Hoffman **PG Registration #** 7735

Additional Comments TD = 2.0

PID = 0.0 ppm

13 uR

68 cpm

MWH

Boring ID: 5ASV-DG-576	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5A
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch) 2.25"	Total Depth (ft.bgs) 3.0
Drill Bit Type: Macrocore	
Drill Start Time/Date: 1005 / 6-4-2014	Drill Finish Time/Date: 1020 / 6-4-2014
Soil Boring Backfill Time/Date: 1035 / 6-4-14	Backfill Material: Soil cuttings
Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None	
Surface Completion: None	
Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None	

Site Sketch Map — N

Soil Vapor ID: N/A

Soil Vapor Well Completion Time/Date: N/A

Soil Vapor Probe Depths (ft.bgs): N/A

Soil Vapor Well Detail Completed (yes/no)

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
	X	36"				0	SM	Silty Sand (SM), brownish yellow (10YR 6/6), loose, dry, fine sand, non-plastic silt, no odors or stains, fill.	--	-	-	70	30
	X		X		10:15	3							
SVL-576-SA5A-SB-2.5-3.0							Br	Sandstone, weathered.					
						4		TD = 3.0 ft, refusal on bedrock; collect grocores at 2.5-3.0, No vapor probes installed.					
						5							
						6		Drilled 2 extra borings to confirm shallow refusal w/ similar results					
						7							
						8							
						9							

Soil Description: 1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description:

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Stephen Myers

Sample ID SVL-576-SASA-SB-2.5-3.0 Date/Time 6-4-2014 / 10:15

Matrix (circle one): (Soil) Sediment Water

Start Depth 2.5

End Depth 3.0

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH ≤ 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH ≤ 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		(SM)	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes) No

2. Percentage Fill (%) 100

3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel N/A

Other Locally sourced fill

Is Staining Present Yes (No)

Color brownish yellow (10YR 6/6)

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature [signature] **PG Registration #** 7735

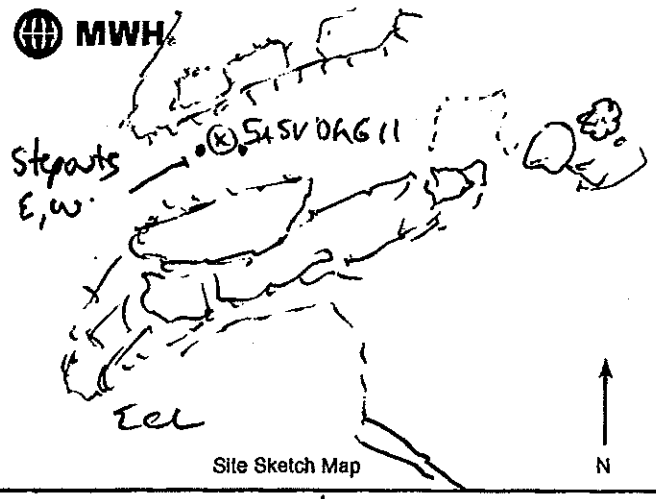
Additional Comments TD = 3.0

PID = 0.0

13.4R

36 cpm

MWH



Site Sketch Map

Boring ID: 5ASVDG-611	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5A
Logged By: Rob Ellis	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs):
Drill Bit Type: Macro Core	
Drill Start Time/Date: 09JUN14 10:36	Drill Finish Time/Date: 09 JUN 14 10:38
Soil Vapor ID: N/A	Soil Boring Backfill Time/Date: 09JUN14 11:02
Soil Vapor Well Completion Time/Date: N/A	Backfill Material:
Soil Vapor Probe Depths (ft.bgs): N/A	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Well Detail Completed (yes/no): N/A	Surface Completion: None
	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description foxtail, coyotebush, oat.

1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size% 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: Flat, on road side

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
		22"				0	SM	0.0-0.5					
						1	SP-SM	Silty Sand (SM) Brown (10YR 4/3)	-	-	10	60	30
					TD= 1.85'	2		Loose, dry. Mostly fine sand (60), some silt (30), and few medium					
Sample 1.35-1.85'								sand (10). No stain, no odor					
SVL-611-5A5A-5B-1.35-1.85						3		Fill material-					
@ 10:39								0.5-1.85'					
0.0 ppm, 13uR, 44cpm						4		Poorly graded sand w/ silt (SP-SM). Yellowish brown (10YR 5/6).	-	TR	10	70	20
TD = 1.85' bgs						5		Loose, dry. Mostly fine					
w/ refusal on								sand (70), little silt (20),					
sandstone bedrock						6		few medium sand (10), trace					
								coarse sand. No stain, no					
						7		odor - Native.					
								TD = 1.85' bgs					
						8		Backfilled w/ soil cuttings					
								09JUN14, ~~10~~ 11:02					
						9							
								Stepped out to east and west					
								to confirm shallow refusal					

QA/QC
Surficial media boring log rev 2-25-2014

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Steph Myrel

Sample ID SVL-611-SA5A-SB-1.35-1.85 Date/Time 09JUN2014; 10:39

Matrix (circle one): Soil (circled) Sediment Water

Start Depth 1.35'

End Depth 1.85'

Depth Units (circle one): Inches Feet (circled)

Check if Composite ☐

Collection Method (circle one): DPT (circled) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): N (circled) FD FB RB

Parent Sample ID N/A

Field Geologist RB Ellis

Sampler RB Ellis

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	✓
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

FSDS Revision 3.0 11/19/2013

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present: Yes (No)
2. Percentage Fill (%): 0
3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present Yes (No)

Color 10 YR 5/6 yellowish brown

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

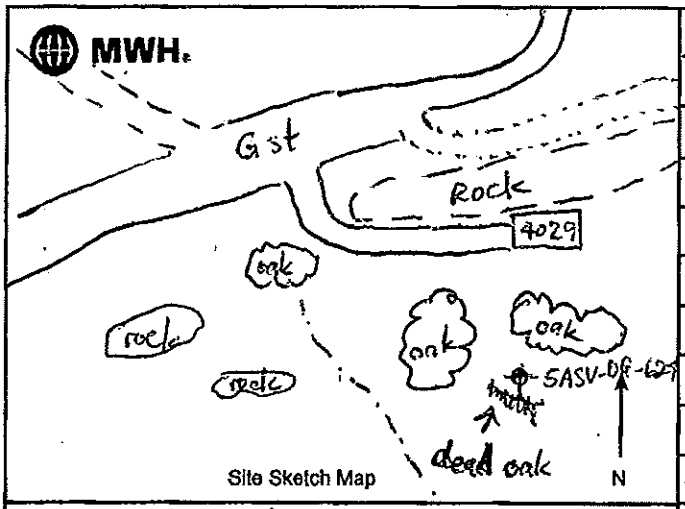
(Dry) Moist Wet

PG Signature _____ **PG Registration #** 7735

Additional Comments Collected 3 encores + 1 4oz jar.

13 μRem, 44 cpm, 0.0 ppm. TD = 1.85'

MWH



Site Sketch Map

Boring ID: SASV-DG-627 Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: SA

Logged By: V. Vathanasin Reviewed By:

Drilling Contractor: EST Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5400 / DP

Sampler Type: Macrocore

Borehole Diam (inch): 2.25 Total Depth (ft.bgs): 3.5

Drill Bit Type: Macrocore

Drill Start Time/Date: 0859 / 6-6-14 Drill Finish Time/Date: 0910 / 6-6-14

Soil Vapor ID: N/A

Soil Boring Backfill Time/Date: 0930 / 6-6-14 Backfill Material: Soil cutting

Soil Vapor Well Completion Time/Date: N/A

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Soil Vapor Probe Depths (ft.bgs): N/A

Surface Completion: None

Soil Vapor Well Detail Completed (yes/no)

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description
1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: Next to dead oak, grassy

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Silty Sand (SM), dark yellowish brown (10YR 3/4), loose, dry, fine sand and non-plastic silt, no odors or stains, native soil (alluvium),	-	-	-	65	35
		40"				1							
						2							
						3		no odors or stains, roots down to 12", non-cohesive					
0.0		X			09:13			@ 3' color change to yellowish brown (10YR 5/6)	-	-	25	55	20
						4	Br	Sandstone, eweathered.					
						5		TD = 3.5, refused on bedrock, no vapor probes installed. Collect soil					
						6		3.0 - 3.5 and submit for VOC analyses.					
						7							
						8							
						9							

QA/QC
Surficial media boring log rev 2-25-2014

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By [signature]

Sample ID SVL-627-SA5A-SB-3.0-3.5 Date/Time 6-6-2014 / 9:13

Matrix (circle one): Soil (circled) Sediment Water

Start Depth 3.0

End Depth 3.5

Depth Units (circle one): Inches Feet (circled)

Check if Composite ☐

Collection Method (circle one): DPT (circled) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): N (circled) FD FB RB

Parent Sample ID None

Field Geologist Van Vathanasin

Sampler

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		(SM)	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				CH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. **Is Fill Material Present** Yes (No)

2. **Percentage Fill (%)** _____

3. **Fill Description (circle all that apply)**

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present Yes (No)

Color Yellowish Brown (10 YR 5/6)

Odor

1. **Odor Strength (circle one)**

(None) Slight Strong

2. **Odor Description (circle one)**

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature [signature] **PG Registration #** 7735

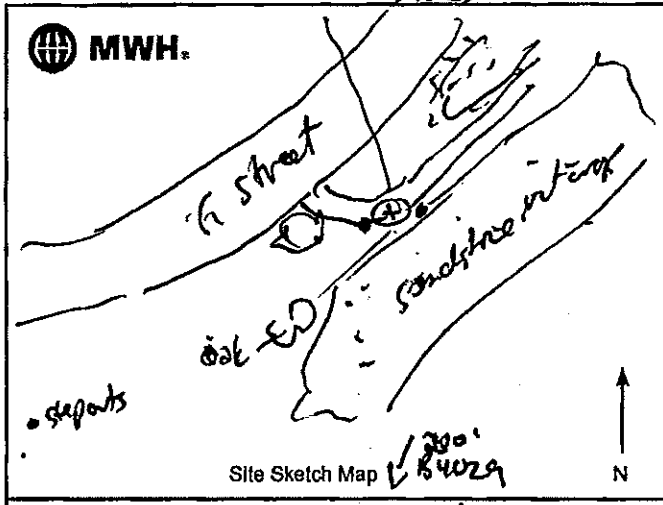
Additional Comments TD = 3.5

PID = 0.0 ppm

~~typo~~ 14 µR, 23 cpm

5ASV DG-630

MWH.



Site Sketch Map 200' B4029

Boring ID: SASV_DG-630	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5A
Logged By: RIBELLIS	Reviewed By:
Drilling Contractor: EST	Drillers Name: MORGAN HUGHES
Drill Rig Type/Method: Geoprobe 5400	
Sampler Type: Macro Core	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 2.0'
Drill Bit Type: Macrocore	
Drill Start Time/Date: 13:40 09 JUN 14	Drill Finish Time/Date: 13:49 09 JUN 14
Soil Vapor ID: N/A	Soil Boring Backfill Time/Date: 14:02 09 JUN 14 Backfill Material: Soil cuttings
Soil Vapor Well Completion Time/Date: N/A	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): N/A	Surface Completion: NONE
Soil Vapor Well Detail Completed (yes/no): N/A	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description
1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

Surface Description:

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
	X	24"				0	SM	0.0 – 0.5	-	-	10	60	30
						1	SP	Silty sand (SM) dark yellow brown (10YR 4/4) loose, dry					
			X		TD =	2		Mostly fine sand (60) some					
SVL-630-5A5A-33-1.5-2.0 @ 13:54								Silt (30), and few med sand (10) No stain, no odor, Fill.					
14 min 26 gpm 0.0 ppm.						3		0.5 – 2.0					
						4		Poorly graded Sand (SP). ~~dight~~ dark yellow brown (10YR 4/4) transitions to light	-	—	15	70	15
						5		yellow brown @ 1.5' bgs to (10YR 6/4). Mostly fine					
						6		Sand (70), little silt (15), little medium sand (15). ~~No~~					
TD = 2.0' bgs w/ refusal on sandstone bedrock.						7		loose, dry. No stain, no odor. Native					
						8							
						9		Stepped out to (E) + (W) for refusal confirmation					

Backfilled w/ soil cuttings @ 14:02

QA/QC
Surficial media boring log rev 2-25-2014

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By: [signature]

Sample ID: SVL-630-SA5A-SB-1.5-2.0 Date/Time: 09 JUN 14; 13:54

Matrix (circle one): (Soil) Sediment Water

Start Depth: 1.5'

End Depth: 2.0'

Depth Units (circle one): Inches (Feet)

Check if Composite: ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID: N/A

Field Geologist: M Bevis

Sampler: M Bevis

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	✓
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present: Yes (No)

2. Percentage Fill (%): (0)

3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present Yes (No)

Color 10YR 6/4 lt yw. brown

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

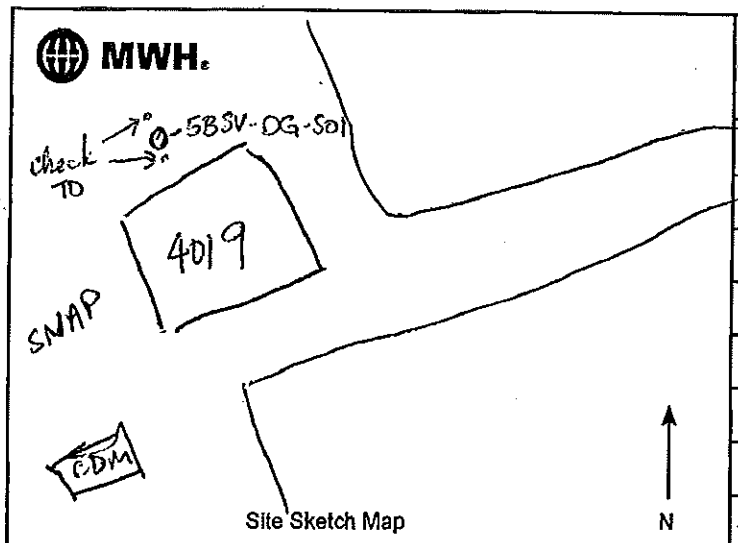
Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature [signature] **PG Registration #** 7735

Additional Comments Collected 3 encores + 1. 4oz jar
14 μRem, 26 cpm, 0.0 ppm.
TD ≈ 2.0' bgs

MWH.



Site Sketch Map

Boring ID: 5BSV-DG-501	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5B
Logged By: V. Vathanasin	Reviewed By: [signature]
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch) 2.25"	Total Depth (ft.bgs) 1.25
Drill Bit Type: Macrocore	
Drill Start Time/Date: 1445 / 5-12-14	Drill Finish Time/Date: 1505 / 5-12-14
Soil Vapor ID: N/A	Soil Boring Backfill Time/Date: 1510 N/A
Soil Vapor Well Completion Time/Date: N/A	Backfill Material: ~~Active~~ Soil cuttings VR
Soil Vapor Probe Depths (ft.bgs): N/A	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Well Detail Completed (yes/no)	Surface Completion: Cold asphalt patch
	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

Surface Description: Asphalt

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
0.0	X	15"	X	0.75-1.25	1450	0	SM	4" asphalt/concrete			10	70	20/
						1		Silty Sand (SM), yellowish brown (10YR 5/4), loose, dry, fine and medium sand, non plastic silt.					
						2		@1.25' Bedrock - light yellowish brown (10YR 6/4).					
						3							
						4		TD = 1.25' Refusal on Bedrock. No Vapor probes installed. Collected shallow encores due to intact slab at surface.					
						5							
						6							
						7							
						8							
						9							

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By _____

Sample ID SL-501-SA5B-SV-0.75-1.25 **Date/Time** 5-12-2014 / 1450

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.75

End Depth 1.25

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID _____

Field Geologist Van Vathanasin

Sampler Rob Ellis

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes) No

2. Percentage Fill (%) 100

3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present Yes (No)

Color Yellowish Brown (10YR 5/4)

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

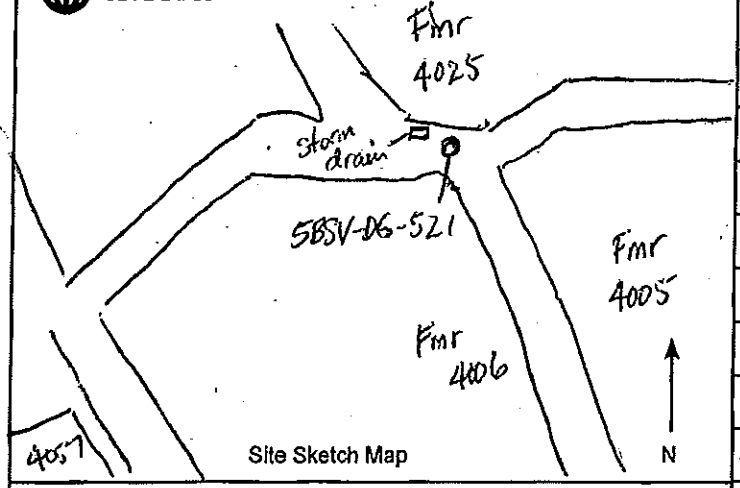
(Dry) Moist Wet

PG Signature Linda Hoffman **PG Registration #** 7735

Additional Comments 3 Encores + 1 4oz jar, TD = 1.25 ft, PID = 0.0 ppm
MR: 8 ; PID: 0.0; CPM: 87

NA – Not Applicable

MWH



Site Sketch Map

Boring ID: SBSV-06 | Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 | Site: 5B

Logged By: V. Vathanasin | Reviewed By:

Drilling Contractor: EST | Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5400 / DP

Sampler Type: Macrocore

Borehole Diam (inch): 2.05" | Total Depth (ft.bgs): 3.8'

Drill Bit Type: Macrocore

Drill Start Time/Date: 0906 / 5-14-14 | Drill Finish Time/Date: 0920 / 5-14-14

Soil Vapor ID: NONE | Soil Boring Backfill Time/Date: 0930 / 5-14-14 | Backfill Material: Soil cuttings

Soil Vapor Well Completion Time/Date:

Observations: ☐ Debris ☒ Staining ☐ Odors ☐ Groundwater ☐ None

Soil Vapor Probe Depths (ft.bgs):

Surface Completion: Asphalt patch

Soil Vapor Well Detail Completed (yes/no)

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0		Surface Description: Asphalt					
0.0							SM	Asphalt 4"					
						1	SW	Silty Sand with gravel (SM), brown (10YR 5/3), loose, dry, fine to medium sand, fine angular gravel, non-plastic silt, non-cemented, dark asphalt stains, no odors, road base/fill	10	-	20	40	30
		46"				2			-	20	30	50	TR
			X		09:20	3		@1' Well Graded Sand (SW), pale brown (10 YR 7/3), loose, dry, fine to coarse sand, trace silt, fill	-	-	10	50	40
				SVL-521-3.5B-SB		3.0-3.5 4	SM						
						5		Silty Sand (SM), yellowish brown (10YR 6/6), loose, dry, predominantly fine sand, medium sand, silt, fill					
						6							
						7		@3.8' Sandstone, weathered.					
						8		TD = 3.8', refusal on bedrock, encores collected 3.0 - 3.5' bgs. No vapor probes installed.					
						9							

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Shelby Valenzuela

Sample ID SVL-521-SA5B-SB-3.0-3.5 **Date/Time** 5-14-14 / 09:20

Matrix (circle one): (Soil) Sediment Water

Start Depth 3.0

End Depth 3.5

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler Rob Ellis

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		(SM)	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. **Is Fill Material Present** (Yes) No

2. **Percentage Fill (%)** 100

3. **Fill Description (circle all that apply)**

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present Yes (No)

WT052020M

Color ~~N/A~~ 10YR 6/16

Odor

1. **Odor Strength (circle one)**

(None) Slight Strong

2. **Odor Description (circle one)**

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

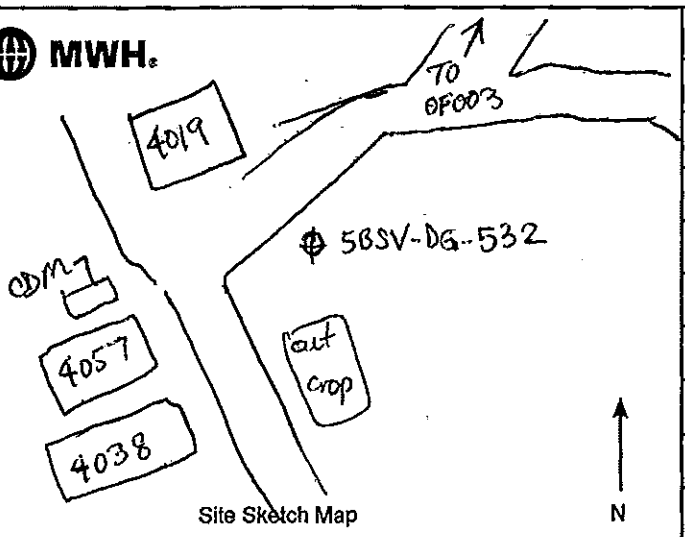
PG Signature _____ **PG Registration #** 7735

Additional Comments PID = 0.0, 3-encores, 1 4oz jar

Total depth = 3.8' bgs.

Rad: 12 uR, 65 cpm

MWH



Site Sketch Map

Boring ID: 5BSV-DG-532 Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: 5B

Logged By: V. Vathanasin Reviewed By: [signature]

Drilling Contractor: EST Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5400 / DP

Sampler Type: Macrocore

Borehole Diam (inch): 2.25" Total Depth (ft.bgs): 5'

Drill Bit Type: Macrocore

Drill Start Time/Date: 0820 / 5-13-14 Drill Finish Time/Date: 0845 / 5-13-14

Soil Vapor ID: N/A

Soil Boring Backfill Time/Date: 0900 / 5-13-14 Backfill Material: Soil Cuttings

Soil Vapor Well Completion Time/Date: N/A

Observations: ☐ Debris ☒ Staining ☐ Odors ☐ Groundwater ☐ None

Soil Vapor Probe Depths (ft.bgs): N/A

Surface Completion: None

Soil Vapor Well Detail Completed (yes/no): no

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
								Surface Description: Graded fill, mustard					
0.0						0	SP-SM	Poorly Graded Sand w/ Silt (SP-SM), very pale brown (10YR 7/3), loose, dry, fine sand, non-plastic silt, non-cemented, fill	-	-	-	70	30
		48"				1							
						2	SM		10	-	5	50	35
								@2' Silty Sand w/ Gravel (SM), brown (10YR 5/3), med. dense, faint moisture, fine sand, medium sand, non-plastic silt, fine gravel (angular), no odors or stains, fill.	-	-	5	60	35
						3							
0.0		12"		532	4.0-5.0	4							
				532	4.0-5.0	5							
					0840		Br	@3' grades w/o gravel, iron stains					
						6		@5' Sandstone, weathered Chatsworth Fm.					
						7		TD=5', refusal on bedrock, no vapor probes installed. Collect soil sample @ 4.0-5.0 ft. (MS/MSD, dup)					
						8							
						9							

QA/QC

Surficial media boring log rev 2-25-2014

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

VV 5-19-14 FSDS Checked By

VV SVL 532

Sample ID ~~SL-536~~ - SA5B-SV-4.0-5.0 MS Date/Time 5-13-2014/08:40

Matrix (circle one): (Soil) Sediment Water

Start Depth 4.0

End Depth 5.0

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler Rob Ellis

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		(SM)	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes) No

2. Percentage Fill (%) 100 %

3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present Yes (No)

WT 05202014

Color ~~N/A~~ 10YR 5/3

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature _____ **PG Registration #** 2735

Additional Comments Total boring depth = 5.0 ft, 9 Encores, 1x 8oz jar

Radiological measurements 4:5' 10 uR, 0.0(PID), 72 cpm

NA – Not Applicable

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By [signature]

Sample ID ~~SL~~ SVL ~~536~~ 832 ~~836~~ V.V. 5-14-14 V.V. - SA5B - ~~SV~~ SB - 4.0-5.0

Date/Time 5-13-14 / 08:45

Matrix (circle one): Soil (circled) Sediment Water

Start Depth 4.0

End Depth 5.0

Depth Units (circle one): Inches Feet (circled)

Check if Composite ☐

Collection Method (circle one): DPT (circled) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): N FD (circled) FB RB

Parent Sample ID ~~SL~~ SVL - 536 - SA5B - ~~SV~~ SB - 4.0 - 5.0

Field Geologist Van Vathanasin

Sampler Rob Ellis

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

FSDS Revision 3.0 11/19/2013

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		(SM)	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes) No

2. Percentage Fill (%) 100

3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present Yes (No)

Color WT05202014 ~~N/A~~ 10YR 5/3

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature _____ **PG Registration #** 7735

Additional Comments Duplicate Sample, 3 encores, 1 4oz jar

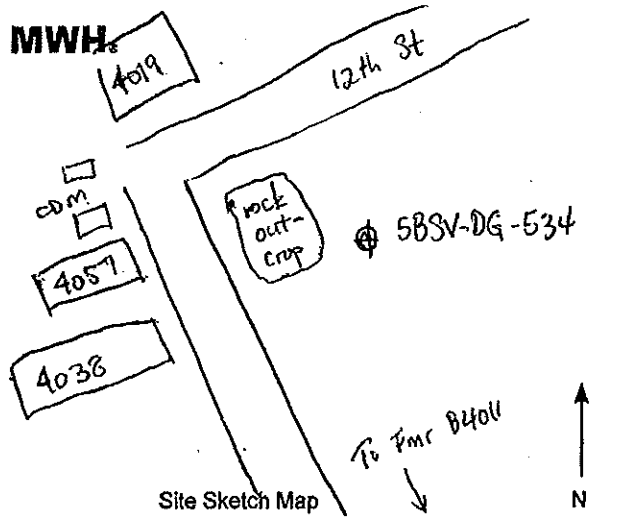
Total depth 5.0 ft

Rad info. 4'-5', 10 uR, 0.0 ppm (PID), 72 cpm

Dupl taken @ 08:45h.

NA – Not Applicable

MWH



Site Sketch Map

Boring ID: SBSV-DG-534 Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: 513

Logged By: V. Vathanasin Reviewed By: [signature]

Drilling Contractor: EST Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5400 / DP

Sampler Type: Macrocore

Borehole Diam (inch): 2.25" Total Depth (ft.bgs): 3.5'

Drill Bit Type: Macrocore

Drill Start Time/Date: 0750 / 5-15-14 Drill Finish Time/Date: 0810 / 5-15-14

Soil Vapor ID: N/A

Soil Boring Backfill Time/Date: 0815 / 5-15-14 Backfill Material: Soil Cuttings.

Soil Vapor Well Completion Time/Date: N/A

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Soil Vapor Probe Depths (ft.bgs): N/A

Surface Completion: None

Soil Vapor Well Detail Completed (yes (no))

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil Type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Surface Description: Graded backfill, mustard. Silty sand (SM), light yellowish brown (10YR 6/4), loose, dry, fine sand, med. sand, low-plasticity silt, no stains,	—	—	20	40	40
		42"				1		no odors, fill.					
						2		@2' color changes to pale brown (10YR 6/3)					
0.3			X		08:10	3	SP-SM	Poorly Graded sand w/ silt (SP-SM), yellowish brown (10YR 5/6), loose,					
SBSV-534-SASB-SB-3.0-3.5						4	Br	dry, fine sand, non-plastic silt, possibly weathered bedrock, native.					
						5		@3.5 Sandstone, weathered, Chatsworth Formation.					
						6							
						7		TD= 3.5', refusal on bedrock, no vapor probes installed, collect 3 encores and 4 oz. jar.					
						8		Stepped out 2ft E and W to confirm shallow refusal with similar results.					
						9							

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Shef Mysel

Sample ID SVL-534-SA5B-SB-3.0-3.5 Date/Time 5-15-14 / 08:10

Matrix (circle one): (Soil) Sediment Water

Start Depth 3.0

End Depth 3.5

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler Rob Ellis

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH * 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH * 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present ~~Yes~~ No ✓ (V.P.)

2. Percentage Fill (%) N/A

3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel N/A

Other _____

Is Staining Present Yes No

Color ~~N/A~~ 10YR 5/6 WT05202014

Odor

1. Odor Strength (circle one)

None Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

N/A Other _____

Moisture Condition (circle one)

Dry Moist Wet

PG Signature [signature] PG Registration # 7735

Additional Comments Total Depth = 3.5 ft, PID = 0.3 ppm

Rad info: 10 uR, 72 cpm

MWH

Boring ID: SBSV-DG-536 Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: 5B

Logged By: V. Vatharasin Reviewed By:

Drilling Contractor: EST Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5406 / DP

Sampler Type: Macrocore

Borehole Diam (inch): 2.25" Total Depth (ft.bgs): 1.5'

Drill Bit Type: Macrocore

Drill Start Time/Date: 0730 / 5-13-14 Drill Finish Time/Date: 0745 / 5-13-14

Soil Boring Backfill Time/Date: 0755 / 5-13-14 Backfill Material: Soil Cuttings

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Surface Completion: None

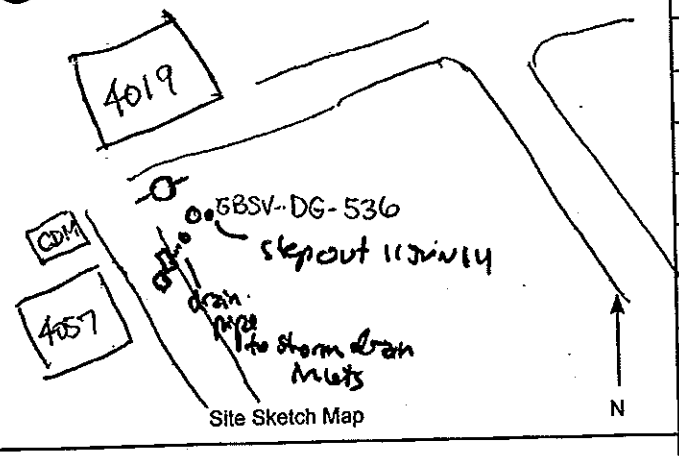
Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Vapor ID: NONE

Soil Vapor Well Completion Time/Date: NONE

Soil Vapor Probe Depths (ft.bgs): NONE

Soil Vapor Well Detail Completed (yes/no) NONE



Site Sketch Map

Soil Description
1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: Graded surface, grass

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
0.0	X	18"	NONE	NONE	NONE	0	SW-SM	Well Graded Sand w/ Silt (@ SW-SM), brownish yellow (10YR 6/6), loose, dry, fine to coarse sand, non-plastic silt, non cemented, fill, no odors or staining;	→	10	30	50	10
	X	sidewalk				1							
						2	Br	Bedrock - Chatsworth Sandstone TD=2.0' of sidewalk					
						3		TD = 1.5', refusal on bedrock; No vapor probes installed and no soil samples collected.				Begin 09:41	
						4							
						5		Sample collected at 1.5-2.0' bgs in fill @ 10:02				End 09:58	
						6		SVL-536-SASB-SB-1.5-2.0 10 µRem, 18 cpm, 0.0 ppm					
						7							
						8		stepped out 18" ENE of probe location to extract sample @ expected shallow refusal on sandstone bedrock					
						9							

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Steff Mupell

Sample ID SVL-536-SASB-SB-1.5-2.0 Date/Time 11 JUN 14; 10:02

Matrix (circle one): (Soil) Sediment Water

Start Depth 1.5'

End Depth 2.0'

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist RB Sellers

Sampler RB Sellers

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	✓
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				CH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes) No
2. Percentage Fill (%) 100%
3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel N/A

Other Disturbed Soil

Is Staining Present Yes (No)

Color 10YR 6/6 brownish yellow

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

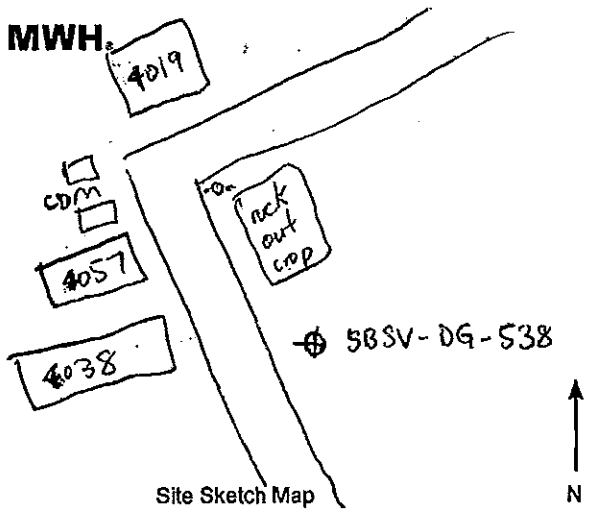
PG Signature _____ PG Registration # 7735

Additional Comments Collected 3 encores + 1 4-oz jar

10.1 ppm IB ppm, 0.0 ppm.

TD = 2.0' bgs

MWH



Site Sketch Map

Boring ID: 5BSV-DG-538	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5B
Logged By: V. Vathanasin	Reviewed By: [signature]
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400/DP	
Sampler Type: Macro core	
Borehole Diam (inch) 2.25"	Total Depth (ft.bgs) 20
Drill Bit Type: Macrocore	
Drill Start Time/Date: 0830/5-15-14	Drill Finish Time/Date: 0850/5-15-14
Soil Vapor ID: N/A	Soil Boring Backfill Time/Date: 0850/5-15-14 Backfill Material: Soil cuttings.
Soil Vapor Well Completion Time/Date: N/A	Observations: ☐ Debris ☒ Staining ☐ Odors ☐ Groundwater ☐ None
Soil Vapor Probe Depths (ft.bgs): N/A	Surface Completion: None
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description
1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

Surface Description: Graded backfill

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
	X	24"				0	SM	Silty Sand (SM), light yellowish brown (10YR 6/4), loose, dry, fine sand, non plastic silt, fill, roots, dried grass @1.5' yellow (10YR 7/8) iron staining	-	-	-	70	30
0.0	X		X	1	08:45	1	SP-SM	Poorly graded sand w/silt brownish yellow (10YR 6/6), loose, dry, fine sand, silt, weathered bedrock, native soil. @2' Bedrock, sandstone	-	-	-	90	10
SVL-538-SA			5B-SB-		~~2.0~~ ~~2.50~~ 1.5-2.0	2							
						3							
						4							
						5		TD= 2.0, refusal on bedrock, no probes installed, collect 3 encores 1.5-2.0 ft.					
						6		* Drilled 2 add'l borings E+W to confirm refusal w/ similar results					
						7							
						8							
						9							

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Stef Mysel

Sample ID SVL-538-SA5B-SB-1.5-2.0 Date/Time 5-15-14 / 08:45

Matrix (circle one): (Soil) Sediment Water

Start Depth 1.5

End Depth 2.0

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler Rob Ellis

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				(SP-SM)	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. **Is Fill Material Present** Yes (No)

2. **Percentage Fill (%)** 0

3. **Fill Description (circle all that apply)**

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present Yes (No)

WT05202014

Color ~~N/A~~ 10YR 6/6

Odor

1. **Odor Strength (circle one)**

(None) Slight Strong

2. **Odor Description (circle one)**

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature _____ **PG Registration #** 7735

Additional Comments Total Depth = 2.0 ft, PID = 0.0 ppm

Rad info: 10 uR, 59 cpm

MWH

Boring ID: SBSV-DG-543 Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: 5B

Logged By: V. Vathanasin Reviewed By:

Drilling Contractor: EST Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5400 / DP

Sampler Type: Macrocore

Borehole Diam (inch): 2.25" Total Depth (ft.bgs): 25'

Drill Bit Type: Macrocore

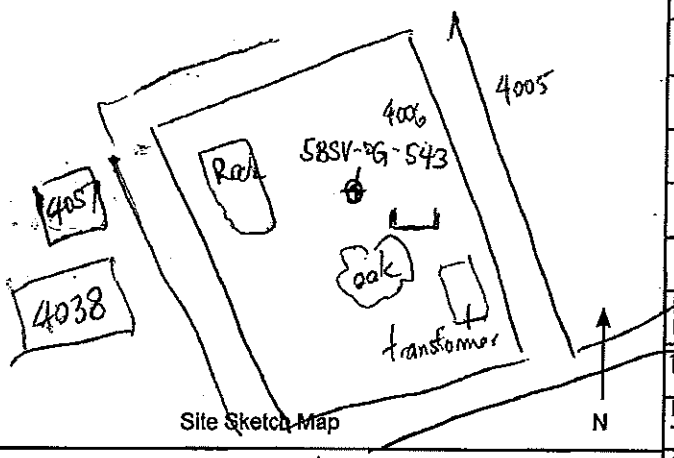
Drill Start Time/Date: 1335 / 5-14-14 Drill Finish Time/Date: 1345 / 5-14-14

Soil Boring Backfill Time/Date: 1355 / 5-14-14 Backfill Material: Soil Cuttings

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Surface Completion: None

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None



Site Sketch Map

Soil Vapor ID: N/A

Soil Vapor Well Completion Time/Date: N/A

Soil Vapor Probe Depths (ft.bgs): N/A

Soil Vapor Well Detail Completed (yes/no)

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Surface Description: weeds, mud cracks.					
0.0	X	30"				1		Silty Sand (SM), very pale brown (10YR 7/4), loose, dry, fine to medium sand, no odors or stains, fill	-	-	20	55	25
			X			2		@1' color changes to brownish yellow (10YR 6/6)					
						3	B_r	Bedrock, Sandstone, weathered (Chatsworth Fm)					
						4		TD = 2.5', refusal on sandstone bedrock, no probes installed. Collect 3 encores and 4 oz jar.					
						5							
						6							
						7							
						8							
						9							

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Shelby Valenzuela

Sample ID SVL-543-SA5B-SB-20-25 Date/Time 5-14-14 / 13:50

Matrix (circle one): (Soil) Sediment Water

Start Depth 20

End Depth 25

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanaxn

Sampler Rob Ellis

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes) No
2. Percentage Fill (%) 100
3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present Yes (No)

Color WT 05/20/2014 ~~N/A~~ 10YR 6/16

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

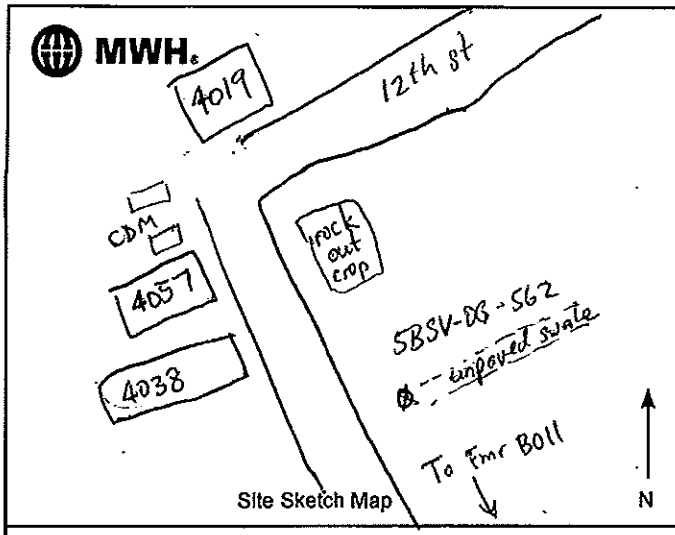
PG Signature [signature] PG Registration # 7735

Additional Comments PID = 0.0. Total Depth = 2.5' bgs.

Radiological info – 13 uR, 96 cpm

NA – Not Applicable

MWH



Site Sketch Map

Boring ID: SBSV-DG-562	Sheet 1 of 2
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5B
Logged By: V. Vatharasir	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgen Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macro core	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 12.5
Drill Bit Type: Macrocore	
Drill Start Time/Date: 0925 / 5-15-14	Drill Finish Time/Date: 1030 / 5-15-14
Soil Vapor ID: SBSV-DG-562	Soil Boring Backfill Time/Date: N/A
Soil Vapor Well Completion Time/Date: 10:50 / 5-15-14	Backfill Material: N/A
Soil Vapor Probe Depths (ft.bgs): 5.0-6.0, 10.5-11.5	Observations: ☒ Debris ☐ Staining ☐ Odors ☐ Groundwater ☐ None
Soil Vapor Well Detail Completed (yes/no)	Surface Completion: Soil Vapor Probe
	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Silty Sand (SM), pale brown (10YR 6/3), med. dense, dry, fine to medium sand, low-plasticity silt, layered appearance, plastic shreds from ~~geosynthetic liner~~ (?), fill	-	-	10	55	35/
		48"	NONE			1							
						2		buried sand bags.					
						3	SM	Silty Sand w/ clay, brownish yellow (10YR 6/8), med. dense, dry, fine sand, low-plasticity fines, no anne plastic scraps, fill, no odors or stains	-	-	-	60	30/10
0.0						4							
						5							
		40"	NONE			6							
						7	SP-SM	Poorly graded Sand w/ Silt (SP-SM), yellowish brown (10YR 5/8), loose, dry, fine sand, very low plasticity silt, no odors or stains, native soil	-	-	-	90	10
0.0						8	CL		-	-	10	80	100/10
						9	SP-SM	Clay (CL), light brown (7.5 YR 6/3), stiff, moist, med-plasticity clay, native					

cont page 2

Boring ID: SBSV-DG-562 Project: DOE Phase 3 Soil Vapor DG Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						10	SP-SM	@ 8.5' Poorly Graded Sand w/ Silt (SP-SM), light yellowish brown (10YR 6/4) with	-	-	-	65	10/25 ← @9
		12"	NONE			11	SP	brownish yellow (10YR 6/8) streaks (iron stain), fine sand, medium sand, non-plastic silt, f.u	-	-	-	100	TR ← @10
						12		@ 9.0 dark brown (10YR 3/3) stain					
						13		@ ~~10.5~~ 9.5 (V) Clayey Sand (SC), very pale brown (10YR 7/4), med. dense, dry, fine sand, low plasticity fines, slightly layered, f.u					
						14		@ ~~11~~ 10 (V) Poorly Graded Sand (SP), brownish yellow (10YR 6/6), loose, dry, fine sand, trace silt, f.u					
						15							
						16		@ 12' Weathered Shale bedrock.					
						17		TD = 12.5' on weathered shale bedrock, install vapor probes at 5.0-6.0 and 10.5-11.5' bgs. Adjusted depths to (V) avoid clay layers.					
						18							
						19							
						20		6/10/14					
						1		- STEPOUT ~2' NE OF ORIGINAL INSTALL; SV PROBE INSTALLED @ 8.0-9.0'.					
						2		- SAMPLE COLLECTED @ 8.0-9.0' SVL-562-SASB-SB-8.0-9.0 @ 1445					
						3		TD ON STEP @ REFUSAL OF 10' - WEATHERED SHALE & CLAY @ 9-9.5' AND WEATHERED BR/SHALE @ 9.5-10'.					
						4		LOG FROM PREVIOUS INSTALL SAME FROM 0-8'; SP @ 8-9'.					
						5							
						6							
						7							
						8							
						9							

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

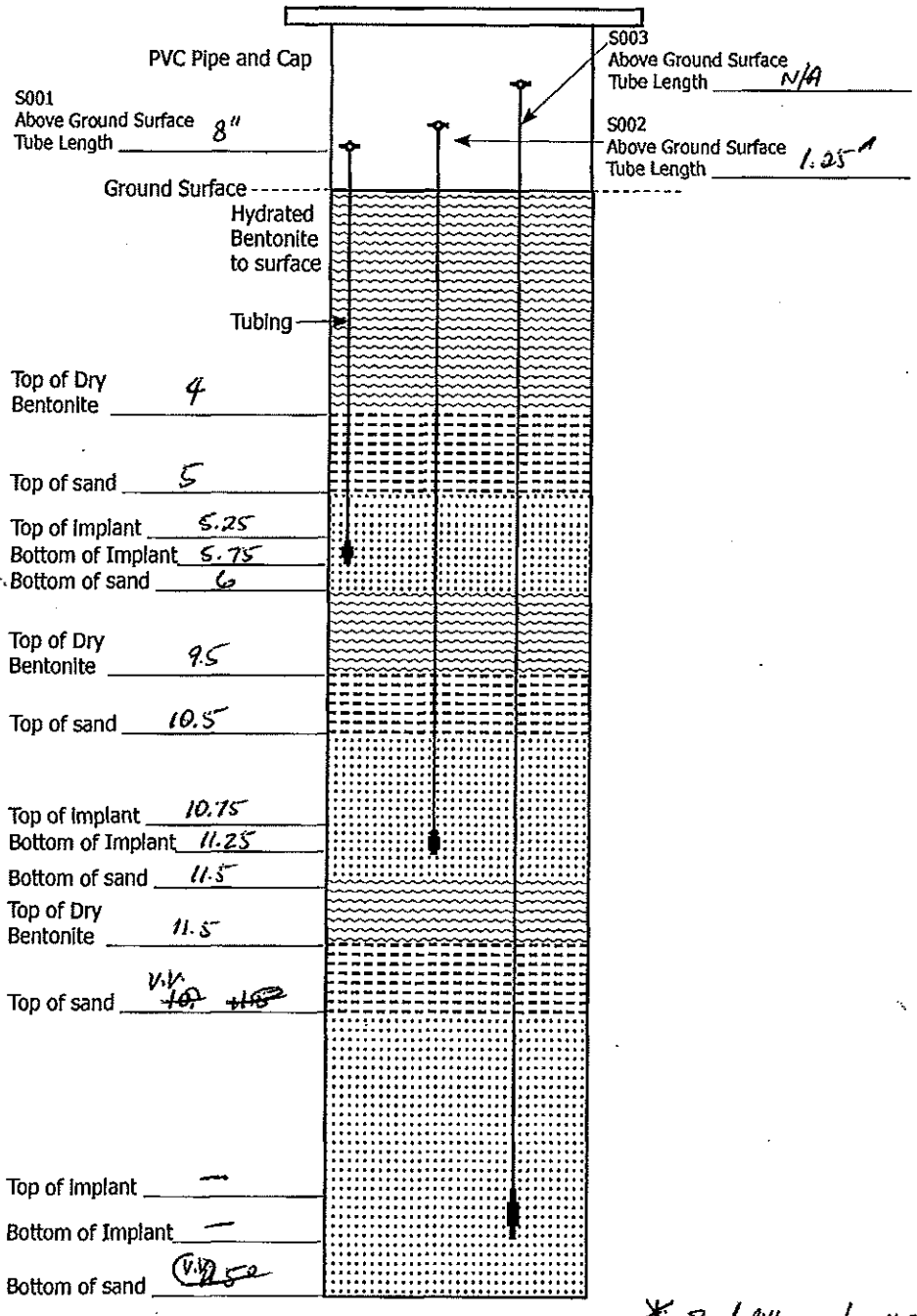
Multiple Soil Vapor Probe Construction Diagram

MWH

Probe ID/Soil ID: SBSV-DG-502
Site: 5B
Drilling Contractor: EST
Borehole TD: 12.5

Project: Phase 3 DOE SV DG
Logged by: V. Vathanasin
Driller: Morgan Hughes
Borehole Diameter: 2.25"

Job #: 10503982
Reviewed by:
Rig Type/Method: Geoprobe 5400 / DP
Probe Completion Date/Time: 5-15-14/10:50



* Backfill up to 11.5'

Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Cemex

Dry Bentonite
Type: #8
Manufacturer: CETCO

Hydrated Bentonite
Type: #8
Manufacturer: CETCO

Notes:

1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

MWH

Single Soil Vapor Probe Construction Diagram

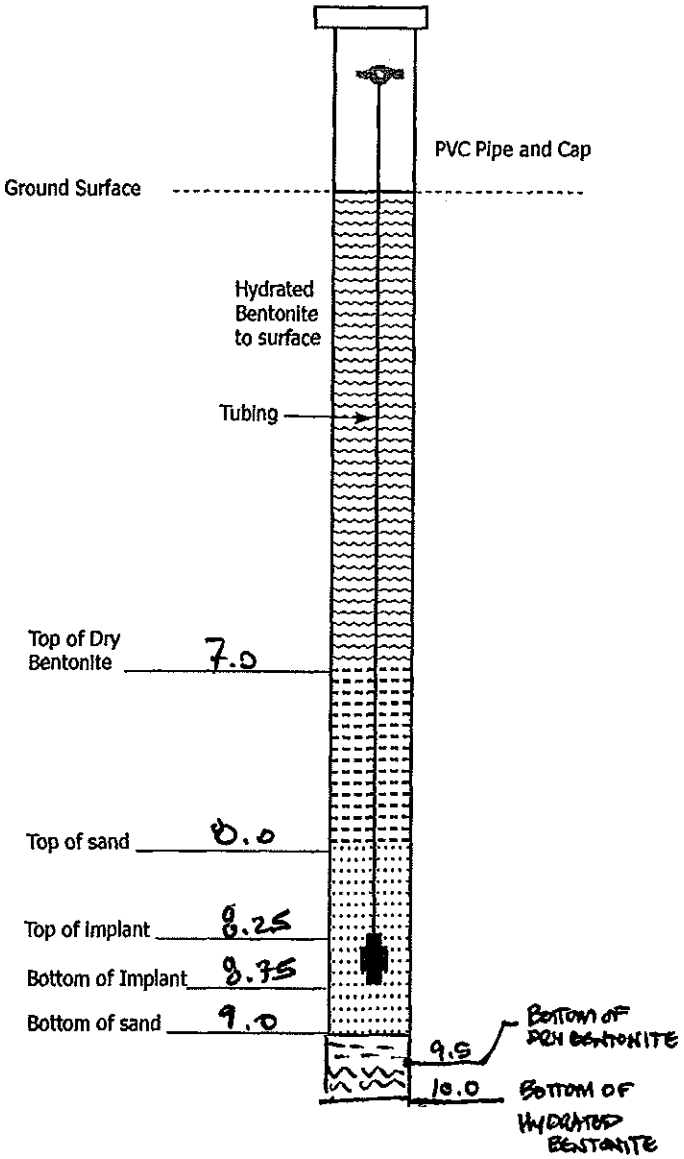
Probe ID/Soil ID: SBSV-DG-562 Job #: 10503982.3050105/10503982.3060105 Project: Phase 3 DOE Data Gap Sampling 2014

Site: SA SB Reviewed by: Logged by: ANDREW WAYNE

Drilling Contractor: EST Rig Type/Method: GEOPROBE 6400 / D.P Driller: MARTIN KINNUNEN

Borehole TD: 10' Probe Completion Date/Time: 6/10/14 1450 Borehole Diameter: 2.25"

(RE-INSTALL - 6/10/14)



Vapor Implant Specs

Material: STAINLESS STEEL

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: TEFLON

Diameter: 1/4"

Color: CLEAR

Sand Pack Specs

Grain Size: #3

Manufacturer: CEMEX

Dry Bentonite

Type: #8

Manufacturer: CETCO

Hydrated Bentonite

Type: #8

Manufacturer: CETCO

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Stephen Myall

Sample ID SVL-562-SA5B-SB-8.0-9.0 Date/Time 6/10/14 1445

Matrix (circle one): (Soil) Sediment Water

Start Depth 8.0

End Depth 9.0

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID

Field Geologist Andrew Payne

Sampler Andrew Payne

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	✓
Encores	1,4 Dioxane	EPA 8260 SIM	
Encores	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
Sediment	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP (circled)	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present: Yes (No)
2. Percentage Fill (%): 2
3. Fill Description (circle all that apply)

Asphalt	Metal	Plastic
Concrete	Wood	Glass
Igneous/Metamorphic Gravel	(N/A)	
Other		

Is Staining Present Yes (No)

Color YELLOWISH BROWN (10YR 5/4)

Odor

1. Odor Strength (circle one): (None) Slight Strong
2. Odor Description (circle one): Organic Petroleum Chemical (N/A) Other

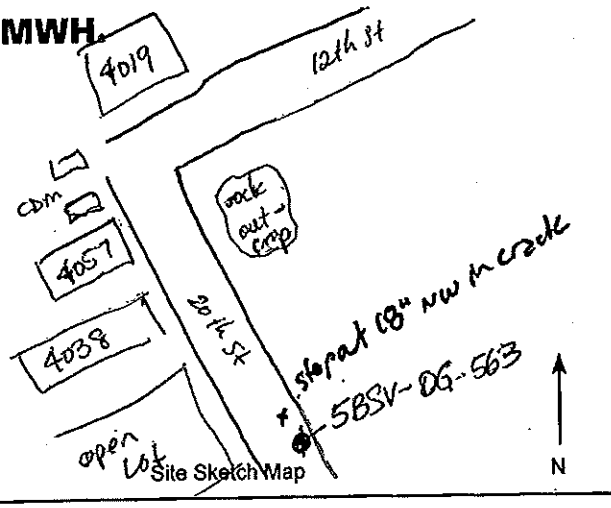
Moisture Condition (circle one): Dry (Moist) Wet

PG Signature [signature] **PG Registration #** 7735

Additional Comments SAMPLE COLLECTED @ 8.0 - 9.0 (SVL-562-SA5B-SB-8.0-9.0) @ 1445; 1-402 GLASS JAR & 2 ENCORES.

12 NREM, 46 OPM, 0.0 PPM

MWH.



Site Sketch Map

Boring ID: 5BSV-DG-563	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5B
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 5.5
Drill Bit Type: Macrocore	
Drill Start Time/Date: 1139 / 5-15-14	Drill Finish Time/Date: 1200 / 5-15-14
Soil Boring Backfill Time/Date: N/A	Backfill Material: N/A
Observations: ☐ Debris ☒ Staining ☐ Odors ☐ Groundwater ☐ None	
Surface Completion: Soil Vapor Probe	
Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None	

Soil Vapor ID: 5BSV-DG-563

Soil Vapor Well Completion Time/Date: 12:25 / 5-15-14

Soil Vapor Probe Depths (ft.bgs): 4.5 - 5.5

Soil Vapor Well Detail Completed (yes/no): yes

Soil Description

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

Surface Description: Asphalt swale

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
						0	AF	0.3' (4") Asphalt	60	20 ~~30~~ (V.D.)	20	10	TR.
							GW-SW	Gravel w/ Sand (GW-SW), greenish gray (5GY	-	-	-	80	20
						1	SM	5/1), med. dense, moist, fine angular					
		48"	NONE					gravel, coarse to fine sand, trace silt,					
						2		Road base, slight asphalt staining, no					
								odors. w/silt SP-SM 4.0-5.2	-	-	20	60	20
						3		@0.6' Silty Sand (SM), brownish yellow (10					
0.0								YR 6/6), ~~soft~~ (V.D.) loose, dry, fine sand, non-					
						4		plastic silt, no stains or odors, fill.					
		18"	NONE										
						5							
0.0							@5	Grades w/ yellow (10YR 7/8) iron staining					
							Br	@5.5 Sandstone, weathered.					
						6							
								TD = 5.5ft, refusal on sandstone. In-					
						7		stall vapor probe at 4.5-5.5 ft					
						8		• Sample SVC-S63-SASB-SB-4.5-5.0					
								12μRem, 84cpm, 0.0ppm					
						9		• No probe set.					
								TD = 8.0' bgs in weathered					
								bedrock					

Bedrock @ 5.0-8.0. w/ shale interbed @ 5.2' bgs; relict 45° bedding in weathered sandstone

Begin boring 07:52

End boring 08:22

11JUN14

QA/QC
Surficial media boring log rev 2-25-2014

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Shaf Mupel

Sample ID SVL-563-SASB-SB-4.5-5.0 Date/Time 11 JUN 2014 0834

Matrix (circle one): (Soil) Sediment Water

Start Depth 4.5 '

End Depth 5.0 '

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist M Ellis

Sampler M Ellis

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	✓
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes) No
2. Percentage Fill (%) 100%
3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel N/A

Other disturbed soil

Is Staining Present Yes (No)

Color 10YR 6/6 brownish yellow

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

Dry (Moist) Wet

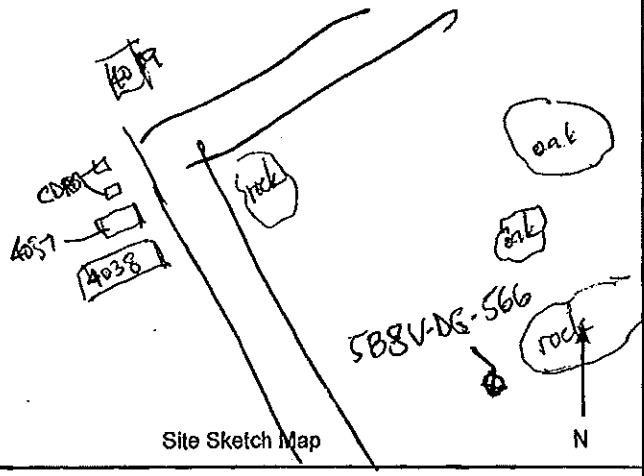
PG Signature _____ PG Registration # 7735

Additional Comments Collected 3 encores + 1 4oz jar

12 uRem, 84 cpm, 0.0 ppm.

TD = 8.0'

MWH



Site Sketch Map

Boring ID: SBSV-DG-566	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: SB
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 2.5
Drill Bit Type: Macrocore	
Drill Start Time/Date: 1440 / 5-15-14	Drill Finish Time/Date: 1458 / 5-15-14
Soil Vapor ID: None	Soil Boring Backfill Time/Date: 1500 / 5-15-14 Backfill Material: Soil Cuttings
Soil Vapor Well Completion Time/Date: N/A	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): N/A	Surface Completion: None
Soil Vapor Well Detail Completed (yes/no) N/A	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
								1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations					
								Surface Description: Gravel, dried grass.					
	X	30"	WL MS			0		Silty Sand (SM), light yellowish brown (10YR 6/4), loose, dry, fine sand, non-plastic silt	–	–	–	70	30
						1							
						2							
	X		X		14:58								
								@25' Sandstone, weathered, Chatsworth formation					
	SVL-566		SASB-SB-20-25										
						4		TD = 2.5, refusal on sandstone bedrock. collected encores for lab analysis.					
						5							
						6							
						7							
						8							
						9							

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Stephen Myers

Sample ID SVL-566-SASB-SB-2.0-2.5 Date/Time 5-15-14 / 14:58

Matrix (circle one): (Soil) Sediment Water

Start Depth 2.0

End Depth 2.5

Depth Units (circle one): Inches Feet

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler Rob Ellis

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes) No

2. Percentage Fill (%) 100

3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present Yes (No)

WT052014

Color ~~N/A~~ 10YR 6/4

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

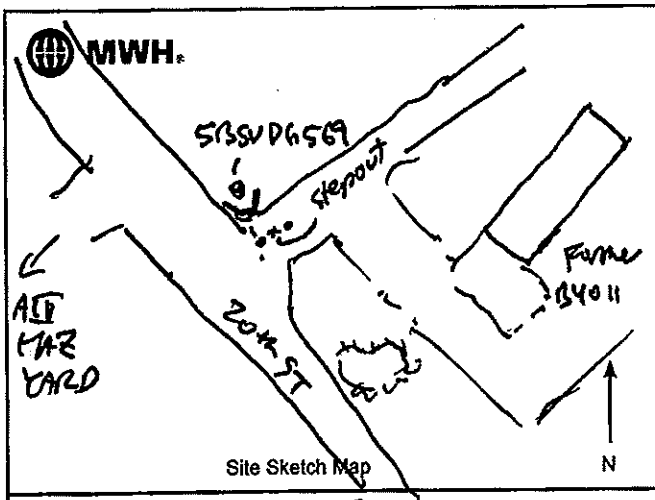
PG Signature _____ PG Registration # 7735

Additional Comments PID = 0.0, TOTAL DEPTH = 2.5 ft

Rad info: 12uR, 65 cpm

NA – Not Applicable

MWH



Site Sketch Map

Boring ID: SBSVDh569 Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: SB

Logged By: RWBEELS Reviewed By:

Drilling Contractor: EST Drillers Name: GILBERT @ DEASON

Drill Rig Type/Method: Geoprobe / Manual Auger

Sampler Type: Bucket auger / grab

Borehole Diam (inch): 3-5" Total Depth (ft.bgs): 3.1' bgs

Drill Bit Type: Bucket auger

Drill Start Time/Date: 09:01 11 JUN 14 Drill Finish Time/Date: 09:19 11 JUN 14

Soil Boring Backfill Time/Date: 09:24 11 JUN 14 Backfill Material: soil cuttings

Soil Vapor ID: N/A

Soil Vapor Well Completion Time/Date: N/A

Soil Vapor Probe Depths (ft.bgs): N/A

Soil Vapor Well Detail Completed (yes/no) N/A

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☐ None

Surface Completion: none

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description: Surface Description: concrete in swale	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
0.0 ppm		38"				0		8" of concrete.					
						1		Bedrock @ 10" bgs.					
								shale, (2.5Y 4/4) olive brown					
						2		heal ~ 2" into weathered					
								bedrock, sandstone,					
						3		yellowish brown (10YR 5/6),					
								Refusal and TD @ 3.1'					
								bgs.					
Began 10:47, End 10:52						4		Confirmed w/ second buried					
Stepout to SE, ~5.0'								concrete hole, ~1' ⌀.					
Fill to 3.0' bgs						5							
Sample at 2.5-3.0'								+ weathered sandstone is fine -	~	10	20	60	10
bgs						6		medium grained, decomposed (WS)					
SBV-569-5953-SB-25-3.0								very weak (R1), soft (H6), w/					
@ 10:54						7		oxide staining					
0.0 ppm, 0.0 ppm, 0.0 ppm													
Refusal @ 3.5' bgs						8		• No sample taken					
on weathered sandstone								• No probes installed					
Fill is 10YR 4/6						9				Stepout			
								TD = 3.1' bgs; in bedrock	—	—	15	65	20
								Bedrock @ concrete interface					

yellowish brown poorly sorted sand w/ soil (SP-SM)

QA/QC

Surficial media boring log rev 2-25-2014

TD = 3.5' bgs

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By

Sample ID SVL-569-SA5B-SB-2.5-3.0 Date/Time 11 JUN 2014; 10:54

Matrix (circle one): (Soil) Sediment Water

Start Depth 2.5'

End Depth 3.0'

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist RBS Ellis

Sampler RBS Ellis

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	✓
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
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				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes) No
2. Percentage Fill (%) 100%
3. Fill Description (circle all that apply)

Asphalt	Metal	Plastic
Concrete	Wood	Glass
Igneous/Metamorphic Gravel		N/A
Other disturbed soil		

Is Staining Present Yes (No)

Color 10YR 4/6 yellowish brown

Odor

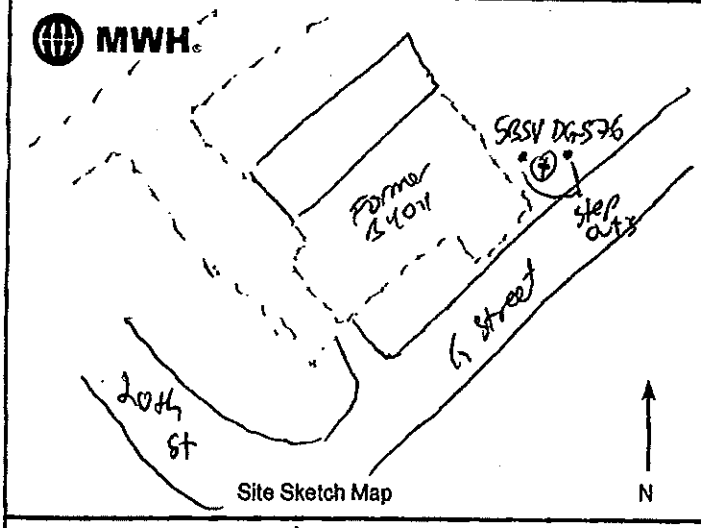
1. Odor Strength (circle one)
   (None) Slight Strong
2. Odor Description (circle one)
   Organic Petroleum Chemical
   (N/A) Other _____

Moisture Condition (circle one)
(Dry) Moist Wet

PG Signature Mike Hollon PG Registration # 7735

Additional Comments collected 3 encores + 1-4oz jar
8 μRem, 44 cpm, 0.0 ppm
TD = 3.5' bgs

MWH



Site Sketch Map

Boring ID: SBSVDG-576	Sheet 1 of 1
Project: Phase 3 DOE SVDG 2014	
Job #: 10503982.3050106	Site: SB
Logged By: RoBellis	Reviewed By:
Drilling Contractor: EST	Drillers Name: MARTY KILHULLEN
Drill Rig Type/Method: GEOPROBE 5400	
Sampler Type: MACROCORE	
Borehole Diam (inch): 2.25"	Total Depth (ft bgs): 4.3'
Drill Bit Type: MACROCORE	
Drill Start Time/Date: 11:50 02 JUN 14	Drill Finish Time/Date: 02 JUN 14, 12:26
Soil Vapor ID: N/A	Soil Boring Backfill Time/Date: 02 JUN 14 13:30 Backfill Material: soil cuttings
Soil Vapor Well Completion Time/Date: N/A	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☐ None
Soil Vapor Probe Depths (ft.bgs): N/A	Surface Completion: soil cuttings / bentonite seal
Soil Vapor Well Detail Completed (yes/no) N/A	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description: SOIL
1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: SOIL, MUSTARD, HYDROZEED

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
		48"				0	SM	0.0 - 1.0					
						1		Silty sand (SM) dark yellowish	-	-	5	65	30
								brown (10YR 4/4), loose, dry,					
						2	SM	Predominant fine sand (65),					
								some silt (30), few medium					
						3		Sand (5) No stain, no					
								odor, Fill material.					
						4		1.0 - 4.0					
		4"			TD - 4.3		SP	Silty sand (SM) dark yellowish	-	-	TR	60	40
0.0 ppm	SVI-576-SB-SB-40-4.3					5		brown (10YR 4/6), loose, dry					
13 µRem, 54 cpm								Predominant fine sand (60),					
						6		some silt (40) and trace					
	TD = 4.3 bgs							medium sand. No stain, no					
	on sandstone					7		odor. Fill. Transitions to					
	bedrock							silty sand with 55% fine sand	-	-	10	55	35
	• Backfill w/					8		35% silt and 10% medium sand					
	soil cuttings @							at 2.5' bgs, same color					
	13:30							4.0 - 4.3					
						9		Poorly sorted sand (SP) lite yellow	-	10	40	45	5
	Step outs to NE/NW							brown. loose, dry. Predominant fine					
	to confirm TD							Sand (45), some coarse sand (40), few					
								[illegible] no odor. Native					

QA/QC
Surficial media boring log rev 2-25-2014

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By

Sample ID SVL-576-SA5B-SB-4.0-4.3 Date/Time 02 JUN 2014, 12:35

Matrix (circle one): Soil / Sediment / Water

Start Depth 4.0'

End Depth 4.3'

Depth Units (circle one): Inches / Feet

Check if Composite ☐

Collection Method (circle one): DPT / Slide Hammer / Hand Auger/Slide Hammer / Trenching / Sediment

QC Type (circle one): N / FD / FB / RB

Parent Sample ID N/A

Field Geologist

Sampler

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	✓
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP (circled)	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				CH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. **Is Fill Material Present** Yes (No)
2. **Percentage Fill (%)** 0
3. **Fill Description (circle all that apply)**

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present Yes (No)

Color 2.5Y 6/4 light yellowish brown

Odor

1. **Odor Strength (circle one)**

(None) Slight Strong

2. **Odor Description (circle one)**

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

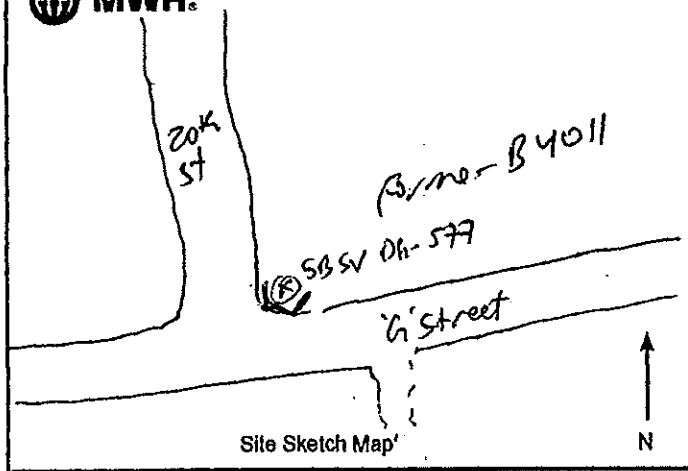
PG Signature [signature] **PG Registration #** 7735

Additional Comments collected 3 encores + 1 4oz jar (moisture)

13 µRem, 5.4 ppm, 0.0 ppm TD = 4.3' bgs'

NA – Not Applicable

MWH.



Site Sketch Map

Boring ID: SBSV DG-577	Sheet 1 of 1
Project: Phase 3 DOE SVDG 2014	
Job #: 10503982.3060706	Site: SB
Logged By: RoBeuis	Reviewed By:
Drilling Contractor: EST	Drillers Name: MARTY KILHOLCEN
Drill Rig Type/Method: Geoprobe 5400	
Sampler Type: Hand Auger	
Borehole Diam (inch): 3.25"	Total Depth (ft bgs): 6.2'
Drill Bit Type: Bucket	
Drill Start Time/Date: 04JUN14	Drill Finish Time/Date: 04JUN14
Soil Vapor ID: SBSV DG-577	Soil Boring Backfill Time/Date: N/A — Backfill Material: N/A
Soil Vapor Well Completion Time/Date: 04JUN14, 08:50	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): 5.2' - 6.2'	Surface Completion: SV probe
Soil Vapor Well Detail Completed (yes/no) attached	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

Surface Description: culvert / concrete

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
0.0 ppm						0		0 - 0.8' bgs = concrete					
						1	ML CL	0.8 - 2.5 silt/silt sand, clay/clay sand (ML-CL) Brown (10YR 4/3). moist, stiff, slow no ~~rapid~~ dil., v. high dry, med tough med. plastic. Mostly fines (60%), fine sand (40). No stain, no odor fill material. Some base gravels (1-3 piece).	-	-	-	40	60
0.0 ppm						3	ML CL	2.5 - 4.5 silt/silt sand, clay/clay sand (ML-CL). dark yellowish brown (10YR 4/4). moist stiff, rapid dil., high dry, med tough med plastic. Mostly fines (55), some fine sand (45). No stain, no odor, Fill.	-	-	-	45	55
			5.3 5.8			5	SM						
Sample SVL-577-SASB-5.3-5.8 @ 08:40					6.2	6	SP						
0.0 ppm	12 µRem, 42 cpm					7		4.5 - 6.0 Silty sand (SM) light olive brown (2.5Y 5/4), moist, med dense, mostly fine sand (60) some silt (25) few med sand (5). No stain no odor. Shale fragments + $CaCO_3$ (caliche). Violent effervescent. Native	-	-	5	60	35
• TD = 6.2' bgs on sandstone bedrock						8							
						9							

6.0 - 6.1 poorly sorted sand (SP) - light yw brown to yw brown (10YR 4/4 - 4/6)

QA/QC
Surficial media boring log rev 2-25-2014

MWH

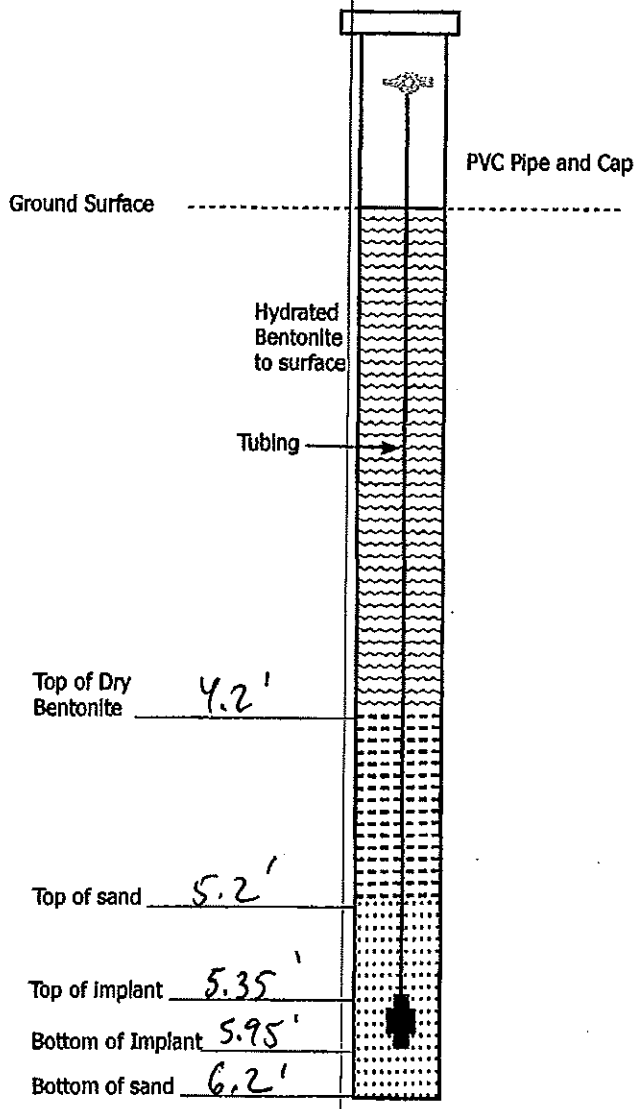
Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SBSV DG-577 | Job #: 10503982.3050106/10503982.3060106 | Project: Phase 3 DOE Data Gap Sampling 2

Site: SB | Reviewed by: | Logged by: RVB Ellis

Drilling Contractor: EST | Rig Type/Method: Geoprobe 5400/ Hand Auger | Driller: MARTY KILHULLEN

Borehole TD: 6.2' bgs | Probe Completion Date/Time: 04JUN14, 08:50 | Borehole Diameter: 3.25"



Vapor Implant Specs

Material: stainless steel

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: teflon

Diameter: 1/4"

Color: clear

Sand Pack Specs

Grain Size: #3 sand

Manufacturer: Cemex

Dry Bentonite

Type: #8 crumbles

Manufacturer: Cetco

Hydrated Bentonite

Type: #8 crumbles

Manufacturer: Cetco

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By [signature]

Sample ID SVL-577-SA SB-SB-5.3-5.8 Date/Time 04 JUN 14, 08:40

Matrix (circle one): (Soil) Sediment Water

Start Depth 5.3' bgs

End Depth 5.8' bgs

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): DPT Slide Hammer (Hand Auger/Slide Hammer) Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist RB Ellis

Sampler RB Ellis

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	✓
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		(SM)	Silty SAND
				(SC)	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. **Is Fill Material Present** Yes (No)
2. **Percentage Fill (%)** Ø

3. **Fill Description (circle all that apply)**

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present Yes (No)

Color 2.5Y 5/4 light olive brown

Odor

1. **Odor Strength (circle one)**

(None) Slight Strong

2. **Odor Description (circle one)**

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

Dry (Moist) Wet

PG Signature [signature] **PG Registration #** 7735

Additional Comments collected 2 encores + 1-4oz jar (moisture)

12 μRem, 42 ppm, 0.0 ppm TD = 6.2' bgs.

NA – Not Applicable

MWH.

Boring ID: SBSV-DG-586 | Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 | Site: 5B

Logged By: V. Vathanasin | Reviewed By:

Drilling Contractor: EST | Drillers Name: Morgan Hughes

Drill Rig Type/Method: ~~Macrocore Geoprobe 5400 / DP~~ Hand Auger

Sampler Type: ~~Macrocore~~ Hand Auger

Borehole Diam (inch): 3.25 | Total Depth (ft.bgs): 4.25

Drill Bit Type: Hand Auger Bucket

Site Sketch Map — N

Drill Start Time/Date: 0809 / 6-4-14 | Drill Finish Time/Date: 0847 / 6-4-14

Soil Vapor ID: N/A

Soil Boring Backfill Time/Date: 0925 / 6-4-14 | Backfill Material: Soil cuttings.

Soil Vapor Well Completion Time/Date: N/A

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Soil Vapor Probe Depths (ft.bgs): N/A

Surface Completion: Concrete

Soil Vapor Well Detail Completed (yes/no)

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	AF	Surface Description: In culvert 17th / GSt 12" concrete					
						1	GW	1" Gravel base					
							SP	Poorly Graded Sand (SP), yellowish brown (10YR 5/6), loose, dry, fine sand, very "clean", fill, no stains, no odors	-	-	-	100	-
						2							
						3							
0.0		☒	☒			4		color changes to brownish yellow (10YR 6/6)					
							Br	@ 4.25' Sandstone, weathered					
						5		TD = 4.25', refusal on bedrock, Collect soil samples at 3.75-4.25':					
						6		SVL-586-SA5B-SB-3.75-4.25 MS @ 0900					
						7		SVL-~~586~~-SA5B-SB-3.75-4.25 @ 09:05 986					
						8							
						9							

QA/QC

Surficial media boring log rev 2-25-2014

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By [signature]

Sample ID SVL-586-SA5B-SB-3.75-4.25MS Date/Time 6/4/2014 0900

Matrix (circle one): Soil (circled) Sediment Water

Start Depth 3.75

End Depth 4.25

Depth Units (circle one): Inches Feet (circled)

Check if Composite ☐

Collection Method (circle one): DPT (circled) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): N (circled) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler Same as above

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

FSDS Revision 3.0 11/19/2013

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes) No
2. Percentage Fill (%) 100
3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel N/A

Other reworked fill

Is Staining Present Yes (No)

Color yellowish brown (10YR 5/6a)

Odor

1. Odor Strength (circle one)

None Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

N/A Other N/A

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature [signature] PG Registration # 7735

Additional Comments T.D. = 4.25' bgs, PID = 0.0 ppm
12 µR, 42 cpm

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By

Sample ID SVL-586-SA5B-SB-3.75-4.25 Date/Time 6/4/14 0905

Matrix (circle one): (Soil) Sediment Water

Start Depth 3.75

End Depth 4.25

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): N (FD) FB RB

Parent Sample ID ~~N/A~~ SVL-586-SA5B-SB-3.75-4.25MS

Field Geologist Van Vathanasin

Sampler same as above

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes) No
2. Percentage Fill (%) 100
3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel N/A

Other reworked fill

Is Staining Present Yes (No)

Color yellowish brown (10YR 5/6)

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

N/A Other N/A

Moisture Condition (circle one)

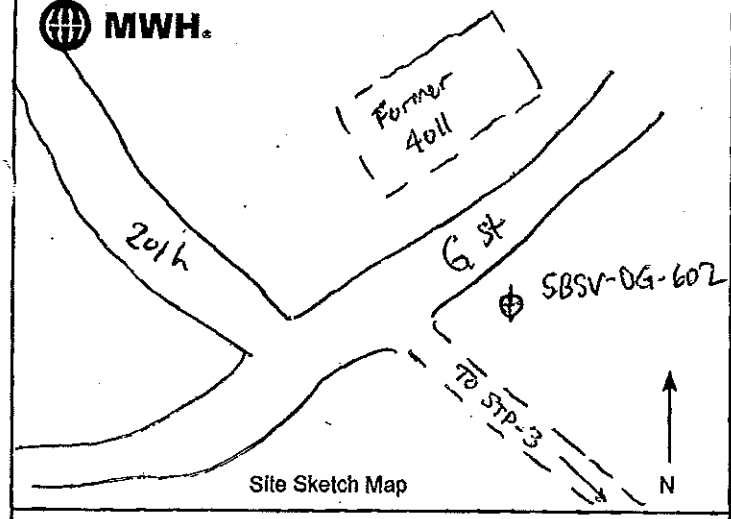
(Dry) Moist Wet

PG Signature [signature] PG Registration # 7735

Additional Comments T.D = 4.25' bgs PID = 0.0 ppm
RyR, 42 cfm

NA – Not Applicable

MWH.



Site Sketch Map

Boring ID: 5BSV-DG-602	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5B
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes.
Drill Rig Type/Method: Geoprobe / DP	
Sampler Type: Macrocore	
Borehole Diam (inch) 2.25"	Total Depth (ft.bgs) 5.0
Drill Bit Type: Macrocore	
Drill Start Time/Date: 0923 / 6-3-14	Drill Finish Time/Date: 0940 / 6-3-74
Soil Vapor ID: N/A	Soil Boring Backfill Time/Date: ~~N/A~~ 0945 ~~6-3-74~~ Backfill Material: Soil cuttings.
Soil Vapor Well Completion Time/Date: N/A	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): N/A	Surface Completion: None.
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

Surface Description: Graded, veg cleared.

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
						0	SM	Silty Sand (SM), brown (10YR 4/3), loose, dry, fine sand, non-plastic silt, no stains or odors, fill	-	-	-	70	30/
		30"	NONE			1							
						2	ML	Silt w/ sand (ML), yellowish brown (10YR 5/8), med. stiff, dry, silt, fine sand, low to medium plasticity, small white nodules, fill				15	80/5
						3							
						4		Color changes to brownish yellow (10YR 6/8),					
0.0		12"	NONE		09:50		SP	Poorly Graded Sand (SP), brownish yellow	-	-	-	100	-
SVL-602-SA5B-SB-4.5-5.0						5	Br	(10YR 6/8), loose, dry, non-cemented, native soil, no stains or odors.					
						6		Sandstone, weathered.					
						7		TD= 5.0, Refusal on bedrock, collect soil samples for VOC analyses 4.5-5.0 ft					
						8							
						9							

QA/QC
Surficial media boring log rev 2-25-2014

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Jeff Myers

Sample ID SVL-60Z-SA5B-SB-4.5-5.0 Date/Time 6-3-14 / 09:50

Matrix (circle one): (Soil) Sediment Water

Start Depth 4.5

End Depth 5.0

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				(SP)	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				CH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. **Is Fill Material Present** Yes (No)
2. **Percentage Fill (%)** 0

3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present Yes (No)

Color Brownish Yellow (10YR 6/8)

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature Mark Hoffmann **PG Registration #** 7735

Additional Comments TD = 5.0

PID = 0.0 ppm

12 uR

52 cpm

NA – Not Applicable

MWH

Boring ID: SCSV-507 | Sheet 1 of 2

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 | Site: SA 5C

Logged By: V. Vathanasin | Reviewed By:

Drilling Contractor: EST | Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5400 / DP

Sampler Type: Macrocore

Borehole Diam (inch): 2.25" | Total Depth (ft.bgs): 11.5

Drill Bit Type: Macrocore

Drill Start Time/Date: 0904 / 5-28-14 | Drill Finish Time/Date: 0925 / 5-28-14

Soil Boring Backfill Time/Date: N/A | Backfill Material: N/A

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Surface Completion: Soil vapor probes

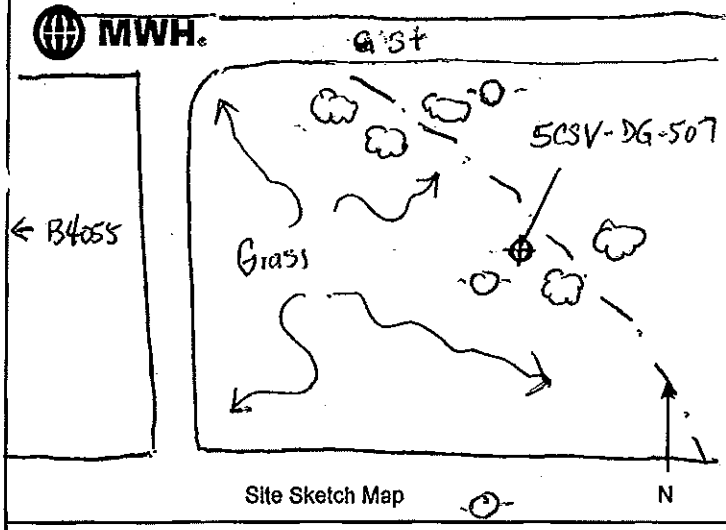
Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Vapor ID: SCSV-DG-507

Soil Vapor Well Completion Time/Date: 0939 / 5-28-14

Soil Vapor Probe Depths (ft.bgs): 10.5-11.5, 5.0-6.0

Soil Vapor Well Detail Completed (yes/no)



Site Sketch Map

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Silty Sand (SM), brown (10YR 4/3), loose, dry, fine sand, silt, roots,	TR	-	-	65	35
0.5		33"				1		traces of decomposed granitic gravel, fill					
						2		@ 1.5' color changes to dark brown (10YR 3/3), dark organic layer					
						3		@ 3' grades* (VII) w/ med. plasticity clay w/clay (VII)	-	-	-	65	25/10
						4	ML	@ 4' Silt (ML), brown (10YR 5/3), stiff, dry, low-plasticity silt, medium plasticity clay, fill, no odors or stains.					85/15
		48"			0940	5							
4.7				SVL-507-SA5C-5B-5.0-6.0		6							
						7	SM	Silty Sand w/ clay (SM), yellowish brown (10YR 5/6), loose, dry, fine sand, ~~low~~ low plasticity fines, no odors or stains,	-	-	-	60	40
						8		native soil	-	-	-	60	40
						9		@ 8.0 grades w/o clay					

Soil Description
1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: Veg. cleared area.

Boring ID: SCSV-DG-507 Project: Phase 3 DOE SV DG 2014 Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						10	SM						
7.1						11							
							Br	Sandstone, weathered.					
						12							
								TD = 11.5, refusal on bedrock. Installed					
						13		vapor probes at 5.0-6.0, 10.5-11.5.					
								Collect Encores at 5.0-6.0 due to silt and					
						14		potential for low flow conditions.					
						15							
						6							
						7							
						8							
						9							
						0							
						1							
						2							
						3							
						4							
						5							
						6							
						7							
						8							
						9							

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

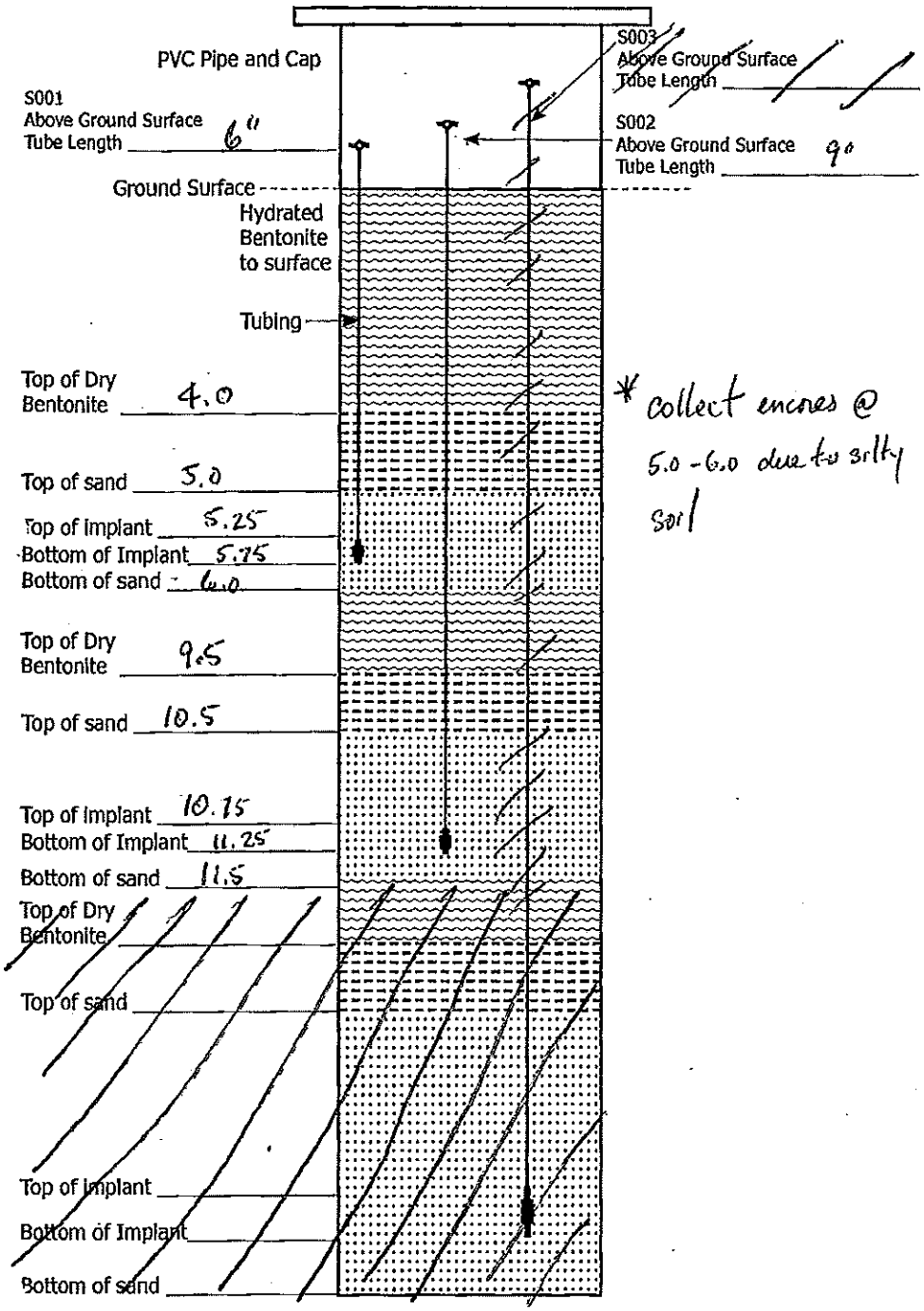
MWH

Multiple Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SCSV-DG-~~505~~ (V.V) 507
Site: SA SC
Drilling Contractor: EST
Borehole TD: 11.5

Project: Phase 3 Dor SV DG 2014
Logged by: V. Vathanasin
Driller: Morgan Hughes
Borehole Diameter: 2.25"

Job #: 10503982
Reviewed by:
Rig Type/Method: Geoprobe 5400/DP
Probe Completion Date/Time: 0939 / 5-28-14



* collect encores @ 5.0 - 6.0 due to silty soil

Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: Clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Cemex

Dry Bentonite
Type: #8
Manufacturer: Cetco

Hydrated Bentonite
Type: #8
Manufacturer: Cetco

Notes:

1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By _____

Sample ID SVL-507-SASC-SB-5.0-6.0 Date/Time 5-28-14/09:40

Matrix (circle one): (Soil) Sediment Water

Start Depth 5.0

End Depth 6.0

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler _____

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		(ML)	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes) No

2. Percentage Fill (%) 100

3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other local fill source

Is Staining Present Yes (No)

Color brown (10YR5/3)

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature [signature] **PG Registration #** 7735

Additional Comments TD = 11.5 ft

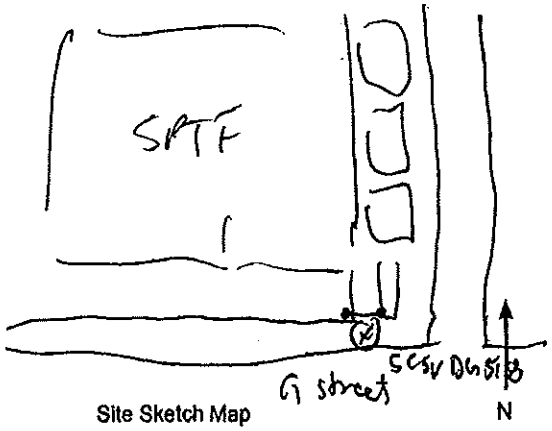
PID = 4.7 ppm

uR = 13

cpm = 48

NA – Not Applicable

MWH.



Site Sketch Map

Boring ID: 5CSV DG-518	Sheet 1 of 2
Project: Phase 3 DOE SVDG 2014	
Job #: 10503982.3050106	Site: 5C
Logged By: RUB ELLIS	Reviewed By:
Drilling Contractor: EST	Drillers Name: MARTY KILHULLEN
Drill Rig Type/Method: GEOPROBE 5400	
Sampler Type: MACROCORE	
Borehole Diam (inch) 2.25"	Total Depth (ft bgs) 11.5'
Drill Bit Type: MACROCORE	
Drill Start Time/Date: 02JUN14, 09:35	Drill Finish Time/Date: 02JUN14, 10:45
Soil Vapor ID: 5CSV DG-518	Soil Boring Backfill Time/Date: N/A — Backfill Material: N/A
Soil Vapor Well Completion Time/Date: 02JUN14 / 11:00	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): 5.0-6.0', 10.5-11.5'	Surface Completion: SOIL VAPOR PROBE
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description
1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: ASPHALT

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
		48"				0		4" asphalt					
						1	SP	0.4 – 0.8 graded		M	45		
								Poorly ~~sorted~~ graded sand (SP), very	–	15	~~45~~	35	5
						2	CH	dark grey (10YR 3/1) mixed,					
								transition to light brown grey					
						3		(10YR 6/2), predominant medium					
								sand (45), some fine sand (35)					
						4		little coarse sand (15), few silt					
		48						(5), loose, dry, no stain,					
						5	SP	no odor, fill.					
								0.8 – 4.5	–	–	–	20	80
							CL	Clay (CH), very dark brown					
		SVC-518-5.5-6.0				6		(10YR 2/2) hard, very dense,					
		@ 10:40											
0.0		10 µRem	18 gpm			7		very high dry strength, slow					
								dilatency, high toughness,					
						8		no stain, no odor, fill					
		36"						4.5 – 5.0					
						9		Transition lens of poorly					
								graded sand (SP), gray (10YR 6/1)	–	30	50	25	5
								~~20~~ Predominant medium sand (50)					

QA/QC
Surficial media boring log rev 2-25-2014

Boring ID: 5CSV D6-518 Project: Phase 3 DOE SVDG 2014 Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
	X					10	CL	Some coarse sand (30), little fine sand (25) and few silt (5)					
	X					11	SM	No stain, no odor, fill, 5.0-11.0					
	SVL-518-SA5C-SB-11.0-11.5 @ 10:45				TD	12		Clay (CL) yellowish brown (10YR 5/4) rapid dilatancy, medium dry strength medium tough, no stain, no odor, fill.	-	-	-	35	65
0.0	12 yellow, 31 cpm					13		11.0 - 11.5					
						14		Silty sand (SM) yellowish brown, (10YR 5/6), loose, moist, predominant medium sand (40%), some fine sand (30), little silt (25), few coarse (5) No stain, no odor native	-	5	40	30	25
						15		TD @ 11.5' bgs Refusal on sandstone bedrock					
						16		Samples taken @ 10:40 5.5' SVL-518-SA5C-SB-5.5 10:45 11.0' SVL-518-SA5C-SB-11.0					
						17							
						18							
						19							

QA/QC
Surficial media boring log rev 2-25-2014

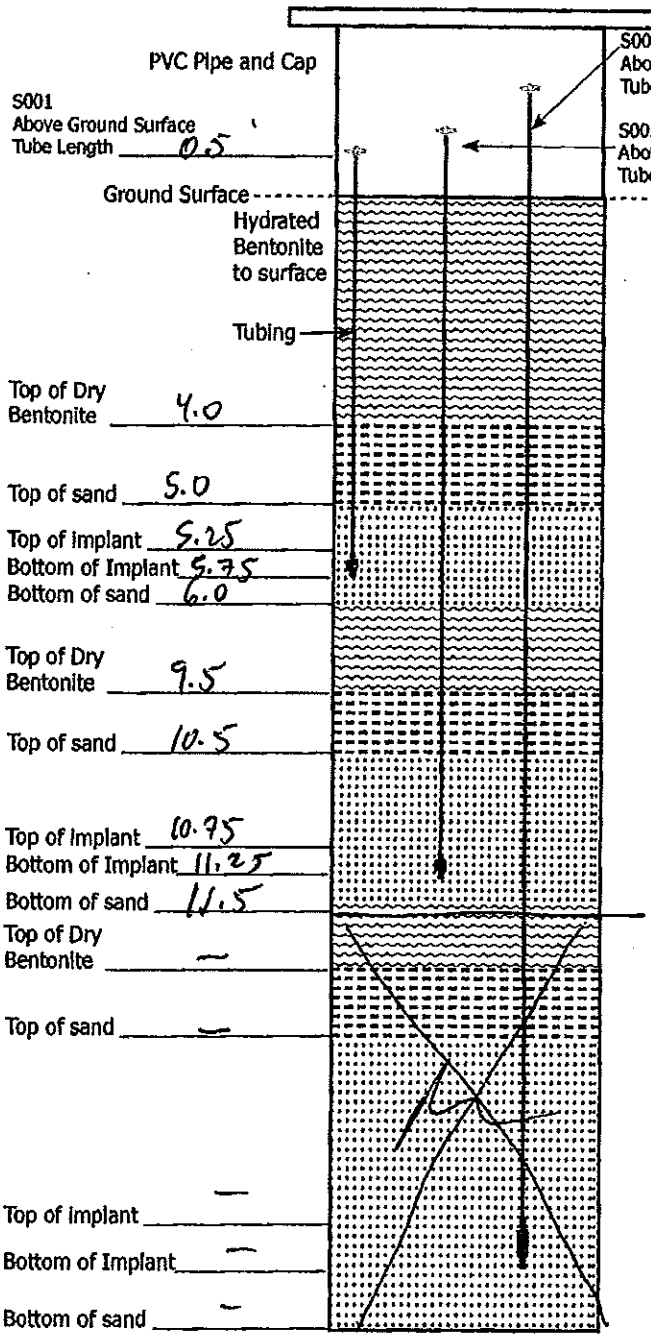
MWH

Multiple Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SC SV DG-518
Site: SC
Drilling Contractor: EST
Borehole TD: 11.5'

Project: Phase 3 DOE Data Gap Sampling 2014
Logged by: [illegible]
Driller: EST
Borehole Diameter: 2.25"

Job #: 10503982.3050105/10503982.3060105
Reviewed by:
Rig Type/Method: Geoprobe 5400
Probe Completion Date/Time: 02 JUN 14 / 1140



Vapor Implant Specs
Material: stainless steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: teflon
Diameter: 1/4"
Color: clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Comox

Dry Bentonite
Type: #8 crumbles
Manufacturer: Cetco

Hydrated Bentonite
Type: #8 crumbles
Manufacturer: Cetco

Notes:
1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By _____

Sample ID SVL-51B-SA5C-SB-5.5-6.0 Date/Time 02 JUN 2014, 10:40

Matrix (circle one): (Soil) Sediment Water

Start Depth 5.5'

End Depth ~~W~~ 6.0'

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist R. ELLIS

Sampler R. ELLIS

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	✓
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH ≤ 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH ≤ 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present Yes No
2. Percentage Fill (%) 100%
3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel N/A

Other disturbed soil

Is Staining Present Yes No

Color 10YR5/6 yellowish brown

Odor

1. Odor Strength (circle one)

None Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

N/A Other _____

Moisture Condition (circle one)

Dry Moist Wet

PG Signature Miller Hoffman **PG Registration #** 7735

Additional Comments Collected 3 encores and 1 4oz jar (moisture), 10 μRem, 18 cpm, 0.0 ppm DD = 11.5 bgs

NA – Not Applicable

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By

Sample ID SVL-518-S45C-SB-11.0-11.5 Date/Time 02 JAN 2014, 10:45

Matrix (circle one): (Soil) Sediment Water

Start Depth 11.0

End Depth N/A 11.5

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): ~~DPT~~ Slide Hammer Hand Auger/Slide Hammer ~~Trenching~~ Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID

Field Geologist RD ELLIS

Sampler ROB ELLIS

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	✓
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH ≤ 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH ≤ 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				CH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present ~~Yes~~ No
2. Percentage Fill (%) ~~100%~~ 0%
3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel N/A

Other ~~disturbed~~

Is Staining Present Yes No

Color 10 YR 5/6 yellowish brown

Odor

1. Odor Strength (circle one)

None Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

N/A Other _____

Moisture Condition (circle one)

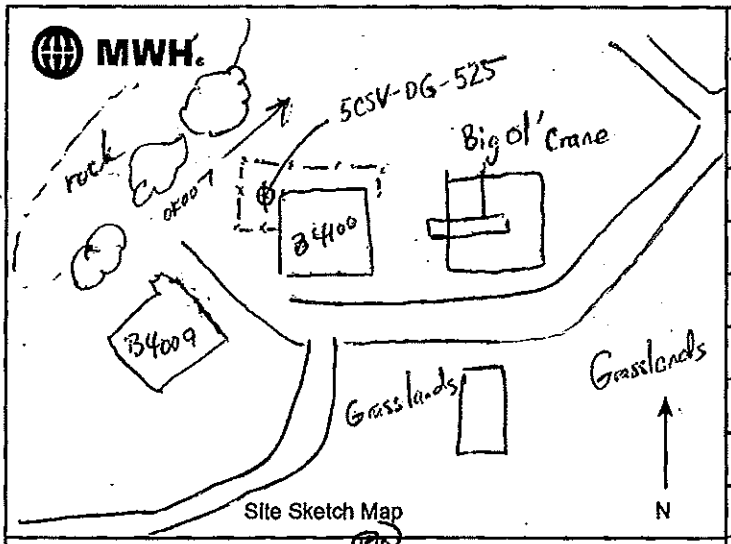
Dry Moist Wet

PG Signature Mike Hoffman **PG Registration #** 7735

Additional Comments collected 3 encores and 1 4oz jar (moisture)
12 µRem, 31 cpm, 0.0 ppm TD = 11.5

NA – Not Applicable

MWH.



Site Sketch Map

Boring ID: 5CSV-DG-525	Sheet 1 of 2
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5C
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch) 2.25"	Total Depth (ft.bgs) 21.0
Drill Bit Type: Macrocore	
Drill Start Time/Date: 1025 / 5-20-14	Drill Finish Time/Date: 11:30 / 5-20-14
Soil Vapor ID: 5CSV-~~525~~ DG-525 (V.V.)	Soil Boring Backfill Time/Date: N/A — Backfill Material: N/A
Soil Vapor Well Completion Time/Date: 12:15 / 5-20-14	Observations: ☐ Debris ☒ Staining ☐ Odors ☐ Groundwater ☐ None
Soil Vapor Probe Depths (ft.bgs): 5.0-6.0, 10.0-11.0, 15.0-16.0, 20.0-21.0	Surface Completion: Soil vapor probes
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☒ None (V.V.)

Soil Description: 1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: Concrete

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
						0		7" Concrete					
						1	SW-SM	Well Graded Sand w/ Silt (SW-SM), brownish	-	10	30	50	10/
		48"				2	ML	yellow (10YR 6/6), med. dense, moist, fine to coarse sand, weathered mica, low plasticity silt, no odors or stains, fill	-	-	-	15	85/
						3		@1' Silt w/ Sand (ML), brown (10YR 5/3), med. stiff, moist, low plasticity silt, fine sand, fill					
						4	CL	@2' color changes to dark brown (10YR 3/3).	-	-	-	-	/100
		48"	X		11:44	5	ML	@4'-4.25' Clay (CL), very dark brown (10YR 2/2), med. stiff, moist, med- to high plasticity clay, native soil					
		SVL-525-SA50-SB-5.0-6.0				6							
						7		@4.25 Silt w/ Sand (~~SM~~ ML), very dark grayish brown (10YR 3/2), med. stiff, dry, low plasticity silt, fine sand, native	-	-	-	-	/100
						8	CL						
		48"				9	Fat	Clay (CL), very dark gray (10YR 3/1), med. stiff, moist, medium plasticity					

Adjust intervals down 7"

QA/QC
Surficial media boring log rev 2-25-2014

Boring ID: 5CSV-DG-525 Project: Phase 3 DOE SV DG 2014 Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
		48"	X		11:49	10		@ 10' Color changes to brown (10 YR 5/3)					
		SVL-525-SA5C-SB-10.0-11.0				11							
						12							
		24"				13	SC	Sandy Clay (SC), yellowish brown (10YR 5/4), stiff, moist, med. plasticy clay, fine sand	-	-	-	20	80
		24"				14							
			X	11:54		15	SC	Grades to clayey sand (SC) →	-	-	-	60	40
		SVL-525-SA5C-SB-15.0-16.0				16							
						17	SM	Silty Sand (SM), yellowish brown (10YR 5/8), med. dense, dry, fine sand, non-plastic silt, no odors, no stains.	-	-	-	60	40
		45"				18	SP	Poorly Graded Sand (SP), brownish yellow (10YR 6/6), w/ mottled light gray (10YR 7/2), med. dense, dry, fine sand, friable, native, close to weathered bedrock.	-	-	-	100	-
						19							
						20							
		6"				21	Br	@ 21' Sandstone, weathered.					
						2		TD = 21.0' from ~~ground~~ ground surface (i.e. top of concrete) Refusal on bedrock. Install vapor probes at 5.0-6.0, 10.0-11.0, 15.0-16.0, 20.0-21.0. Collect encores and place on hold at 5.0-6.0, 10.0-11.0, and 15.0-16.0 due to possible low-flow conditions.					
						3							
						4							
						5							
						6							
						7							
						8							
						9							

116
114
~~113~~
115

QA/QC
Surficial media boring log rev 2-25-2014

Multiple Soil Vapor Probe Construction Diagram

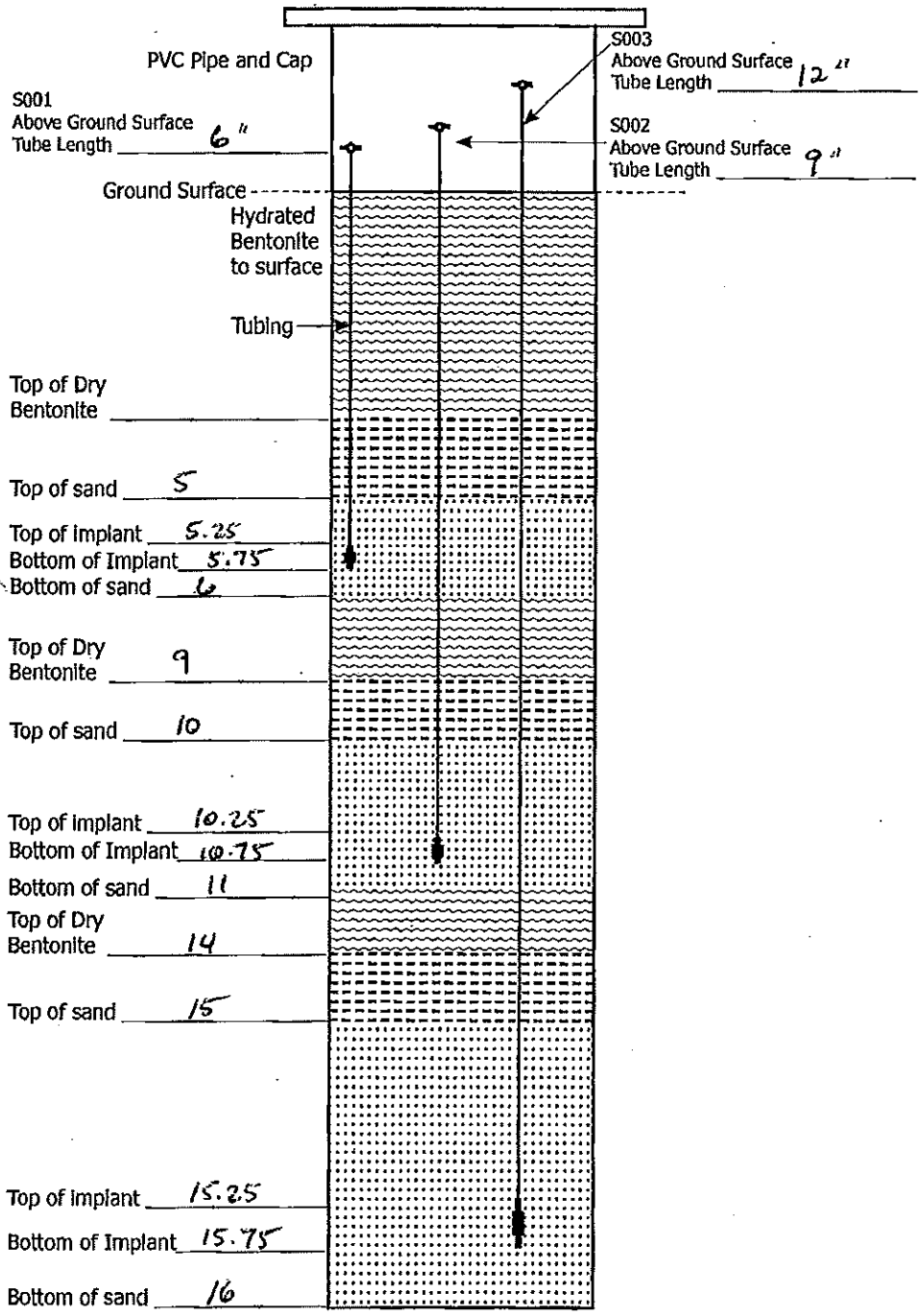
MWH

Probe ID/Soil ID: 5CSV-DG-525 | Project: DoE Phase 3 SV DG | Job #: 105049382 (V.V.)

Site: 5C | Logged by: V. Vathanasin | Reviewed by:

Drilling Contractor: EST | Driller: Morgan Hughes | Rig Type/Method: Geoprobe 5400 / D

Borehole TD: 21.0 | Borehole Diameter: 2.25" | Probe Completion Date/Time: 1245 / 5-20



Vapor Implant Specs

Material: Stainless Steel

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: Teflon

Diameter: 1/4"

Color: Clear

Sand Pack Specs

Grain Size: # 3

Manufacturer: Carmel

Dry Bentonite

Type: #8

Manufacturer: CETCO

Hydrated Bentonite

Type: # 3

Manufacturer: CETCO

Notes:

1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

MWH

Multiple Soil Vapor Probe Construction Diagram

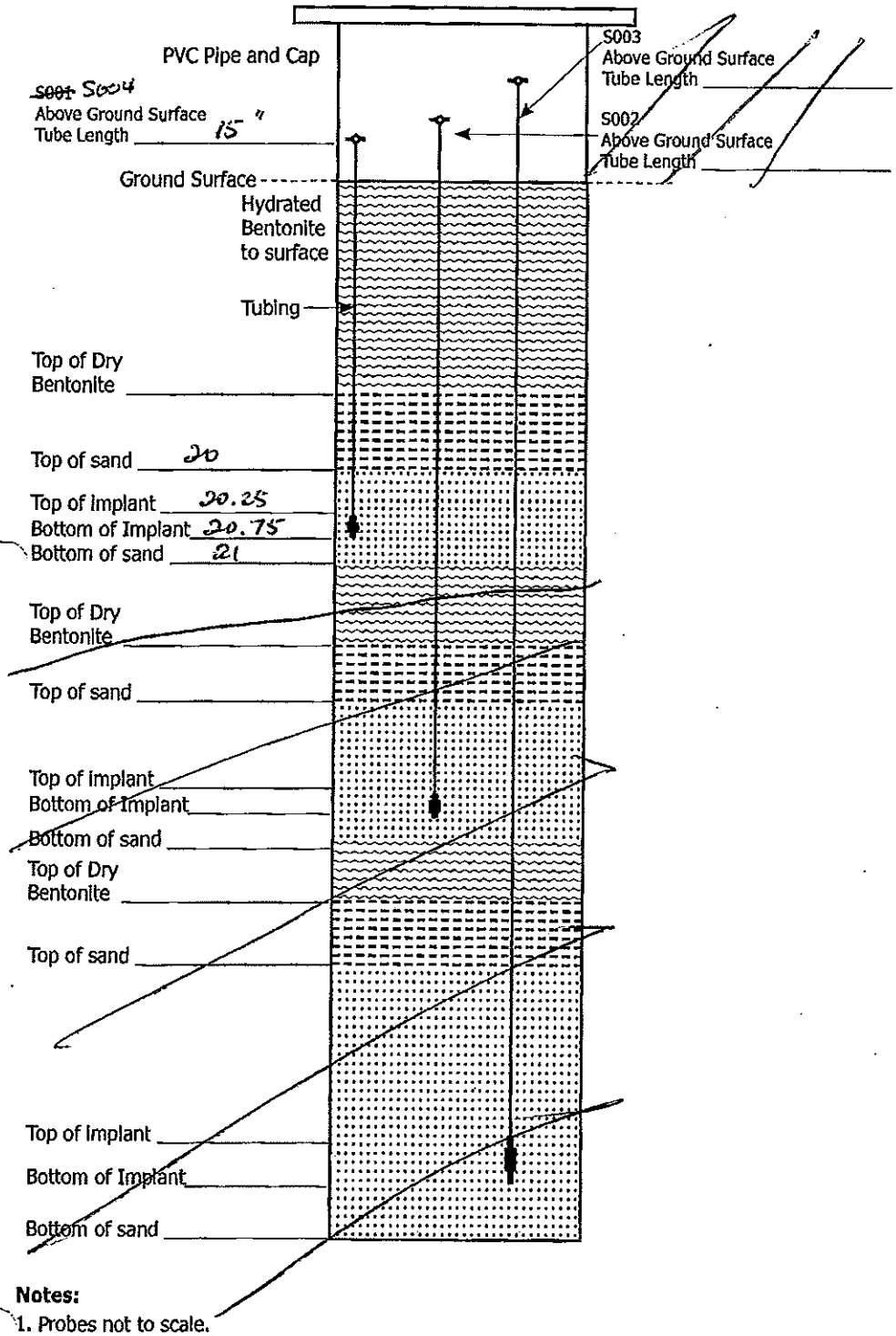
Probe ID/Soil ID: SCSV-DG-525
Site: SC
Drilling Contractor: EST
Borehole TD: 21.0

Project: Phase 3 DOE SV DG
Logged by: V. Vathanasin
Driller: Morgan Hughes
Borehole Diameter: 2.25"

Job #: 10503982
Reviewed by:
Rig Type/Method: Geoprobe 5400/DP
Probe Completion Date/Time: 12:15/5-20-

Continued from P. 1 of 2.

Deepest probe



Vapor Implant Specs

Material:
Length:
Diameter:

Tubing Specs

Material:
Diameter:
Color:

Sand Pack Specs

Grain Size:
Manufacturer:

Dry Bentonite

Type:
Manufacturer:

Hydrated Bentonite

Type:
Manufacturer:

Notes:

1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By SM by Valmzuela

Sample ID SVL-525-SA5C-SB-5.0-6.0 Date/Time 5/20/14 / 1144

Matrix (circle one): (Soil) Sediment Water

Start Depth 5.0

End Depth 6.0

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler Same as above

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present: Yes (No)
2. Percentage Fill (%): 0
3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present: Yes (possible staining) No

Color dark grayish brn 10YR 3/2

Odor

1. Odor Strength (circle one): (None) Slight Strong
2. Odor Description (circle one): Organic Petroleum Chemical (N/A) Other _____

Moisture Condition (circle one)

Dry (Moist) Wet

PG Signature Mila Hoffman **PG Registration #** 7735

Additional Comments T.D. = 21' bgs Extract + Hold

µR = 10

PID = 0.0

CPM = 92

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Shelby Valenzuela

Sample ID SVL-525-SA5C-SB-10.0-11.0 Date/Time 5/20/14/1149

Matrix (circle one): (Soil) Sediment Water

Start Depth 10.0

End Depth 11.0

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler Same as above

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

possible staining

Fill Material

1. Is Fill Material Present: Yes (No)
2. Percentage Fill (%): 0

3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present: (Yes) No

Color: brown (10YR 5/3)

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

Dry (Moist) Wet

PG Signature: Mike Hoffman **PG Registration #:** 7735

Additional Comments: T.D. = 21' bgs Extract + hold

µR = 11

PID = 0.0

CPM = 75

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By: Shelby Valmassoi

Sample ID: SVL-525-SA5C-SB-15-16.0 Date/Time: 5/20/14 1154

Matrix (circle one): (Soil) Sediment Water

Start Depth: 15.0

End Depth: 16.0

Depth Units (circle one): Inches (Feet)

Check if Composite: ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID: N/A

Field Geologist: Van Vathanasin

Sampler: Same as above

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH ≤ 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH ≤ 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present: Yes (No)
2. Percentage Fill (%): 0
3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present: Yes (No)

Color: brownish yellow 10YR 6/4

Odor

1. Odor Strength (circle one): (None) Slight Strong
2. Odor Description (circle one): Organic Petroleum Chemical (N/A) Other _____

Moisture Condition (circle one): Dry (Moist) Wet

PG Signature: _____ **PG Registration #:** 2735

Additional Comments: T.D = 21 ft bgs, Extract + hold

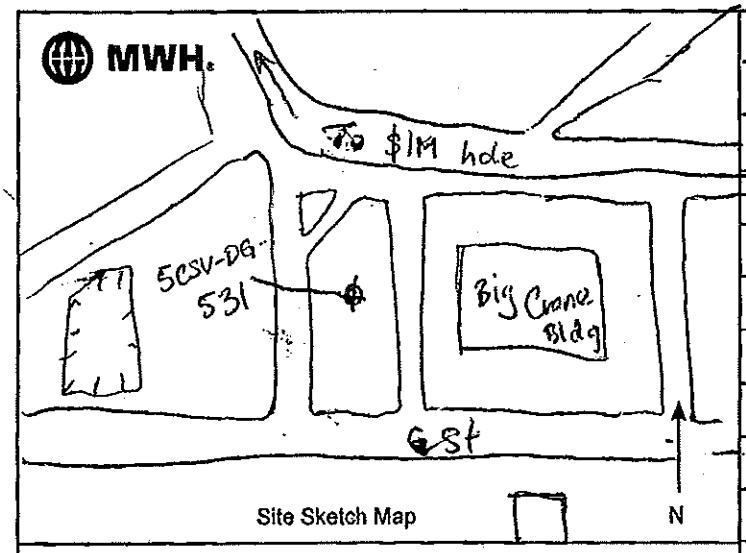
μR = 10

PID = 0.0

CPM = 90

NA – Not Applicable

MWH



Site Sketch Map

Boring ID: 5CSV-DG-531 Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: 5C

Logged By: V. Vathanasin Reviewed By:

Drilling Contractor: EST Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5400 / DP

Sampler Type: Macrocore

Borehole Diam (inch): 2.25" Total Depth (ft.bgs): 2.9

Drill Bit Type: Macrocore

Drill Start Time/Date: 1340 / 5-30-14 Drill Finish Time/Date: 1401 / 5-30-14

Soil Boring Backfill Time/Date: ~~5-30~~ (V.V.) Backfill Material: Soil cuttings.

Soil Vapor ID: N/A

Soil Vapor Well Completion Time/Date: N/A

Soil Vapor Probe Depths (ft.bgs): N/A

Soil Vapor Well Detail Completed (yes/no)

Observations: ☐ Debris ☒ Staining ☐ Odors ☐ Groundwater ☐ None

Surface Completion: Soil vapor probe

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations) Surface Description: Grass	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
	X					0	SM	Silty Sand (SM), light yellowish brown (10YR 6/4), loose, dry, fine sand, silt, roots.	–	–	–	60	40
	X	30"				1							
	X					2		grades with slightly coarser grains (still fine sand)	–	–	–	70	30
0.0	X		X		1405	3	Br	Shale ~~Sandstone~~, weathered. (V.V.)					
SVE-531-SASC-SO-2.5-2.9						4		TD = 2.9 ft bgs., refusal on bedrock. Collect encored at 2.5-2.9 ft for voc analyses. Stepped out twice to confirm refusal w/ similar results.					
						5							
						6							
						7							
						8							
						9							

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By 05/20/2014

Sample ID SVL-531-SA5C-SB-2.5-2.9 Date/Time 5-20-2014 / 1405

Matrix (circle one): (Soil) Sediment Water

Start Depth 2.5

End Depth 2.9

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		(SM)	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. **Is Fill Material Present** (Yes) No

2. **Percentage Fill (%)** 100

3. **Fill Description (circle all that apply)**

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel N/A

Other Soil backfill

Is Staining Present Yes (No)

Color Light yellowish brown (10YR 6/4)

Odor

1. **Odor Strength (circle one)**

None Slight Strong

2. **Odor Description (circle one)**

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature [signature] **PG Registration #** 7955

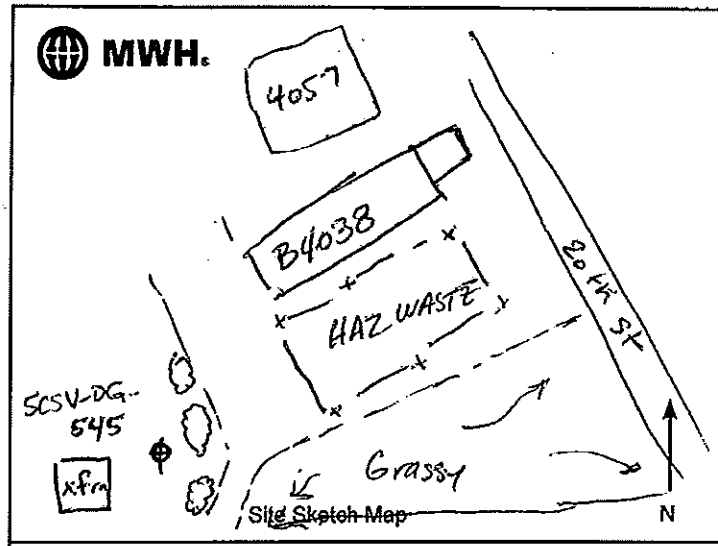
Additional Comments TD = 2.9 ft

PID = 0.0 ppm

uR = 12

cpm = 81

MWH.



Site Sketch Map

Boring ID: SCSV-DG-545	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: SASC
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 3.5
Drill Bit Type: Macrocore	
Drill Start Time/Date: 1352 / 5-28-14	Drill Finish Time/Date: 1403 / 5-28-14
Soil Vapor ID: N/A	Soil Boring Backfill Time/Date: 1410 / 5-28-14 Backfill Material: Soil cuttings
Soil Vapor Well Completion Time/Date: N/A	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): N/A	Surface Completion: None
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description
1) Soil type; 2) USCS Symbol; 3) Munsell Color; 4) Consistency/Density; 5) Moisture; 6) Grain Size %; 7) Cementation; 8) Plasticity (fines); 9) Geologic Unit (fill, alluvium, bedrock); 10) Misc. Observations

Surface Description: Graded, grass and shrubs

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Silty Sand (sm), light yellowish brown (10YR 6/4), med. dense, dry, no stains or odors, fill, roots	-	-	-	60	40
0.0						1							
		40"						@ 1.6' color changes to brownish yellow (10YR 6/6) - native soil					
						2							
								@ 2.9 ft - large root from shrub - root was moist and possibly alive.					
0.0			X		1410	3							
SVL-545-SASC-SB-3.0-3.5							Br	Sandstone, weathered					
						4							
								TD = 3.5 ft; collect encores for VOC analyses. No probes installed.					
						5							
						6							
						7							
						8							
						9							

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By _____

Sample ID SVL-545-SA5C-SB-3.0-3.5 Date/Time 5-28-14 / 14:10

Matrix (circle one): (Soil) Sediment Water

Start Depth 3.0

End Depth 3.5

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler _____

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		(SM)	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				CH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes) No
2. Percentage Fill (%) 100
3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other Locally sourced fill

Is Staining Present Yes (No)

Color brownish yellow (10YR 6/4)

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature [signature] **PG Registration #** 7735

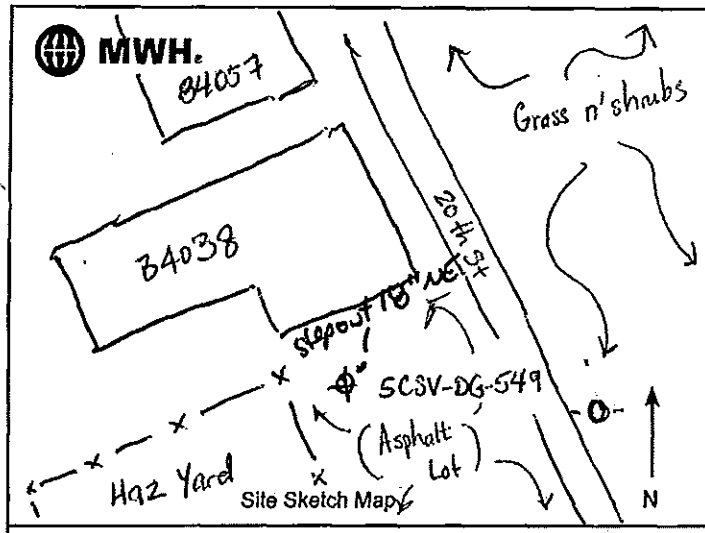
Additional Comments TD = 3.5 ft

PID = 0.0 ppm

uR = 10

cpm = 66

NA – Not Applicable



Site Sketch Map

Boring ID: 5CSV-DG-549	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: SA 5C
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 8.0
Drill Bit Type: Macrocore	
Drill Start Time/Date: 1257 / 5-30-14	Drill Finish Time/Date: 1314 / 5-30-14
Soil Vapor ID: 5CSV-DG-549	Soil Boring Backfill Time/Date: N/A — Backfill Material: N/A
Soil Vapor Well Completion Time/Date: 1335 / 5-30-14	Observations: ☐ Debris ☒ Staining ☐ Odors ☐ Groundwater ☐ None
Soil Vapor Probe Depths (ft.bgs): 7.0-8.0	Surface Completion: Soil vapor probes
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description
1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (lines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: Asphalt lot S. of 4038

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
						0	AF	3" Asphalt.	–	–	–	75	25
							SM	Silty Sand w/ gravel (SM), dark yellowish brown (10YR 3/4), loose, moist, fine sand, non-plastic silt, dark asphalt stains, road base (gravel) at the surface, no odors fill					
		40"	NONE			1							
						2							
						3	ML	Silt (ML), dark yellowish brown (10YR 4/6), med. stiff, moist, low-plasticity silt, no odors or stains, weak silt cement, fill	–	–	–	–	~~100~~
						4					5	20	75
						5	~~SM~~ V.V.	• stepout 18" NE of previous • sample SVL-549-SA5C-SB-6.3-6.8 6.3-6.8' bgs @ 14:23	Begin hole 14:02				
		36"	NONE			6		• Set probe 6.0-7.0' bgs; 14:50 TD = 8.85' bgs	End hole 14:22				
		18"	NONE			7		@7' Asphalt debris					
						8	SM	10 μRem, 42 cpm, 0.0 ppm					
						9	Br ~~SM~~ V.V.	Silty Sand (SM), yellowish brown (10YR 5/6), dense, dry, fine sand, non-plastic silt, moderate silt cement, no odors or stains, native soil					

*TD = 8.0; refusal on bedrock

@ 8.0 Weathered Bedrock

QA/QC
Surficial media boring log rev 2-25-2014

MWH

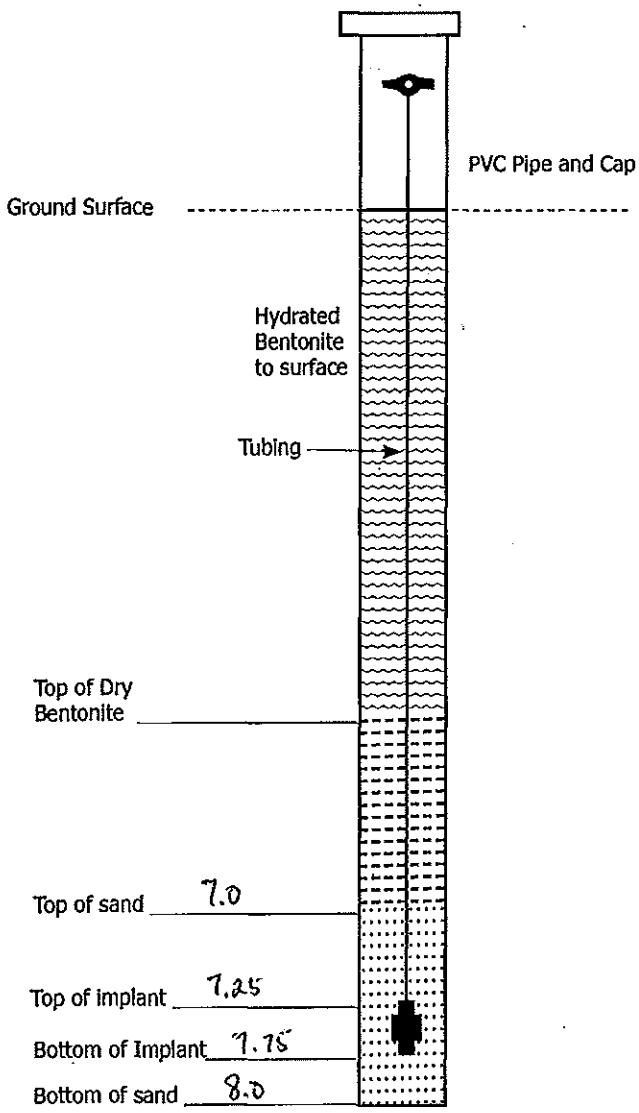
Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SCSV-DG-549 | Job #: 10503982.3050105/10503982.3060105 | Project: Phase 3 DOE Data Gap Sampling 2

Site: SC | Reviewed by: | Logged by: V. Vathanasm

Drilling Contractor: EST | Rig Type/Method: Geoprobe 5400 / DP | Driller: Morgan Hughes

Borehole TD: 8.0 | Probe Completion Date/Time: 1335 / 5-30-14 | Borehole Diameter: 2.25



Vapor Implant Specs

Material: Stainless Steel

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: Teflon

Diameter: 1/4"

Color: clear

Sand Pack Specs

Grain Size: #3

Manufacturer: Cemex

Dry Bentonite

Type: #8

Manufacturer: Cetco

Hydrated Bentonite

Type: #8

Manufacturer: Cetco

Notes:

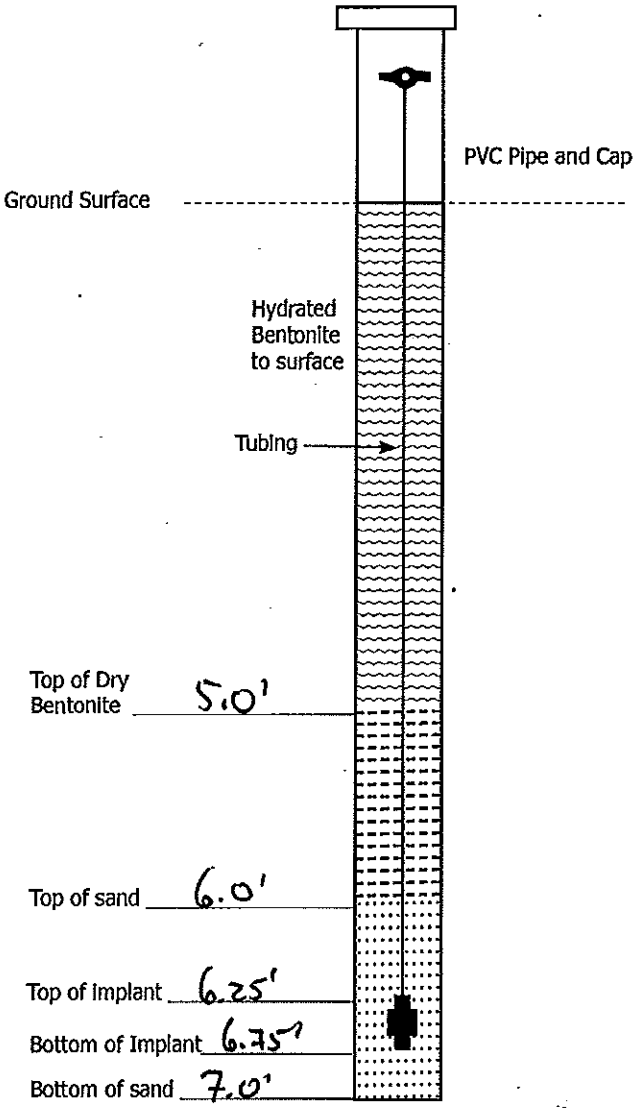
1. Probes not drawn to scale.

FIGURE 4-1

MWH.

Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SCSV_DG-549
Job #: 10503982.3050105/10503982.3060105
Project: Phase 3 DOE Data Gap Sampling 2
Site: SC
Reviewed by:
Logged by: [illegible]
Drilling Contractor: EST
Rig Type/Method: Geoprobe 5400
Driller: Morgan Hughes
Borehole TD: 8.85' bgs
Probe Completion Date/Time: 10 JUN 14, 1450
Borehole Diameter: 2.25"



Vapor Implant Specs
Material: stainless steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: teflon
Diameter: 1/4"
Color: clear

Sand Pack Specs
Grain Size: #3 sand
Manufacturer: Comex

Dry Bentonite
Type: #8 crumbles
Manufacturer: Cetco

Hydrated Bentonite
Type: #8 crumbles
Manufacturer: Cetco

Notes:
1. Probes not drawn to scale.

FIGURE 4-1

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By

Sample ID SVL-549-SASC-SB-6.3-6.8 Date/Time 10 JUN 14, 14:27

Matrix (circle one): (Soil) Sediment Water

Start Depth 6.3'

End Depth 6.8'

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist

Sampler

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	✓
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH * 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH * 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes) No
2. Percentage Fill (%) 100 %
3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel N/A

Other disturbed soil

Is Staining Present Yes (No)

Color WYR 4/6 dk yw. brown

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

Dry (Moist) Wet

PG Signature [signature] **PG Registration #** 7735

Additional Comments Collect 3 encores + 1.4-oz Jar

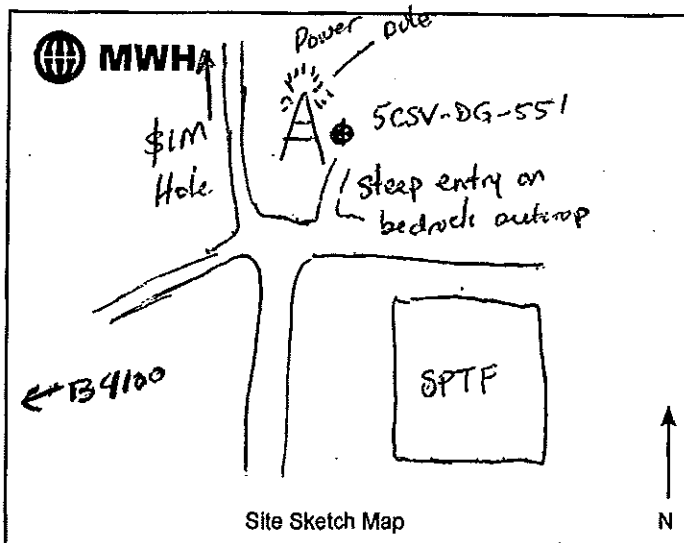
10 µRem, 42 cpm, 0.0 ppm.

TD = 8.85' bgs

NA – Not Applicable

FSDS Revision 3.0 11/19/2013

MWH



Site Sketch Map

Boring ID: 5CSV-DG-551	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5C
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 2.8'
Drill Bit Type: Macrocore	
Drill Start Time/Date: 1500 / 5-28-14	Drill Finish Time/Date: 1509 / 5-28-14
Soil Vapor ID: N/A	Soil Boring Backfill Time/Date: 15:20 / 5-28-14 Backfill Material: Soil cuttings.
Soil Vapor Well Completion Time/Date: N/A	Observations: ☐ Debris ☒ Staining ☐ Odors ☐ Groundwater ☐ None
Soil Vapor Probe Depths (ft.bgs): N/A	Surface Completion: None
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
	X					0	SM	Surface Description: @ Base of power pole, bedrock nearby. Silty Sand (SM), yellowish brown (10YR 5/4), loose, dry, fine sand, non-plastic silt, roots, fill, minor dark stains (dark yellowish brown (10YR 4/4))	-	-	-	65	35
	X	24"				1	SP-SM		-	-	-	65	35
0.0	X		X		15:15	2		Poorly Graded Sand with silt (SP-SM), very pale brown (10YR 7/4), loose, dry, predominantly fine sand, non-plastic silt, fill (native soil that has been disturbed), no odors or stains					
SVL-551-SA5C-SB-2.0-2.8						3							
						4							
						5							
						6		TD = 2.8 ft; refusal on bedrock. Collect encores 2.0-2.8 ft. No vapor probe installed.					
						7							
						8							
						9							

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By _____

Sample ID SVL-551-SA5C-SB-2.0-2.8 Date/Time 5-28-14/15:15

Matrix (circle one): (Soil) Sediment Water

Start Depth 2.0

End Depth 2.8

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID NONE

Field Geologist Van Vathanaviu

Sampler _____

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes) No
2. Percentage Fill (%) 100
3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other Reworked native soil

Is Staining Present Yes (No)

Color very pale brown (10YR 7/4)

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature _____ **PG Registration #** 7735

Additional Comments TD = 2.8 ft

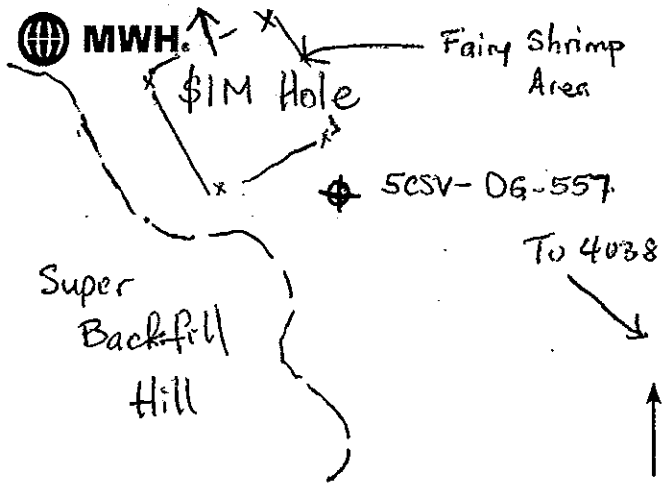
PID = 0.0 ppm

wR = 10

ppm = 34

NA – Not Applicable

MWH



Site Sketch Map

Boring ID: 5CSV-DG-557 Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: 5C

Logged By: V. Vathanasin Reviewed By:

Drilling Contractor: EST Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5400 / DP

Sampler Type: Macrocore

Borehole Diam (inch): 2.25" Total Depth (ft.bgs): 3.5

Drill Bit Type: Macrocore

Drill Start Time/Date: 0940 / 5-29-14 Drill Finish Time/Date: 0949 / 5-29-14

Soil Vapor ID: N/A

Soil Boring Backfill Time/Date: 1005 / 5-29-14 Backfill Material: Soil cuttings

Soil Vapor Well Completion Time/Date: N/A

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Soil Vapor Probe Depths (ft.bgs): N/A

Surface Completion: NONE

Soil Vapor Well Detail Completed (yes/no)

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description: 1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations. Surface Description: Gravelly w/ Gravel (V.V)	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
	X					0	SM	Silty Sand (SM), brownish yellow (10YR 6/6), loose to med. dense, fine sand and low plasticity silt, dry, back fill, no odors or stains. fine gravel	5	-	-	60	25/10
	X	38"				1							
	X					2							
	X		X		10:00	3		thin					
SVL-557-SA5C-SB					3.0-3.5	4	Br	Weathered Bedrock - Sandstone over shale					
						5		TD = 3.5', refusal on bedrock. Stepped out twice to confirm refusal; 2nd attempt 2.5', 3rd attempt 2.0					
						6							
						7		Collect encores for voc analyses at 3.0 - 3.5'					
						8							
						9							

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By

Sample ID SVL-557-SASC-SB-3.0-3.5 Date/Time 5-29-14 / 10:00

Matrix (circle one): (Soil) Sediment Water

Start Depth 3.0

End Depth 3.5

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasm

Sampler

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		(SM)	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				CH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes) No
2. Percentage Fill (%) 100
3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other Graded soil

Is Staining Present Yes (No)

Color brownish yellow (10YR 6/6)

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature _____ **PG Registration #** 7735

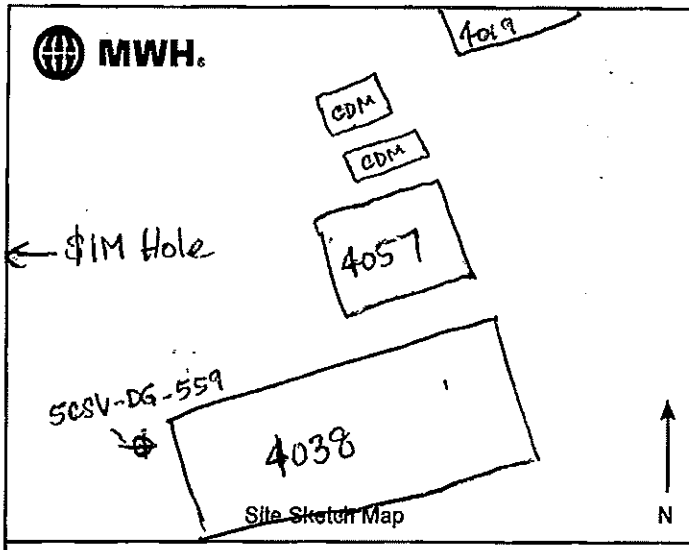
Additional Comments TD = 3.5 ft

PID = 0.0 ppm

uR = 14

cpm = 64

MWH



Boring ID: SCSV-DG-559	Sheet 1 of 1		
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014			
Job #: 10503982.3050105/ 10503982.3060105	Site: SC		
Logged By: V. Vathanasin	Reviewed By:		
Drilling Contractor: EST	Drillers Name: Morgan Hughes		
Drill Rig Type/Method: Geoprobe 5400 / DP			
Sampler Type: Macrocore			
Borehole Diam (inch) 2.25"	Total Depth (ft.bgs)	3.0	
Drill Bit Type: Macrocore			
Drill Start Time/Date: 1015 / 5-29-14	Drill Finish Time/Date: 1025 / 5-29-14		
Soil Vapor ID: N/A	Soil Boring Backfill Time/Date: 1038 5-29-14	Backfill Material: Soil cuttings.	
Soil Vapor Well Completion Time/Date: N/A	Observations: ☐ Debris ☒ Staining ☐ Odors ☐ Groundwater ☐ None		
Soil Vapor Probe Depths (ft.bgs): N/A	Surface Completion:		
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ☐ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None		

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
								Surface Description: Asphalt					
				3"		0	SM	3" asphalt					
		36"				1		Silty Sand (SM), dark yellowish brown (10 YR 4/6), loose, moist, fine sand, non-plastic silt, asphalt stains, fill	-	-	-	75	25
						2		* 1" layer of road base ~~at~~ beneath asphalt, @ 2' mild oxidation, yellowish brown (10 YR 5/8)					
					1035	3							
				SCSV-559-SASC-SB-2.5-3.0			Br	Sandstone, weathered.					
						4							
						5		TD = 3.0 ft, refusal on bedrock. Collect encores at 2.5-3.0 for VOC analyses. ~~yellowish brown (10YR 5/8)~~					
						6							
						7							
						8							
						9							

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By _____

Sample ID SVL-559-SA5C-SB-2.5-3.0 Date/Time 5-29-14 / 10:35

Matrix (circle one): (Soil) Sediment Water

Start Depth 2.5

End Depth 3.0

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID None

Field Geologist Van Valkenaar

Sampler _____

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		(SM)	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				CH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes) No

2. Percentage Fill (%) 100

3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other Locally Sourced Fill

Is Staining Present Yes (No)

Color dark yellowish brown (10YR 4/6)

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

Dry (Moist) Wet

PG Signature _____ **PG Registration #** 7735

Additional Comments TD = 3.0'

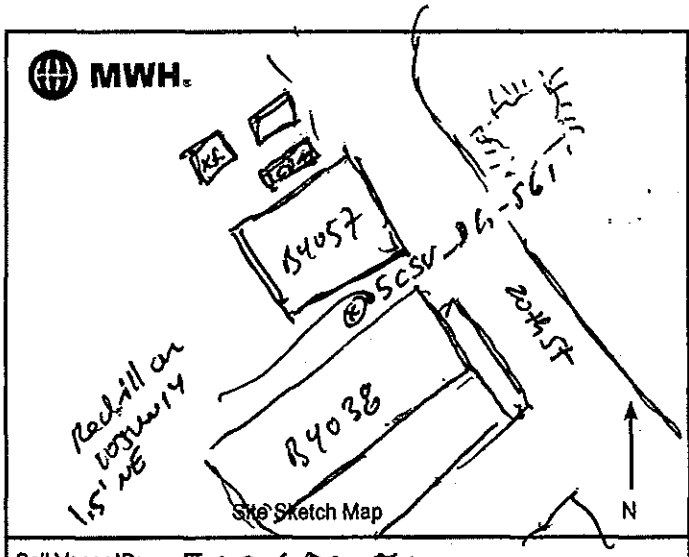
PID = 0.0 ppm

uR = 12

Cpm = 54

NA – Not Applicable

MWH.



Site Sketch Map

Boring ID: 5CSV DG-561	Sheet 1 of 2
Project: Phase 3 DOE SVDG 2014	
Job #: 10503982.3050106	Site: 5C
Logged By: Russell	Reviewed By:
Drilling Contractor: EST	Drillers Name: MARTY KILHULLEN
Drill Rig Type/Method: GEOPROBE 5400	
Sampler Type: MACROCORE	
Borehole Diam (inch): 2.25 OD	Total Depth (ft.bgs): 12.5'
Drill Bit Type: MACROCORE	
Drill Start Time/Date: 02JUN14, 07:49	Drill Finish Time/Date: 02JUN14, 0845
Soil Vapor ID: 5CSV DG-561	Soil Boring Backfill Time/Date: N/A
Backfill Material: N/A	
Soil Vapor Well Completion Time/Date: 02JUN 2014	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): 5.0-~~5.5~~ ÷ 6.0, 11.5-~~12.0~~ 12.5	Surface Completion: SV Probe
Soil Vapor Well Detail Completed (yes/no): attached	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description
1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

Surface Description: ASPHALT DRIVEWAY

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
		26"				0		4" asphalt					
0.0						1	SM	Silty sand (sm), black (10YR 2/1), ~~dry~~ slightly moist, medium dense,	-	~~15~~ 0	15	55	30
						2		Predominant fine sand (55%), some silt (30%), and little medium sand (15).					
						3		No odor, no stain. Fill material					
						4		4.0-5.5					
0.0		48"				5	SP	Poorly graded sand (SP), dark yellowish brown (10YR 3/4), dry, loose	-	15	45	30	10
						6	SM	Predominant medium sand (45), some fine sand (30), little loose (15) with					
						7		few silt (10). No odor, no stain. Fill material.					
								5.5-12.0	-	-	~~60~~	~~40~~	-
0.0		48"				8		Silty sand (sm), very dark greyish brown (10YR 3/2), moist, dense			-	60	40
						9	CH	Predominant fine sand (60%), with some (40%) silt. medium stiff,					
						CH		non plastic, no odor, no					

QA/QC
Surficial media boring log rev 2-25-2014

Boring ID: 5CSV DG-561 Project: Phase 3 110E SVDG 2014 Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
						10		strain, Fill material.					
						11		- color change at 7.0' bgs to black (10YR 2/1) - with silt fraction increasing to ~~40%~~ 60%					
	X	6"				12	SM	- color change at 8.0 to very dark grayish brown (10YR 3/2)		~	-	40	60
						3		12.0-12.5					
0.0						4		Silty sand (SM), light olive brown (2.5Y5/4), dry loose, predominant ~~medium~~ fine sand (75), with little silt (25%) and trace medium sand. No stain, no odor, native soil.	-	-	TR	75	25
						5							
						6							
						7							
						8		• Refusal on sandstone at 12.5' bgs bedrock					
						9		• Soil vapor probes installed at 5.0 - 6.0 and 11.5 - 12.5 bgs					
						0							
						1		• TD = 12.5' bgs					
						2		• moved sample location ~2.0' feet SW to avoid water line.					
		10JUN14				3							
						4		(D) 8.0-11.0 on boring 10JUN14 Clay (CH) no dilatancy, v high dry strength, high toughness					
						5							
						6		• Took Sample at 10.5-11.0' interval					
						7		• SVL-561-5ASC-SB-10.5-11.0 @ 13:24h. 13 uRem, 32 cpm, 0.0 ppm					
						8		Set probe 5CSV-DG-561 @ 10.0 - 11.0' bgs					
						9		10JUN14 13:2					

Begin hole 12:57
End hole 13:09

Moved location to 1.5' NE of previous.

QA/QC
Surficial media boring log rev 2-25-2014

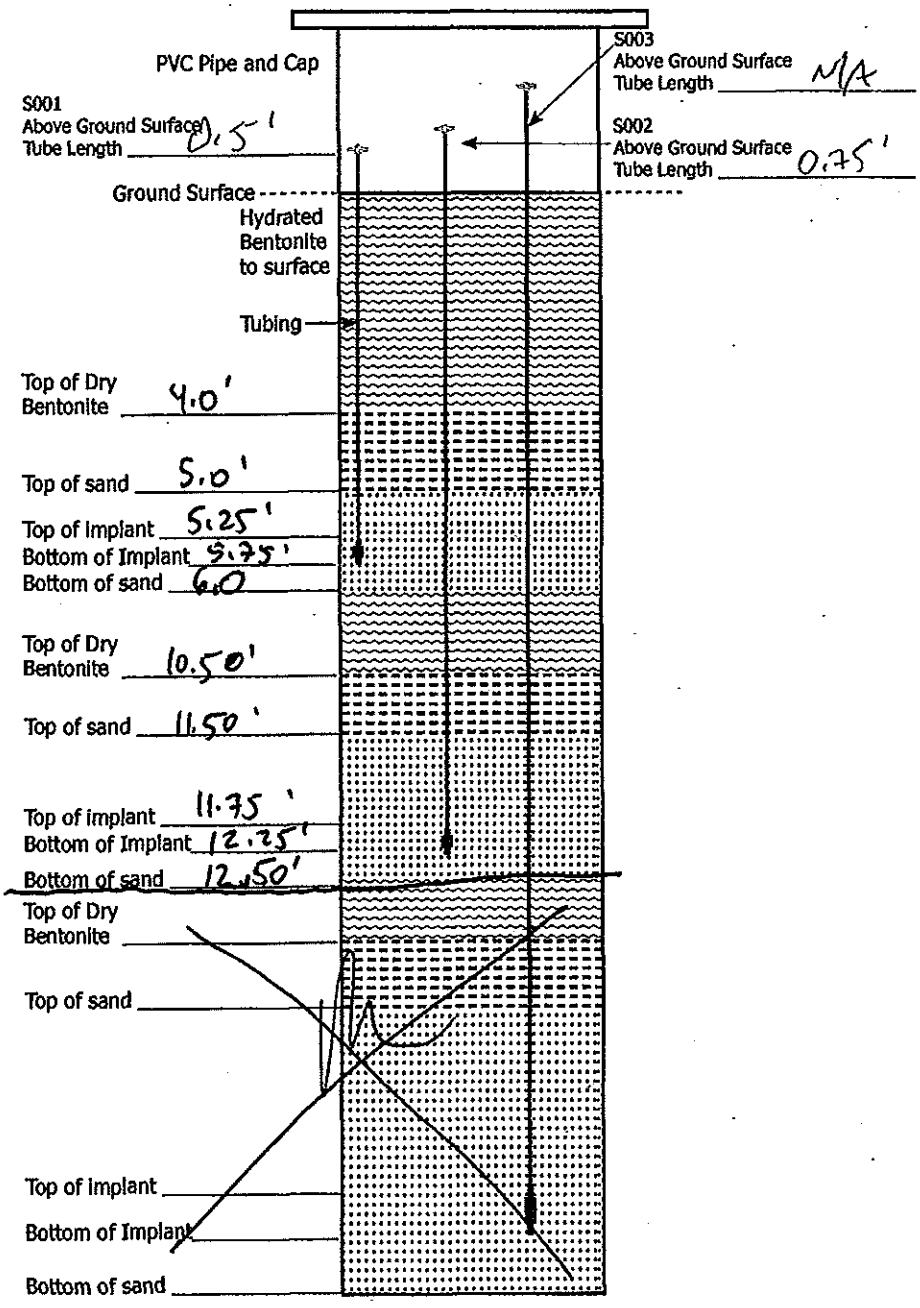
MWH

Multiple Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: 5C SV DG-S61
Site: 5C
Drilling Contractor: EST
Borehole TD: 12.5'

Project: Phase 3 DOE Data Gap Sampling 2014
Logged by: ROBELLIS
Driller: EST
Borehole Diameter: 2.25"

Job #: 10503982.3050105/10503982.3060105
Reviewed by:
Rig Type/Method: Geoprobe 5400
Probe Completion Date/Time: 02JUN14/0814



Vapor Implant Specs

Material: stainless steel
Length: 6"
Diameter: 3/8"

Tubing Specs

Material: teflon
Diameter: 1/4"
Color: clear

Sand Pack Specs

Grain Size: #3
Manufacturer: Cenex

Dry Bentonite

Type: #8 crumbles
Manufacturer: cetco

Hydrated Bentonite

Type: #8 crumbles
Manufacturer: cetco

Notes:

1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

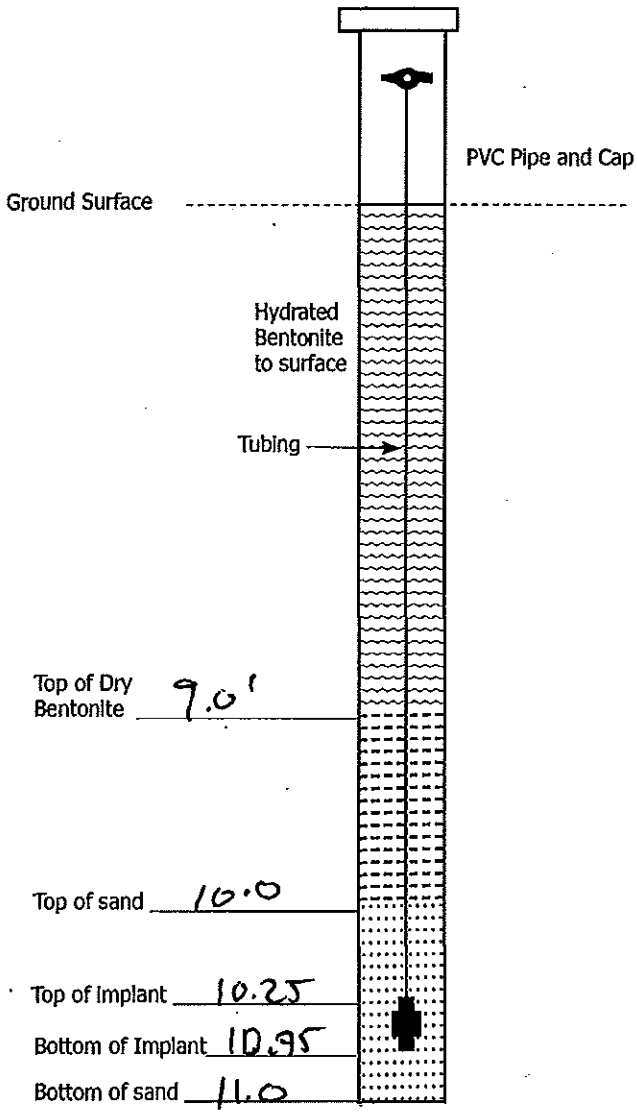
Single Soil Vapor Probe Construction Diagram

MWH

Probe ID/Soil ID: SCSV DG-561
Site: SC
Drilling Contractor: EST
Borehole TD: 11'0" bgs

Job #: 10503982.3050105/10503982.3060105
Reviewed by:
Rig Type/Method: Geoprobe 5400
Probe Completion Date/Time: 10 Jan 14, 13:24

Project: Phase 3 DOE Data Gap Sampling 2(
Logged by: CWS Ellis
Driller: Morgan Hughes
Borehole Diameter: 2.25"



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Tefzel
Diameter: 1/4"
Color: clear

Sand Pack Specs
Grain Size: #3 Sand
Manufacturer: Cemex

Dry Bentonite
Type: #8 crumbles
Manufacturer: Cetco

Hydrated Bentonite
Type: #8 crumbles
Manufacturer: Cetco

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By [signature]

Sample ID SVL-561-SA5C-SB-10.5-11.0 Date/Time 10 JUN 14, 13:24

Matrix (circle one): Soil (circled) Sediment Water

Start Depth 10.5

End Depth 11.0

Depth Units (circle one): Inches Feet (circled)

Check if Composite ☐

Collection Method (circle one): DPT (circled) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): N (circled) FD FB RB

Parent Sample ID N/A

Field Geologist Robbins

Sampler Robbins

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	✓
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

FSDS Revision 3.0 11/19/2013

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				(CH)	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes), No
2. Percentage Fill (%) 100%
3. Fill Description (circle all that apply)

Asphalt	Metal	Plastic
Concrete	Wood	Glass
Igneous/Metamorphic Gravel		N/A
Other disturbed soil		

Is Staining Present Yes (No)

Color 10YR 3/2 very dk grey brown

Odor

1. Odor Strength (circle one): (None) Slight Strong
2. Odor Description (circle one): Organic Petroleum Chemical (N/A) Other _____

Moisture Condition (circle one): Dry (Moist) Wet

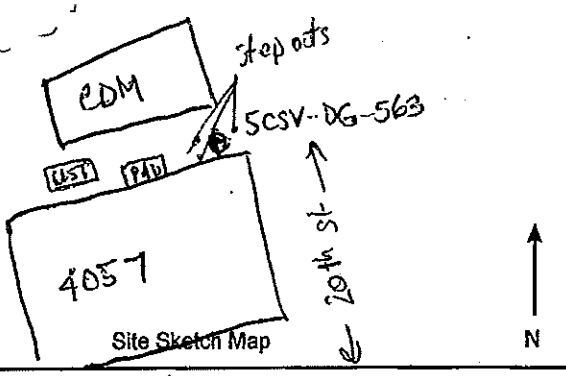
PG Signature _____ **PG Registration #** 7735

Additional Comments Collected 3 ounces, 1-4oz jar.
13 μrem, 32 cpm, 0.0 ppm / 0.7 ppm (HS).
TD = 11.0' bgs

MWH

4019

Fmr 4059



Boring ID: SCSV-DG-563	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: SC
Logged By: V. Vatharasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 1.5
Drill Bit Type: Macrocore	
Drill Start Time/Date: 0750 / 6-2-14	Drill Finish Time/Date: 0830 / 6-2-14
Soil Vapor ID: N/A	Soil Boring Backfill Time/Date: 0845/6-2-14 Backfill Material: Soil cuttings
Soil Vapor Well Completion Time/Date: N/A	Observations: ☐ Debris ☒ Staining ☐ Odors ☐ Groundwater ☐ None
Soil Vapor Probe Depths (ft.bgs): N/A	Surface Completion: None; backfill with cutting and asphalt patch
Soil Vapor Well Detail Completed (yes no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Surface Description: Asphalt 3"					
	X							Silty Sand (SM), brown (10YR 4/3), loose,	TR	—	—	70	30/
						1		dry, fine sand, non-plastic silt,					
0.0	X		X		0840			trace angular gravel (road base?),					
SVL-563-SA5C-SB-1.0-1.5							Br	non-cohesive, ~~asphalt~~ asphalt stains,					
						2		Sandstone, weathered.					
						3							
						4		TD = 1.5', refusal on bedrock. Drilled					
								3 borings to confirm shallow refusal.					
						5		1st 2 borings were 15". Final boring					
								1.5'. Collected samples from final boring.					
						6		Returned @ 1521 hrs to drill 4th Stepout					
								approx 5' NE of original location =					
						7		refusal at 1.0 ft.					
						8							
						9							

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Steff Mupel

Sample ID SVL-563-SASC-SB-1.0-1.5 Date/Time 0840 / 6-2-14

Matrix (circle one): (Soil) Sediment Water

Start Depth 1.0

End Depth 1.5

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanagsin
" "

Sampler

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		(SM)	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes) No

2. Percentage Fill (%) 100

3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other Re-worked native soil

Is Staining Present (Yes) No Asphalt Stain

Color brown (10YR 4/3)

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature _____ **PG Registration #** 7735

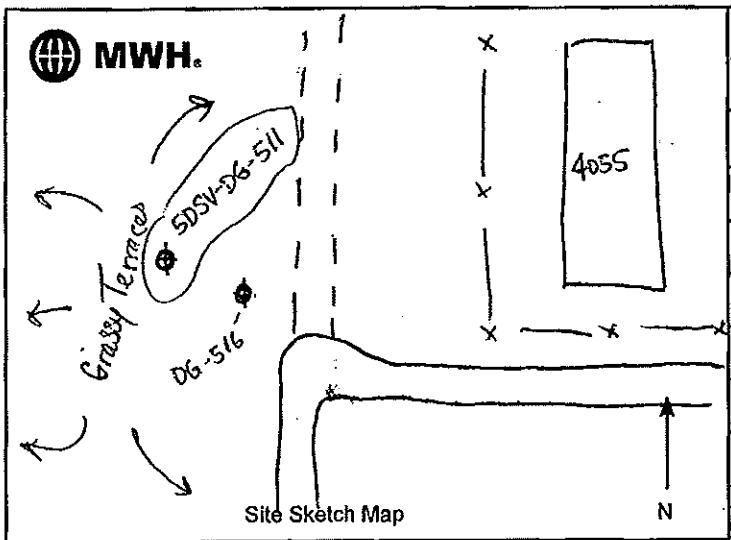
Additional Comments TD = 1.5'

PID = 0.0'

uR = 10

cpm = 48

MWH.



Site Sketch Map

Boring ID: 5DSV-DG-511	Sheet 1 of 2
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: SA 5D
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch) 2.25"	Total Depth (ft.bgs) 10.5
Drill Bit Type: Macrocore	
Drill Start Time/Date: 0740 / 5-22-14	Drill Finish Time/Date: 0800 / 5-22-14
Soil Vapor ID: 5DSV-DG-511	Soil Boring Backfill Time/Date: N/A — Backfill Material: N/A
Soil Vapor Well Completion Time/Date: 0830 / 5-22-14	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): 4.5-5.5, 9.5-10.5	Surface Completion: Soil vapor probes
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

Surface Description: Grassy, branches and limbs

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
						0	ML	Silt (ML), dark yellowish brown (10YR 4/4), med. stiff, slightly moist, non-plastic silt, trace sand, grass roots, wood fragments, fill	-	-	-	TR	100/
						1			-	5	-	TR	95/
		38"	NONE			2		@1' graded w/ coarse sand ~~fragments~~					
						3	CL	~~cl~~ Silty clay (CL), brownish yellow (10YR 5/6), stiff, dry, non-plastic clay and silt, weathered qtz(?) or plag (?) grains, fill, no odors or staining.	-	-	TR	-	V.V. ~~10~~ 20/80
						4							
0.1						5		@ 4ft-2" gravel					
		48"				6		color changes to light yellowish brown (10YR 6/4).					
						7							
						8	ML	Silt (ML), yellowish brown (10YR 5/4), stiff, dry, non-plastic silt, fill	-	-	-	-	100/
		24"	NONE			9	SM	Silty Sand (SM), yellow (10YR 7/6), loose, dry, fine sand, non cemented, native soil	-	-	-	70	30/
						10							
0.3													

SVL-511-SA5D-SB-4.5-5.5MS
SVL-811-SA5D-SB-4.5-5.5

Boring ID: SDSV-~~01~~ V.V DG-511 Project: Phase 3 DOE SV DG Sheet 2 of 2

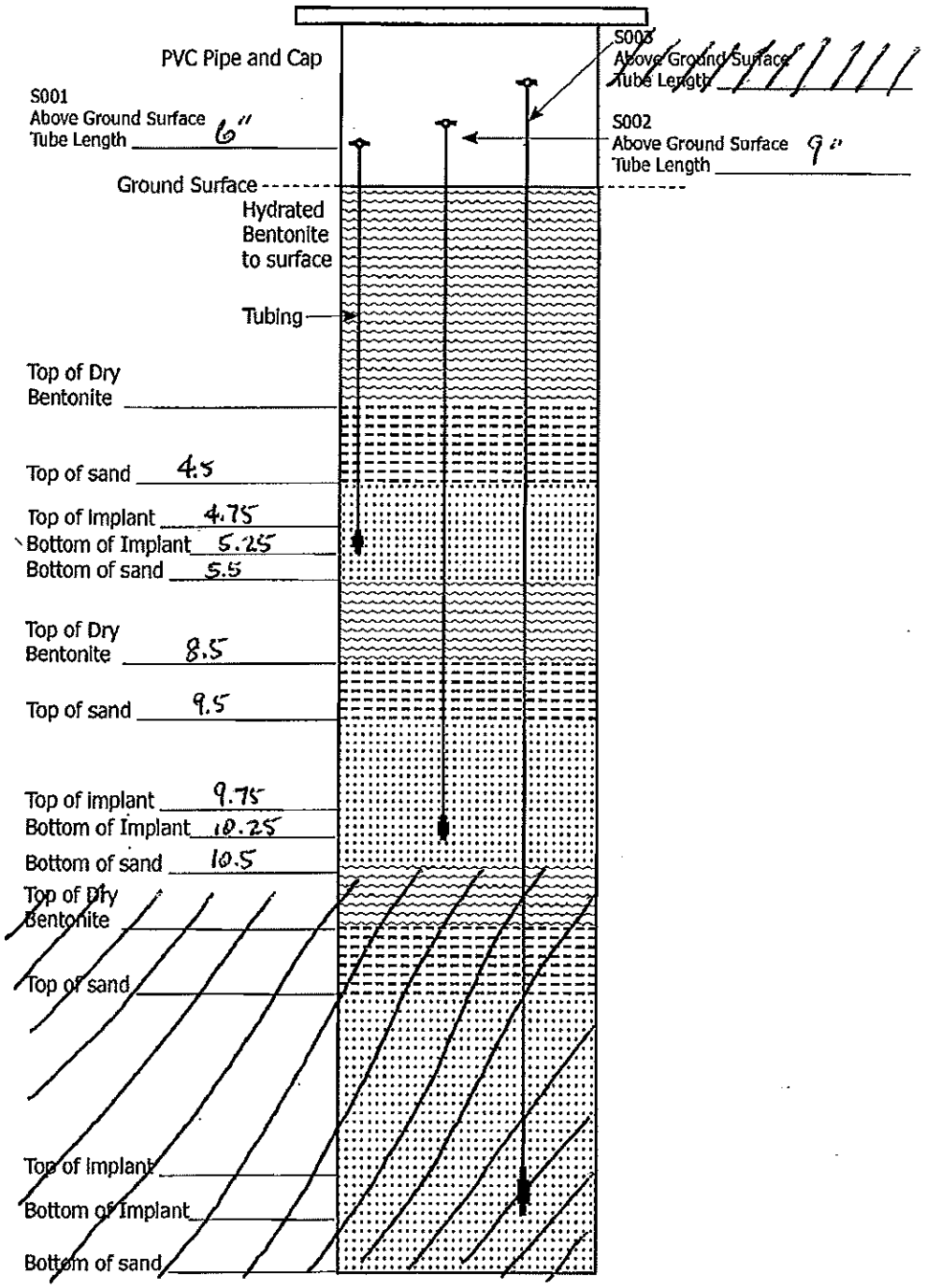
PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						10		@10.5' Sandstone, weathered.					
						11		TD=10.5', refusal on bedrock. Install vapor probes at 4.5-5.5' and 9.5-10.5'.					
						12		Collect encores at 4.5-5.5' for potential no-flow conditions.					
						13							
						14							
						15							
						6							
						7							
						8							
						9							
						0							
						1							
						2							
						3							
						4							
						5							
						6							
						7							
						8							
						9							

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

MWH

Multiple Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SDSV-DG-S11
Project: Phase 3 DOE SV DG
Job #: 10503982
Site: SASD
Logged by: V. Vathanasin
Reviewed by:
Drilling Contractor: EST
Driller: Morgan Hughes
Rig Type/Method: Geoprobe 5400 / DP
Borehole TD: 10.5
Borehole Diameter: 2.25"
Probe Completion Date/Time: 0830 / 5-22-10



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: Clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Cemex

Dry Bentonite
Type: #8
Manufacturer: Celco

Hydrated Bentonite
Type: #8
Manufacturer: Celco

Notes:

1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Shyam Nyapati

Sample ID SVL-811-SA5D-SB-4.5-5.5 Date/Time 5-22-14/0835

Matrix (circle one): (Soil) Sediment Water

Start Depth 4.5

End Depth 5.5

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): N (FD) FB RB

Parent Sample ID SVL-511-SA5D-SB-4.5-5.5

Field Geologist Van Vathanasin

Sampler

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				(CL)	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes) No

2. Percentage Fill (%) 100

3. Fill Description (circle all that apply)

Asphalt	Metal	Plastic
Concrete	Wood	Glass
Igneous/Metamorphic Gravel		N/A

Other locally sourced fill

Is Staining Present Yes (No)

Color brownish yellow (10YR 5/6)

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature _____ **PG Registration #** 7735

Additional Comments Total depth = 10.5'

PID = 0.1 ppm

uR = 13

cpm = 72

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Skyler Mypel

Sample ID SVL-511-SA5D-SB-4.5-5.5 MS **Date/Time** 5-22-14 / 0830

Matrix (circle one): (Soil) Sediment Water

Start Depth 4.5

End Depth 5.5

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) + MS/MSD FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML (VL)	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				CH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes) No

2. Percentage Fill (%) 100

3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel N/A

Other Locally sourced fill

Is Staining Present Yes (No)

Color brownish yellow (10YR 5/6)

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature Nikki Hoffman **PG Registration #** 7735

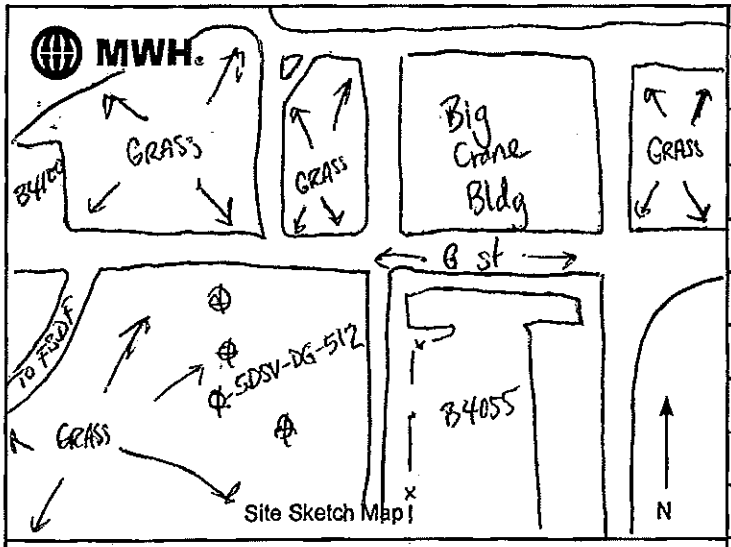
Additional Comments Total depth = 10.5

FID = 0.1 ppm

uR = 13

cpm = 72

MWH



Site Sketch Map

Boring ID: SDSV-DG-512 Sheet 1 of 2

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: SD

Logged By: V. Vathanasin Reviewed By:

Drilling Contractor: EST Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5400 / DP

Sampler Type: Macrocore

Borehole Diam (inch): 2.25" Total Depth (ft.bgs): 17.75

Drill Bit Type: Macrocore

Drill Start Time/Date: 1231 / 5-21-14 Drill Finish Time/Date: 1330 / 5-21-14

Soil Vapor ID: SDSV-DG-512

Soil Boring Backfill Time/Date: N/A Backfill Material: N/A

Soil Vapor Well Completion Time/Date: 1356 / 5-21-14

Observations: ☒ Debris ☐ Staining ☐ Odors ☐ Groundwater ☐ None

Soil Vapor Probe Depths (ft.bgs): 5.0-6.0, 11.0-12.0, 16.75-17.75

Surface Completion: Soil vapor probes.

Soil Vapor Well Detail Completed (yes/no)

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	ML	Surface Description: Veg. cleared,					
								~~Silt~~ Sandy Silt (ML), brown (10YR 5/3), med. stiff, dry, non-plastic silt, fine sand, roots, trace fine gravel, fill, no odors or stains.	TR	-	-	20	80/
		36"				1			-	-	-	20	60/40
						2		@1' ~~1.5~~ grades with clay, low plasticity, ~~slight~~ very dark grayish brown staining (10YR 3/2) at 1.5-2.0', plastic debris					
						3							
						4	CL	Silty Clay (CL), dark yellowish brown (10YR 4/4), stiff, moist, medium plasticity	-	TR	-	TR	35/65
			X		13:4			clay, silt, trace coarse and fine sand, areas w/ white weathering ~~areas~~					
		48"				5							
				SDSV-512-5.0-6.0-SB		6							
						7		color lightens to (10YR 4/6)					
						8							
						9		grades w/ angular gravel (weathered)	10	-	-	TR	40/50
		48"											

cont next page

Boring ID: SDSV-DG-512 Project: Phase 3 DOE SV DG Sheet 2 of 2

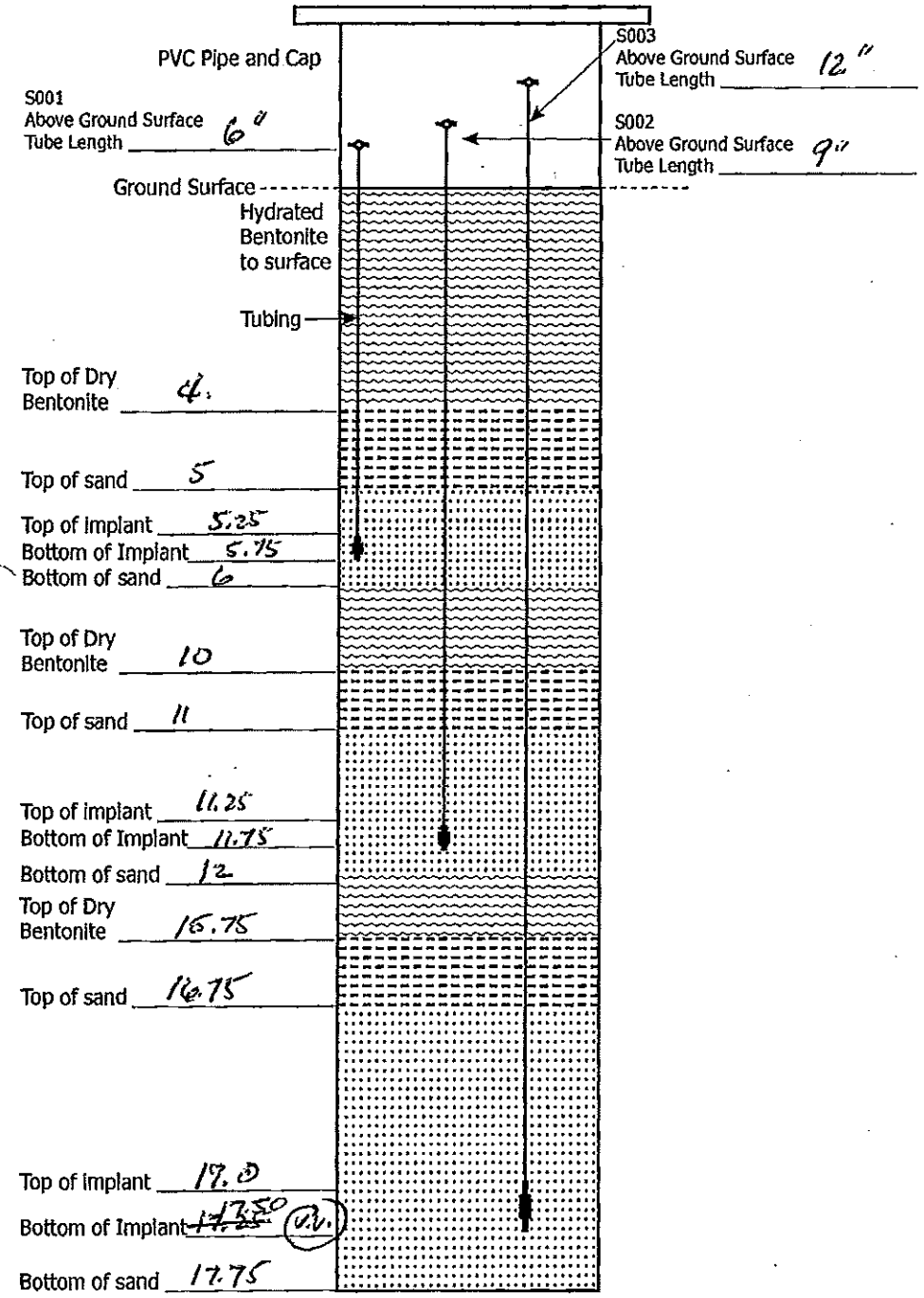
PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						10	SC CL	V.V.					
						11	SC	clayey Sand (SC), yellowish brown (10YR 5/6) with very pale brown streaks (10YR 7/3), med. dense, dry, fine sand, low plasticity clay, clay cement, possibly native, no odors, some brownish yellow (10YR 6/8) iron staining	-	-	-	65	35
						12							
0.0		24"	NONE			13							
						14	CL		-	-	-	35	65
		24"	NONE			15		@13.5 Sandy clay (CL), brownish yellow (10YR 6/6), med. stiff, moist, low plasticity clay, fine sand, no odors or stains	-	-	-	70	30
0.0						16							
		20"	NONE			17		@14.5 Silty Sand (SM), brownish yellow (10YR 6/8), loose, dry, fine sand, non-plastic silt, no odors or stains	-	-	-	100	TR
0.0						18							
						19		@17.25 Poorly Graded Sand (SP), brownish yellow (10YR 6/8), loose, dry, fine sand, trace silt, weak silt cement (V.V.)					
						20		@17.75 Sandstone, weathered.					
						1							
						2		TD = 17.75', refusal on sandstone bedrock, install vapor probe at 5.0-6.0, 11.0-12.0, and 16.75-17.75 (V.V.). Collect encores at 5.0-6.0 due to potential low-flow conditions.					
						3							
						4							
						5							
						6							
						7							
						8							
						9							

5-11-14.T 17

QA/QC
Surficial media boring log rev 2-25-2014

Multiple Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SOSV-DG-S12
Site: SA SD
Drilling Contractor: EST
Borehole TD: 17.75
Project: Phase 3 DOE SV DG
Logged by: V. Vathanasin
Driller: Morgan Hughes
Borehole Diameter: 2.25
Job #: 10503982
Reviewed by:
Rig Type/Method: Geoprobe 5400 / DP
Probe Completion Date/Time: 1356 / 5-21-11



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: Clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Cemex

Dry Bentonite
Type: #8
Manufacturer: Cetco

Hydrated Bentonite
Type: #8
Manufacturer: Cetco

Notes:

1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By 05/21/2014

Sample ID SVL-512-SA5D-SB-5.0-6.0 Date/Time 5-21-14 / 13:40

Matrix (circle one): (Soil) Sediment Water

Start Depth 5.0

End Depth 6.0

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				(CL)	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				CH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes) No

2. Percentage Fill (%) 100

3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel N/A

Other Fill from Local Source

Is Staining Present Yes (No)

Color dark yellowish brn (10YR 4/4)

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

Dry (Moist) Wet

PG Signature Mike Hoffman PG Registration # 7735

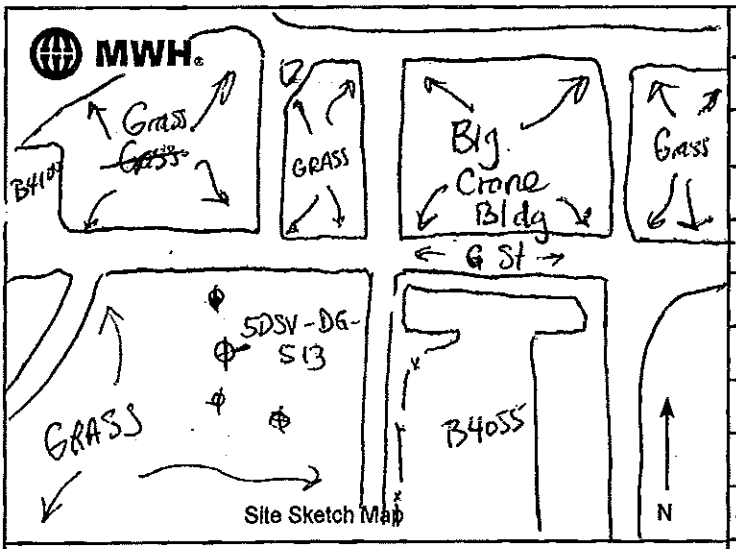
Additional Comments Total depth = 17.75 ft

PID = 0.0

uR = ~~10~~ 12 (V.V.)

cpm = 70

MWH



Site Sketch Map

Boring ID: 5DSV-DG-513 Sheet 1 of 2

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: SD

Logged By: V. Vathanasin Reviewed By:

Drilling Contractor: EST Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5400 / DP

Sampler Type: Macrocore

Borehole Diam (inch): 2.25" Total Depth (ft.bgs): 16.5

Drill Bit Type: Macrocore

Drill Start Time/Date: 1003 / 5-21-2014 Drill Finish Time/Date: 1100 / 5-21-2014

Soil Boring Backfill Time/Date: N/A Backfill Material: N/A

Observations: [X] Debris [ ] Staining [ ] Odors [ ] Groundwater [ ] None

Surface Completion: Soil Vapor probes.

Type of Refusal: [X] Bedrock [ ] Debris [ ] Gravel [ ] Unknown [ ] None

Soil Vapor ID: 5DSV-DG-513

Soil Vapor Well Completion Time/Date: 1150 / 5-21-14

Soil Vapor Probe Depths (ft.bgs): 5.0 - 6.0, 10.0-11.0, 15.5-16.5

Soil Vapor Well Detail Completed (yes/no)

Soil Description
1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: Cleared veg.

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	ML	Silt w/ sand (ML), yellowish brown (10YR 5/4), loose to med. dense, dry, non-plastic silt, fine sand, no odors or stains, fill	—	—	—	15	85/ (HD)
		36"	NONE			1							
						2	V: Clean Lean CL	Clay (CL), yellowish brown (10YR 5/6), stiff, dry, low plasticity, fill	—	—	—	—	100
0.0						3							
						4							
		30"	NONE			5	ML	Silt w/ gravel and sand (ML), light yellowish brown (10YR 6/4), loose/soft, dry, non-plastic silt, fine angular gravel, fine sand, coarse sand, fill	10	5	—	25	60
						6							
0.0						7		grades w/o gravel	—	—	—	20	80/
						8		@ 8' grades w/ clay, med plasticity, stiff	—	—	—	10	70/20
			NONE			9							

Cont next page

Boring ID: SDSV-DG-513 Project: Phase 3 DOE SV DG Sheet 2 of 2

PID/OVA	Sample interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
0.0		32"	NONE			10		@9' grades w/o clay, PVC cable jacket in core-sample; soft to med stiff.	-	-	-	15	85/
0.2		24"	NONE			11							
						12							
						13	SM	Silty Sand (SM), brownish yellow (10YR 6/6), med. dense, dry, fine sand, non-plastic	-	-	-	70	30/
		24"	NONE			14	ML	silt, and sand 7/4	-	-	-	15	65 / 85 V.O.
0.0		6"				15		Silt w/ clay (ML), very pale brown (10YR 6/4) (Bv.), soft, dry, low to medium plasticity fines, fine sand, no odors (V.O.), or staining; native soil, no debris					
						16							
						17	Br	Shale, weathered, fissile					
						18		TD = 16.5', refusal on bedrock, install vapor probes at 5.0-6.0, 10.0-11.0, 15.5-16.5					
						19							
						20							
						1							
						2							
						3							
						4							
						5							
						6							
						7							
						8							
						9							

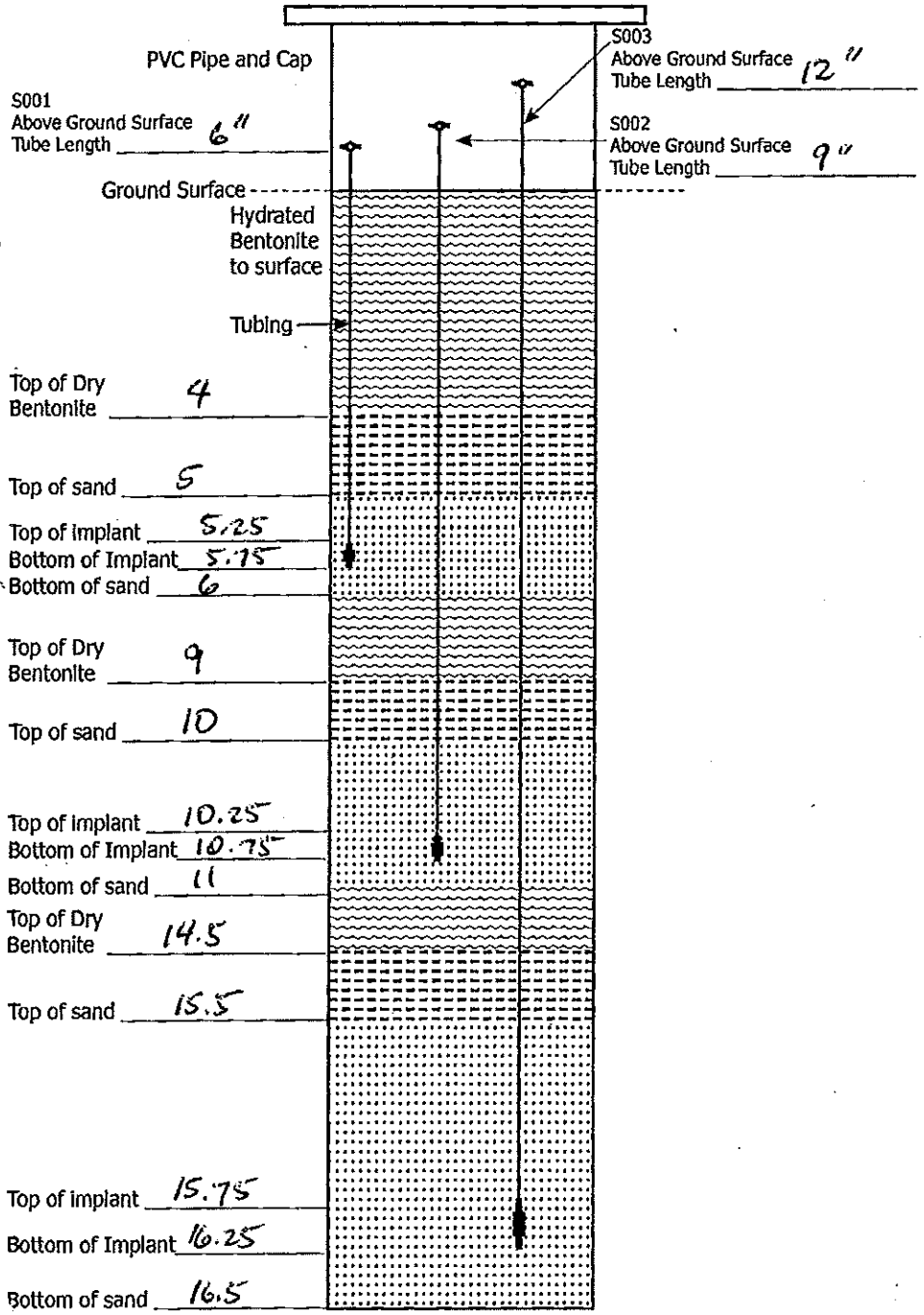
MWH

Multiple Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SDSV-DG-513
Site: SD
Drilling Contractor: EST
Borehole TD: 16.5

Project: Phase 3 DOE DGSV
Logged by: V. Vathanasin
Driller: Morgan Hughes
Borehole Diameter: 2.25"

Job #: 10503982
Reviewed by:
Rig Type/Method: Geoprobe 5400 / DP
Probe Completion Date/Time:



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: Clear

Sand Pack Specs
Grain Size: # 3
Manufacturer: Cemex

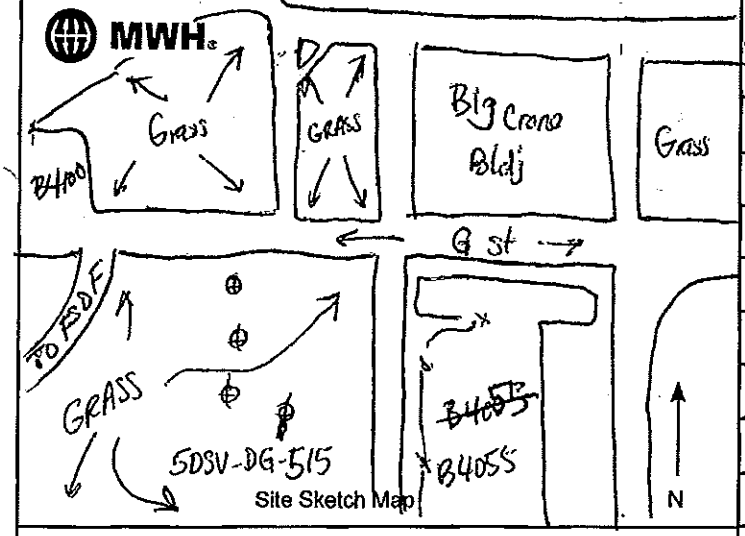
Dry Bentonite
Type: # 8
Manufacturer: Cetco

Hydrated Bentonite
Type: #8
Manufacturer: CETCO

Notes:
1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

MWH



Site Sketch Map

Boring ID: SDSV-DG-515	Sheet 1 of 2
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5D
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 13.8
Drill Bit Type: Macrocore	
Drill Start Time/Date: 1420 / 5-21-14	Drill Finish Time/Date: 1510 / 5-21-14
Soil Vapor ID: SDSV-DG-515	Soil Boring Backfill Time/Date: (N.V.) N/A Backfill Material: N/A
Soil Vapor Well Completion Time/Date: 1523 / 5-21-14	Observations: ☒ Debris ☒ Staining ☐ Odors ☐ Groundwater ☐ None
Soil Vapor Probe Depths (ft.bgs): 5.0-6.0, 12.5-13.8	Surface Completion: Soil vapor probe
Soil Vapor Well Detail Completed (yes) no	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description
1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: Veg. cleared, grassy.

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	ML	Silt (ML), yellowish brown (10YR 5/4) (V.V.), soft, dry, non-plastic silt, 2" gravel (subrounded) at 1 ft bgs, compacted fill, roots, organic detritus.	TR	–	–	–	100
		33"	NOISE			1							
						2	CL	@1.3' 2nd chunk of 2" subrounded gravel	TR	·	·	–	100
						3		@2.3' Lean clay (CL), brown (10YR 4/3), stiff, faint moisture, med. plasticity clay, moderately cemented (clay), no odor or stains, ≤ 1mm (V.V.) white very pale brown nodules (10YR 8/2), fill					
		48"			1510	4							
				SDSV-515-SA5D-58-5.0-6.0		5							
						6		@6.8' 2" subrounded gravel.					
						7							
						8							
						9							

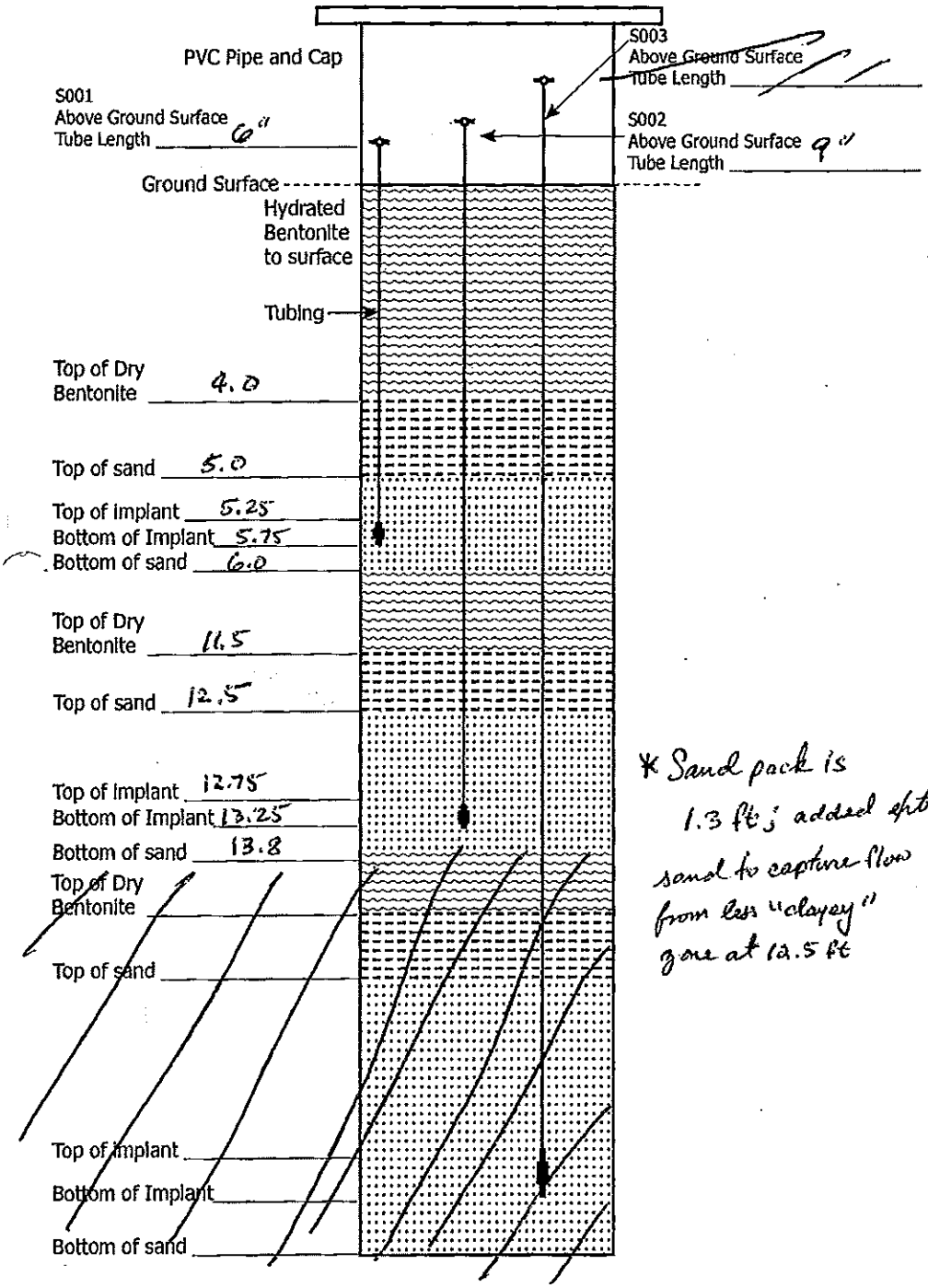
cont'd on ...

Boring ID: SDSV-DG-~~SB~~ 515 Project: Phase 3 DOE SV DG 2014 Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
								1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations					
		48"				10	SW	~~Poorly~~ Well Graded Sand (SP-SW), brownish yellow (10YR 6/6), loose, dry, fine to coarse sand, friable, native soil. (VII) (VII)	–	10	30	60	–
			None			11							
						12	CL	~~clay~~ Fat Clay (CL), dark grayish brown (10YR 4/2), med stiff, moist, high plasticity clay	–	–	–	–	100
			None			13	SC	@12.5 Clayey Sand (SC), brownish yellow (10YR 6/6), loose, dry, fine sand, high plasticity clay, weak clay cement, no odors, ~~no stains~~, dark streaks native soil	–	–	–	100	–
						14							
						15		@13.5 Poorly Graded Sand (SP), brownish yellow (10YR 6/8), loose, dry, fine sand, possibly weathered bedrock					
						16							
						17		@13.8 Sandstone, weathered.					
						18		TD = 13.8', refusal on bedrock. Install vapor probes at 5.0-6.0, 12.5-13.8. Collect encores at 5.0-6.0 in case low-flow is encountered.					
						19							
						20							
						1							
						2							
						3							
						4							
						5							
						6							
						7							
						8							
						9							

Multiple Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SDSV-DG - 515
Site: SA SD
Drilling Contractor: EST
Borehole TD: 13.8'
Project: Phase 3 DOE SV DG
Logged by: V. Vathanasin
Driller: Morgan Hughes
Borehole Diameter: 2.25"
Job #: 10503982
Reviewed by:
Rig Type/Method: Geoprobe 5400 / DP
Probe Completion Date/Time: 15:23/5-21-10



* Sand pack is 1.3 ft; added extra sand to capture flow from less "clayey" zone at 12.5 ft

Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Cemex

Dry Bentonite
Type: #8
Manufacturer: Cetco

Hydrated Bentonite
Type: #8
Manufacturer: Cetco

Notes:
1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By _____

Sample ID SVL-515-SA5D-SB-5.0-6.0 Date/Time 5-21-14 / 15:10

Matrix (circle one): (Soil) Sediment Water

Start Depth 5.0

End Depth 6.0

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler _____

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				(CL)	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes) No

2. Percentage Fill (%) 100

3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel N/A

Other Import fill from local source

Is Staining Present Yes (No)

Color brown (10YR 4/3)

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

Dry (Moist) Wet

PG Signature Mark Hoffman **PG Registration #** 7735

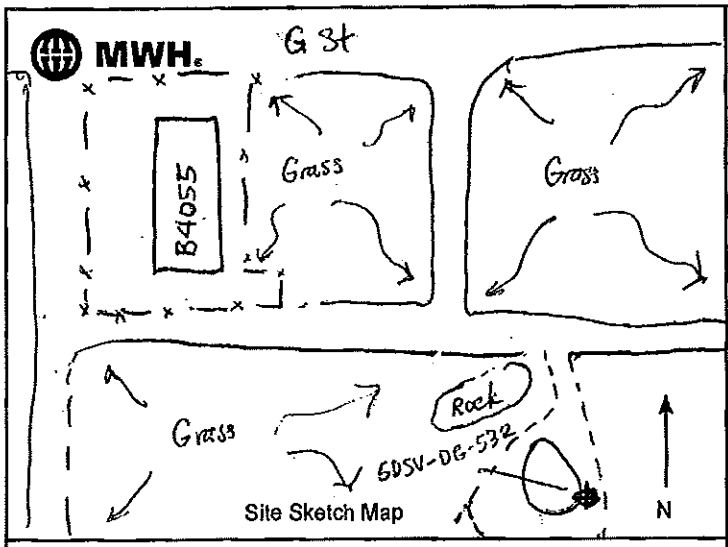
Additional Comments TD = 13.8 ft

uR = 13

cpm = 66

PID = ~~0.0~~ 0.1 ppm (V.V.)

MWH



Site Sketch Map

Boring ID: SDSV-DG-532 Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: SASD

Logged By: V. Vathanasin Reviewed By:

Drilling Contractor: EST Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5400 / DP

Sampler Type: Macrocore

Borehole Diam (inch): 2.25" Total Depth (ft.bgs): 4.5'

Drill Bit Type: Macrocore

Drill Start Time/Date: 1255 / 5-27-14 Drill Finish Time/Date: 1320 / 5-27-14

Soil Vapor ID: N/A

Soil Boring Backfill Time/Date: 1331 / 5-27-14 Backfill Material: Soil cuttings.

Soil Vapor Well Completion Time/Date: N/A

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Soil Vapor Probe Depths (ft.bgs): N/A

Surface Completion: None

Soil Vapor Well Detail Completed (yes/no)

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Surface Description: Gravel access road. (V.) Silty Sand (SM), dark yellowish brown (10YR 4/4), loose, dry, fine sand, non-plastic silt, no odors or stains, backfill,	-	-	-	65	35
		45"				1							
						2		@1.25' laminated appearance					
						3							
0.6						4		(V.)					
		6"			13:15			~~grades~~ grades to →	-	-	-	70	30
SVE-532-SASD-SB-4.0-4.5						5		color changes to (10YR 5/8) yellowish brown					
						6		TD= 4.5 ft bgs. Refusal on bedrock, no probes installed; collect soil sample ~~4.5-5~~ 4.0-4.5 ft bgs.					
						7							
						8							
						9							

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By _____

Sample ID SVL-532-SA5D-SB-4.0-4.5 Date/Time 5-27-14 / 13:15

Matrix (circle one): (Soil) Sediment Water

Start Depth 4.0

End Depth 4.5

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID NONE

Field Geologist Van Vathanasin

Sampler _____

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH ≤ 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH ≤ 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		(SM)	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				CH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes) No

2. Percentage Fill (%) 100

3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other Local fill source

Is Staining Present Yes (No)

Color yellowish brown (10YR 5/8)

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature Mike Hoffman **PG Registration #** 7735

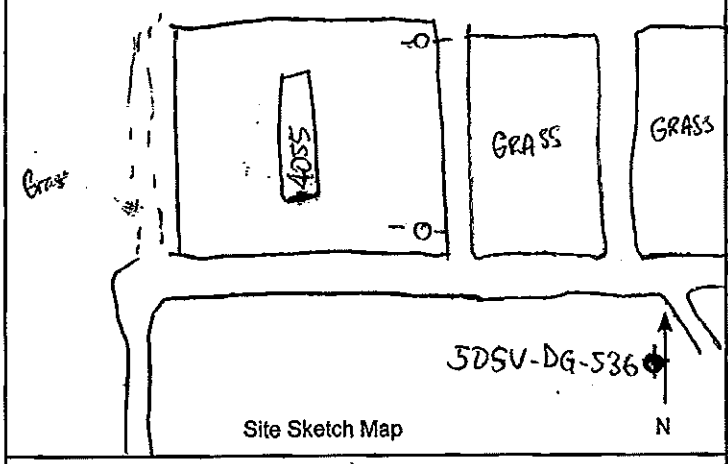
Additional Comments TD = 4.5 ft

PID = 0.6 ppm

uR = 13

cpm = 54

MWH



Site Sketch Map

Boring ID: 5DSV-DG-536	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5D
Logged By: V. Vatharasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 2.3
Drill Bit Type: Macrocore	
Drill Start Time/Date: 1041 / 5-23-14	Drill Finish Time/Date: 1050 / 5-23-14
Soil Vapor ID: N/A	Soil Boring Backfill Time/Date: 1105 / 5-23-14 Backfill Material: Soil cutting
Soil Vapor Well Completion Time/Date: N/A	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): N/A	Surface Completion: Backfilled w/ soil
Soil Vapor Well Detail Completed (yes no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Silty Sand (SM), yellowish brown (10YR 5/4), loose, dry, fine sand, non plastic silt, animal burrows, grass, fill.	–	–	–	60	40
		27"			1054	1		@ 1.1 ft, color changes to yellow (10YR 7/6), native soil.					
0.0						2		@ 2.3 ft Shale.					
SVE-536-			SASD-SB-		1.8-2.3	3		TD = 2.3 ft, refusal on bedrock.					
						4		Collect encores at 1.8-2.5 ft.					
						5							
						6							
						7							
						8							
						9							

Surface Description: Grass covered hummocky area.

Soil Description: 1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By [signature]

Sample ID SVL-536-SA5D-SB-1.8-2.3 (V.V.)

Date/Time 5-23-14 / 10:54

Matrix (circle one): (Soil) Sediment Water

Start Depth 1.8

End Depth 2.3

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

" "

Sampler

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

FSDS Revision 3.0 11/19/2013

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		(SM)	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				CH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. **Is Fill Material Present** (Yes) No
2. **Percentage Fill (%)** 100
3. **Fill Description (circle all that apply)**

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other Reworked native soil

Is Staining Present Yes (No)

Color yellow (10YR 7/6)

Odor

1. **Odor Strength (circle one)**

(None) Slight Strong

2. **Odor Description (circle one)**

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature _____ **PG Registration #** 7735

Additional Comments Total Depth = 2.3'

PID = 0.0 ppm

HR = 12

cpm = 88

Boring ID: 5DSV-DG-5446 Project: Phase 3 DOE SV DG 2014 Sheet 2 of 2

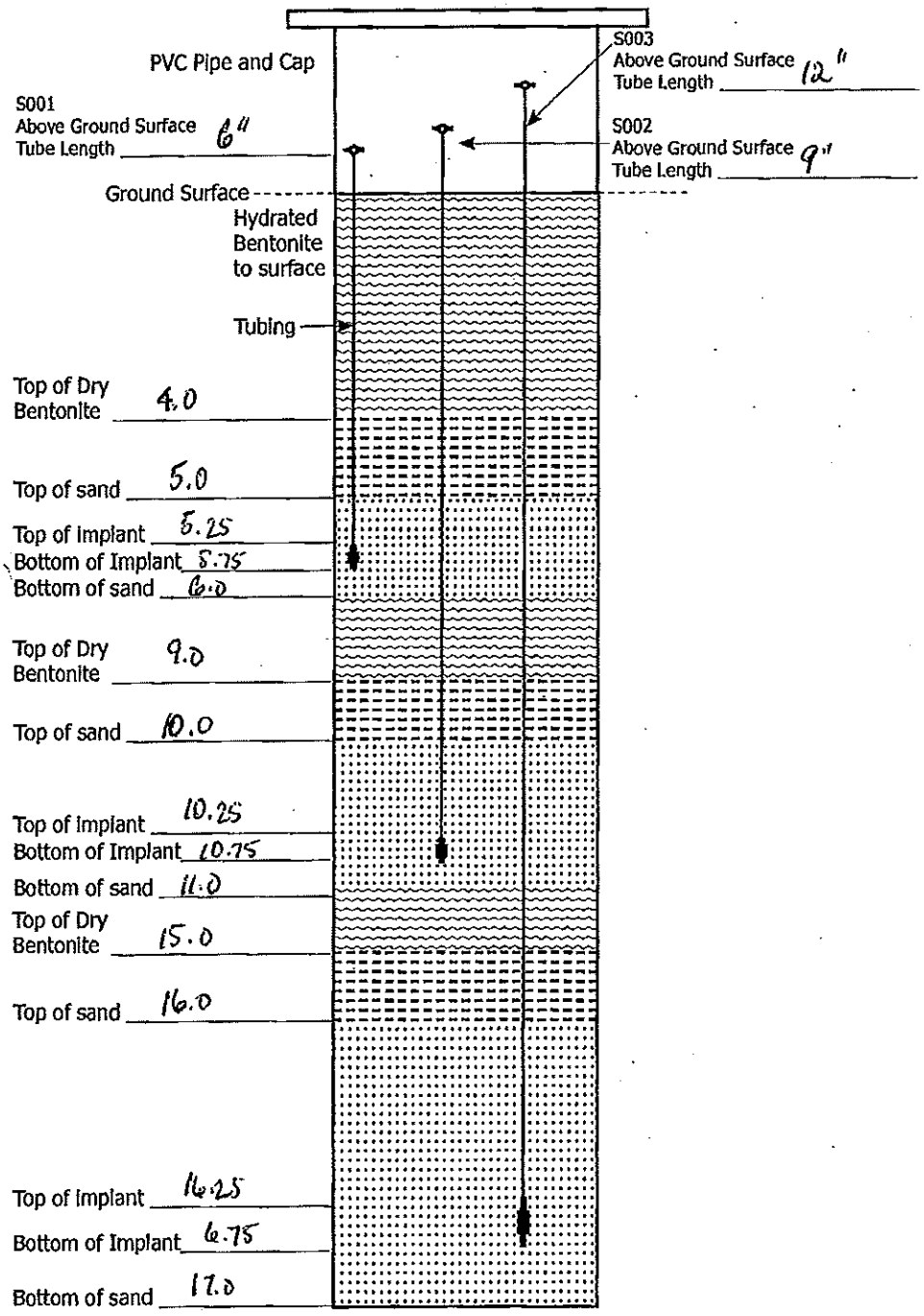
PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
		48"				0							
						1		grades with fine gravel, angular, ~~mottled~~ (sp) (VB)					
						2		mottled (sp?) yellowish brown (10YR 5/4) and very pale brown (10YR 8/3); fill					
		40"				3							
						4							
						5							
		18"				6	SM	Silty Sand w/ Clay (SM), light yellowish brown (10YR 6/4), med. dense, dry, fine	-	-	-	85	20/15
						7	BR	sand, silt, low plasticity clay, native soil					
						8		@ 17.0 Weathered Sandstone					
						9							
						20		TD = 17.0' Refusal on bedrock, install probes					
						1		at 5.0-6.0, 10-11.0, 16.0-17.0. Collect					
						2		encores at 5.0-6.0 due to clay-rich soil.					
						3							
						4							
						5							
						6							
						7							
						8							
						9							

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

Multiple Soil Vapor Probe Construction Diagram

MWH

Probe ID/Soil ID: SDSV-DG-546
Project: DOE Phase 3 SV DG
Job #: 10503982
Site: SA SD
Logged by: V. Vathanasin
Reviewed by:
Drilling Contractor: EST
Driller: Morgan Hughes
Rig Type/Method: Geoprobe 5400 / DP
Borehole TD: 17.0
Borehole Diameter: 2.25"
Probe Completion Date/Time: 1145 / 5-27-14



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Cemex

Dry Bentonite
Type: #8
Manufacturer: Cetco

Hydrated Bentonite
Type: #3
Manufacturer: Cetco

Notes:
1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By _____

Sample ID SVL-546-SA5D-SB-5.0-6.0 Date/Time 5-27-14/11:03

Matrix (circle one): (Soil) Sediment Water

Start Depth 5.0

End Depth 6.0

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID None

Field Geologist Van Vathanagm

Sampler "

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				(CL)	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				CH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes) No

2. Percentage Fill (%) 100

3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other fill from local source

Is Staining Present Yes (No)

Color yellowish brown (10YR 5/6)

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

Dry (Moist) Wet

PG Signature Mike Hoffman **PG Registration #** 7735

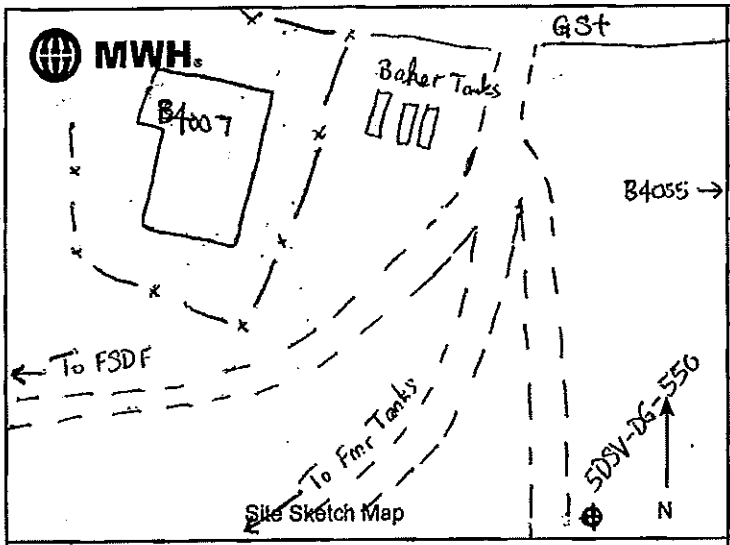
Additional Comments TD = 17.0

PID = 0.0 ppm

uR = 13

cpm = 92

MWH



Site Sketch Map

Boring ID: ~~SVDG~~ | Sheet 1 of 2

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 | Site: SD

Logged By: V. Vatharasu | Reviewed By:

Drilling Contractor: EST | Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5400 / DP

Sampler Type: Macrocore

Borehole Diam (inch): 2.25 | Total Depth (ft.bgs): 18.0'

Drill Bit Type: Macrocore

Drill Start Time/Date: 0803 / 5-27-14 | Drill Finish Time/Date: 0851 / 5-27-14

Soil Vapor ID: SDSV-DG-550

Soil Boring Backfill Time/Date: N/A | Backfill Material: N/A

Soil Vapor Well Completion Time/Date:

Observations: ☐ Debris ☒ Staining ☐ Odors ☐ Groundwater ☐ None

Soil Vapor Probe Depths (ft.bgs): 5.0-6.0, 11.0-12.0, 17.0-18.0 (T.V.)

Surface Completion: Soil vapor probes.

Soil Vapor Well Detail Completed (yes/no)

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description
1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: Grass

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Silty Sand (SM), dark yellowish brown (10YR 4/4), med. dense, dry, fine sand, non-plastic silt, roots, no staining, no odors, fill.	-	-	-	60	40/
		31"				2	ML	Silt (ML), yellowish brown (10YR 5/4), med. stiff, dry, low-plasticity silt, white weathering fractures, no odors, fill	-	-	-	-	100/
						4							
0.0						4	CL	Clay w/Silt (CL), dark yellowish brown (10YR 4/4), stiff, slightly moist, low to medium plasticity clay, silt, possibly native soil, (T.V.) ~~no stains~~ no odors, white chemical weathering stains,					
		48"			0803	6							
	SVL-550-SA50-SB-5.0-6.0					7							
0.0						8	CL	~~Clay~~ Sandy Clay (CL), dark yellowish brown (10YR 4/6), soft, dry, low plasticity clay, fine sand, slight oxidation (yellowish brown (10YR 5/8), native soil, no odors.					
						9							
						10							

Boring ID: SDSV-DG-550 Project: Phase 3 DOT SV DG 2014 Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
		48"				0							
						1							
						2							
		48"				3							
						4							
0.0						5							
						6						50	KV
		24"				7	SC	Clayey Sand (SC), yellowish brown (10YR 5/6), loose, dry, fine to med sand, medium plasticity clay, weak clay cement, native soil.	-	-	15	~~65~~ 95	
0.0						8	Br	Bedrock - Sandstone, weathered.					
						9		TD = 18', Refusal on sandstone bedrock, Install probes at 5.0-6.0, 11.0-12.0, and 17.0-18.0. Collect encores at 5.0-6.0 for potential low flow conditions.					
						20							
						1							
						2							
						3							
						4							
						5							
						6							
						7							
						8							
						9							

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

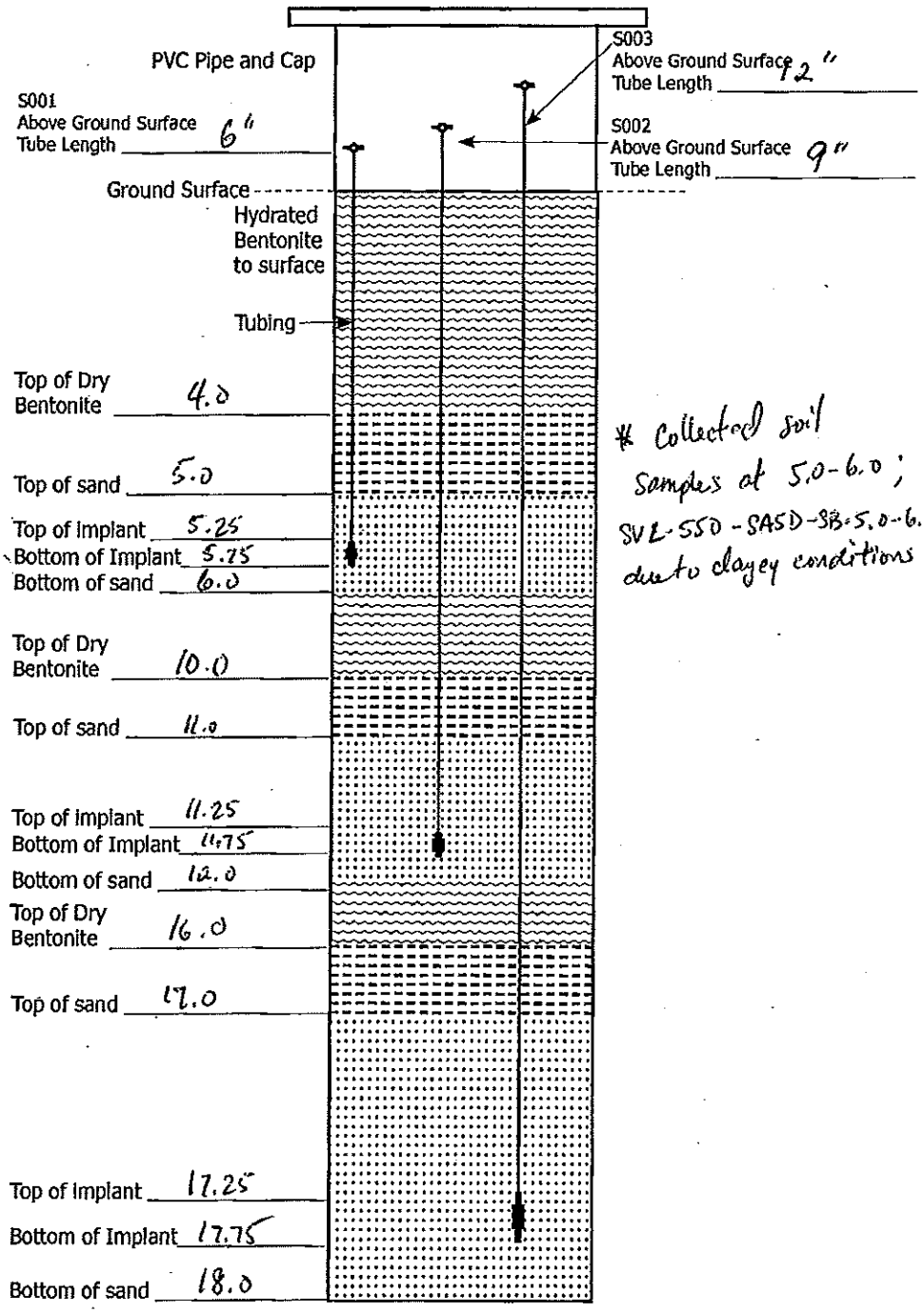
Multiple Soil Vapor Probe Construction Diagram

MWH

Probe ID/Soil ID: SDSV-DG-550
Site: 3A 5D
Drilling Contractor: EST
Borehole TD: 18.0

Project: Phase 3 DoE SV DG 2014
Logged by: V. Vathanasin
Driller: Morgan Hughes
Borehole Diameter: 2.25"

Job #: 10503982
Reviewed by:
Rig Type/Method: Geoprobe 5400/DP
Probe Completion Date/Time: 09:30/5-27



* Collected soil samples at 5.0-6.0; SV2-55D-SASD-SB-5.0-6.0 due to clayey conditions

Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Cemex

Dry Bentonite
Type: #8
Manufacturer: Cetco

Hydrated Bentonite
Type: #8
Manufacturer: Cetco

Notes:

1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By _____

Sample ID SVL-550-SA5D-SB-5.0-6.0 Date/Time 5-27-2014 / 09:02

Matrix (circle one): (Soil) Sediment Water

Start Depth 5.0

End Depth 6.0

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler _____

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH ± 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH ± 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present Yes No stet (v.d.)

2. Percentage Fill (%) ~~100~~ 0

3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel N/A Native soil

Other _____

Is Staining Present Yes No

Color dark yellowish brown (10YR 4/4)

Odor

1. Odor Strength (circle one)

None Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

N/A Other _____

Moisture Condition (circle one)

Dry Moist Wet

PG Signature [signature] PG Registration # 7735

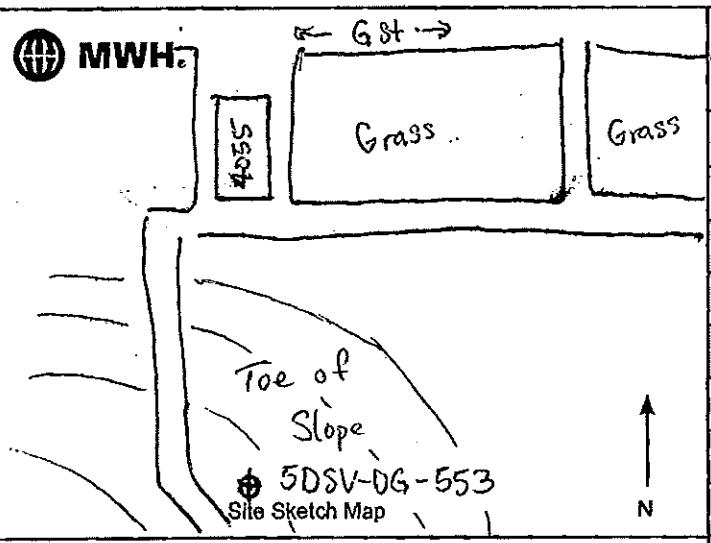
Additional Comments TD = 18.0

uR = 12.0

PID = 0.0

cpm = 72

MWH



Site Sketch Map

Boring ID: 5DSV-DG-553 Sheet 1 of 2

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: 5D

Logged By: V. Vathanasin Reviewed By:

Drilling Contractor: EST Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5460 / DP

Sampler Type: Macrocore

Borehole Diam (inch): 2.25" Total Depth (ft.bgs): 20.0

Drill Bit Type: Macrocore

Drill Start Time/Date: 1053 / 6-3-14 Drill Finish Time/Date: 1140 / 6-3-14

Soil Vapor ID: 5DSV-DG-553

Soil Boring Backfill Time/Date: N/A Backfill Material: N/A

Soil Vapor Well Completion Time/Date: 1300 / 6-3-14

Observations: ☐ Debris ☒ Staining ☐ Odors ☐ Groundwater ☐ None

Soil Vapor Probe Depths (ft.bgs): 4.5-5.5, 9.0-10.0, 14.0-15.0, 19.0-20.0

Surface Completion: Soil vapor probes

Soil Vapor Well Detail Completed (yes/no)

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Estimated % of Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Surface Description: NE facing Slope, Grassy Silty Sand (SM), dark yellowish brown (10YR 4/4), loose, dry, fine sand, non-plastic silt, roots, fill	-	-	-	60	40
		36"				1							
						2	ML	Silt w/ Sand (ML), brown (10YR 4/3), medium stiff, dry, low-plasticity silt, fine sand, fill	-	-	-	15	85
0.0						3							
						4							
					12:03	5	CL	Clay (CL), dark yellowish brown (10YR 4/4), med. stiff, moist, med. plasticity clay, no odors, few white nodules (decomposed feldspar), native soil	-	-	-	-	100
		48"				6							
						7							
						8							
						9							
		48"			12:10								
0.0													

Boring ID: SDSV-DG-553 Project: Phase 3 DOE Soil Vapor Data Gap Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	CL						
						1							
						2							
						3							
0.0		45"				4							
					12:15	5		@15' dark yellowish brown (10YR 4/4) staining (3 streaks), no odors.					
						6							
								Grades with sand.	-	-	-	15	85
		48"				7							
						8							
						9							
0.0					12:22	20	Br	Weathered bedrock, sandstone					
						1							
						2		TD = 20.0'; refusal on bedrock, installs vapor probes at 4.5-5.5, 9.0-10.0, 14.5-15.5, and 19.0-20.0					
						3							
						4		Collected encores at 4.5-5.5, 9.0-10.0, 14.0-15.0, and 19.0-20.0 due to potential low-flow conditions					
						5							
						6		Note: Moved location ~3 ft east to "softer" conditions. Proposed location is too steep for rig.					
						7							
						8							
						9							

4.5-5.5, 9-10, 14-15, 19-20

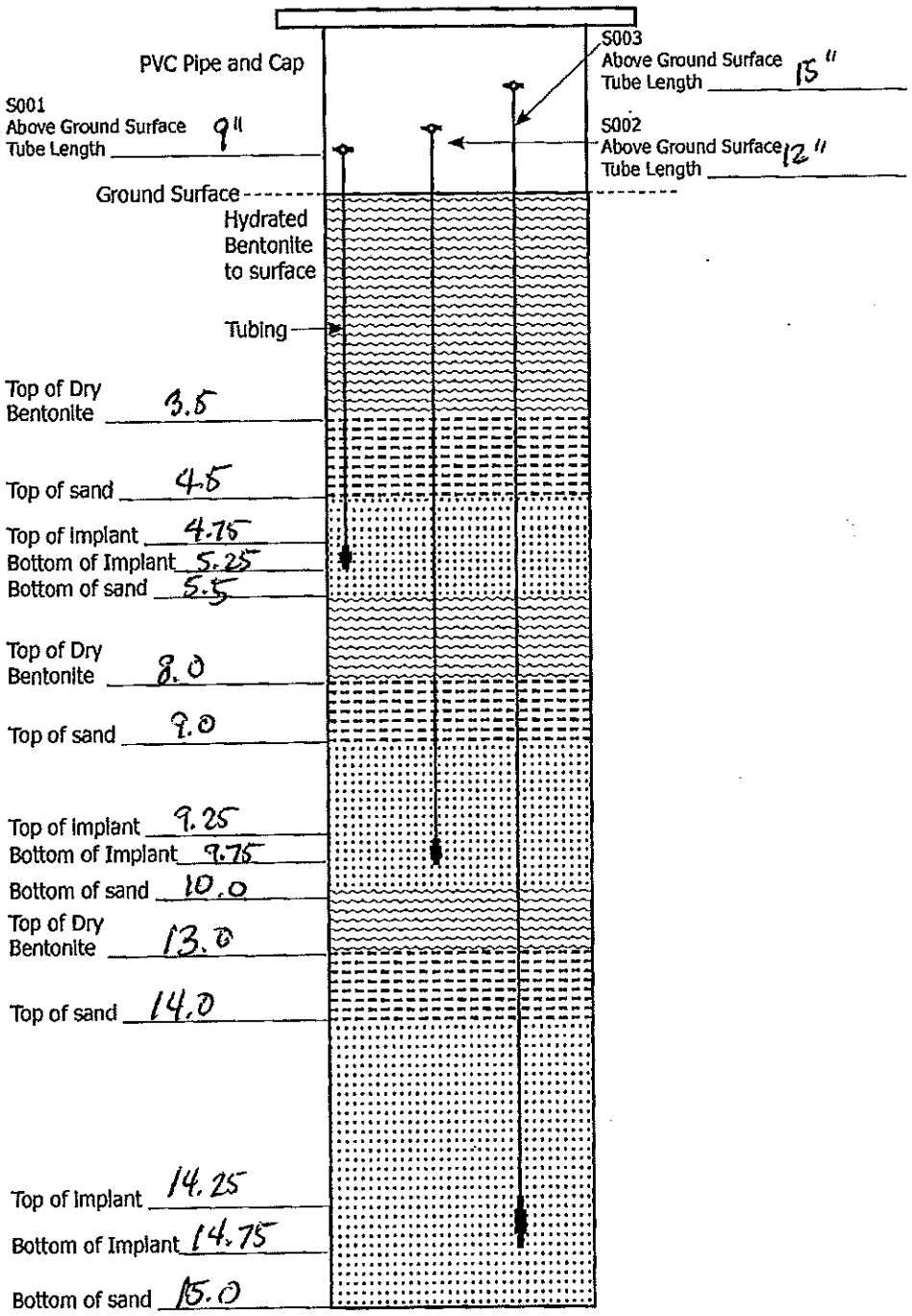
MWH

Multiple Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SDSV-DG-553
Site: SD
Drilling Contractor: EST
Borehole TD: 20.0

Project: Phase 3 DOE SV DG
Logged by: V. Vathanasin
Driller: Morgan Hughes
Borehole Diameter: 2.25"

Job #: 10503982
Reviewed by:
Rig Type/Method: Geoprobe 5400 / DP
Probe Completion Date/Time: 1300 / 6-3-14



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Cemex

Dry Bentonite
Type: #8
Manufacturer: CETCO

Hydrated Bentonite
Type: #8
Manufacturer: CETCO

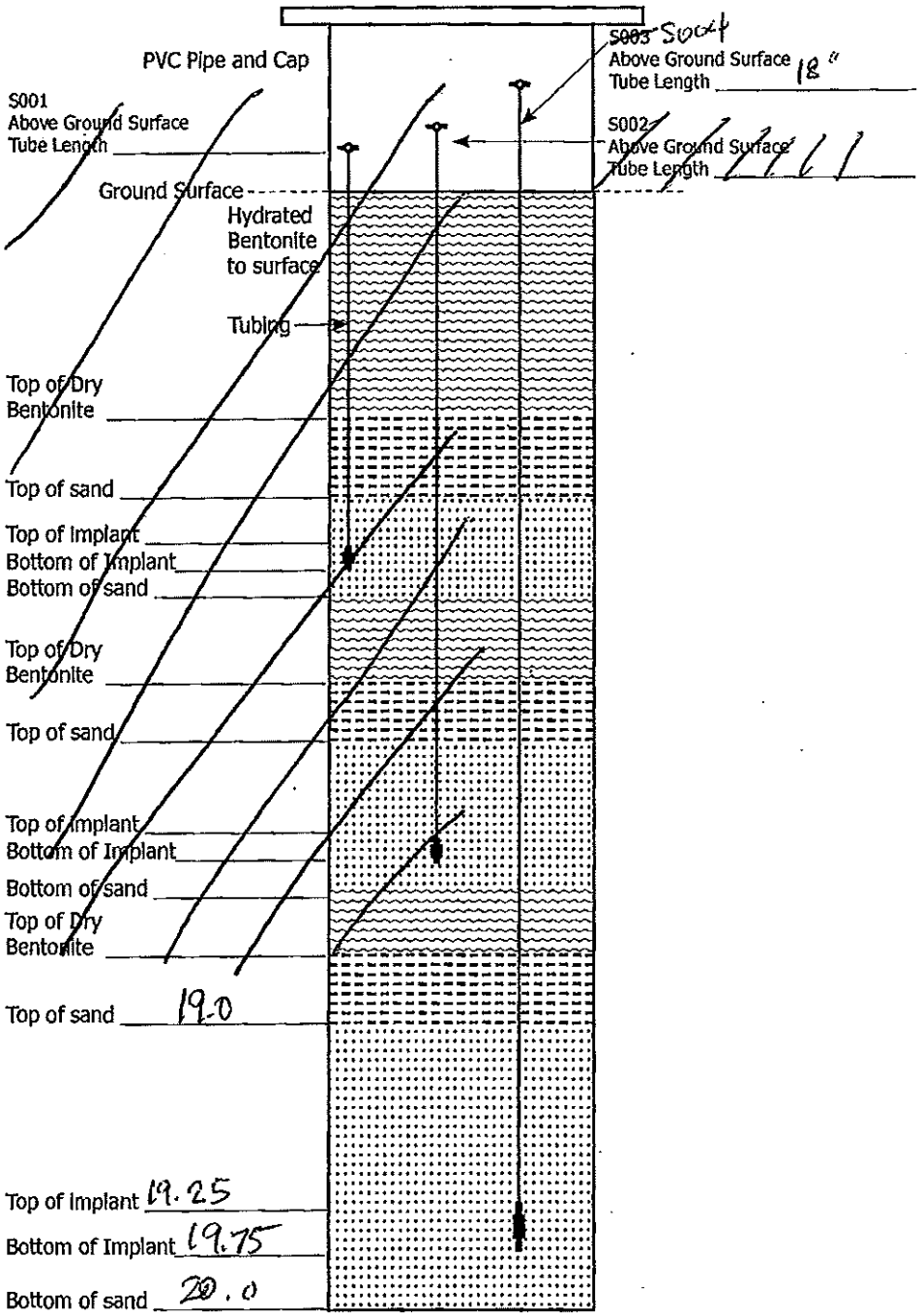
Notes:

1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

Multiple Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: 5DSV-DG-553
Site: 5D
Drilling Contractor: EST
Borehole TD: 20.0
Project: Phase 3 DoE SV DG
Logged by: V. Vathanasin
Driller: Morgan Hughes
Borehole Diameter: 2.25"
Job #: 10503982
Reviewed by:
Rig Type/Method: Geoprobe 5400 / DP
Probe Completion Date/Time: 1300 / 6-3-14



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: Clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Cemex

Dry Bentonite
Type: #8
Manufacturer: Cetco

Hydrated Bentonite
Type: #8
Manufacturer: Cetco

Notes:
1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Jeff Myers

Sample ID SVL-553-SA5D-SV-4.5'-5.5' Date/Time 6/3/14 / 1203

Matrix (circle one): (Soil) Sediment Water

Start Depth 4.5'

End Depth 5.5'

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler " "

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				CH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present: Yes (No)
2. Percentage Fill (%): N/A
3. Fill Description (circle all that apply)

Asphalt	Metal	Plastic
Concrete	Wood	Glass
Igneous/Metamorphic Gravel		N/A
Other: N/A		

Is Staining Present Yes (No)

Color 10YR 4/4 dark yellowish brn.

Odor

1. Odor Strength (circle one): (None) Slight Strong
2. Odor Description (circle one): Organic Petroleum Chemical (N/A) Other _____

Moisture Condition (circle one): (Dry) Moist Wet

PG Signature _____ **PG Registration #** 7735

Additional Comments T.D = 20' bgs, PID = 0.0 ppm
12 µR, 0 30 cpm

NA – Not Applicable

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By [signature]

Sample ID SVL-553-SA5D-SV-~~9-10~~ 9.0-10.0 SM 6/3/14

Date/Time 6/3/14/1211

Matrix (circle one): (Soil) Sediment Water

Start Depth 9.0'

End Depth 10.0'

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler same as above

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				CH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present: Yes (No)
2. Percentage Fill (%): N/A
3. Fill Description (circle all that apply)

Asphalt	Metal	Plastic
Concrete	Wood	Glass
Igneous/Metamorphic Gravel		N/A

Other: N/A

Is Staining Present (Yes) No

Color 10YR 4/4 dark yellowish brown

Odor

1. Odor Strength (circle one): (None) Slight Strong
2. Odor Description (circle one): Organic Petroleum Chemical (N/A) Other _____

Moisture Condition (circle one): Dry (Moist) Wet

PG Signature _____ **PG Registration #** 7295

Additional Comments T.D = 20.0', ~~0.0~~ PID = 0.0 ppm
12 µR, 42 cpm

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Steve Myrel

Sample ID SVL-553-SA5D-SV-~~14'-15'~~ 14.0-15.0 SM60314

Date/Time 6/3/14 / 1215

Matrix (circle one): Soil Sediment Water

Start Depth 14'

End Depth 15'

Depth Units (circle one): Inches Feet

Check if Composite ☐

Collection Method (circle one): DPT Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): N FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler Same as above

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

FSDS Revision 3.0 11/19/2013

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				CH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present: Yes (No)
2. Percentage Fill (%): N/A
3. Fill Description (circle all that apply)

Asphalt Metal Plastic
Concrete Wood Glass
Igneous/Metamorphic Gravel N/A
Other N/A

Is Staining Present Yes (No)

Color dark yellowish brown (10YR4/4)

Odor

1. Odor Strength (circle one): (None) Slight Strong
2. Odor Description (circle one): Organic Petroleum Chemical (N/A) Other _____

Moisture Condition (circle one): Dry (Moist) Wet

PG Signature [signature] PG Registration # 7735

Additional Comments T.D = 20' bgs. PID = 0.0 ppm
15 µR, 30 cpm

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By [signature]

Sample ID SVL-553-SA 5D-SV-~~19-20~~ 19.0-20.0 SM6314 Date/Time 6/3/14/1222

Matrix (circle one): Soil Sediment Water

Start Depth 19'

End Depth 20'

Depth Units (circle one): Inches Feet

Check if Composite ☐

Collection Method (circle one): DPT Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): N FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler same as above

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

FSDS Revision 3.0 11/19/2013

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				CH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present: Yes (No)
2. Percentage Fill (%): N/A
3. Fill Description (circle all that apply)

Asphalt	Metal	Plastic
Concrete	Wood	Glass
Igneous/Metamorphic Gravel		N/A
Other: N/A		

Is Staining Present Yes (No)

Color dark yellowish brown (10YR 4/4)

Odor

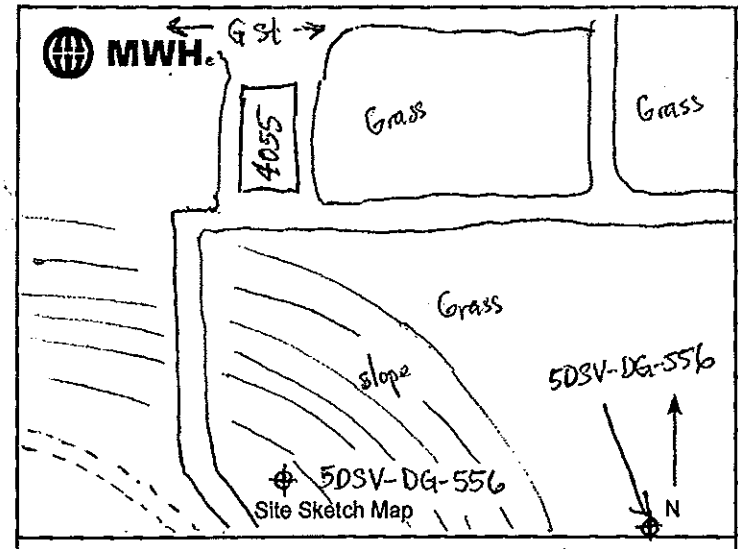
1. Odor Strength (circle one): (None) Slight Strong
2. Odor Description (circle one): Organic Petroleum Chemical (N/A) Other: _____

Moisture Condition (circle one): Dry (Moist) Wet

PG Signature _____ **PG Registration #** 2235

Additional Comments T.D = 20.0' bgs, PID = 0.0 ppm
BuR, 42 cpm

MWH



Boring ID: 5DSV-DG-556	Sheet 1 of 2
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5D
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 12.0
Drill Bit Type: Macrocore	
Drill Start Time/Date: 1325 / 6-3-14	Drill Finish Time/Date: 1355 / 6-3-14
Soil Vapor ID: 5DSV-DG-556	Soil Boring Backfill Time/Date: N/A — Backfill Material: N/A
Soil Vapor Well Completion Time/Date: 1420 / 6-3-14	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): 4.5-5.5, 10.0-11.0	Surface Completion: Soil Vapor probes
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description
1) Soil type; 2) USCS Symbol; 3) Munsell Color; 4) Consistency/Density; 5) Moisture; 6) Grain Size %; 7) Cementation; 8) Plasticity (fines); 9) Geologic Unit (fill, alluvium, bedrock); 10) Misc. Observations

Surface Description: Veg Cleared, @ foothills

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Silty Sand (SM), brown (10YR 4/3), loose, dry, fine sand, non-plastic silt, few grass roots, fill, no stains or odors.	-	-	-	60	40/
		36"				1	SM						
						2		grades to med. stiff; color changes to dark yellowish brown (10YR 4/4), fill					
						3							
0.0						4							
					1400	5	ML	Silt (ML), dark yellowish brown (10YR 4/4) w/ yellow (10YR 7/6) weathering, med. dense, dry, non-plastic silt, native soil	-	-	-	-	100/
		48"		SV-556-SASD		4.5-5.5							
						6							
						7							
0.0						8							
						9							
		36"				10							

Boring ID: SDSV-DG-556 Project: Phase 3 DOE SV DG Sheet 2 of 2

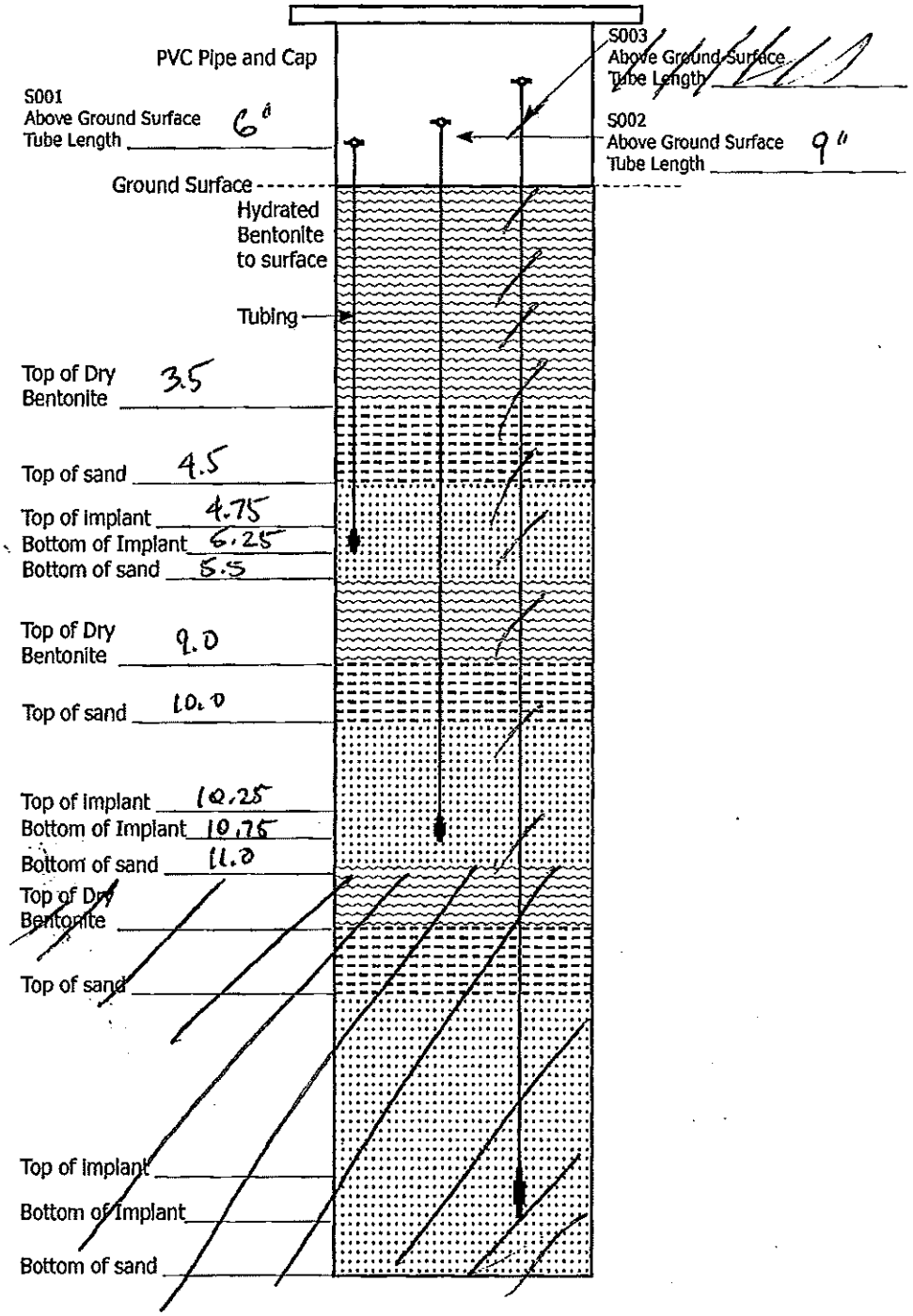
PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						10							
					14:08		CL	Clay (CL), light yellowish brown (10YR6/4), soft, dry, low to medium plasticity clay, native, likely weathered shale.					100
		12"			14:08	11	Br						
0.0				BASD	10:11								
						12	Br	Shale, weathered.					
						13							
						14		TD = 12.0, drilled into bedrock.					
						15		Backfill to 11.0 ft and set probes at 4.5-5.5 and 10.0-11.0 ft - Also collected encores due to tight soil conditions (clayey/silty).					
						16							
						17							
						18		4.5-5.5: 13 uR, 0.0 ppm, 44 cpm					
								10.0-11.0: 14 uR, 0.0 ppm, 55 cpm					
						19							
						20							
						1							
						2							
						3							
						4							
						5							
						6							
						7							
						8							
						9							

4.5-5.5, 10-11

MWH

Multiple Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SDSV-DG-556
Project: Phase 3 DOE SvDG
Job #: 10503982
Site: SA SD
Logged by: V. Vathanasin
Reviewed by:
Drilling Contractor: EST
Driller: Morgan Hughes
Rig Type/Method: Geoprobe 5400/DP
Borehole TD: 12.0
Borehole Diameter: 2.25"
Probe Completion Date/Time: 1420/6-3-14



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: Clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Cemex

Dry Bentonite
Type: #8
Manufacturer: Cetco

Hydrated Bentonite
Type: #8
Manufacturer: Cetco

Notes:

1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By [signature]

Sample ID SVL-556-SA5D-SB-4.5-5.5 Date/Time 6-3-14 / 14:00

Matrix (circle one): Soil (circled) Sediment Water

Start Depth ~~5.5~~ 4.5 (V.V. 6/3/14)

End Depth 5.5

Depth Units (circle one): Inches Feet (circled)

Check if Composite ☐

Collection Method (circle one): DPT (circled) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): N (circled) FD FB RB

Parent Sample ID N/A

Field Geologist VAN VATHANASIN!

Sampler

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		(ML)	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present Yes (No)

2. Percentage Fill (%) 0

3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present Yes (No)

Color Dark Yellowish brown (10YR 4/4)

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature [signature] **PG Registration #** 7735

Additional Comments TD: 12.0

PID: 0.0 ppm

13 uR

44 cpm

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Steph Myrell

Sample ID SVL-556-SA5D-SB-10.0-11.0 Date/Time 6-3-14 / 14:03

Matrix (circle one): Soil (circled) Sediment Water

Start Depth 10.0

End Depth 11.0

Depth Units (circle one): Inches Feet (circled)

Check if Composite ☐

Collection Method (circle one): DPT (circled) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): N (circled) FD FB RB

Parent Sample ID

Field Geologist Van Vathanasin

Sampler

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH ≤ 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH ≤ 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				CH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present Yes (No)

2. Percentage Fill (%) 0

3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present Yes (No)

Color light yellowish brown (10YR 6/4)

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature Mike Hoffman **PG Registration #** 7735

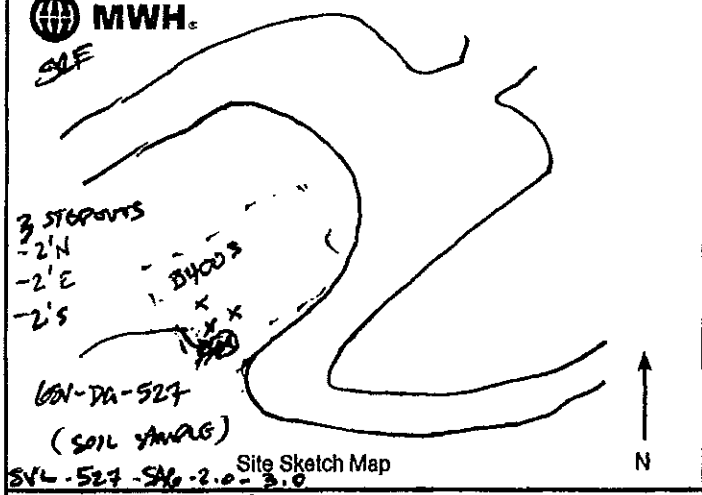
Additional Comments TD = 12.0

PID = 0.0 ppm

14 uR

55 cpm

MWH



Site Sketch Map

Boring ID: LSN-DA-527 | Sheet 1 of 1

Project: Phase 3 DOE Data Gap Sampling 2014

Job #: 10503982.3050106 / 10503982.3060106 | Site: SA 6

Logged By: ANDREW RAYNE | Reviewed By:

Drilling Contractor: EST | Drillers Name: MARTIN KILHULLEN

Drill Rig Type/Method: GEOPROBE 5400 / DP

Sampler Type: MACROCORE

Borehole Diam (inch): 2.25" | Total Depth (ft bgs): 3.5'

Drill Bit Type: MACROCORE

Drill Start Time/Date: 1240 / 6/9/14 | Drill Finish Time/Date: 1335 / 6/9/14

Soil Vapor ID: N/A

Soil Boring Backfill Time/Date: 1345 6/9/14 | Backfill Material: SOIL WITH NAS

Soil Vapor Well Completion Time/Date: N/A

Observations: [X] Debris [ ] Staining [ ] Odors [ ] Groundwater [ ] None

Soil Vapor Probe Depths (ft.bgs): N/A

Surface Completion: N/A

Soil Vapor Well Detail Completed (yes/no)

Type of Refusal: WEATHERED BEDROCK
[X] Bedrock [ ] Debris [ ] Gravel [ ] Unknown [ ] None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description: Surface Description: PEA SIZE TO 1/2" GRAVEL, GRASS	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
						0	SM	SILTY SAND (SM), DRY, LOOSE, FINE TO MED SAND, YELLOWISH BROWN (10YR 5/4), FILL MATERIAL; GOING TO SUBROOTS	—	10	30	40	20
		40"				1							
						2	ML	SANDY SILT (ML), DRY, MEDIUM STIFF, YELLOWISH BROWN (10YR 5/4), NO PLASTICITY, PIECES OF CONCRETE AND CLAY PIPE, FINE TO MED SAND, ASPHALT FILL MATERIAL; TRACE GRAVEL SIZE ASPHALT.	5	—	10	20	65
0.0			X		1325	3							
						4	SS	WEATHERED (SS) BEDROCK, PALE BROWN (10YR 6/3) DRY, FINE TO MEDIUM SAND, ANGULAR TO SR, FRIABLE, WEAK.	—	—	10	20	70
						5							
						6		TD = 3.5'; REFUSAL @ 3.5'					
						7		- SOIL SAMPLE @ 2.0-3.0'					
						8		- SVL-527-SA6-2.0-3.0 @ 1325					
						9							

SVL-527-SA6-2.0-3.0

QA/QC

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Steve Myrell

Sample ID SVL-527-SA6-SB-2.0-3.0 Date/Time 6/9/14 1325

Matrix (circle one): Soil (circled) Sediment Water

Start Depth 2.0

End Depth 3.0

Depth Units (circle one): Inches Feet (circled)

Check if Composite ☐

Collection Method (circle one): DPT (circled) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): N (circled) FD FB RB

Parent Sample ID N/A

Field Geologist Andrew Payne

Sampler Andrew Payne

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	✓
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				CH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present (Yes) No
2. Percentage Fill (%) 100 (DISTURBED SOIL)
3. Fill Description (circle all that apply)

(Asphalt) Metal Plastic

(Concrete) Wood Glass

Igneous/Metamorphic Gravel N/A

(Other) SMALL PIECES CMP PIPE

Is Staining Present Yes (No)

Color YELLOWISH BROWN (10YR 5/4)

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

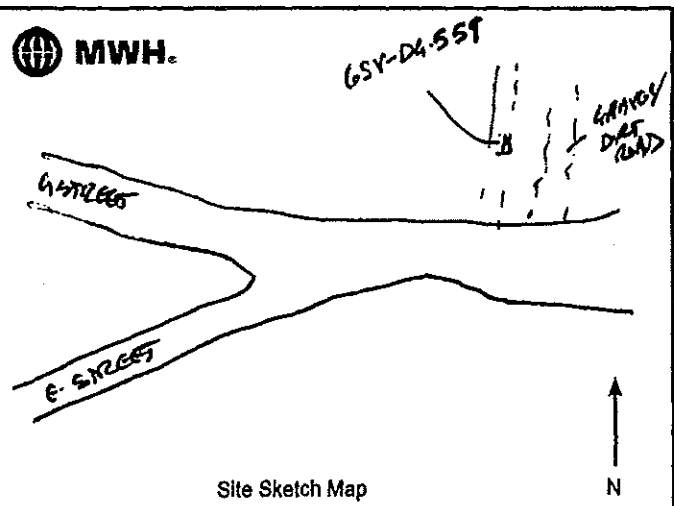
PG Signature [signature] **PG Registration #** 7735

Additional Comments SOIL COLLECTED @ 2.0-3.0' BGS SVL-527-SAB-SB-2.0-3.0 @1325 → 1 4oz GLASS JAR AND 3 ENCORES

-0.0 PPM ON PID, 13 uREM, 34 cpm

NA – Not Applicable

MWH.



Site Sketch Map

Boring ID: 6SV-DG-551	Sheet 1 of 1
Project: Phase 3 DOE Data Gap Sampling 2014	
Job #: 10503982.3050106 / 10503982.3060106	Site: SA 6A
Logged By: ANDREW PAYNE	Reviewed By:
Drilling Contractor: EST	Drillers Name: MARTIN KILHULLEN
Drill Rig Type/Method: GEOPROBE 5400 / D.P.	
Sampler Type: MACRO CORE	
Borehole Diam (inch) 2.25"	Total Depth (ft bgs) 5.5'
Drill Bit Type: MACRO CORE	
Drill Start Time/Date: 0930 6/10/14	Drill Finish Time/Date: 0945 6/10/14
Soil Vapor ID: 6SV-DG-551	Soil Boring Backfill Time/Date: N/A — Backfill Material: N/A
Soil Vapor Well Completion Time/Date: 6/10/14 0950	Observations: ☒ Debris ☐ Staining ☐ Odors ☐ Groundwater ☐ None
Soil Vapor Probe Depths (ft.bgs): 4.5-5.5	Surface Completion: SV PROBE
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description
1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: GRASSES, MULE FAT, OAK SHRUB; ASPHALT SHALE

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
						0	CL	CLAY W/ SAND AND GRAVEL (CL) DRY TO SLT; ROOTS	10	10	5	—	75
						1		MOIST, LT OLIVE GRAY (5Y 6/2) TO OLIVE GRAY					
								(5Y 5/2); SOFT TO MEDSTIFF, LOW PLASTICITY,					
0.0		40"	—	N/A NMC		2	ML	SOME MED TO CS SAND AND PEA SIZE GRAVEL	—	15	20	15	50
								(ROAD BASE); FILL MATERIAL; TRACE OXIDATION					
								SANDY SILT (ML), DRY TO SLT MOIST, BROWN					
						3		(10YR 4/3) TO DARK BROWN (10YR 3/3); FINE					
								TO CS SAND; ANGULAR TO SUBROUNDED, TRACE					
						4		YELLOWISH BROWN (10YR 5/8) OXIDIZED GRAIN;					
0.0		18"	X X		0945			MED STIFF; NO PLASTICITY; ROOTS; FILL	—	—	20	65	15
						5	SP-SM	SAND W/ SILT (SP-SM) YELLOWISH BROWN					
								(10YR 5/4), LOOSE; DRY, FINE TO MEDIUM					
						6		SAND, SUBANGULAR TO SUBROUNDED,					
								NATIVE ALLUVIUM;					
								TD= 5.5'; REFUSAL @ 5.5'					
						7		- COLLECT SOIL SAMPLE @ 4.0-5.0					
								SVL-551-SA6-SB-4.0-5.0 @0945					
						8		- COMPLETE/INSTALL SV PROBE FROM					
								4.5-5.5'.					
						9							

(SVL-551-SA6-SB-4.0-5.0 @0945)

QA/QC
Surficial media boring log rev 2-25-2014

MWH

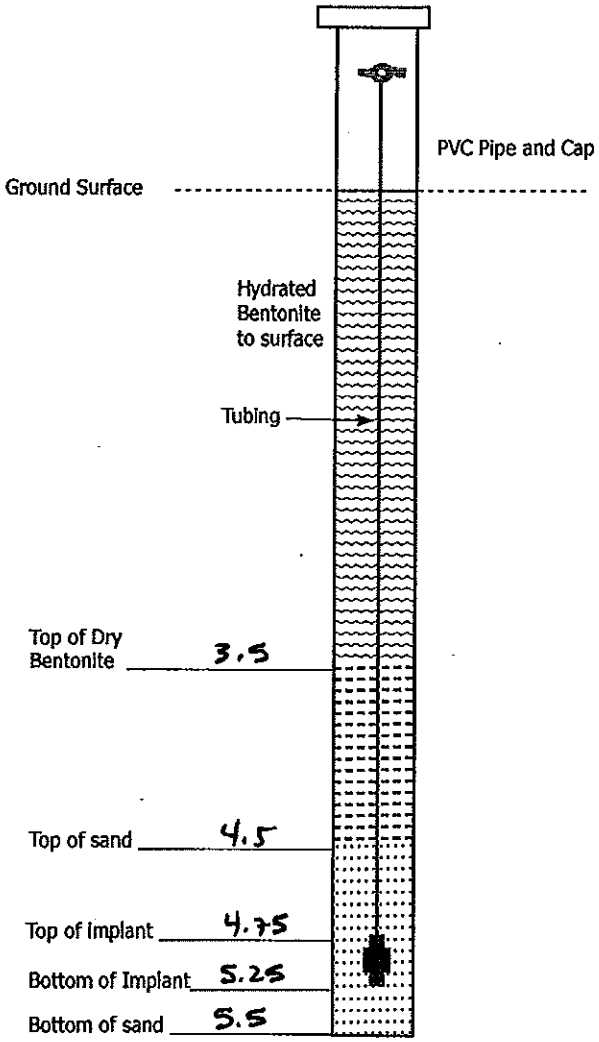
Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: GSV-DG-551 | Job #: 10503982.3050105/10503982.3060105 | Project: Phase 3 DOE Data Gap Sampling 2014

Site: SA 6 | Reviewed by: | Logged by: ANDREW RAYNE

Drilling Contractor: EST | Rig Type/Method: GEOPROBE 8400 / D.P. | Driller: MARTIN KILHULLEN

Borehole TD: 5.5' | Probe Completion Date/Time: 6/10/14 0950 | Borehole Diameter: 2.25"



Vapor Implant Specs

Material: STAINLESS STEEL

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: TEFLON

Diameter: 1/4"

Color: CLEAR

Sand Pack Specs

Grain Size: #3

Manufacturer: CEMEX

Dry Bentonite

Type: #8

Manufacturer: CETCO

Hydrated Bentonite

Type: #8

Manufacturer: CETCO

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By [signature]

Sample ID SVL-551-SA6-SB-4.0-5.0 ~~6SV-DA-551~~ SM61014

Date/Time 6/10/14 0945

Matrix (circle one): Soil (circled) Sediment Water

Start Depth 4.0

End Depth 5.0

Depth Units (circle one): Inches Feet (circled)

Check if Composite ☐

Collection Method (circle one): DPT (circled) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): N (circled) FD FB RB

Parent Sample ID N/A

Field Geologist Andrew Raine

Sampler Andrew Raine

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	✓
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH ≤ 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH ≤ 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				CH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present Yes No

2. Percentage Fill (%) 100

3. Fill Description (circle all that apply)

Asphalt — MINOR Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel N/A

Other DISTURBED SOIL

Is Staining Present Yes No

Color DARK BROWN (10YR 3/3)

Odor

1. Odor Strength (circle one)

None Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

N/A Other _____

Moisture Condition (circle one)

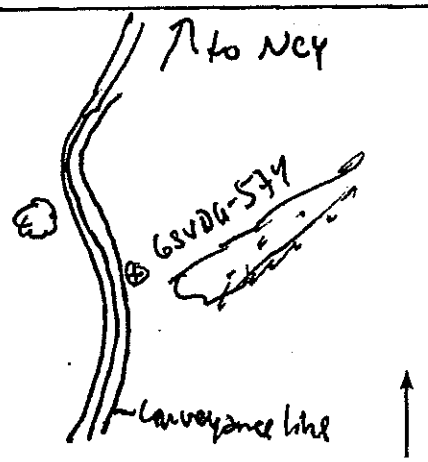
Dry Moist Wet

PG Signature [signature] PG Registration # 7735

Additional Comments – SOIL SAMPLE COLLECTED → SVL-551-SA6-SB-4.0-5.0
@ 0945 ; 1-4oz JAR AND 3 ENCORES
PRESTON READINGS → 12 μREM, 38 CPM, 0.1 PPM

NA – Not Applicable

MWH.



Site Sketch Map

Boring ID: 6SVDG-574	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 6
Logged By: RJB Geslic	Reviewed By:
Drilling Contractor: EST	Drillers Name: MORGAN HUGHES
Drill Rig Type/Method: HAND AUGER	
Sampler Type: BUCKET AUGER / GRAB	
Borehole Diam (inch): 3.5"	Total Depth (ft bgs): 4.3'
Drill Bit Type: BUCKET AUGER	
Drill Start Time/Date: 09 JUN 14 1430	Drill Finish Time/Date: 09 JUN 14 1438
Soil Vapor ID: N/A	Soil Boring Backfill Time/Date: 09 JUN 14 1506 Backfill Material: soil cuttings
Soil Vapor Well Completion Time/Date: N/A	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): N/A	Surface Completion: NONE
Soil Vapor Well Detail Completed (yes/no) N/A	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description: will be at 5

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

Surface Description: side slope next to road.

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
0.0 ppm		51"				0	SP-SM	Poorly graded sand with silt (SP-SM), 1 Brown (10YR 4/3) transitions to dark yellowish brown (10YR 4/6). Loose dry. Mostly fine sand (70) ~~Some~~ little silt (25) w/ few med. sand (5). No stain no odor. Fill to 3.5', then Native 3.5-4.3' bgs at color change.	—	—	5	70	25
			3.8			1							
			4.3		TD = 4.3'	2							
SVL-SA4-SA6-SB-3.8-4.3 @ 14:48						3							
						4							
10 µRem, 18 cpm 9.7 ppm.						5		Stepped at (N) + (S) w/ refusal at same.					
						6							
						7		TD = 4.3' bgs w/ refusal on sandstone bedrock.					
						8							
						9		Backfilled at 15:06 w/ soil cuttings					

QA/QC
Surficial media boring log rev 2-25-2014

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By [signature]

Sample ID SVL-574-SA6-SB-3.8-4.3 Date/Time 09JUN14 ; 14:48

Matrix (circle one): Soil (circled) Sediment Water

Start Depth 3.8

End Depth 4.3

Depth Units (circle one): Inches Feet (circled)

Check if Composite ☐

Collection Method (circle one): DPT Slide Hammer Hand Auger/Slide Hammer (circled) Trenching Sediment

QC Type (circle one): N (circled) FD FB RB

Parent Sample ID N/A

Field Geologist Rob Ellis

Sampler Rob Ellis

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	✓
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

FSDS Revision 3.0 11/19/2013

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present: Yes (No)

2. Percentage Fill (%): 0

3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present: Yes (No)

Color: 10YR 4/6 dark yellowish brown

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

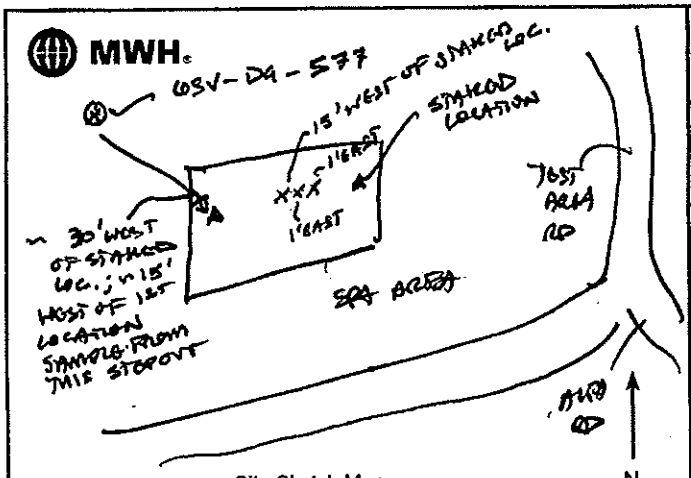
PG Signature: [signature] **PG Registration #:** 7735

Additional Comments: collected 3 encores + 1-4oz jar

10 μRem, 18 cpm, 9.7 ppm

TD = 4.7' bgs

MWH.



Site Sketch Map

Boring ID: 6SV-DG-577	Sheet 1 of 1
Project: Phase 3 DOE Data Gap Sampling 2014	
Job #: 10503982.3050106 / 10503982.3060106	Site: ~~SA 6A~~ SA 6
Logged By: ANDREW DAVIS	Reviewed By:
Drilling Contractor: EST	Drillers Name: MARTIN KILHUKEN
Drill Rig Type/Method: GEOPROBE 5400 / DP	
Sampler Type: MACROCORE	
Borehole Diam (inch): 2.25"	Total Depth (ft bgs): 3'
Drill Bit Type: MACROCORE	
Drill Start Time/Date: 1030 6/11/14	Drill Finish Time/Date: 1140 6/11/14
Soil Boring Backfill Time/Date: N/A	Backfill Material: N/A
Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None	
Surface Completion: SOIL VAPOR PROBE	
Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None	

Soil Vapor ID: ~~6~~ N/A	
Soil Vapor Well Completion Time/Date: N/A	
Soil Vapor Probe Depths (ft.bgs): N/A	
Soil Vapor Well Detail Completed (yes/no)	

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations; Surface Description: GRASSES, SHRUBS, SS BEDROCK NGARBY	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
						0	SM	SILTY SAND (SM), DRY, BROWN (10YR 4/4), LOOSE, FINE TO MED SAND, SA TO SR, ROOTS, FILL MATERIAL; TRACE COARSE SAND	—	5	30	45	20
						1	SM	SILTY SAND (SM) SLT. MOIST, DARK YELLOWISH BROWN (10YR 5/4), FINE TO MED. SAND ANG TO SUBROUNDED, TRACE COARSE SAND, NATIVE ALLUVIUM, MICA	—	5	30	40	25
0.0		36"	X		1145	2	SS/SM	WEATHERED SS AND SHALE (SS/SM); LIGHT YELLOWISH BROWN (10YR 6/4) TO PALE BROWN (10YR 6/3), FINE SAND, ANG TO SR, WEAK, FRIABLE, SHALE IS GRAYISH BROWN (10YR 5/2); BEDROCK/WEATHERED	—	—	~~30~~ 25	65	10
						3							
						4		- 1ST LOCATION ~15 WEST OF STAKED LOCATION TD/REFUSAL @ 2'; 2 STEPOUTS ~1' EAST OF PRIMARY LOCATION ALSO REFUSED @ 2';					
SVL-577-SA6-SB-1.0-2.0 @ 1145						5		4TH LOCATION ~30' WEST OF STAKED LOCATION AND 15' FROM PRIMARY LOCATION TD/REFUSED @ 3', SOIL SAMPLE COLLECTED					
						6		@ 1-2.0' @ 1145; SVL-577-SA6-SB-1.0-2.0					
						7		(1-40z JAR 2 ENCORES)					
								14 NREM, 40 CPM, 0.0 PPM					
						8							
						9							

QA/QC
Surficial media boring log rev 2-25-2014

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Steve Mupel

Sample ID SVL-577-SA6-SB-1.0-2.0 Date/Time 6/11/14 1145

Matrix (circle one): Soil (circled) Sediment Water

Start Depth 1.0

End Depth 2.0

Depth Units (circle one): Inches Feet (circled)

Check if Composite ☐

Collection Method (circle one): DPT (circled) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): N (circled) FD FB RB

Parent Sample ID

Field Geologist Andrew Payne

Sampler Andrew Payne

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	✓
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				CH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. **Is Fill Material Present** Yes (No)
2. **Percentage Fill (%)** 0
3. **Fill Description (circle all that apply)**

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present Yes (No)

Color Dark Yellowish Brown (10YR 4/4)

Odor

1. **Odor Strength (circle one)**

(None) Slight Strong

2. **Odor Description (circle one)**

Organic Petroleum Chemical

(N/A) Other _____

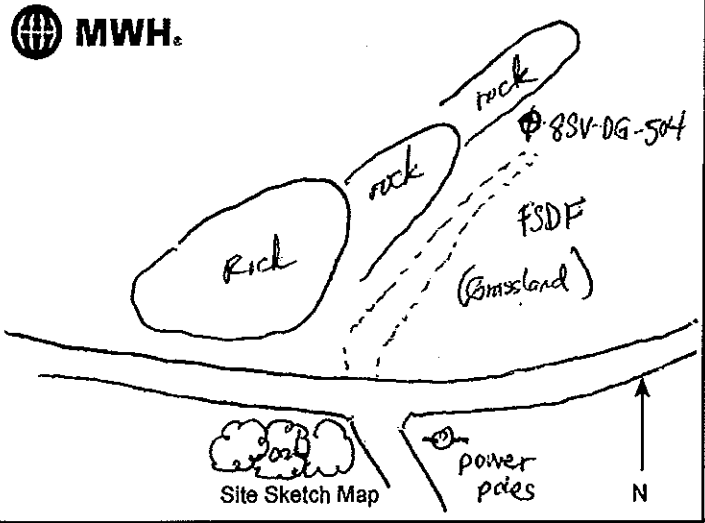
Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature _____ **PG Registration #** 7735

Additional Comments COLLECT SAMPLE @ 1.0-2.0' AT LOCATION GSV-D4-577,
SVL-577-SA6-SB-1.0-2.0 @ 1145
- 1-4oz GLASSJAR & 2 ENCORES
- 14 VREM, 40 CPM, 0.0 PPM.

MWH



Site Sketch Map

Boring ID: ~~SSV~~-DG-504 | Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 | Site: SA 8

Logged By: V. Vathanavin | Reviewed By:

Drilling Contractor: EST | Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5400 / DP

Sampler Type: Macrocore

Borehole Diam (inch): 2.25" | Total Depth (ft.bgs): 3.0

Drill Bit Type: Macrocore

Drill Start Time/Date: 0940/5-16-14 | Drill Finish Time/Date: 10:00/5-16-14

Soil Vapor ID: N/A

Soil Boring Backfill Time/Date: 10:00/5-16-14 | Backfill Material: Soil cuttings.

Soil Vapor Well Completion Time/Date: N/A

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Soil Vapor Probe Depths (ft.bgs): N/A

Surface Completion: Backfill w/ cuttings.

Soil Vapor Well Detail Completed (yes/no)

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description
1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: Grass.

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
	X	30"				0	ML	Silt w/ fine sand (ML), grayish brown (10YR 5/2), med. stiff, dry, low plasticity silt, fine sand, no stains or odors, fill.				10	90/
			X		10:00	2							
						3	Br	@ Bedrock - Sandstone, weathered chatsworth fm					
SVE-504-SA8-SB					20-25								
						4		TD = 3.0 ft., refusal on bedrock, no vapor probe installed, collect encores + jar at 20-25					
						5							
						6							
						7							
						8							
						9							

QA/QC

Surficial media boring log rev 2-25-2014

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Steg Mysel

Sample ID SVL-504-SA8-SB-2.0-2.5 Date/Time 5-16-14 / 10:00

Matrix (circle one): Soil (circled) Sediment Water

Start Depth 2.0

End Depth 2.5

Depth Units (circle one): Inches Feet (circled)

Check if Composite ☐

Collection Method (circle one): DPT (circled) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): N (circled) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler Rob Ellis

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

FSDS Revision 3.0 11/19/2013

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		(ML)	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. **Is Fill Material Present** (Yes) No

2. **Percentage Fill (%)** 100

3. **Fill Description (circle all that apply)**

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present Yes (No)

Color ~~N/A~~ 10YR 5/2
WT 03202014

Odor

1. **Odor Strength (circle one)**

(None) Slight Strong

2. **Odor Description (circle one)**

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature _____ **PG Registration #** 7735

Additional Comments Total Depth = 3.0 ft. Refusal on bedrock.

PID=~~(0.0)~~ (V.V.) 0.0 ppm

Rad info: 10 uR, 77 cpm

MWH

Boring ID: SSV-DG-517 | Sheet 1 of 2

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 | Site: SA 8

Logged By: V. Vathanasin | Reviewed By:

Drilling Contractor: EST | Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5400 / DP

Sampler Type: Macrocore

Borehole Diam (inch): 2.25" | Total Depth (ft.bgs): 16.5

Drill Bit Type: Macrocore

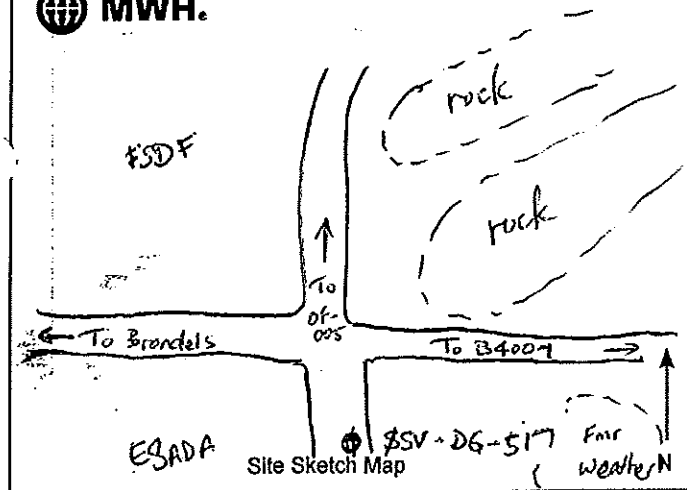
Drill Start Time/Date: 0805 / 5-19-2014 | Drill Finish Time/Date: 0840 / 5-19-2014

Soil Boring Backfill Time/Date: N/A | Backfill Material: N/A

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Surface Completion: Soil Vapor Probe

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None



Site Sketch Map

Soil Vapor ID: SSV-DG-517

Soil Vapor Well Completion Time/Date: 0925 / 5-19-2014

Soil Vapor Probe Depths (ft.bgs): 5.0-6.0, 10.0-11.0, ~~15.5~~ 15.0-16.5 (V.V.)

Soil Vapor Well Detail Completed (yes/no)

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	ML	Surface Description: Vegetated road. Silt w/ Sand (ML), yellowish brown (10YR 5/4), med ~~stiff~~ (V.), dry, low plastic ~~silty~~ Silt, fine sand, grass roots, no staining, no odors, graded fill,	-	-	-	10	90
		45"				1							
						2							
						3	CL	Silty Clay (CL), yellowish brown (10YR 5/4), stiff, dry, silt + clay, med plasticity, native	-	-	-	-	100
0.1						4		@ 4' obs changes to brownish yellow (10YR 6/6)					
			X		0900	5							
		48"				6		5.0-6.0 SA8-SB-SSV-DG-517					
						7							
0.6						8							
						9							

Cont next page

Boring ID: 8SV-DG-517 Project: DOE Phase 3 SV DG Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
			X		0905	10							
						11							
0.1						12							
						13		@ grades to med. stiff, color changes to very pale brown (10YR 7/4); brownish yellow (10YR 6/8) iron staining.					
		48"				14							
						15							
			X		0910	16							
0.5	X	6"					Br	Weathered sandstone, looks like ~~silty~~ (VL) silty sand.	-	-	10	50	40
						17							
						18							
						19		TD = 16.5', refusal on bedrock. Install vapor probes at 5.0'-6.0', 10'-11', 15.5'-16.5'; also collect encores at each respective depths due to possible low flow conditions.					
						20							
						1							
						2							
						3							
						4							
						5							
						6							
						7							
						8							
						9							

SVL-517-SA8-SB-10-11

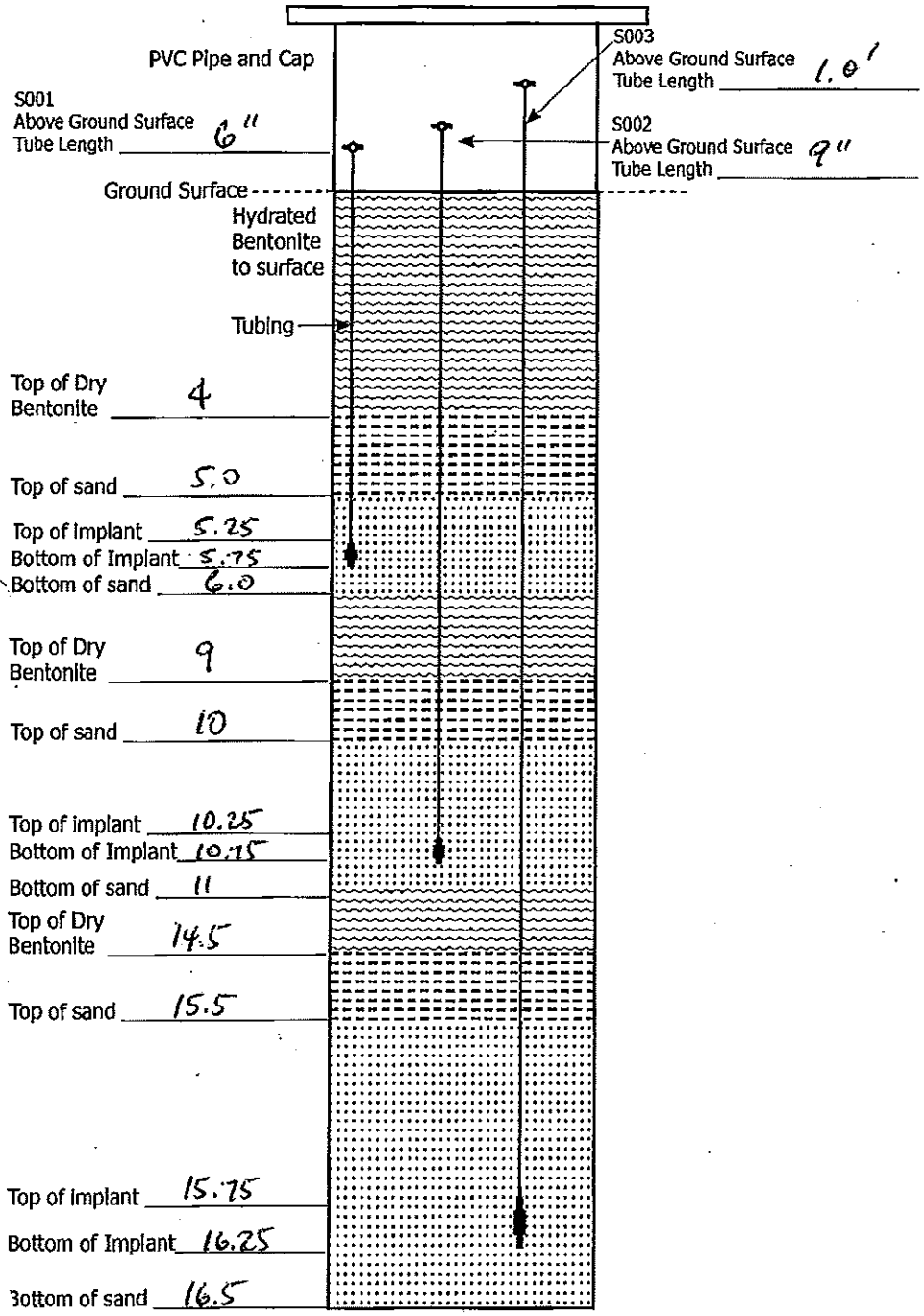
SVL-517-SA8-SB-15.5-16.5

QA/QC
Surficial media boring log rev 2-25-2014

MWH

Multiple Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SSV-DG-617
Site: SA 8
Drilling Contractor: EST
Borehole TD: 16.5
Project: Phase 3 DOE SV
Logged by: V. Vathanasin
Driller: Morgan Hughes
Borehole Diameter: 8.25
Job #: 10503982
Reviewed by:
Rig Type/Method: Geoprobe 5400 / DP
Probe Completion Date/Time: 0925/5-19-20



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: Clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Carmel

Dry Bentonite
Type: #8
Manufacturer: Cetco

Hydrated Bentonite
Type: #8
Manufacturer: CETCO

Notes:

1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By [signature]

Sample ID ~~8~~ (N.) SVL-517-SA8-SB-5.0-6.0 Date/Time 5-19-14 / 0900

Matrix (circle one): (Soil) Sediment Water

Start Depth 5.0

End Depth 6.0

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler " "

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

FSDS Revision 3.0 11/19/2013

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. **Is Fill Material Present** Yes (No)
2. **Percentage Fill (%)** N/A
3. **Fill Description (circle all that apply)**

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present Yes (No)

WT 05202014

Color ~~N/A~~ 10YR 6/6

Odor

1. **Odor Strength (circle one)**

(None) Slight Strong

2. **Odor Description (circle one)**

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature Mike Hodgson **PG Registration #** 7735

Additional Comments Total depth = 16.5' PID = 0.1 ppm

uR = 10 84 ppm

Extract and hold for analyses.

NA – Not Applicable

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Stef Mypel

Sample ID SVL-517-SA8-SB-10.0-11.0 Date/Time 5-12-14 / 0905

Matrix (circle one): (Soil) Sediment Water

Start Depth 10.0

End Depth 11.0

Depth Units (circle one): ~~Inches~~ (ft.) Feet

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
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				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
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	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
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				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. **Is Fill Material Present** Yes (No)

2. **Percentage Fill (%)** N/A

3. **Fill Description (circle all that apply)**

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present Yes (No)

Color WT 05202014 N/A 10 YR 6/6

Odor

1. **Odor Strength (circle one)**

(None) Slight Strong

2. **Odor Description (circle one)**

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature [signature] **PG Registration #** 7735

Additional Comments Total depth = 16.5' PID = 0.1 ppm

11 uR, 74 epm

Extract and hold for analyses.

NA – Not Applicable

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Stef Myers

Sample ID SVL-517-SA8-SB-15.5-16.5 Date/Time 5-19-14 / 0910

Matrix (circle one): (Soil) Sediment Water

Start Depth 15.5

End Depth 16.5

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

SM → weathered bedrock

Fill Material

1. Is Fill Material Present: Yes (No)
2. Percentage Fill (%): N/A
3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel N/A

Other _____

Is Staining Present Yes (No) WT 05202014

Color ~~N/A~~ 10YR 6/8

Odor

1. Odor Strength (circle one): (None) Slight Strong
2. Odor Description (circle one): Organic Petroleum Chemical (N/A) Other _____

Moisture Condition (circle one): (Dry) Moist Wet

PG Signature _____ PG Registration # 7735

Additional Comments: Total depth = 16.5 PID = 0.0 ppm
10 uR, 81 cpm
Extract and hold for analyses

MWH.

Boring ID: SSV-DG-519 Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: SA 8

Logged By: V. Vathanasin Reviewed By:

Drilling Contractor: EST Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5400 / DP

Sampler Type: Macrocore

Borehole Diam (inch): 3.25" Total Depth (ft.bgs): 8.0

Drill Bit Type: Macrocore

Drill Start Time/Date: 1100 / 5-16-14 Drill Finish Time/Date: 1142 / 5-16-14

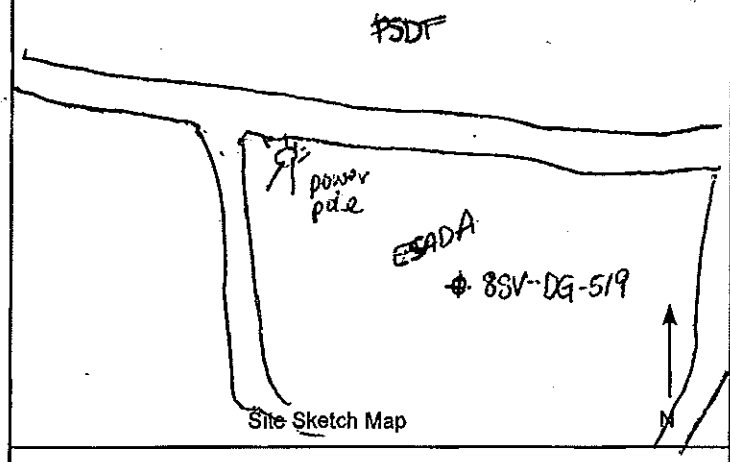
Soil Boring Backfill Time/Date: N/A Backfill Material: N/A

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Surface Completion: Soil vapor probe

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Site Sketch Map



Soil Vapor ID: SSV-DG-519

Soil Vapor Well Completion Time/Date: 1150 / 5-16-14

Soil Vapor Probe Depths (ft.bgs): 7.0 - 8.0

Soil Vapor Well Detail Completed (yes/no)

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations) Surface Description: Grassland (CESADA)	Estimated % of Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	α	Silty Clay (CL), brown (10YR 4/3), stiff, dry, low to med. plasticity clay, few roots, native	–	–	–	–	25/75
		48"				1							
			NONE			2							
						3							
0.0						4							
						5	ML	Sandy Silt (ML) w/ clay (ml), dark yellowish brown (10YR 4/4), med. stiff, dry, medium plasticity clay and silt, fine sand native	–	–	–	20	65/15
		48"	NONE			6							
						7	SP	Poorly graded Sand (SP), yellowish brown (10YR 5/6), loose, dry, fine sand, trace med. and coarse sand, no odors or stains, native	–	TR	TR	100	–
0.0			X		1140	8							
SVL-519-SA8-SB-7.5-8.0							Bo	@8.0 ft Sandstone - weathered. TD = 8.0 ft, refusal on bedrock. Set vapor probes at 7.0-8.0 ft; collect encores and place on hold in case no flow conditions exist.					
						9							

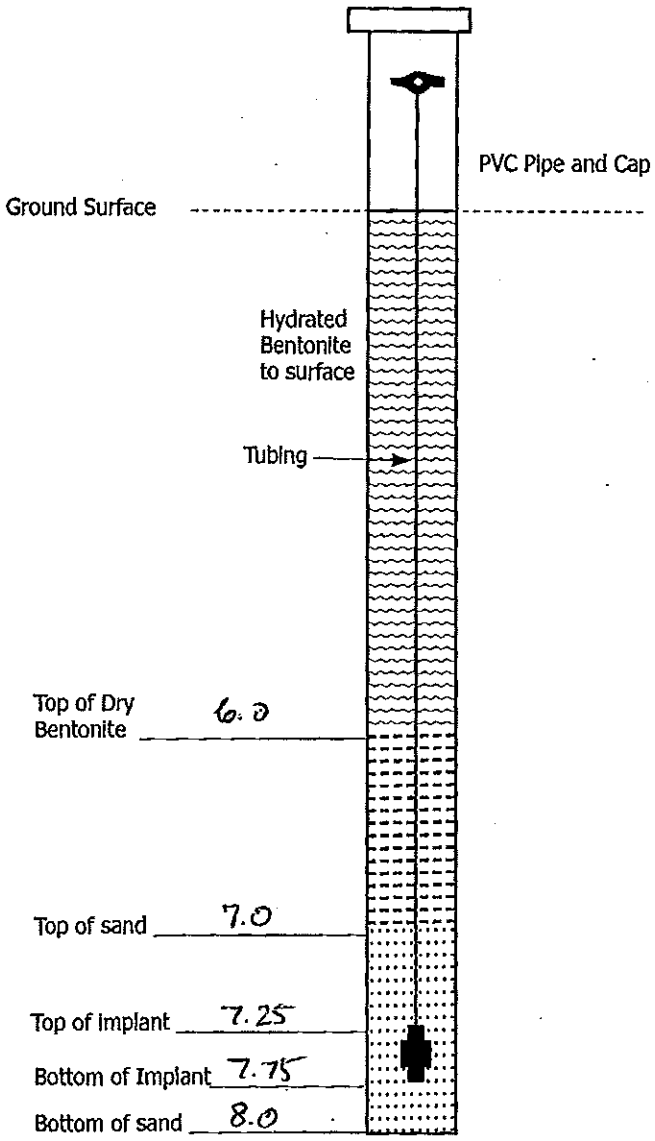
QA/QC

Surficial media boring log rev 2-25-2014

Single Soil Vapor Probe Construction Diagram

MWH

Probe ID/Soil ID: SSV-DG-519
Job #: 10503982.3050105/10503982.3060105
Project: Phase 3 DOE Data Gap Sampling 2
Site: SA8
Reviewed by:
Logged by: V. Vathanasin
Drilling Contractor: EST
Rig Type/Method: Geoprobe 5400 / DP
Driller: Morgan Hughes
Borehole TD: 8.0
Probe Completion Date/Time: 1157 / 5-16-14
Borehole Diameter: 2.25"



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: Clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Cemex

Dry Bentonite
Type: #8
Manufacturer: Cetco

Hydrated Bentonite
Type: #8
Manufacturer: Cetco

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Steve Mysel

Sample ID SVL-519-SA8-SB-7.5-8.0 Date/Time 5-16-14 / 11:40

Matrix (circle one): Soil (circled) Sediment Water

Start Depth 7.5

End Depth 8.0

Depth Units (circle one): Inches Feet (circled)

Check if Composite ☐

Collection Method (circle one): DPT (circled) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): N (circled) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler Rob Ellis

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP (circled)	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. **Is Fill Material Present** Yes (No)

2. **Percentage Fill (%)** 0

3. **Fill Description (circle all that apply)**

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present Yes (No)

Color ~~N/A~~ 10YR 5/6
WT 05202014

Odor

1. **Odor Strength (circle one)**

(None) Slight Strong

2. **Odor Description (circle one)**

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

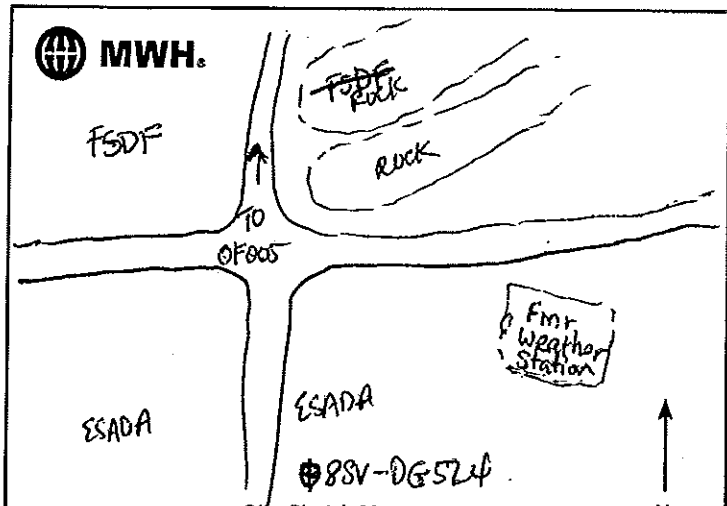
(Dry) Moist Wet

PG Signature _____ **PG Registration #** 7735

Additional Comments TD = 8.0 ft. PID = 0.0 ppm
Rad info: 12 uR, 87 cpm
Extract and hold! Do not ~~ant~~ analyze!!

NA – Not Applicable

MWH



Site Sketch Map

Boring ID: SSV-DG-524	Sheet 1 of 12
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: SA 8
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name:
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25	Total Depth (ft.bgs): 11.5
Drill Bit Type: Macrocore	
Drill Start Time/Date: 1124 / 5-19-14	Drill Finish Time/Date: 1210 / 5-19-14
Soil Vapor ID: SSV-DG-524	Soil Boring Backfill Time/Date: N/A Backfill Material: N/A
Soil Vapor Well Completion Time/Date: 12:38 / 5-19-14	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): 4.5-5.5, 10.5-11.5	Surface Completion: Soil vapor probes.
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	ML	Clayey Silt (ML) brown (10YR 4/3), stiff, dry, low to medium plasticity, fines, no odors or stains, graded fill (VV)	–	–	–	–	100
		48"	NONE			1							
						2		color changes to light yellowish brown (10YR 6/4), some white (10YR 8/1) leaching stains, grades to medium plasticity fines					
0.2						3							
					1220	4							
		40"		SSV-DG-524-SA8-S8		5							
						4.5-5.5							
						6							
						7							
0.3						8							
						9							
		24"											

Soil Description
1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: Hydromulch, mustard

Boring ID: SSV-DG-S24 Project: Phase 3 DOE SV DG Sampling Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
								1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations					
	X		NONE			10		Same as above					
						11	SP-SM	Poorly graded Sand with Silt and Clay (SP-SM), yellowish brown (10YR 5/4), loose, dry, fine to medium sand, low plasticity clay and silt, weak cementation, no stains or odors, native soil.	-	-	10	75	15
						12							
						13							
						14		@11.5 Sandstone, weathered.					
						15		TD = 11.5', refusal on bedrock; install vapor probes at 4.5-5.5 and 10.5-11.5'					
						16		Submit encores for 4.5-5.5' due to possible no-flow conditions.					
						17							
						18							
						19							
						20							
						1							
						2							
						3							
						4							
						5							
						6							
						7							
						8							
						9							

MWH

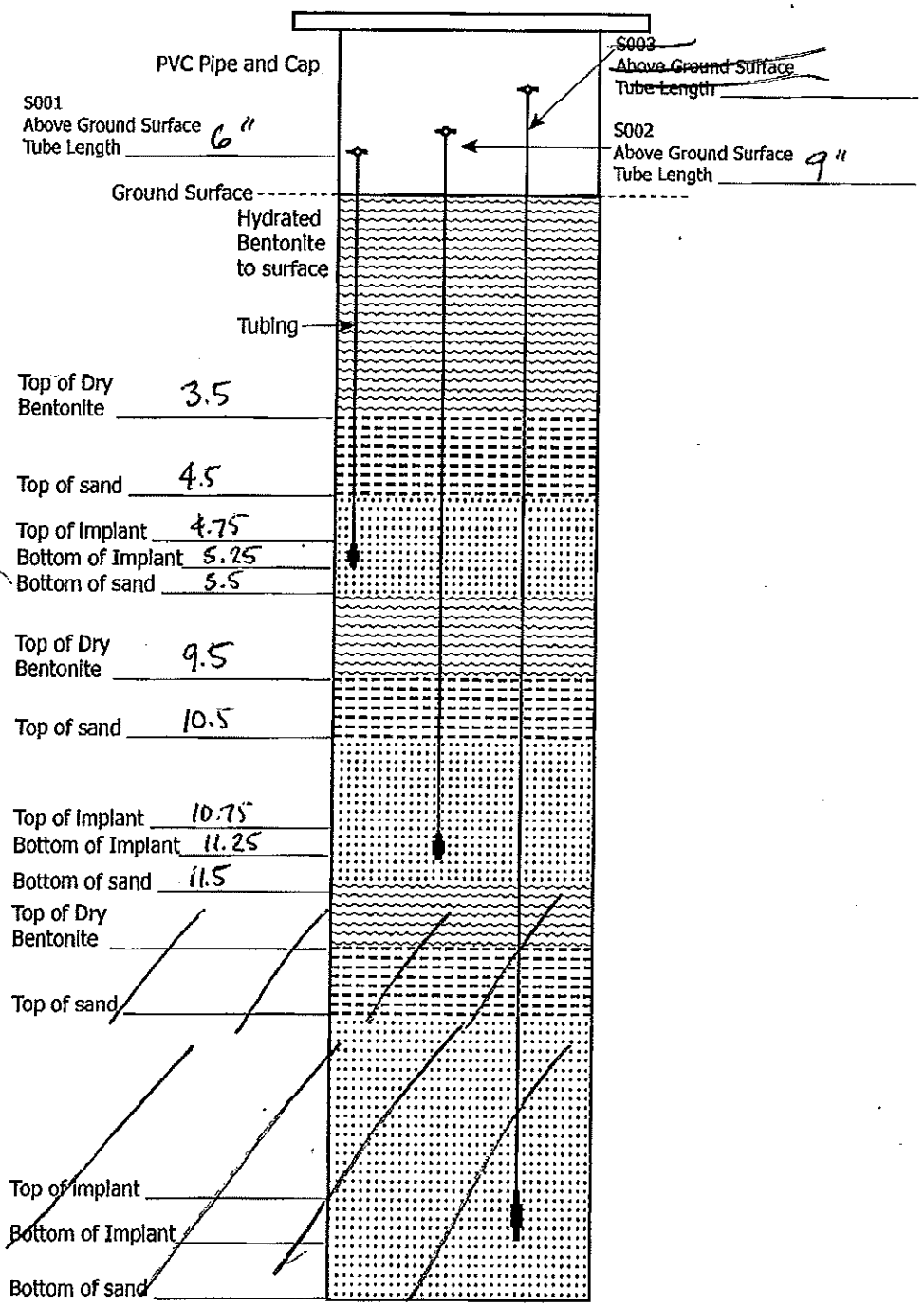
Multiple Soil Vapor Probe Construction Diagram

(V.V.)

Probe ID/Soil ID: SSV-DG-524
Site: SA8
Drilling Contractor: EST
Borehole TD: 11.5

Project: Phase 3 DOE SVDG
Logged by: V. Vathanasin
Driller: Morgan Hughes
Borehole Diameter: 2.25"

Job #: ~~10504~~ 10503982
Reviewed by:
Rig Type/Method: Geoprobe 5400 / DP
Probe Completion Date/Time: 12:38 / 5-19-



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: Clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Cemex

Dry Bentonite
Type: #8
Manufacturer: CETCO

Hydrated Bentonite
Type: #8
Manufacturer: CETCO

Notes:

1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By

Sample ID SVL-524-SA8-SB-4.5-5.5 Date/Time 5-19-14 / 1220

Matrix (circle one): (Soil) Sediment Water

Start Depth 4.5

End Depth 5.5

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

" "

Sampler

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. **Is Fill Material Present** Yes (No)

2. **Percentage Fill (%)** 0

3. **Fill Description (circle all that apply)**

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present Yes (No) WT 05202014

Color ~~N/A~~ 10 YR 6/4

Odor

1. **Odor Strength (circle one)**

(None) Slight Strong

2. **Odor Description (circle one)**

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

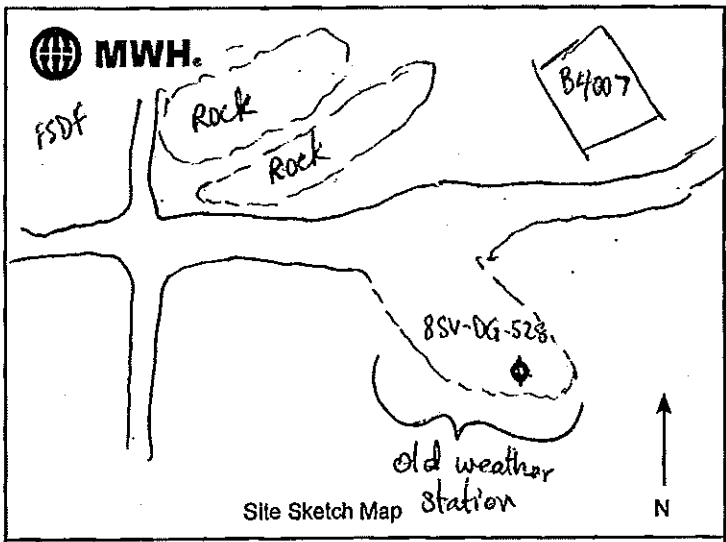
PG Signature [signature] **PG Registration #** 7735

Additional Comments Total depth = 11.5 ft. PID = 0.0 ppm

10 YR, 6/4 ppm

Extract + hold

MWH



Site Sketch Map

Boring ID: SSV-DG-528	Sheet 1 of 2
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: SA 8
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 19.5'
Drill Bit Type: Macrocore	
Drill Start Time/Date: 1325 / 5-19-14	Drill Finish Time/Date: 1430 / 5-19-14
Soil Boring Backfill Time/Date: N/A	Backfill Material: N/A
Soil Vapor ID: SSV-DG-528	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Well Completion Time/Date: 15:14 / 5-19-14	Surface Completion: Soil Vapor Probes
Soil Vapor Probe Depths (ft.bgs): 5.0-6.0, 11.0-12.0, 18.5-19.5	Type of Refusal: ☐ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☒ None
Soil Vapor Well Detail Completed (yes/no)	

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	ML	Sandy Silt (ML), light yellowish brown (10 YR 6/4), med. stiff, dry, non-plastic fines, fine sand, weak clay cement, no odors or fines, roots, graded fill	-	-	-	15	85
		40"	NONE			2		color changes to brown (10YR 4/3),					
						3							
						4							
						5		color changes to pale brown (10YR 6/3), stiff, increasing sand, native	-	-	-	25	75
		48"			1446	6							
		SVE-528-	SA8-	55-60		7	CL	Clay with Sand (CL), very pale brown (10YR 7/3), med stiff, moist, med plasticity clay, fine sand, heavy weathering [white (10YR8/1)]					
						8							
						9		grades to dry.					

cont next page

Boring ID: SSV-DG-528 Project: Phase 3 DOE SV DG Sampling Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0		Same as above					
		48"			1450	1	ML	Silt w/ clay (ML), light yellowish brown (10YR 6/4), stiff, moist, med. plasticity clay, silt	-	-	-	-	15/85
				SSV-528-SB-110		12.0							
		48"				2							
						3							
						4							
						5							
						6	SM						
						7	SM	Silty sand (SM), brownish yellow (10YR 6/6), med. dense, dry, fine sand, non-plastic silt, no odors or staining,	-	-	-	80	20
						18	V.V.		-	-	-	10	90
							ML		-	-	-	80	20
						19		@17.5 Silt w/ sand (ML), yellowish brown (10YR 5/4), stiff, moist, lo plast. silt, sand					
						20		@18.0 Silty Sand (SM), brownish yellow (10YR 6/6), med. dense, dry, fine sand, non-plastic silt, ~~no~~ V.V.					
						21							
						2		@19.5 Sandstone					
						3		TD= 19.5, refusal on bedrock, install probes at 5.0-6.0, 11.0-12.0, 18.5-19.5, Collect encores at 5.0-6.0, 11.0-12.0 due to possible low-flow conditions and place on hold.					
						4							
						5							
						6							
						7							
						8							
						9							

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

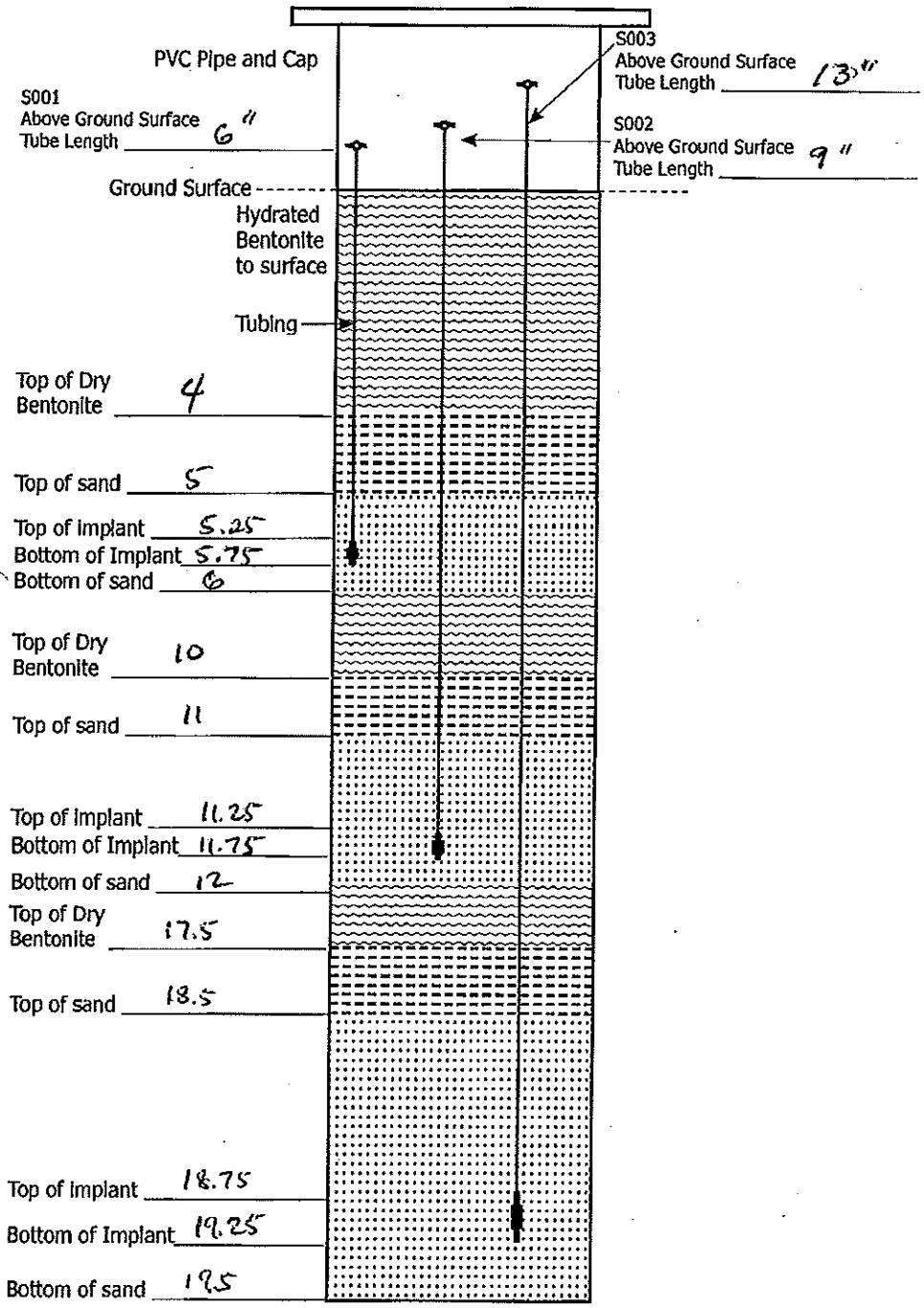
MWH

Multiple Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: BSV-DG-528
Site: SA 8
Drilling Contractor: EST
Borehole TD: 19.5

Project: Phase 3 DOE SVDS
Logged by: V. Vathanasin
Driller: Morgan Hughes
Borehole Diameter: 2.25"

Job #: 10503982
Reviewed by:
Rig Type/Method: Geoprobe 5400 / DP
Probe Completion Date/Time: 1514 / 5-19-1



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: Clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Cemex

Dry Bentonite
Type: #8
Manufacturer: CETCO

Hydrated Bentonite
Type: #8
Manufacturer: CETCO

Notes:
1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By: Shelby Vallenzuela

Sample ID: SVL-528-SA8-SB-5.0-6.0 Date/Time: 5/19/14 1446

Matrix (circle one): (Soil) Sediment Water

Start Depth: 5.0

End Depth: 6.0

Depth Units (circle one): Inches (Feet)

Check if Composite: ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID: N/A

Field Geologist: Van Vathanasm

Sampler: Van Vathanasm

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean Inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic Inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. **Is Fill Material Present** Yes (No)
2. **Percentage Fill (%)** 0
3. **Fill Description (circle all that apply)**

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present Yes (No)

Color 10YR 6/3

Odor

1. **Odor Strength (circle one)**

(None) Slight Strong

2. **Odor Description (circle one)**

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature Mike Hoffman **PG Registration #** 7735

Additional Comments Extract + HOLD Total Depth = 19.5' bgs

PID = 0.0

S/H MR = 11

CPM = 72

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Shelby Valmonte

Sample ID SVL-528-SA8-SB-~~5.0 6.0~~ 11 - 12' Date/Time 5/19/14 1450

Matrix (circle one): (Soil) Sediment Water

Start Depth 11'

End Depth 12'

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): (DPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist ~~SV~~ Van Vathanaah

Sampler Same as above

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. **Is Fill Material Present** Yes (No)
2. **Percentage Fill (%)** 0
3. **Fill Description (circle all that apply)**

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present Yes (No)

Color 10YR 6/4

Odor

1. **Odor Strength (circle one)**

(None) Slight Strong

2. **Odor Description (circle one)**

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature Mike Hoffman **PG Registration #** 7735

Additional Comments Total Depth = 16 19.5' Extract + HOLD

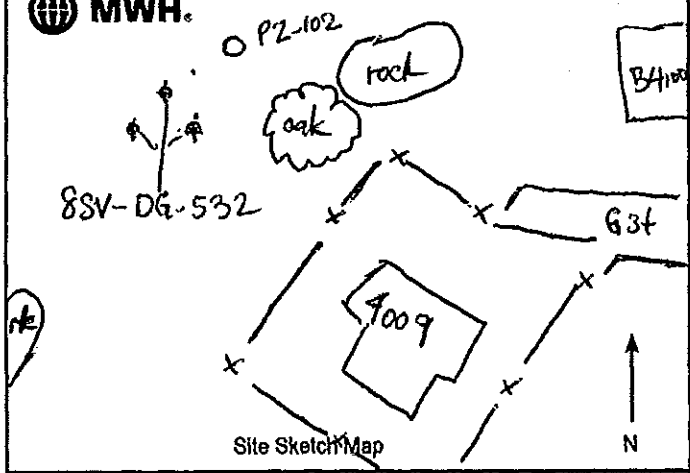
µR = 10

PID = 0.0

CPM = 68

NA – Not Applicable

MWH



Boring ID: SSV-DG-532 Sheet 1 of 1

Project: Phase 3 DOE Data Gap Sampling 2014

Job #: 10503982.3050106 / 10503982.3060106 Site: Subarea 8

Logged By: V. Vathanasin Reviewed By:

Drilling Contractor: EST Drillers Name: Marty Kilcher

Drill Rig Type/Method: Hand auger

Sampler Type: Grab

Borehole Diam (inch): 3.25" Total Depth: (ft bgs): 4.0

Drill Bit Type: Standard bucket auger

Drill Start Time/Date: 1155 / 6-12-14 Drill Finish Time/Date: 1230 / 6-12-14 (V.V.)

Soil Boring Backfill Time/Date: 1232 / 6-12-14 Backfill Material:

Soil Vapor ID: N/A

Soil Vapor Well Completion Time/Date: N/A

Soil Vapor Probe Depths (ft.bgs): N/A

Soil Vapor Well Detail Completed (yes (no))

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Surface Completion: Backfilled w/ soil cuttings

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations) Surface Description: Grassy, ~ 20' SW from PZ-102	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Silty Sand (SM), dark yellowish brown (10 YR 4/6), med. dense, dry, fine sand, silt, roots, dry wood, fill		-	-	65	35
						1							
						2							
						3	CL	@3' CLAY (CL), dark yellowish brown (10YR 4/6), stiff, dry, white nodules (<1 mm), no stains or odors, very difficult to auger through, native					
0.0			X		1230	4							
SVL-532-SA&SB-3.5-4.0						5	BR						
						6		Sandstone (?), few fragments of weathered sandstone, poor recovery in auger bucket					
						7		TD = 4.0 ft, refusal on bedrock, type of bedrock uncertain; need soil core to determine. Collect soil sample 3.5-4.0 and submit for VOC analyses.					
						8							
						9		Drilled 3 borings to confirm shallow refusal. 1st boring = 2.9', 2nd = 3.9' 3rd = 4.0'					

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By [signature]

Sample ID SVL-532-SA8-SB-3.5-4.0 Date/Time 6-12-14 / 12:30

Matrix (circle one): Soil (circled) Sediment Water

Start Depth 3.5

End Depth 4.0

Depth Units (circle one): Inches Feet (circled)

Check if Composite ☐

Collection Method (circle one): DPT Slide Hammer Hand Auger/Slide Hammer (circled) Trenching Sediment

QC Type (circle one): N (circled) FD FB RB

Parent Sample ID N/A

Field Geologist Van Vathanasin

Sampler " "

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	X
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present Yes (No)
2. Percentage Fill (%) 0
3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present Yes (No)

Color dark yel. brn (10YR 4/~~6~~ 6) (v.v.)

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature [signature] PG Registration # 7735

Additional Comments TD = 4.0'

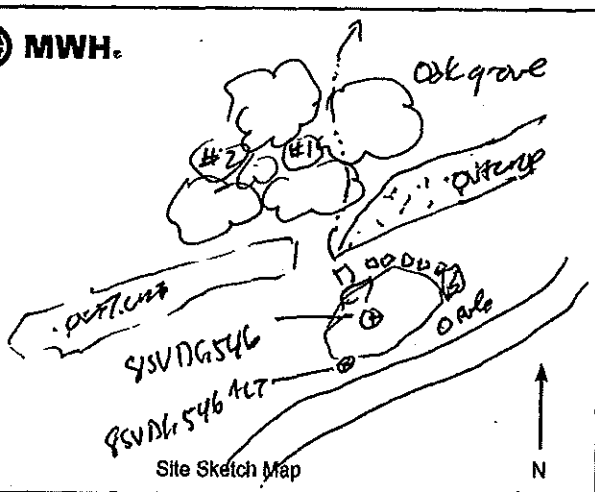
PID = 0.0 ppm

14 uRem

88 cpm

NA – Not Applicable

MWH



Site Sketch Map

Boring ID: SSV_DG-546	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 8
Logged By: KWB ELLIS	Reviewed By:
Drilling Contractor: EST	Drillers Name: NORMAN HAINES
Drill Rig Type/Method: HAND AUGER	
Sampler Type: BUCKET AUGER GRAB	
Borehole Diam (inch): 3.5"	Total Depth (ft.bgs): 4.9'
Drill Bit Type: BUCKET AUGER	
Drill Start Time/Date: 09:44 12JUN14	Drill Finish Time/Date: 10:26 12JUN14
Soil Boring Backfill Time/Date: 10:33 12JUN14	Backfill Material: SOIL CUTTINGS 12JUN14
Soil Vapor ID: N/A	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Well Completion Time/Date: N/A	
Soil Vapor Probe Depths (ft.bgs): N/A	Surface Completion: NONE
Soil Vapor Well Detail Completed (yes/no) N/A	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description: wild oat

1) Soil type; 2) USCS Symbol; 3) Munsell Color; 4) Consistency/Density; 5) Moisture; 6) Grain Size %; 7) Cementation; 8) Plasticity (fines); 9) Geologic Unit (fill, alluvium, bedrock); 10) Misc. Observations

Surface Description: on bank next to drainage.

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
		4.9'				0						
						1		~	–	10	60	30
						2						
						3	SM					
						4						
			4.4 – 4.9			4.9'						
						5						
						6						
						7						
						8						
						9						

0–4.9
Silty sand (SM); brown (10YR 4/3) transitioning to (10YR 4/4) gradually. Loose, dry. Mostly fine sand (60), some silt (30); few medium sand (10). No stain, no odor; probable native. Proximal oak trees, within 20' feet; but fine oak roots throughout; one up to 3/4" found not
• Location moved downgradient and stepped S.5' W from Hallway for #1; refusal @ 3.0', stepped additional S.3' W to Location #2. TD = 4.9' w/ refusal on weathered bedrock.

Sample @ 10:25
SVL-546-SA8-SB-4.4-4.9 MS
+ Duplicate @ 10:30
SVL-546-SA8-SB-4.4-4.9
12 liters 52 cpm
0.0 ppm @ 10:25h
9 encores + 1 80 mL jar

QA/QC

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By

Sample ID SUL-SU6-SA8-SB-4.4-4.9MS Date/Time 12JUN14; 10:25

Matrix (circle one): (Soil) Sediment Water

Start Depth 4.4'

End Depth 4.9'

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): DPT Slide Hammer (Hand Auger/Slide Hammer) Trenching Sediment

QC Type (circle one): (N) FD FB RB

Parent Sample ID N/A

Field Geologist RWS ELLIS

Sampler RWS ELLIS

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	✓
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH ≤ 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH ≤ 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		SM	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				OH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. Is Fill Material Present Yes (No)
2. Percentage Fill (%) 0
3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present Yes (No)

Color 10YR 4/4 dark yellowbrown

Odor

1. Odor Strength (circle one)

(None) Slight Strong

2. Odor Description (circle one)

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature [signature] **PG Registration #** 7735

Additional Comments Sample includes MS/MSD + DUP 9 encores, 1 8oz jar
12 µRem, 52 cpm, 0.0 ppm
TD = 4.9' bgs

SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By

Sample ID SVL-846-SA8-SB-4.4-4.9 Date/Time 12JUN14 ; 10:30

Matrix (circle one): (Soil) Sediment Water

Start Depth 4.4'

End Depth 4.9'

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): DPT Slide Hammer (Hand Auger/Slide Hammer) Trenching Sediment

QC Type (circle one): N (FD) FB RB

Parent Sample ID SVL-546-SA8-~~BB~~ SB -4.4-4.9MS

Field Geologist

Sampler

Analysis

	Parameters	Method	Analyze?
	Metals	EPA 6010	
		EPA 6020	
		EPA 7471 (Soil)	
		EPA 7470 (Water)	
	Fluoride	EPA 300.0/9056	
	SVOCs	EPA 8270	
	TIC	EPA 8270	
	PAHs	EPA 8270 SIM	
	1,4 Dioxane	EPA 8270 SIM	
	Dioxins	EPA 1613	
	PCBs/PCTs	EPA 8082	
	Perchlorate	EPA 314.0/331	
	Perchlorate Confirmation	EPA 6850/6860	
	pH	EPA 9045 (Soil)	
		EPA 9040 (Water)	
	Hexavalent Chromium	EPA 7196/7199	
	Herbicides	EPA 8151	
	Pesticides	EPA 8081	

	Parameters	Method	Analyze?
Encores	VOCs	EPA 8260	✓
	1,4 Dioxane	EPA 8260 SIM	
	TPH-GRO	EPA 8015	
	TPH-EFH	EPA 8015	
	Glycols	EPA 8015	
	Alcohols	EPA 8015	
	Terphenyls	EPA 8015	
	Nitrates	EPA 300.0/9056	
	Energetics	EPA 8330	
	Cyanide	EPA 9012	
	Formaldehyde	EPA 8315	
	NDMA	EPA 1625	
Sediment	Organotin	NOAA Status and Trends, Krone et al.	
	Methyl Mercury	EPA 1630	
	Total Nitrogen	ASTM D5373	
	TOC	ASTM D5310	
	Grain Size	ASTM 2488-09a	

NA – Not Applicable

SSFL Phase 3 – Field Data Sample Sheet (Sample Descriptions)

Soil Classification (circle one)

MAJOR DIVISION			GROUP SYMBOL	LETTER SYMBOL	GROUP NAME
COARSE GRAINED SOILS CONTAINS MORE THAN 50% FINES	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVEL WITH < 5% FINES		GW	Well-graded GRAVEL
				GP	Poorly graded GRAVEL
		GRAVEL WITH BETWEEN 5% AND 15% FINES		GW-GM	Well-graded GRAVEL with silt
				GW-GC	Well-graded GRAVEL with clay
				GP-GM	Poorly graded GRAVEL with silt
				GP-GC	Poorly graded GRAVEL with clay
		GRAVEL WITH ≥ 15% FINES		GM	Silty GRAVEL
				GC	Clayey GRAVEL
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SAND WITH < 5% FINES		SW	Well-graded SAND
				SP	Poorly graded SAND
		SAND WITH BETWEEN 5% AND 15% FINES		SW-SM	Well-graded SAND with silt
				SW-SC	Well-graded SAND with clay
				SP-SM	Poorly graded SAND with silt
				SP-SC	Poorly graded SAND with clay
		SAND WITH ≥ 15% FINES		(SM)	Silty SAND
				SC	Clayey SAND
FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES	SILT AND CLAY	LIQUID LIMIT LESS THAN 50		ML	Inorganic SILT with low plasticity
				CL	Lean inorganic CLAY with low plasticity
				OL	Organic SILT with low plasticity
		LIQUID LIMIT GREATER THAN 50		MH	Elastic inorganic SILT with moderate to high plasticity
				CH	Fat inorganic CLAY with moderate to high plasticity
				CH	Organic SILT or CLAY with moderate to high plasticity
HIGHLY ORGANIC SOILS				PT	PEAT soils with high organic contents

Fill Material

1. **Is Fill Material Present** Yes (No)

2. **Percentage Fill (%)** 0

3. **Fill Description (circle all that apply)**

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

Is Staining Present Yes (No)

Color 10YR 4/4 dark yellowish brown

Odor

1. **Odor Strength (circle one)**

(None) Slight Strong

2. **Odor Description (circle one)**

Organic Petroleum Chemical

(N/A) Other _____

Moisture Condition (circle one)

(Dry) Moist Wet

PG Signature [signature] **PG Registration #** 7735

Additional Comments Sample includes MS/MSD + Dup 9 ounces, + 1-8oz jar
12 μRem, 52 ppm, 0.0 ppm
TD = 4.9' bgs
Collect 3 ounces + 1 4oz for dupe.

Appendix F
Chain of Custodies

Sample Delivery Group

PH158

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 1/13/2014 A-13013
CarrierName: FedEx
AirbillNo: 797623860084 G-1445714
S-7335015-24

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140113-01
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7470 (Water)	Mercury 7471 (Soil)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EPH 8015	Glycols 8015	Alcohols 8015	Terpenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc.Nitrate_Nitrite_TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
SL-840-SA5B-SB-0.0-0.5	1/13/14 10:00	SO	None	2 - SS-Sleeve	10 day	X	X					X		X	X											X													
SL-840-SA5B-SB-0.0-0.5	1/13/14 10:00	SO	None	1 - 4 oz glass	10 day													X																					
SL-840-SA5B-SB-4.0-5.0	1/13/14 10:40	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X								X													
SL-840-SA5B-SB-4.0-5.0	1/13/14 10:40	SO	None	2 - Encore	10 day																			X														
SL-840-SA5B-SB-7.0-8.0	1/13/14 10:45	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X								X													
SL-840-SA5B-SB-7.0-8.0	1/13/14 10:45	SO	None	2 - Encore	10 day																			X														
SL-838-SA5B-SB-0.0-0.5	1/13/14 13:30	SO	None	2 - SS-Sleeve	10 day	X	X					X		X	X											X													
SL-838-SA5B-SB-0.0-0.5	1/13/14 13:30	SO	None	1 - 4 oz glass	10 day													X																				
SL-838-SA5B-SB-4.0-5.0MS	1/13/14 14:10	SO	None	6 - 16 oz glass	10 day	X	X					X		X	X			X								X													MS/MSD
SL-838-SA5B-SB-4.0-5.0MS	1/13/14 14:10	SO	None	6 - Encore	10 day																			X														MS/MSD
SL-1138-SA5B-SB-4.0-5.0	1/13/14 13:40	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X								X													
SL-1138-SA5B-SB-4.0-5.0	1/13/14 13:40	SO	None	2 - Encore	10 day																			X														

Special Instructions:

Sampler: [signature]

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
[signature]	01/13/2014	1600									
									[signature]	1/14/14	1000

Amended COC

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 1/13/2014
CarrierName: FedEx
AirbillNo: 797623860084

A-13013
G-1445714
S-7335015-24

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140113-01
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terpenoids 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate_Nitrite_TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
SL-840-SA5B-SB-0.0-0.5	1/13/14 10:00	SO	None	2 - SS-Sleeve	10 day	X	X					X		X	X											X													
SL-840-SA5B-SB-0.0-0.5	1/13/14 10:00	SO	None	1 - 4 oz glass	10 day														X																				
SL-840-SA5B-SB-4.0-5.0	1/13/14 10:40	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X				X							X													
SL-840-SA5B-SB-4.0-5.0	1/13/14 10:40	SO	None	2 - Encore	10 day																																		
SL-840-SA5B-SB-7.0-8.0	1/13/14 10:45	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X				X							X													
SL-840-SA5B-SB-7.0-8.0	1/13/14 10:45	SO	None	2 - Encore	10 day																																		
SL-838-SA5B-SB-0.0-0.5	1/13/14 13:30	SO	None	2 - SS-Sleeve	10 day	X	X					X		X	X											X													
SL-838-SA5B-SB-0.0-0.5	1/13/14 13:30	SO	None	1 - 4 oz glass	10 day														X																				
SL-838-SA5B-SB-4.0-5.0MS	1/13/14 14:10	SO	None	6 - 16 oz glass	10 day	X	X					X		X	X				X								X												MS/MSD
SL-838-SA5B-SB-4.0-5.0MS	1/13/14 14:10	SO	None	6 - Encore	10 day																				X														MS/MSD
SL-1138-SA5B-SB-4.0-5.0	1/13/14 13:40	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X				X								X												
SL-1138-SA5B-SB-4.0-5.0	1/13/14 13:40	SO	None	2 - Encore	10 day																				X														
TB-011314	1/13/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																				X														

Special Instructions:

Sampler: Kim Larson

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Shey Myers	01/13/2014	1600									

COC Rev 3

COC: 20140113-01, Page 1 of 1

1 of 1

Sample Delivery Group

PH159

A-13013

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 1/14/2014 G-1446014

CarrierName: FedEx

AirbillNo: 797634322639 5-733613951

Contact Name: Pam Hartman

Contact Phone: (818)466-8007

COC No: 20140114-02

Cooler #: 2

Lab: Lancaster

Lab Phone: 717-556-7259

Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-ERH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc.Nitrate_Nitrite_TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
SL-839-SA5B-SB-0.0-0.5	1/14/14 09:00	SO	None	2 - SS-Sleeve	10 day	X	X					X		X	X											X														
SL-839-SA5B-SB-0.0-0.5	1/14/14 09:00	SO	None	1 - 4 oz glass	10 day													X																						
SL-839-SA5B-SB-4.0-5.0MS	1/14/14 09:15	SO	None	6 - 16 oz glass	10 day	X	X					X		X	X			X								X														MS/MSD
SL-839-SA5B-SB-4.0-5.0MS	1/14/14 09:15	SO	None	6 - Encore	10 day																				X															MS/MSD
SL-1139-SA5B-SB-4.0-5.0	1/14/14 09:10	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X								X														
SL-1139-SA5B-SB-4.0-5.0	1/14/14 09:10	SO	None	2 - Encore	10 day																				X															
SL-839-SA5B-SB-9.0-10.0	1/14/14 10:15	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X								X														
SL-839-SA5B-SB-9.0-10.0	1/14/14 10:15	SO	None	2 - Encore	10 day																				X															
SL-839-SA5B-SB-15.5-16.5	1/14/14 10:30	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X								X														
SL-839-SA5B-SB-15.5-16.5	1/14/14 10:30	SO	None	2 - Encore	10 day																				X															
SL-843-SA5B-SB-0.0-0.5	1/14/14 13:10	SO	None	2 - SS-Sleeve	10 day	X	X					X		X	X											X														
SL-843-SA5B-SB-0.0-0.5	1/14/14 13:10	SO	None	1 - 4 oz glass	10 day													X																						
SL-843-SA5B-SB-4.0-5.0	1/14/14 13:30	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X								X														
SL-843-SA5B-SB-4.0-5.0	1/14/14 13:30	SO	None	2 - Encore	10 day																				X															
SL-843-SA5B-SB-7.0-8.0	1/14/14 13:40	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X								X														
SL-843-SA5B-SB-7.0-8.0	1/14/14 13:40	SO	None	2 - Encore	10 day																				X															
TB-011414	1/14/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																				X															

COC Rev 3

COC: 20140114-02, Page 1 of 2

A-13013
G-1446014
S-7336139-51

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 1/14/2014
CarrierName: FedEx
AirbillNo: 797634322639

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140114-02
Cooler #: 2
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate_Nitrite_TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes

Special Instructions:

Sampler:

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
	1/14/2014	1600									
										1/15/14	1000

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 1/14/2014 A-13013
CarrierName: FedEx G-1446014
AirbillNo: 797634322639 S-733639-51

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140114-01
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc.Nitrate_Nitrite_TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
EB-011414	1/14/14 15:00	WQ	HNO3 pH<2	1 - 250 mL Poly	10 day	X		X																															
EB-011414	1/14/14 15:00	WQ	None	2 - 250 mL Amber	10 day							X			X																								
EB-011414	1/14/14 15:00	WQ	None	2 - 1 L Amber	10 day									X																								
EB-011414	1/14/14 15:00	WQ	None	1 - 40 mL Vial	10 day												X																					
EB-011414	1/14/14 15:00	WQ	None	1 - 250 mL Poly	10 day														X																			
EB-011414	1/14/14 15:00	WQ	HCl	3 - 40 mL Vial	10 day																				X												
EB-011414	1/14/14 15:00	WQ	HCl	2 - 1 L Amber	10 day																					X											

Special Instructions:

Sampler: Pam Hartman

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
[signature]	01/14/2014	1600									
									[signature]	1/15/14	1000

(3) CE 1/15/14

COC Rev 9

COC: 20140114-01, Page 1 of 1

Sample Delivery Group

PH172

acct 3013 Cap# 1473052 Sample# 7457065

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/7/2014
CarrierName: FedEx
AirbillNo: 798788635154

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140507-01
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate_Nitrite_TKN	TOC SM 5310B	Grain Size ASTM 2488--09a	Other Analysis/Notes
FDG-SL-798-SA5B-SB-0.0-0.5	5/7/14 12:29	SO	None	2 - SS-Sleeve	10 day	X	X					X			X	X										X													
FDG-SL-798-SA5B-SB-0.0-0.5	5/7/14 12:29	SO	None	1 - 4 oz glass	10 day													X																					

Special Instructions:

Sampler: Heather Treadway

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Doug Mysel	05/07/14	1500									
										5/8/14	0920

COC Rev 3

COC: 20140507-01, Page 1 of 1

Sample Delivery Group

PH173

A-13013
G-1473208

SSFL Phase 3 Chain of Custody

S-745798-75

CDM Smith

DateShipped: 5/8/2014
CarrierName: FedEx
AirbillNo: 801785869961

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140508-01
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488--09a	Other Analysis/Notes
EB-050814	5/8/14 15:00	WQ	HNO3 pH<2	1 - 250 mL Poly	10 day	X		X																															
EB-050814	5/8/14 15:00	WQ	None	2 - 250 mL Amber	10 day							X			X																								
EB-050814	5/8/14 15:00	WQ	None	2 - 1 L Amber	10 day									X																									
EB-050814	5/8/14 15:00	WQ	None	1 - 250 mL Poly	10 day														X																				
EB-050814	5/8/14 15:00	WQ	HCl	2 - 1 L Amber	10 day																					X												For EFH, silica gel cleanup requi
EB-050814	5/8/14 15:00	WQ	HCl	3 - 40 mL Vial	10 day																				X													on 1/2 the extract. Analyze both
EB-050814	5/8/14 15:00	WQ	None	1 - 40 mL Vial	10 day												X																					extracts for EFH.

Special Instructions:

Sampler: Pa Hartman

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Stephanie Mykel	05/08/14	1600									
									1/ 91	5/9/14	0915

COC Rev 3

COC: 20140508-01, Page 1 of 1

SSFL Phase 3 Chain of Custody

CDM Smith A-13013
DateShipped: 5/8/2014 G-1473208
CarrierName: FedEx S-7457968-75
AirbillNo: 801785869961

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140508-02
Cooler #: 2
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
FDG-SL-511-SA5C-SB-0.0-0.5	5/8/14 09:40	SO	None	2 - SS-Sleeve	10 day	X	X					X		X	X		X																							
FDG-SL-511-SA5C-SB-0.0-0.5	5/8/14 09:40	SO	None	1 - 4 oz glass	10 day													X																						
FDG-SL-511-SA5C-SB-2.0-3.0	5/8/14 11:05	SO	None	1 - SS-Sleeve	10 day	X	X					X		X	X		X																							
FDG-SL-511-SA5C-SB-2.0-3.0	5/8/14 11:05	SO	None	1 - 4 oz glass	10 day													X																						
FDG-SL-511-SA5C-SB-2.0-3.0	5/8/14 11:05	SO	None	1 - 16 oz glass	10 day	X	X					X		X	X		X																							
FDG-SL-749-SA5C-SB-0.0-0.5MS	5/8/14 13:30	SO	None	6 - SS-Sleeve	10 day	X	X					X		X	X		X																							MS/MSD
FDG-SL-749-SA5C-SB-0.0-0.5MS	5/8/14 13:30	SO	None	1 - 8 oz glass	10 day													X																						MS/MSD
FDG-SL-1049-SA5C-SB-0.0-0.5	5/8/14 14:00	SO	None	2 - SS-Sleeve	10 day	X	X					X		X	X		X																							
FDG-SL-1049-SA5C-SB-0.0-0.5	5/8/14 14:00	SO	None	1 - 4 oz glass	10 day													X																						

Special Instructions:

Sampler: Whitney Treadway

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Steve Myers	05/08/14	1600									
									[signature]	5/9/14	0915

COC Rev 3

COC: 20140508-02, Page 1 of 1

Sample Delivery Group

PH174

13013/14738877/74612_-53 Revised COC NM 5/17/14

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/12/2014
CarrierName: FedEx
AirbillNo: 798830977226

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140512-02
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7470 (Water)	Mercury 7471 (Soil)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9040 (Water)	pH 9045 (Soil)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc. Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
TB-051214	5/12/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																		X																	
SVL-501-SA5B-SB-0.75-1.25	5/12/14 14:50	SO	None	3 - Encore	10 day																		X																	
SVL-501-SA5B-SB-0.75-1.25	5/12/14 14:50	SO	None	1 - 4 oz glass	10 day																		X																	Soil Moisture

Special Instructions:

Sampler: Rob Ellis

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
[signature]	5/12/2014	1600									

COC Rev 3

COC-20140512-02, Page 1 of 1

Sample Delivery Group

PH175

acct#1301 Cap# 1473878 Sample# 7461254-55

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/12/2014
CarrierName: FedEx
AirbillNo: 798830977226

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140512-01
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7470 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260 SIM	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate_Nitrite_TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
FDG-SL-748-SA5C-SB-0.0-0.5	5/12/14 08:32	SO	None	2 - SS-Sleeve	10 day	X	X					X		X	X		X																						
FDG-SL-748-SA5C-SB-0.0-0.5	5/12/14 08:32	SO	None	1 - 4 oz glass	10 day													X																						
FDG-SL-748-SA5C-SB-4.0-5.0	5/12/14 10:00	SO	None	2 - SS-Sleeve	10 day	X	X					X		X	X		X																						
FDG-SL-748-SA5C-SB-4.0-5.0	5/12/14 10:00	SO	None	1 - 4 oz glass	10 day													X																						

Special Instructions:

Sampler: Whitney Meadows

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Doug Mysel	05/12/2014	1600									
										5/13/14	0925

COC Rev 3

COC: 20140512-01, Page 1 of 1

Sample Delivery Group

PH176

A-13013 G-1474152 S-7462588-97

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/13/2014
CarrierName: FedEx
AirbillNo: 798848021746

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140513-01
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc. Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
TB1-051314	5/13/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																			X																
FDG-SL-756-SA5C-SB-15.0-16.0	5/13/14 09:20	SO	None	2 - 16 oz glass	10 day	X	X					X			X		X																							
FDG-SL-756-SA5C-SB-15.0-16.0	5/13/14 09:20	SO	None	1 - 4 oz glass	10 day													X																						
FDG-SL-836-SA5B-SB-15.0-16.0	5/13/14 11:00	SO	None	2 - 16 oz glass	10 day	X	X					X			X			X								X														For all EFH, silica gel
FDG-SL-836-SA5B-SB-15.0-16.0	5/13/14 11:00	SO	None	2 - Encore	10 day																			X																cleanup required on 1/2
FDG-SL-836-SA5B-SB-19.0-20.0	5/13/14 11:20	SO	None	2 - 16 oz glass	10 day	X	X					X			X			X								X														the extract. Analyze both
FDG-SL-836-SA5B-SB-19.0-20.0	5/13/14 11:20	SO	None	2 - Encore	10 day																			X																extracts for EFH.

Special Instructions:

Sampler: Whitney Treadway

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Jeff Mype	05/13/2014	1600									
										5.14.14	950

A-13013 G-147415Z S-746258-97

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/13/2014
CarrierName: FedEx
AirbillNo: 798848021746

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140513-03
Cooler #: 2
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate_Nitrite_TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
FB-051314	5/13/14 15:00	WQ	HNO3 pH<2	1-250 mL Poly	10 day	X		X																															For EFH, silica gel cleanup
FB-051314	5/13/14 15:00	WQ	None	2-250 mL Amber	10 day							X			X																								required on 1/2 the extract.
FB-051314	5/13/14 15:00	WQ	None	2-1 L Amber	10 day									X																									Analyze both extracts for EFH.
FB-051314	5/13/14 15:00	WQ	None	1-40 mL Vial	10 day												X																						
FB-051314	5/13/14 15:00	WQ	None	1-250 mL Poly	10 day														X																				
FB-051314	5/13/14 15:00	WQ	HCl	6-40 mL Vial	10 day																		X		X														
FB-051314	5/13/14 15:00	WQ	HCl	2-1 L Amber	10 day																					X													

Special Instructions:

Sampler: Pam Hartman

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Stephanie Lopez	5/13/2014	1600									
									Brian Bm	5.14.14	950

Sample Delivery Group

PH177

acct#130 Cap#1474671 Sample#7465088-101

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/14/2014
CarrierName: FedEx
AirbillNo: 798863489721

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140514-01
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
EB1-051414	5/14/14 15:00	WQ	HNO3 pH<2	1 - 250 mL Poly	10 day	X		X																																For all EFH, silica gel
EB1-051414	5/14/14 15:00	WQ	None	2 - 250 mL Amber	10 day							X			X																									cleanup required on 1/2
EB1-051414	5/14/14 15:00	WQ	None	2 - 1 L Amber	10 day									X																										the extract. Analyze both
EB1-051414	5/14/14 15:00	WQ	None	1 - 40 mL Vial	10 day												X																							extracts for EFH.
EB1-051414	5/14/14 15:00	WQ	None	1 - 250 mL Poly	10 day														X																					
EB1-051414	5/14/14 15:00	WQ	HCl	2 - 1 L Amber	10 day																					X														
EB2-051414	5/14/14 15:30	WQ	HNO3 pH<2	1 - 250 mL Poly	10 day	X		X																																
EB2-051414	5/14/14 15:30	WQ	None	2 - 250 mL Amber	10 day							X			X																									
EB2-051414	5/14/14 15:30	WQ	None	2 - 1 L Amber	10 day									X																										
EB2-051414	5/14/14 15:30	WQ	None	1 - 40 mL Vial	10 day												X																							
EB2-051414	5/14/14 15:30	WQ	None	1 - 250 mL Poly	10 day														X																					
EB2-051414	5/14/14 15:30	WQ	HCl	2 - 1 L Amber	10 day																					X														
EB2-051414	5/14/14 15:30	WQ	HCl	3 - 40 mL Vial	10 day																				X															

Special Instructions:

Sampler: Pa Hartman

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Shy J Mupel	05/14/14	1600									
									[signature]	5/15/14	1000

Final Data Gap

COC Rev 3

acct# 13013 Ap# 1474671 Sample# 74650885-101

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/14/2014
CarrierName: FedEx
AirbillNo: 798863489927

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140514-02
Cooler #: 2
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate_Nitrite_TKN	TOC SM 5310B	Grain Size ASTM 2488-08a	Other Analysis/Notes
TB1-051414	5/14/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																			X																
FDG-SL-841-SA5B-SB-0.0-0.5	5/14/14 09:00	SO	None	2 - SS-Sleeve	10 day	X	X					X		X	X										X																For all EFH, silica gel
FDG-SL-841-SA5B-SB-0.0-0.5	5/14/14 09:00	SO	None	1 - 4 oz glass	10 day													X																					cleanup required on 1/2
FDG-SL-841-SA5B-SB-4.0-5.0	5/14/14 09:25	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X								X														the extract. Analyze both
FDG-SL-841-SA5B-SB-4.0-5.0	5/14/14 09:25	SO	None	2 - Encore	10 day																			X																extracts for EFH.
FDG-SL-841-SA5B-SB-9.0-10.0	5/14/14 09:35	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X								X														
FDG-SL-841-SA5B-SB-9.0-10.0	5/14/14 09:35	SO	None	2 - Encore	10 day																			X																
FDG-SL-757-SA5C-SB-0.0-0.5	5/14/14 11:35	SO	None	2 - SS-Sleeve	10 day	X	X					X		X	X		X																							
FDG-SL-757-SA5C-SB-0.0-0.5	5/14/14 11:35	SO	None	1 - 4 oz glass	10 day													X																					
FDG-SL-757-SA5C-SB-4.0-5.0	5/14/14 11:50	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X		X	X																					
FDG-SL-757-SA5C-SB-8.0-9.0	5/14/14 12:00	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X		X	X																					
FDG-SL-842-SA5B-SB-0.0-0.5	5/14/14 13:55	SO	None	2 - SS-Sleeve	10 day	X	X					X		X	X											X														
FDG-SL-842-SA5B-SB-0.0-0.5	5/14/14 13:55	SO	None	1 - 4 oz glass	10 day													X																					
FDG-SL-842-SA5B-SB-4.0-5.0	5/14/14 14:25	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X								X														
FDG-SL-842-SA5B-SB-4.0-5.0	5/14/14 14:25	SO	None	2 - Encore	10 day																			X																

Special Instructions:

Sampler: Whitney Treadway

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Stephanie Myers	5/14/14	1600									
										5/15/14	1030

COC Rev 3

Final Data Gap

Sample Delivery Group

PH178

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/15/2014
CarrierName: FedEx
AirbillNo: 798876647098

A-13013
G-1474888
S-7466271-75

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140515-03
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9040 (Water)	pH 9045 (Soil)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
TB-051514	5/15/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																		X																	
SVL-534-SA5B-SB-3.0-3.5	5/15/14 08:10	SO	None	3 - Encore	10 day																		X																	
SVL-534-SA5B-SB-3.0-3.5	5/15/14 08:10	SO	None	1 - 4 oz glass	10 day																		X																	Soil Moisture
SVL-538-SA5B-SB-1.5-2.0	5/15/14 08:45	SO	None	3 - Encore	10 day																		X																	
SVL-538-SA5B-SB-1.5-2.0	5/15/14 08:45	SO	None	1 - 4 oz glass	10 day																		X																	Soil Moisture
SVL-566-SA5B-SB-2.0-2.5	5/15/14 14:58	SO	None	3 - Encore	10 day																		X																	
SVL-566-SA5B-SB-2.0-2.5	5/15/14 14:58	SO	None	1 - 4 oz glass	10 day																		X																	Soil Moisture

Special Instructions:

Sampler: Rob Ellis

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
[signature]	5/15/14	1600									
										5/16/14	1010

COC Rev 3

COC 20140515 03, Page 1 of 1

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/15/2014
CarrierName: FedEx
AirbillNo: 798876647098

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140515-06
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

A-13013
G-1474888
S-746627I-75

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9040 (Water)	pH 9045 (Soil)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terpenvls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate_Nitrite_TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
EB2-051514	5/15/14 09:05	WQ	HCl	3 - 40 mL Vial	10 day																		X																	

Special Instructions:

Sampler: Rob Ellis

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
[illegible]	5/15/14	1600									
									[illegible]	5/16/14	1010

CDC Rev 3

COC: 20140515-06, Page 1 of 1

Sample Delivery Group

PH180

SSFL Phase 3 Chain of Custody

A-13013 G-~~1474152~~ 1475001 S-~~7462588-97~~ 7466838-42 CMC 5/15/14 (3)

CDM Smith

DateShipped: 5/13/2014
CarrierName: FedEx
AirbillNo: 798848021746

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140513-02
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
TB2-051314	5/13/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																		X																	
SVL-536-SA5B-SB-4.0-5.0MS	5/13/14 08:40	SO	None	9 - Encore	10 day																		X																	ms/msd
SVL-536-SA5B-SB-4.0-5.0MS	5/13/14 08:40	SO	None	1 - 8 oz glass	10 day																		X																	Soil Moisture, MS/MSD
SVL-836-SA5B-SB-4.0-5.0	5/13/14 08:45	SO	None	3 - Encore	10 day																		X																	
SVL-836-SA5B-SB-4.0-5.0	5/13/14 08:45	SO	None	1 - 4 oz glass	10 day																		X																	Soil Moisture

Special Instructions:

Sampler: Rob Ellis

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Steve Myers	05/13/2014	1600									
									Bruce Bu	5.14.14	950

COC Rev 3

COC: 20140513-02, Page 1 of 1

13013/1475001/7460838-42

Revised COC
NM 5/17/14

SSFL Phase 3 Chain of Custody

CDM Smith
DateShipped: 5/13/2014
CarrierName: FedEx
AirbillNo: 798848021746

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140513-02
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9040 (Water)	pH 9045 (Soil)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-ERH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc. Nitrate_Nitrite_TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
TB2-051314	5/13/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																		X																	
SVL-532-SA5B-SB-4.0-5.0MS	5/13/14 08:40	SO	None	9 - Encore	10 day																		X																	
SVL-532-SA5B-SB-4.0-5.0MS	5/13/14 08:40	SO	None	1 - 8 oz glass	10 day																		X																	MS/MSD
SVL-832-SA5B-SB-4.0-5.0	5/13/14 08:45	SO	None	3 - Encore	10 day																		X																	Soil Moisture. MS/MSD
SVL-832-SA5B-SB-4.0-5.0	5/13/14 08:45	SO	None	1 - 4 oz glass	10 day																		X																	Soil Moisture

Special Instructions:

Sampler: Rob Ellis

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Steph Myers	5/13/2014	1600									

COC Rev 3

Sample Delivery Group

PH181

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/16/2014
CarrierName: FedEx
AirbillNo: 770009222264

A-13013
G-1475119
S-7467784

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140516-01
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate Confirm 6850/6860	Perchlorate 314.0/331	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
TB-051614	5/16/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																		X																		
SVL-504-SA8-SB-2.0-2.5	5/16/14 10:00	SO	None	3 - Encore	10 day																		X																		
SVL-504-SA8-SB-2.0-2.5	5/16/14 10:00	SO	None	1 - 4 oz glass	10 day																		X																		Soil Moisture
SVL-519-SA8-SB-7.5-8.0	5/16/14 11:40	SO	None	3 - Encore	10 day																		X																		HOLD AFTER EXTRACTION.
SVL-519-SA8-SB-7.5-8.0	5/16/14 11:40	SO	None	1 - 4 oz glass	10 day																		X																		Soil Moisture.

Special Instructions:

Sampler: Rob Ellis

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
[signature]	05/16/14	1300									
									[signature]	5/17/14	0915

COC Rev 3

COC: 20140516-01, Page 1 of 1

Sample Delivery Group

PH182

acct# 13[illegible]3 Cp# ~~1474671~~ 1475281 Sample# ~~7465088-101~~ 468635-37

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/14/2014

CarrierName: FedEx

AirbillNo: 798863489721

ame (3) 5/19/14

Contact Name: Pam Hartman

Contact Phone: (818)466-8007

COC No: 20140514-03

Cooler #: 2

Lab: Lancaster

Lab Phone: 717-556-7259

Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
SVL-521-SA5B-SB-3.0-3.5	5/14/14 09:20	SO	None	3 - Encore	10 day																		X																	
SVL-521-SA5B-SB-3.0-3.5	5/14/14 09:20	SO	None	1 - 4 oz glass	10 day																		X																	Soil Moisture
TB2-051414	5/14/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																		X																	
SVL-543-SA5B-SB-2.0-2.5	5/14/14 13:50	SO	None	3 - Encore	10 day																		X																	
SVL-543-SA5B-SB-2.0-2.5	5/14/14 13:50	SO	None	1 - 4 oz glass	10 day																		X																	Soil Moisture

Special Instructions:

Sampler: Rob Ellis

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Steve Myers	05/14/14	1600									
									[signature]	5/15/14	1000

Soil Vapor

COC Rev 3

COC: 20140514-03, Page 1 of 1

1 of 1

Sample Delivery Group

PH183

Analysis Request/ Environmental Services Chain of Custody

Lancaster Laboratories

For Lancaster Laboratories use only

Acct. # 13013 Group# 147580 Sample # 747016O-66 **COC #** 213661

Please print. Instructions on reverse side correspond with circled numbers.

(1) Client: CDM Smith Acct. #:

Project Name/#: SSFL PWSID #:

Project Manager: John Wondolleck P.O.#:

Sampler: Van Vathanasiam Quote #:

Name of state where samples were collected: CA

For Lab Use Only
FSC:
SCR#:

(2) Sample Identification	Date Collected	Time Collected	(3) Grab	Composite	Matrix: Soil	Water	Other	(4) Total # of Containers	(5) Analyses Requested / Preservation Codes: VOCs 8260	Soil Moisture		Put on hold after extraction							(6) Temperature of samples upon receipt (if required)	Remarks
SVL-517-SA8-SB-5.0-6.0	05/19/14	09:00	X		X		4	3	X	X		X								
SVL-517-SA8-SB-10.0-11.0	05/19/14	09:05	X		X		4	3	X	X		X								
SVL-517-SA8-SB-15.5-16.5	05/19/14	09:10	X		X		4	3	X	X		X								
SVL-524-SA8-SB-4.5-5.5	05/19/14	12:20	X		X			4	X	X		X								
SVL-528-SA8-SB-5.0-6.0	05/19/14	14:46	X		X			4	X	X		X								
SVL-528-SA8-SB-11.0-12.0	05/19/14	14:50	X		X			4	X	X		X								
TBI-051914	05/19/14	09:00				X		3	X											

(7) **Turnaround Time Requested** (TAT) (please circle): (Normal) Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: 10 day
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

(8) **Data Package Options** (please circle if required)
Type I (validation/NJ Reg) TX TRRP-13
Type II (Tier II) MA MCP CT RCP
Type III (Reduced NJ)
Type IV (CLP SOW)
Type VI (Raw Data Only)

SDG Complete? Yes (No)

Site-specific QC (MS/MSD/Dup)? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal COC Required? Yes / No

Relinquished by:	Date	Time	Received by:	Date	Time
Stephen Mysel	05/19/14	1600			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	5-20-14	945

(9)

Sample Delivery Group

PH185

Analysis Request/Environmental Services Chain of Custody

Lancaster Laboratories

For Lancaster Laboratories use only
Acct. # 13013 Group# 1475629 Sample # 7470312-21

COC # 213662

Please print. Instructions on reverse side correspond with circled numbers.

(1) Client: ComSmith Acct. #:
Project Name/#: SSFL PWSID #:
Project Manager: John Wondolleck P.O.#:
Sampler: Quote #:
Name of state where samples were collected: CA

(2) Sample Identification	Date Collected	Time Collected	(3) Grab	Composite	(4) Matrix: Soil	Water	Other	Total # of Containers	(5) Analyses Requested / Preservation Codes: METALS + Hg EPA 6010, 6020, 7471	PAH 8270 SIM	DIOXINS 1613	PCBs/RTs 8082	pH 9045	TPH-GRO 9015	TPH-EFH 8015			Remarks	(6) Temperature of samples upon receipt (if requested)
SL-534-SA8-TR-0.5	05/19/14	09:10	X		X			2	X	X	X	X	X		X				
SL-534-SA8-TR-5.0	05/19/14	09:40	X		X			4	X	X	X	X	X	X	X				
SL-548-SA8-TR-0.5	05/19/14	1337	X		X			2	X	X	X	X	X		X				
SL-848-SA8-TR-5.0	05/19/14	1322	X		X			4	X	X	X	X	X	X	X				
SL-548-SA8-TR-5.0MS	05/19/14	1317	X		X			10	X	X	X	X	X	X	X			MS/MSD	
SL-548-SA8-TR-10.0	05/19/14	1309	X		X			4	X	X	X	X	X	X	X				
TB2-051914	05/19/14	0800				X		3						X					

For Lab Use Only
FSC:
SCR#:

Preservation Codes
H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 O=Other

(7) **Turnaround Time Requested** (TAT) (please circle): (Normal) Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: 10 day
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

(8) **Data Package Options** (please circle if required)
Type I (validation/NJ Reg)
Type II (Tier II)
Type III (Reduced NJ)
Type IV (CLP SOW)
Type VI (Raw Data Only)
TX TRRP-13
MA MCP CT RCP
SDG Complete? Yes (No)
Site-specific QC (MS/MSD/Dup)? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal COC Required? Yes / No

(9)

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	05/19/14	1600			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: [signature]	5/20/14	945

Lancaster Laboratories, Inc., 2425 New Holland Pike, Lancaster, PA 17601 (717) 656-2300 Fax: (717) 656-6766
Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client.

Airbill #: 7700 2994 1000

cooler 2 Trenching 1 of 1 ~~2 of 2~~ SMS 5/21

2102.03

Sample Delivery Group

PH186

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/20/2014 A-13013

CarrierName: FedEx G-1475898

AirbillNo: 770044397602 S-7471511-15

Contact Name: Pam Hartman

Contact Phone: (818)466-8007

COC No: 20140520-08

Cooler #: .1

Lab: Lancaster

Lab Phone: 717-556-7259

Lab Address 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
TB2-052014	5/20/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																		X																	
SVL-525-SA5C-SB-10.0-11.0	5/20/14 11:49	SO	None	3 - Encore	10 day																		X																	
SVL-525-SA5C-SB-10.0-11.0	5/20/14 11:49	SO	None	1 - 4 oz glass	10 day																		X																	Soil Moisture
SVL-525-SA5C-SB-15.0-16.0	5/20/14 11:54	SO	None	3 - Encore	10 day																		X																	
SVL-525-SA5C-SB-15.0-16.0	5/20/14 11:54	SO	None	1 - 4 oz glass	10 day																		X																	Soil Moisture
SVL-531-SA5C-SB-2.5-2.9	5/20/14 14:05	SO	None	3 - Encore	10 day																		X																	
SVL-531-SA5C-SB-2.5-2.9	5/20/14 14:05	SO	None	1 - 4 oz glass	10 day																		X																	Soil Moisture
SVL-525-SA5C-SB-5.0-6.0	5/20/14 11:44	SO	None	3 - Encore	10 day																		X																	
SVL-525-SA5C-SB-5.0-6.0	5/20/14 11:44	SO	None	1 - 4 oz glass	10 day																		X																	Soil Moisture

Special Instructions:

Sampler: Van Vatterson

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Stephen Myers	05/20/14	1600									
									[illegible]	5.21.14	950

COC Rev 3

Sample Delivery Group

PH188

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/20/2014

CarrierName: FedEx

AirbillNo: 7700 4439 7602

Contact Name: Pam Hartman

Contact Phone: (818)466-8007

A-13013 G-1475897 S-7471503-10

COC No: 20140520-07

Cooler #: 1

Lab: Lancaster

Lab Phone: 717-556-7259

Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
TB1-052014	5/20/14 08:00	WQ	HCl	6 - 40 mL Vial	10 day																		X		X															
FDG2-SL-874-SA5A-SB-0.0-0.5	5/20/14 08:20	SO	None	2 - SS-Sleeve	10 day	X	X					X		X	X			X					SMS 2014			X														
FDG2-SL-874-SA5A-SB-4.0-5.0MS	5/20/14 09:15	SO	None	6 - 16 oz glass	10 day	X	X					X		X	X			X								X														MSMSD
FDG2-SL-874-SA5A-SB-4.0-5.0MS	5/20/14 09:15	SO	None	6 - Encore	10 day																				X															MSMSD
FDG2-SL-1174-SA5A-SB-4.0-5.0	5/20/14 09:25	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X								X														For all EFH, silica gel
FDG2-SL-1174-SA5A-SB-4.0-5.0	5/20/14 09:25	SO	None	2 - Encore	10 day																				X															clean up required on half
FDG2-SL-874-SA5A-SB-12.0-13.0	5/20/14 10:15	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X								X														the extract. Analyze both
FDG2-SL-874-SA5A-SB-12.0-13.0	5/20/14 10:15	SO	None	2 - Encore	10 day																				X															extracts for EFH.

Special Instructions:

Sampler: Randy Roberts

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
										5.21.14	950

COC Rev 3

Sample Delivery Group

PH189

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/20/2014
CarrierName: FedEx
AirbillNo: 770044397602

A-13013
G-1475905
S-7471531-39

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140520-09
Cooler #: 2
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
TB3-052014	5/20/14 08:00	WQ	HCl	6 - 40 mL Vial	0																		X		X															For all EFH, silica gel
SL-611-SA8-TR-0.5	5/20/14 09:10	SO	None	2 - 16 oz glass	0	X	X					X		X	X			X								X														clean up required on half
SL-611-SA8-TR-5.0	5/20/14 09:15	SO	None	2 - 16 oz glass	0	X	X					X		X	X			X								X														the extract. Analyze both
SL-611-SA8-TR-5.0	5/20/14 09:15	SO	None	2 - Encore	0																				X															extracts for EFH.
SL-611-SA8-TR-10.5	5/20/14 09:20	SO	None	2 - 16 oz glass	0	X	X					X		X	X			X								X														
SL-611-SA8-TR-10.5	5/20/14 09:20	SO	None	2 - Encore	0																				X															
SL-570-SA6-TR-6.0	5/20/14 13:43	SO	None	2 - 16 oz glass	0	X	X					X		X	X			X								X														
SL-570-SA6-TR-6.0	5/20/14 13:43	SO	None	2 - Encore	0																				X															
SL-570-SA6-TR-2.0	5/20/14 13:00	SO	None	2 - 16 oz glass	0	X	X					X		X	X			X								X														
SL-570-SA6-TR-2.0	5/20/14 13:00	SO	None	2 - Encore	0																				X															
SL-570-SA6-TR-0.5	5/20/14 12:10	SO	None	2 - 16 oz glass	0	X	X					X		X	X			X								X														
SL-569-SA6-TR-2.5	5/20/14 11:15	SO	None	2 - 16 oz glass	0	X	X					X		X	X			X								X														
SL-569-SA6-TR-2.5	5/20/14 11:15	SO	None	2 - Encore	0																				X															
SL-569-SA6-TR-0.5	5/20/14 10:58	SO	None	2 - 16 oz glass	0	X	X					X		X	X			X								X														

Special Instructions:

Sampler: Ben Cisneros

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Steve Mapel	5/20/2014	1600									

5-21-14 950

COC Rev 3

Sample Delivery Group

PH190

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/21/2014
CarrierName: FedEx
AirbillNo: 770058142099

A-13013
G-1476367
S-1473394-97

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140521-02
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terpenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
TB2-052114	5/21/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																		X																	
SVL-512-SA5D-SB-5.0-6.0	5/21/14 13:40	SO	None	3 - Encore	10 day																		X																	soil moisture
SVL-512-SA5D-SB-5.0-6.0	5/21/14 13:40	SO	None	1 - 4 oz glass	10 day																		X																	
SVL-515-SA5D-SB-5.0-6.0	5/21/14 15:10	SO	None	3 - Encore	10 day																		X																	soil moisture
SVL-515-SA5D-SB-5.0-6.0	5/21/14 15:10	SO	None	1 - 4 oz glass	10 day																		X																	

Special Instructions:

Sampler: Van Vathanaxay

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
	05/21/2014	1600									
										5/22/14	0925

SOIL VAPOR

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/21/2014
CarrierName: FedEx
AirbillNo: 770058142099

A-13013
G-1476367
S-747394-97

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140521-04
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate_Nitrite_TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
EB-052114	5/21/14 14:10	WQ	HCl	3 - 40 mL Vial	10 day																		X																		

Special Instructions:

Sampler: Van Vathanaxin

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
	05/21/2014	16:00									
										5/22/14	0923

SOIL VAPOR

Sample Delivery Group

PH191

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/21/2014
CarrierName: FedEx
AirbillNo: 770058142099

A-13013
G-1476280
S-7472961

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140521-06
Cooler #: 4
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
FB-052114	5/21/14 14:00	WQ	HNO3 pH<2	1 - 250 mL Poly	10 day	X		X																															
FB-052114	5/21/14 14:00	WQ	None	6 - 250 mL Amber	10 day					X	X	X			X						X																		
FB-052114	5/21/14 14:00	WQ	HCl	9 - 40 mL Vial	10 day																	X	X	X								X						
FB-052114	5/21/14 14:00	WQ	None	7 - 40 mL Vial	10 day												X								X			X										
FB-052114	5/21/14 14:00	WQ	None	3 - 250 mL Poly	10 day														X	X									X							X		
FB-052114	5/21/14 14:00	WQ	HCl	1 - 1 L Amber	10 day																								X									
FB-052114	5/21/14 14:00	WQ	H2SO4 pH<2	2 - 250 mL Poly	10 day																									X								
FB-052114	5/21/14 14:00	WQ	H3PO4 pH<2	2 - 40 mL Vial	10 day																																X	X	

SVOCs = biphenyls only. TIC = morpholine only. Nitrates = anions = Cl2, SO4, NO3, NO2, Br2, Ortho-PO4, Fluoride, Phophate

Special Instructions:

Sampler: Pam Hartman

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
	05/21/2014	16:00									
										5/22/14	0925

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/21/2014
CarrierName: FedEx
AirbillNo: 770058142099

A-13013
G-1476280
S-747296 1

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140521-05
Cooler #: 3
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7470 (Water)	Mercury 7471 (Soil)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
FB-052114	5/21/14 14:00	WQ	None	6 - 1 L Amber	10 day									X							X										X									
FB-052114	5/21/14 14:00	WQ	HCl	2 - 1 L Amber	10 day																				X														

Special Instructions: For all EFH, silica gel clean up required on half the extract. Analyze both the extracts for EFH.

Sampler: Pam Hartman

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
	05/21/2014	16:00									
										5/22/14	0925

Sample Delivery Group

PH192

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/21/2014
CarrierName: FedEx
AirbillNo: 770058142099

A-13013
G-1476374
S-7473410-13

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140521-03
Cooler #: 2
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7470 (Water)	Mercury 7471 (Soil)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc. Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
TB3-052114	5/21/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																			X																
SL-686-SA6-TR-0.5	5/21/14 08:02	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X								X														For all EFH, silica gel clean up
SL-686-SA6-TR-5.0	5/21/14 08:20	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X								X														required on half the extracts.
SL-686-SA6-TR-5.0	5/21/14 08:20	SO	None	2 - Encore	10 day																				X															Analyze both extracts for EFH.
SL-686-SA6-TR-11.0	5/21/14 10:58	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X								X														
SL-686-SA6-TR-11.0	5/21/14 10:58	SO	None	2 - Encore	10 day																				X															

Special Instructions:

Sampler: Ben Cisneros

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
[signature]	05/21/2014	16:00									
									[signature]	5/22/14	0925

TRENCHING

Sample Delivery Group

PH193

SSFL Phase 3 Chain of Custody

A-13013
G-1476433
S-7473685-700

CDM Smith
DateShipped: 5/21/2014
CarrierName: FedEx
AirbillNo: 770058142099

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140521-01
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
TB1-052114	5/21/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																			X																	
FDG2-SL-585-SA5D-SB-0.0-0.5M	5/21/14 09:06	SO	None	6 - SS-Sleeve	10 day	X	X					X		X	X							X			X							X									For all EFH, silica gel
FDG2-SL-585-SA5D-SB-0.0-0.5M	5/21/14 09:06	SO	None	3 - 4 oz glass	10 day													X																					clean up required on one half
FDG2-SL-885-SA5D-SB-0.0-0.5	5/21/14 09:16	SO	None	2 - SS-Sleeve	10 day	X	X					X		X	X							X			X							X									the extract. Analyze both
FDG2-SL-885-SA5D-SB-0.0-0.5	5/21/14 09:16	SO	None	1 - 4 oz glass	10 day													X																					extracts for EFH.
FDG2-SL-585-SA5D-SB-4.0-5.0	5/21/14 09:21	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X				X			X							X									
FDG2-SL-584-SA5D-SB-0.0-0.5	5/21/14 07:52	SO	None	2 - SS-Sleeve	10 day	X	X					X		X	X							X			X							X									
FDG2-SL-584-SA5D-SB-0.0-0.5	5/21/14 07:52	SO	None	1 - 4 oz glass	10 day													X																					
FDG2-SL-584-SA5D-SB-4.0-5.0	5/21/14 08:10	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X				X			X							X									
FDG2-SL-586-SA5D-SB-0.0-0.5	5/21/14 10:25	SO	None	2 - SS-Sleeve	10 day	X	X					X		X	X							X			X							X									
FDG2-SL-586-SA5D-SB-0.0-0.5	5/21/14 10:25	SO	None	1 - 4 oz glass	10 day													X																					
FDG2-SL-586-SA5D-SB-2.0-3.0	5/21/14 10:32	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X				X			X							X									
FDG2-SL-586-SA5D-SB-2.0-3.0	5/21/14 10:32	SO	None	2 - Encore	10 day																			X																
FDG2-SL-584-SA5D-SB-4.0-5.0	5/21/14 08:10	SO	None	2 - Encore	10 day																			X																
FDG2-SL-585-SA5D-SB-4.0-5.0	5/21/14 09:21	SO	None	2 - Encore	10 day																			X																
FDG2-SL-623-SA8-SB-4.0-5.0	5/21/14 13:21	SO	None	2 - Encore	10 day																			X																
FDG2-SL-623-SA8-SB-9.0-10.0	5/21/14 13:41	SO	None	2 - Encore	10 day																			X																
FDG2-SL-623-SA8-SB-14.0-15.0	5/21/14 13:56	SO	None	2 - Encore	10 day																			X																
FDG2-SL-623-SA8-SB-19.0-20.0	5/21/14 14:14	SO	None	2 - Encore	10 day																			X																
FDG2-SL-623-SA8-SB-0.0-0.5	5/21/14 13:14	SO	None	1 - SS-Sleeve	10 day																					X														

FINAL DATA GAP BLOCK 2

Received by [signature] 5/22/14 0925

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/21/2014
CarrierName: FedEx
AirbillNo: 770058142099

A-13013
G-1476433
S-7473685-700

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140521-01
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9040 (Water)	pH 9045 (Soil)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc. Nitrate - Nitrite - TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes

Special Instructions:

Sampler: Randall Roberson

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
[signature]	05/21/2014	1600									
									[signature] [signature]	5/22/14	0925

FINAL DATA GAP BLOCK 2

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/21/2014
CarrierName: FedEx
AirbillNo: 770058142099

A-13013
G-1476433
S-7473685-700

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140521-08
Cooler #: 2
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc. Nitrate, Nitrite, TKN	TOC SM 6310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
FDG2-SL-623-SA8-SB-4.0-5.0	5/21/14 13:21	SO	None	1 - 16 oz glass	10 day																					X														For all EFH, silica gel clean up
FDG2-SL-623-SA8-SB-9.0-10.0	5/21/14 13:41	SO	None	2 - 16 oz glass	10 day	X	X					X			X			X								X														required on half the extract.
FDG2-SL-623-SA8-SB-14.0-15.0	5/21/14 13:56	SO	None	2 - 16 oz glass	10 day	X	X					X			X			X								X														Analyze all the extract for EFH.
FDG2-SL-623-SA8-SB-19.0-20.0	5/21/14 14:14	SO	None	2 - 16 oz glass	10 day	X	X					X			X			X								X														

Special Instructions:

Sampler: Randy Roberts

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Steve Myers	05/21/2014	1600									
									[signature]	5/22/14	0925

Final data gap block 2

COC Rev 3

Sample Delivery Group

PH194

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/22/2014
CarrierName: FedEx
AirbillNo: 770073250078

A-13013
G-1476755
S-7475236-40

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140522-03
Cooler #: 2
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
TB2-052214	5/22/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																		X																	
SVL-511-SA5D-SB-4.5-5.5MS	5/22/14 08:30	SO	None	9 - Encore	10 day																		X																	
SVL-511-SA5D-SB-4.5-5.5MS	5/22/14 08:30	SO	None	1 - 8 oz glass	10 day																		X																	Soil Moisture
SVL-811-SA5D-SB-4.5-5.5	5/22/14 08:35	SO	None	3 - Encore	10 day																		X																	
SVL-811-SA5D-SB-4.5-5.5	5/22/14 08:35	SO	None	1 - 4 oz glass	10 day																		X																	Soil Moisture

Special Instructions:

Sampler: Va Vathanasen

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
[signature]	5/22/14	1600									
									Brandy [signature]	5.23.14	950

Soil Vapor

COC Rev 3

1 of 1

Sample Delivery Group

PH195

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/22/2014
CarrierName: FedEx
AirbillNo: 770073250078

A-13013
G-1476783
S-74755533-42

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140522-04
Cooler #: 3
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
TB3-052214	5/22/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																			X																
SL-730-SA5A-TR-0.5	5/22/14 09:56	SO	None	2 - 16 oz glass	10 day	X		X				X		X	X			X								X														
SL-730-SA5A-TR-6.0	5/22/14 10:09	SO	None	2 - 16 oz glass	10 day	X		X				X		X	X			X								X														
SL-730-SA5A-TR-6.0	5/22/14 10:09	SO	None	2 - Encore	10 day																			X																
SL-587-SA5A-TR-0.5	5/22/14 12:14	SO	None	2 - 16 oz glass	10 day	X		X				X		X	X			X								X														
SL-587-SA5A-TR-5.5MS	5/22/14 13:03	SO	None	6 - 16 oz glass	10 day	X		X				X		X	X			X								X														MS/MSD
SL-587-SA5A-TR-5.5MS	5/22/14 13:03	SO	None	6 - Encore	10 day																			X															MS/MSD
SL-887-SA5A-TR-5.5	5/22/14 13:08	SO	None	2 - Encore	10 day																			X															
SL-887-SA5A-TR-5.5	5/22/14 13:08	SO	None	2 - 16 oz glass	10 day	X		X				X		X	X			X								X														

Special Instructions: For all EFH, silica gel clean up required on half the extract. Analyze both extracts for EFH.

Sampler: Rob Ellen

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Greg Murphy	5/23/14	1600									
										5/23/14	950

Trenching

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/22/2014
CarrierName: FedEx
AirbillNo: 770073250078

4-13013
6-1476783
S-7475533-42

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140522-05
Cooler #: 4
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate_Nitrite_TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
EB3-052214	5/22/14 15:45	WQ	HNO3 pH<2	1 - 250 mL Poly	10 day	X		X																															
EB3-052214	5/22/14 15:45	WQ	None	1 - 250 mL Amber	10 day							X																											
EB3-052214	5/22/14 15:45	WQ	None	2 - 1 L Amber	10 day									X																								
EB3-052214	5/22/14 15:45	WQ	None	1 - 250 mL Amber	10 day										X																							
EB3-052214	5/22/14 15:45	WQ	None	1 - 250 mL Poly	10 day														X																		
EB3-052214	5/22/14 15:45	WQ	HCl	3 - 40 mL Vial	10 day																			X													
EB3-052214	5/22/14 15:45	WQ	HCl	2 - 1 L Amber	10 day																				X												
EB3-052214	5/22/14 15:45	WQ	None	1 - 250 mL Amber	10 day						X																											Morpholine Only
EB3-052214	5/22/14 15:45	WQ	HCl	3 - 40 mL Vial	10 day																		X														

Special Instructions: For all EFH, silica gel clean up required on half the extract. Analyze both extracts for EFH.

Sampler: Rob Ellen

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
[illegible]	5/22/14	1600									
										5.23.14	450

Trenching

Sample Delivery Group

PH196

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/22/2014
CarrierName: FedEx
AirbillNo: 770073250078

A-13013
G-1476822
S-1475817-28

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140522-01
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terpenvls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc. Nitrate - Nitrite - TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
EB1-052214	5/22/14 15:00	WQ	HNO3 pH<2	1 - 250 mL Poly	10 day	X		X																															
EB2-052214	5/22/14 15:30	WQ	HNO3 pH<2	1 - 250 mL Poly	10 day	X		X																															
EB1-052214	5/22/14 15:00	WQ	None	1 - 250 mL Amber	10 day							X																											
EB1-052214	5/22/14 15:00	WQ	None	1 - 250 mL Amber	10 day										X																								
EB1-052214	5/22/14 15:00	WQ	None	1 - 250 mL Poly	10 day														X																				
EB1-052214	5/22/14 15:00	WQ	HCl	3 - 40 mL Vial	10 day																	X																
EB1-052214	5/22/14 15:00	WQ	HCl	3 - 40 mL Vial	10 day																			X														
EB1-052214	5/22/14 15:00	WQ	HCl	2 - 1 L Amber	10 day																				X													
EB2-052214	5/22/14 15:30	WQ	None	1 - 250 mL Amber	10 day							X																										
EB2-052214	5/22/14 15:30	WQ	None	2 - 1 L Amber	10 day									X																								
EB2-052214	5/22/14 15:30	WQ	None	1 - 250 mL Amber	10 day										X																							
EB2-052214	5/22/14 15:30	WQ	None	1 - 250 mL Poly	10 day														X																			
EB2-052214	5/22/14 15:30	WQ	None	1 - 250 mL Amber	10 day																	X																
EB2-052214	5/22/14 15:30	WQ	HCl	3 - 40 mL Vial	10 day																				X													
EB2-052214	5/22/14 15:30	WQ	HCl	2 - 1 L Amber	10 day																					X												
EB2-052214	5/22/14 15:30	WQ	None	1 - 250 mL Amber	10 day																											X						

For all EFH, silica gel clean up required on half the extract. Analyze both extracts for EFH.

Special Instructions:

Sampler: Ron Hart

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Stacy Mypel	5/22/14	16000									
										5/24/14	0930

COC Rev 3

Final Data Gap Block 2

1 of 2

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/22/2014 A-13013

CarrierName: FedEx G-1476822

AirbillNo: 7700 7325 0078 S-7475817-28

Contact Name: Pam Hartman

Contact Phone: (818)466-8007

COC No: 20140522-02

Cooler #: 2

Lab: Lancaster

Lab Phone: 717-556-7259

Lab Address: 2425 New Holland Pike Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate_Nitrite_TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
TB1-052214	5/22/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																			X																
FDG2-SL-628-SA8-SB-0.0-0.5	5/22/14 08:20	SO	None	1 - SS-Sleeve	10 day																				X															
FDG2-SL-628-SA8-SB-4.0-5.0	5/22/14 08:30	SO	None	1 - SS-Sleeve	10 day																				X															
FDG2-SL-628-SA8-SB-4.0-5.0	5/22/14 08:30	SO	None	2 - Encore	10 day																			X															
FDG2-SL-628-SA8-SB-9.0-10.0	5/22/14 08:52	SO	None	2 - Encore	10 day																			X															
FDG2-SL-628-SA8-SB-9.0-10.0	5/22/14 08:52	SO	None	2 - SS-Sleeve	10 day	X	X					X			X											X														
FDG2-SL-628-SA8-SB-14.0-15.0	5/22/14 09:20	SO	None	1 - SS-Sleeve	10 day	X	X					X			X											X														
FDG2-SL-628-SA8-SB-14.0-15.0	5/22/14 09:20	SO	None	1 - 16 oz glass	10 day	X	X					X			X			X								X														
FDG2-SL-628-SA8-SB-9.0-10.0	5/22/14 08:52	SO	None	1 - 4 oz glass	10 day													X																					
FDG2-SL-628-SA8-SB-14.0-15.0	5/22/14 09:20	SO	None	2 - Encore	10 day																			X															
FDG2-SL-578-NBZ-SB-0.0-0.5	5/22/14 11:26	SO	None	1 - 4 oz glass	10 day													X																					
FDG2-SL-578-NBZ-SB-0.0-0.5	5/22/14 11:26	SO	None	2 - SS-Sleeve	10 day	X	X					X			X											X														
FDG2-SL-581-NBZ-SB-0.0-0.5	5/22/14 13:10	SO	None	1 - 4 oz glass	10 day													X																					
FDG2-SL-581-NBZ-SB-0.0-0.5	5/22/14 13:10	SO	None	1 - SS-Sleeve	10 day	X	X																			X														
FDG2-SL-581-NBZ-SB-4.0-5.0	5/22/14 13:20	SO	None	2 - 16 oz glass	10 day	X	X											X								X														
FDG2-SL-581-NBZ-SB-4.0-5.0	5/22/14 13:20	SO	None	2 - Encore	10 day																			X															
FDG2-SL-581-NBZ-SB-9.0-10.0	5/22/14 13:30	SO	None	2 - Encore	10 day																			X															
FDG2-SL-581-NBZ-SB-9.0-10.0	5/22/14 13:30	SO	None	2 - 16 oz glass	10 day	X	X					X			X			X								X														
FDG2-SL-581-NBZ-SB-13.0-14.0	5/22/14 13:41	SO	None	2 - 16 oz glass	10 day	X	X					X			X			X								X														
FDG2-SL-581-NBZ-SB-13.0-14.0	5/22/14 13:41	SO	None	2 - Encore	10 day																			X															

FINAL DATA GAP BLOCK 2

Page 63 Received by Bucanely Bun ELLE 5.23.14 950

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/22/2014 A-13013

CarrierName: FedEx G-1476822

AirbillNo: 7700 7325 0098 S-7475817-28

Contact Name: Pam Hartman

Contact Phone: (818)466-8007

COC No: 20140522-02

Cooler #: 2

Lab: Lancaster

Lab Phone: 717-556-7259

Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9040 (Water)	pH 9045 (Soil)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Tenbenvls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc. Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes

Special Instructions: For all EFH, silica gel clean up required on half the extract. Analyze both extracts for EFH.

Sampler: Randy Robson

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Stephanie Mypolos	5/22/14	1600									
									[signature]	5.23.14	950

FINAL DATA GAP BLOCKS

Sample Delivery Group

PH197

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/23/2014
CarrierName: FedEx
AirbillNo: ~~770081777065 SM52314~~ 7700 8382 3163

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

A-13013
G-1476956
S-1476634

COC No: 20140523-02
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Methyl Mercury 1630	Organotin	Calc. Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
FDG2-SL-561-NBZ-SB-0.0-0.5	5/23/14 09:25	SO	None	1 - 16 oz glass	10 day	X	X					X			X			X							X														
FDG2-SL-561-NBZ-SB-0.0-0.5	5/23/14 09:25	SO	None	1 - SS-Sleeve	10 day	X	X					X			X										X														

Special Instructions: For all EFH, silica gel clean up required on half the extract. Analyze both extracts for EFH.

Sampler: Randall Roberts

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
	05/23/14	1300									
										5/24/14	~~0830~~ 0930 JG 5/24/14

FINAL DATA GAP BLOCK 2

1 of 1

Sample Delivery Group

PH198

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/23/2014
CarrierName: FedEx
AirbillNo: ~~770081777065~~ Sm52314
7700 8382 3163

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

A-13013
G-1476957
S-7476635-36

COC No: 20140523-03
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EPH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Cyanide 9012	Energetics 8330	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc. Nitrate. Nitrite. TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
TB2-052314	5/23/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																		X																	
SVL-536-SA5D-SB-1.8-2.3	5/23/14 10:54	SO	None	1 - 4 oz glass	10 day																		X																	soil moisture
SVL-536-SA5D-SB-1.8-2.3	5/23/14 10:54	SO	None	3 - Encore	10 day																		X																	

Special Instructions:

Sampler: Van Vatharasin

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
[signature]	05/23/14	1300									
									[signature]	5/24/14	0930

Soil Vapor

Sample Delivery Group

PH199

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/23/2014

CarrierName: FedEx

AirbillNo: ~~7700 8177 7065~~ SM82314
7700 8382 3163

Contact Name: Pam Hartman

Contact Phone: (818)466-8007

A-13013
G-1476958
S-7476637-40

COC No: 20140523-01

Cooler #: 1

Lab: Lancaster

Lab Phone: 717-556-7259

Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate_Nitrite_TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
TB3-052314	5/23/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																			X																
SL-636-SA5A-TR-0.5	5/23/14 07:46	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X								X														
SL-636-SA5A-TR-3.5	5/23/14 08:47	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X								X														
SL-636-SA5A-TR-3.5	5/23/14 08:47	SO	None	2 - Encore	10 day																			X																
SL-636-SA5A-TR-7.5	5/23/14 08:41	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X								X														
SL-636-SA5A-TR-7.5	5/23/14 08:41	SO	None	2 - Encore	10 day																			X																

Special Instructions: For all EFH, silica gel clean up required on half the extract. Analyze both extracts for EFH.

Sampler: Rob Ellis

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
[signature]	05/23/2014	1300									
									[signature]	5/24/14	0930

TRENCHING

1 of 1

COC Rev 3

Sample Delivery Group

PH200

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/27/2014
CarrierName: FedEx
AirbillNo: 770107894616

A-13013 G-1477505 S-7479336-39

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140527-02
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7470 (Water)	Mercury 7471 (Soil)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
SVL-546-SA5D-SB-5.0-6.0	5/27/14 11:03	SO	None	1 - 4 oz glass	10 day																		X																	soil moisture
SVL-546-SA5D-SB-5.0-6.0	5/27/14 11:03	SO	None	3 - Encore	10 day																		X																	
SVL-550-SA5D-SB-5.0-6.0	5/27/14 09:02	SO	None	1 - 4 oz glass	10 day																		X																	soil moisture
SVL-550-SA5D-SB-5.0-6.0	5/27/14 09:02	SO	None	3 - Encore	10 day																		X																	
TB2-052714	5/27/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																		X																	
SVL-532-SA5D-SB-4.0-4.5	5/27/14 13:15	SO	None	1 - 4 oz glass	10 day																		X																	soil moisture
SVL-532-SA5D-SB-4.0-4.5	5/27/14 13:15	SO	None	3 - Encore	10 day																		X																	

Special Instructions:

Sampler: Van Vathauer

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
[signature]	05/27/14	1600									
									[signature]	5.28.14	1115

Sample Delivery Group

PH201

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/27/2014
CarrierName: FedEx
AirbillNo: 770107894616

A-13013 G-1477510 S-747935A-59

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140527-01
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9040 (Water)	pH 9045 (Soil)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Calc Nitrate_Nitrite_TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other Analysis/Notes
SL-707-SA5B-TR-0.5	5/27/14 08:13	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X				X				X														
SL-707-SA5B-TR-3.0	5/27/14 08:55	SO	None	2 - Encore	10 day																				X															
SL-707-SA5B-TR-3.0	5/27/14 08:55	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X				X				X														
TB3-052714	5/27/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																				X															
SL-693-SA5B-TR-0.5	5/27/14 10:17	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X				X				X														
SL-693-SA5B-TR-3.5	5/27/14 13:15	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X				X				X														
SL-693-SA5B-TR-3.5	5/27/14 13:15	SO	None	2 - Encore	10 day																				X															
SL-693-SA5B-TR-5.0	5/27/14 13:40	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X				X				X														
SL-693-SA5B-TR-5.0	5/27/14 13:40	SO	None	2 - Encore	10 day																				X															

Special Instructions: For all EFH, silica gel clean up required on half the extract. Analyze both extracts for EFH.

Sampler: Andrew Payne

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
[signature]	05/27/14	1600									
									[signature]	5.28.14	1115

Sample Delivery Group

PH203

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/28/2014
CarrierName: FedEx
AirbillNo: 770118975080

A-13013 G-1477788 S-7480323-26

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140528-04
Cooler #: 2
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
SVL-507-SA5C-SB-5.0-6.0	5/28/14 09:40	SO	None	1 - 4 oz glass	10 day																		X																		soil moisture
SVL-507-SA5C-SB-5.0-6.0	5/28/14 09:40	SO	None	3 - Encore	10 day																		X																		
TB2-052814	5/28/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																		X																		
SVL-551-SA5C-SB-2.0-2.8	5/28/14 15:15	SO	None	1 - 4 oz glass	10 day																		X																		soil moisture
SVL-551-SA5C-SB-2.0-2.8	5/28/14 15:15	SO	None	3 - Encore	10 day																		X																		
SVL-545-SA5C-SB-3.0-3.5	5/28/14 14:10	SO	None	1 - 4 oz glass	10 day																		X																		soil moisture
SVL-545-SA5C-SB-3.0-3.5	5/28/14 14:10	SO	None	3 - Encore	10 day																		X																		

Special Instructions:

Sampler: Van Vatharauk

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
[signature]	05/29/14	1600									
									C Cable	5/29/14	0935

SOIL VAPOR

COC Rev 4

COC. 20140528-04. Page 1 of 1

Sample Delivery Group

PH204

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/28/2014
CarrierName: FedEx
AirbillNo: 770118975080

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

A-13013 G-1477802 S-7480411-18

COC No: 20140528-07
Cooler #: 2
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate_Nitrite_TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
SL-699-SA5B-TR-0.5	5/28/14 10:00	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X				X				X														
SL-699-SA5B-TR-3.0	5/28/14 10:30	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X				X				X														
SL-699-SA5B-TR-3.0	5/28/14 10:30	SO	None	2 - Encore	10 day																				X																
SL-693-SA5B-TR-3.0	5/28/14 08:35	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X				X				X														
SL-693-SA5B-TR-3.0	5/28/14 08:35	SO	None	2 - Encore	10 day																				X																
TB3-052814	5/28/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																				X																
SL-529-SA5B-TR-0.5	5/28/14 13:05	SO	None	2 - 16 oz glass	10 day	X	X				X	X		X	X			X									X														
SL-529-SA5B-TR-2.0	5/28/14 14:05	SO	None	2 - Encore	10 day																				X																
SL-529-SA5B-TR-2.0	5/28/14 14:05	SO	None	2 - 16 oz glass	10 day	X	X				X	X		X	X			X									X														
SL-529-SA5B-TR-3.0	5/28/14 14:15	SO	None	2 - Encore	10 day																				X																
SL-529-SA5B-TR-3.0	5/28/14 14:15	SO	None	2 - 16 oz glass	10 day	X	X				X	X		X	X			X									X														
SL-529-SA5B-TR-11.0	5/28/14 14:30	SO	None	2 - Encore	10 day																				X																
SL-529-SA5B-TR-11.0	5/28/14 14:30	SO	None	2 - 16 oz glass	10 day	X	X				X	X		X	X			X									X														

Special Instructions: For all EFH, silica gel clean up required on half the extract. Analyze both extracts for EFH. Morpholine only on TIC.

Sampler: Andrew Payne

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
[signature]	05/28/14	1600									
									[signature]	5/29/14	0935

TRENCHING

COC Rev 4

COC: 20140528-07, Page 1 of 1

Sample Delivery Group

PH206

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/29/2014
CarrierName: FedEx
AirbillNo: 770138544895

A-13013
G-1478173
S-7482076-79

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140529-02
Cooler #: 3
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
SVL-557-SA5C-SB-3.0-3.5	5/29/14 10:00	SO	None	1 - 4 oz glass	10 day																		X																		soil moisture
SVL-557-SA5C-SB-3.0-3.5	5/29/14 10:00	SO	None	3 - Encore	10 day																		X																		
TB2-052914	5/29/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																		X																		
SVL-559-SA5C-SB-2.5-3.0	5/29/14 10:35	SO	None	1 - 4 oz glass	10 day																		X																		soil moisture
SVL-559-SA5C-SB-2.5-3.0	5/29/14 10:35	SO	None	3 - Encore	10 day																		X																		

Special Instructions:

Sampler: Randy Reber

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
	5/29/14	1600									
										5/30/14	0945

SOIL VAPOR

COC Rev 4

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/29/2014
CarrierName: FedEx
AirbillNo: 770138544895

A-13013
G-1478173
S-7482076-79

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140529-01
Cooler #: 3
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Arsenic Speciation 3200	Calc Nitrate_Nitrite_TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
EB2-052914	5/29/14 09:30	WQ	HCl	3 - 40 mL Vial	10 day																		X																		

Special Instructions:

Sampler: Randy Robson

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
	52914	1600									
										5/30/14	0945

EB 2 - SV

Sample Delivery Group

PH207

SSFL Phase 3 Chain of Custody

#-13013
G-1478251
S-7482392-99

CDM Smith

DateShipped: 5/29/2014
CarrierName: FedEx
AirbillNo: 770138544895

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140529-04
Cooler #: 1 and 2
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	*Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
EB1-052914	5/29/14 15:00	WQ	HNO3 pH<2	1-250 mL Poly	10 day	X		X																																
EB1-052914	5/29/14 15:00	WQ	None	1-250 mL Amber	10 day					X																														Biphenyls only.
EB1-052914	5/29/14 15:00	WQ	None	1-250 mL Amber	10 day						X																													Morpholine only.
EB1-052914	5/29/14 15:00	WQ	None	1-250 mL Amber	10 day							X																												
EB1-052914	5/29/14 15:00	WQ	None	2-1 L Amber	10 day								X																											
EB1-052914	5/29/14 15:00	WQ	None	1-250 mL Amber	10 day									X																										
EB1-052914	5/29/14 15:00	WQ	None	2-40 mL Vial	10 day										X																									
EB1-052914	5/29/14 15:00	WQ	None	1-250 mL Poly	10 day											X	X																							
EB1-052914	5/29/14 15:00	WQ	None	1-250 mL Poly	10 day														X																					
EB1-052914	5/29/14 15:00	WQ	None	2-1 L Amber	10 day															X																				
EB1-052914	5/29/14 15:00	WQ	None	1-250 mL Amber	10 day																X																			
EB1-052914	5/29/14 15:00	WQ	HCl	3-40 mL Vial	10 day																	X																		
EB1-052914	5/29/14 15:00	WQ	HCl	3-40 mL Vial	10 day																		X																	
EB1-052914	5/29/14 15:00	WQ	HCl	2-1 L Amber	10 day																			X																
EB1-052914	5/29/14 15:00	WQ	None	2-40 mL Vial	10 day																				X															
EB1-052914	5/29/14 15:00	WQ	HCl	1-1 L Amber	10 day																					X														
EB1-052914	5/29/14 15:00	WQ	None	2-1 L Amber	10 day																						X													

*Perchlorate by 314 was removed per TB.
NM 6/4/14

EB1 - TRENCH

SSFL Phase 3 Chain of Custody

A-13013
G-1478251
S-7482392-99

CDM Smith

DateShipped: 5/29/2014
CarrierName: FedEx
AirbillNo: 770138544895

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140529-03
Cooler #: 3
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EPH 8015	Glycols 8015	Alcohols 8015	Terpenvls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate_Nitrite_TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
SL-503-SA5C-TR-0.5	5/29/14 08:05	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X	X	X	X								X														
SL-503-SA5C-TR-5.0	5/29/14 08:20	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X	X	X	X								X														
SL-503-SA5C-TR-5.0	5/29/14 08:20	SO	None	2 - Encore	10 day																				X															
SL-503-SA5C-TR-7.5	5/29/14 09:00	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X	X	X	X								X														
SL-503-SA5C-TR-7.5	5/29/14 09:00	SO	None	2 - Encore	10 day																				X															
TB3-052914	5/29/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																				X															only TPH-GRO
SL-605-SA5C-TR-0.5	5/29/14 13:15	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X	X	X	X								X														
SL-605-SA5C-TR-5.0	5/29/14 13:30	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X	X	X	X								X														
SL-605-SA5C-TR-5.0	5/29/14 13:30	SO	None	2 - Encore	10 day																				X															
SL-605-SA5C-TR-10.0	5/29/14 13:45	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X	X	X	X								X														
SL-605-SA5C-TR-10.0	5/29/14 13:45	SO	None	2 - Encore	10 day																				X															

Special Instructions: For all EFH, silica gel clean up required on half the extract. Analyze both extracts for EFH.

Sampler: Randy Roberts

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
	5/29/14	1600									
										5/30/14	0945

TRENCHING

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/29/2014 A-13013
CarrierName: FedEx G-1478251
AirbillNo: 770138544895 5-748239299

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140529-04
Cooler #: 1 and 2
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9040 (Water)	pH 9045 (Soil)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	1,4 Dioxane 8260 SIM	VOCs 8260	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate_Nitrite_TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other

Special Instructions: For all EFH, silica gel clean up required on half the extract. Analyze both extracts for EFH.

Sampler: Andrew Payne

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
[signature]	05/29/14	1600									
									[signature]	5/30/14	0945

EB1- TRENCH

Sample Delivery Group

PH209

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 5/30/2014
CarrierName: FedEx
AirbillNo: 770151717677

A-13013
G-1478425
S-7483433-44

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140530-05
Cooler #: 3
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	~~Perchlorate 314.0/331.0~~	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Oxamotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
SL-651-SA5C-TR-0.5	5/30/14 08:18	SO	None	2 - 16 oz glass	10 day	X	X			X		X		X	X	X	X	X		X	X	X				X	X		X	X											Perchlorate by EPA 314 was removed per TB. NM 6/4/14
SL-651-SA5C-TR-5.0MS	5/30/14 08:40	SO	None	6 - 16 oz glass	10 day	X	X			X		X		X	X	X	X	X		X	X	X				X	X		X	X										
SL-651-SA5C-TR-5.0MS	5/30/14 08:40	SO	None	6 - Encore	10 day																				X															
SL-951-SA5C-TR-5.0	5/30/14 08:45	SO	None	2 - 16 oz glass	10 day	X	X			X		X		X	X	X	X	X		X	X	X				X	X		X	X										
SL-951-SA5C-TR-5.0	5/30/14 08:45	SO	None	2 - Encore	10 day																				X															
SL-651-SA5C-TR-10.0	5/30/14 09:22	SO	None	2 - 16 oz glass	10 day	X	X			X		X		X	X	X	X	X		X	X	X				X	X		X	X										
SL-651-SA5C-TR-10.0	5/30/14 09:22	SO	None	2 - Encore	10 day																				X															
SL-651-SA5C-TR-15.0	5/30/14 11:14	SO	None	2 - 16 oz glass	10 day	X	X			X		X		X	X	X	X	X		X	X	X				X	X		X	X										
SL-651-SA5C-TR-15.0	5/30/14 11:14	SO	None	2 - Encore	10 day																				X															
TB3-053014	5/30/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																				X															

Special Instructions: For all EFH, silica gel clean up required on half the extract. Analyze both extracts for EFH. For SVOC, biphenyls only.

Sampler: Rob Ellis

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
	05/30/14	1600									
										5/31/14	1020

TRENCHING

COC Rev 1

Sample Delivery Group

PH211

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 6/2/2014
CarrierName: FedEx
AirbillNo: 770169300503

A-13013
G-1478735
S-7484900-04

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140602-04
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
SVL-563-SA5C-SB-1.0-1.5	6/2/14 08:40	SO	None	3 - Encore	10 day																		X																		
SVL-563-SA5C-SB-1.0-1.5	6/2/14 08:40	SO	None	1 - 4 oz glass	10 day																		X																		Soil Moisture
TB3-060214	6/2/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																		X																		
SVL-518-SA5C-SB-11.0-11.5	6/2/14 10:45	SO	None	3 - Encore	10 day																		X																		
SVL-518-SA5C-SB-11.0-11.5	6/2/14 10:45	SO	None	1 - 4 oz glass	10 day																		X																		Soil Moisture
SVL-518-SA5C-SB-5.5-6.0	6/2/14 10:40	SO	None	3 - Encore	10 day																		X																		
SVL-518-SA5C-SB-5.5-6.0	6/2/14 10:40	SO	None	1 - 4 oz glass	10 day																		X																		Soil Moisture
SVL-576-SA5B-SB-4.0-4.3	6/2/14 12:35	SO	None	3 - Encore	10 day																		X																		
SVL-576-SA5B-SB-4.0-4.3	6/2/14 12:35	SO	None	1 - 4 oz glass	10 day																		X																		Soil Moisture

Special Instructions:

Sampler: Va Vanthasia Rob Ellis

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Steve Myrel	06/02/14	1600									
									CCSmith	6/3/14	0920

Soil Vapor Sampling 1 of 1

COC Rev 4

COC: 20140602-04, Page 1 of 1

Sample Delivery Group

PH212

SSFL Phase 3 Chain of Custody

CDM Smith
DateShipped: 6/2/2014 A-13013
CarrierName: FedEx G-1478782
AirbillNo: 770169300503 S-4785078-82

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140602-05
Cooler #: 2
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
SL-653-SA5C-TR-0.5	6/2/14 10:20	SO	None	2 - 16 oz glass	10 day	X	X			X		X		X	X		X	X		X	X	X				X	X		X		X										
SL-653-SA5C-TR-5.0	6/2/14 10:45	SO	None	2 - 16 oz glass	10 day	X	X			X		X		X	X		X	X		X	X	X				X	X		X		X										
SL-653-SA5C-TR-5.0	6/2/14 10:45	SO	None	2 - Encore	10 day																				X																
SL-653-SA5C-TR-10.0	6/2/14 10:55	SO	None	2 - 16 oz glass	10 day	X	X			X		X		X	X		X	X		X	X	X				X	X		X		X										
SL-653-SA5C-TR-10.0	6/2/14 10:55	SO	None	2 - Encore	10 day																				X																
SL-653-SA5C-TR-15.0	6/2/14 09:20	SO	None	2 - 16 oz glass	10 day	X	X			X		X		X	X		X	X		X	X	X				X	X		X		X										
SL-653-SA5C-TR-15.0	6/2/14 09:20	SO	None	2 - Encore	10 day																				X																
TB4-060214	6/2/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																				X																

Special Instructions: For all EFH, silica gel cleanup required on half of extract. Analyze all extract for EFH.

Sampler: [signature]

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
[signature]	06/02/14	1600									
									[signature]	6/3/14	0920

Trench Sampling 1 of 1

COC Rev 4

COC: 20140602-05, Page 1 of 1

Sample Delivery Group

PH214

SSFL Phase 3 Chain of Custody

~~CDM Smith~~

DateShipped: 6/3/2014
CarrierName: FedEx
AirbillNo: 770183423794

A-13013
G-1479236
S-7486854-61

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

~~COC No:~~ ~~20140603-01~~
Cooler #: 2
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc. Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
SVL-602-SA5B-SB-4.5-5.0	6/3/14 09:50	SO	None	3 - Encore	10 day																		X																		
SVL-602-SA5B-SB-4.5-5.0	6/3/14 09:50	SO	None	1 - 4 oz glass	10 day																		X																		soil moisture
SVL-553-SA5D-SB-4.5-5.5	6/3/14 12:03	SO	None	3 - Encore	10 day																		X																		
SVL-553-SA5D-SB-4.5-5.5	6/3/14 12:03	SO	None	1 - 4 oz glass	10 day																		X																		soil moisture
SVL-553-SA5D-SB-9.0-10.0	6/3/14 12:11	SO	None	3 - Encore	10 day																		X																		
SVL-553-SA5D-SB-9.0-10.0	6/3/14 12:11	SO	None	1 - 4 oz glass	10 day																		X																		soil moisture
SVL-553-SA5D-SB-14.0-15.0	6/3/14 12:15	SO	None	3 - Encore	10 day																		X																		
SVL-553-SA5D-SB-14.0-15.0	6/3/14 12:15	SO	None	1 - 4 oz glass	10 day																		X																		soil moisture
SVL-553-SA5D-SB-19.0-20.0	6/3/14 12:22	SO	None	3 - Encore	10 day																		X																		
SVL-553-SA5D-SB-19.0-20.0	6/3/14 12:22	SO	None	1 - 4 oz glass	10 day																		X																		soil moisture
SVL-556-SA5D-SB-4.5-5.5	6/3/14 14:00	SO	None	3 - Encore	10 day																		X																		
SVL-556-SA5D-SB-4.5-5.5	6/3/14 14:00	SO	None	1 - 4 oz glass	10 day																		X																		soil moisture
SVL-556-SA5D-SB-10.0-11.0	6/3/14 14:03	SO	None	3 - Encore	10 day																		X																		
SVL-556-SA5D-SB-10.0-11.0	6/3/14 14:03	SO	None	1 - 4 oz glass	10 day																		X																		soil moisture
TB1-060314	6/3/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																		X																		

Special Instructions:

Sampler: Van Vatten

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
[signature]	06/03/14	1600									
									[signature]	6/4/14	0920

COC Rev 1

Soil Vapor Sampling 1 of 1

COC: 20140603-01, Page 1 of 1

Sample Delivery Group

PH216

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 6/4/2014
CarrierName: FedEx
AirbillNo: 770197160010

A-13013
G-1479554
S-7488097-110

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140604-04
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
TB3-060414	6/4/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																		X																		
SVL-577-SA5B-SB-5.3-5.8	6/4/14 08:40	SO	None	3 - Encore	10 day																		X																		
SVL-577-SA5B-SB-5.3-5.8	6/4/14 08:40	SO	None	1 - 4 oz glass	10 day																		X																		Soil Moisture
SVL-586-SA5B-SB-3.75-4.25MS	6/4/14 09:00	SO	None	9 - Encore	10 day																		X																		MS/MSD
SVL-586-SA5B-SB-3.75-4.25MS	6/4/14 09:00	SO	None	1 - 8 oz glass	10 day																		X																		Soil Moisture. MS/MSD
SVL-986-SA5B-SB-3.75-4.25	6/4/14 09:05	SO	None	3 - Encore	10 day																		X																		
SVL-986-SA5B-SB-3.75-4.25	6/4/14 09:05	SO	None	1 - 4 oz glass	10 day																		X																		Soil Moisture
SVL-576-SA5A-SB-2.5-3.0	6/4/14 10:15	SO	None	3 - Encore	10 day																		X																		
SVL-576-SA5A-SB-2.5-3.0	6/4/14 10:15	SO	None	1 - 4 oz glass	10 day																		X																		Soil Moisture
SVL-571-SA5A-SB-2.5-3.0	6/4/14 11:26	SO	None	3 - Encore	10 day																		X																		
SVL-571-SA5A-SB-2.5-3.0	6/4/14 11:26	SO	None	1 - 4 oz glass	10 day																		X																		Soil Moisture
SVL-574-SA5A-SB-1.5-2.0	6/4/14 11:10	SO	None	3 - Encore	10 day																		X																		
SVL-574-SA5A-SB-1.5-2.0	6/4/14 11:10	SO	None	1 - 4 oz glass	10 day																		X																		Soil Moisture
SVL-566-SA5A-SB-3.0-3.5	6/4/14 13:15	SO	None	3 - Encore	10 day																		X																		
SVL-566-SA5A-SB-3.0-3.5	6/4/14 13:15	SO	None	1 - 4 oz glass	10 day																		X																		Soil Moisture

Special Instructions:

Sampler: Van Vanden Rob Ellis

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
[signature]	06/04/14										
									[signature]	6.5.14	915

COC Rev 4 Soil Vapor 1 of 2

COC: 20140604-04, Page 1 of 1

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 6/4/2014
CarrierName: FedEx
AirbillNo: 770197160010

A-13013
G-1479554
S-7488097-110

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140604-05
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9040 (Water)	pH 9045 (Soil)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
EB1-060414	6/4/14 07:05	WQ	HCl	3 - 40 mL Vial	10 day																		X																			
EB2-060414	6/4/14 07:20	WQ	HCl	3 - 40 mL Vial	10 day																		X																			
EB4-060414	6/4/14 07:08	WQ	HCl	3 - 40 mL Vial	10 day																		X																			
EB5-060414	6/4/14 07:22	WQ	HCl	3 - 40 mL Vial	10 day																		X																			

Special Instructions:

Sampler: VanVatthanan Rob Ellis

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
[illegible] Mupel	06/04/14	1600									
									[signature]	6.5.14	915

Soil Vapor 2 of 2

Sample Delivery Group

PH217

SSFL Phase 3 Chain of Custody

CDM Smith

A-13013
G-1479557
S-7488113-18

DateShipped: 6/4/2014
CarrierName: FedEx
AirbillNo: 770197160010

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140604-06
Cooler #: 3
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenvls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
EB3-060414	6/4/14 10:30	WQ	None	6 - 1 L Amber	10 day									X							X										X										
EB3-060414	6/4/14 10:30	WQ	HCl	2 - 1 L Amber	10 day																					X															

Special Instructions: For all EFH, silica gel cleanup required on half the extract. Analyze both for EFH.

Sampler: Andrew Pavon

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Sleyg Mipel	06/04/14	1600									
									[signature]	6-5-14	915

Trench Sampling 1 of 3

COC Rev 4

SSFL Phase 3 Chain of Custody

A-13013
G-1479557
S-7488113-18

CDM Smith
DateShipped: 6/4/2014
CarrierName: FedEx
AirbillNo: 770197160010

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140604-07
Cooler #: 4
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc. Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
EB3-060414	6/4/14 10:30	WQ	HNO3 pH<2	1 - 250 mL Poly	10 day	X		X																																	
EB3-060414	6/4/14 10:30	WQ	None	4 - 250 mL Amber	10 day					X		X			X							X																				
EB3-060414	6/4/14 10:30	WQ	None	3 - 40 mL Vial	10 day												X									X															
EB3-060414	6/4/14 10:30	WQ	None	2 - 250 mL Poly	10 day														X	X																				
EB3-060414	6/4/14 10:30	WQ	HCl	1 - 1 L Amber	10 day																							X											
EB3-060414	6/4/14 10:30	WQ	HCl	3 - 40 mL Vial	10 day																				X														

Special Instructions:

Sampler: Andy Pam

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Stephanie Meyer	06/04/14	1600									
									Kim Bui	6-5-14	915

Trench Sampling 2 of 3

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 6/4/2014
CarrierName: FedEx
AirbillNo: 770197160010

A-13013
G-1479557
S-7488113-18

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140604-08
Cooler #: 2
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terpenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate_Nitrite_TKN	TOC SM 5310B	Grain Size ASTM 2488--09a	Other
TB2-060414	6/4/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																			X																	
SL-655-SA5C-TR-0.5	6/4/14 07:45	SO	None	2 - 16 oz glass	10 day	X	X			X		X		X	X		X	X		X	X	X			X	X		X		X										
SL-655-SA5C-TR-5.0	6/4/14 08:00	SO	None	2 - 16 oz glass	10 day	X	X			X		X		X	X		X	X		X	X	X			X	X		X		X										
SL-655-SA5C-TR-5.0	6/4/14 08:00	SO	None	2 - Encore	10 day																			X																	
SL-646-SA5C-TR-0.5	6/4/14 11:30	SO	None	2 - 16 oz glass	10 day	X	X			X		X		X	X		X	X		X	X	X			X	X		X		X										
SL-646-SA5C-TR-5.0	6/4/14 11:45	SO	None	2 - 16 oz glass	10 day	X	X			X		X		X	X		X	X		X	X	X			X	X		X		X										
SL-646-SA5C-TR-5.0	6/4/14 11:45	SO	None	2 - Encore	10 day																			X																	

Special Instructions: For all EFH, silica gel cleanup required on half the extract. Analyze both for EFH.

Sampler: Andrea Payne

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Stefan Myers	6/04/14	1000									
									Brian Kim	6.5.14	915

Trench Sampling 3 of 3

Sample Delivery Group

PH219

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 6/5/2014 A-13013
CarrierName: FedEx G-479940
AirbillNo: 770212567524 S-7489860-63

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140605-03
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terpenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
TB2-060514	6/5/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																		X																		
SVL-552-SA5A-SB-1.5-2.0	6/5/14 11:38	SO	None	3 - Encore	10 day																		X																		
SVL-552-SA5A-SB-1.5-2.0	6/5/14 11:38	SO	None	1 - 4 oz glass	10 day																		X																		Soil Moisture
SVL-554-SA5A-SB-1.5-2.0	6/5/14 12:46	SO	None	3 - Encore	10 day																		X																		
SVL-554-SA5A-SB-1.5-2.0	6/5/14 12:46	SO	None	1 - 4 oz glass	10 day																		X																		Soil Moisture
SVL-529-SA5A-SB-4.0-4.5	6/5/14 15:04	SO	None	3 - Encore	10 day																		X																		
SVL-529-SA5A-SB-4.0-4.5	6/5/14 15:04	SO	None	1 - 4 oz glass	10 day																		X																		Soil Moisture

Special Instructions:

Sampler: Van Vathanasin

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
[signature]	06/05/14	1600									
									[signature]	6/6/14	915

Soil Vapor 1 of 1

Sample Delivery Group

PH220

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 6/5/2014
CarrierName: FedEx
AirbillNo: 770212567524

A-13013
G-1479956
S-7489903-09

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140605-01
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Methyl Mercury 1630	Organotin	Mercury Speciation 3200	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
EB-060514	6/5/14 15:00	WQ	HNO3 pH<2	1 - 250 mL Poly	10 day	X		X																																	
EB-060514	6/5/14 15:00	WQ	None	2 - 250 mL Amber	10 day							X			X																											
EB-060514	6/5/14 15:00	WQ	None	1 - 250 mL Poly	10 day														X																						
EB-060514	6/5/14 15:00	WQ	HCl	3 - 40 mL Vial	10 day																			X																
EB-060514	6/5/14 15:00	WQ	HCl	2 - 1 L Amber	10 day																				X															
EB-060514	6/5/14 15:00	WQ	None	2 - 1 L Amber	10 day									X																										

Special Instructions: For all EFH, silica gel cleanup required on half the extract. Analyze both extracts for EFH.

Sampler: Pa Hart

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Stacy Myers	06/05/14	1600									
									Brun/Thm	6-6-14	915

Final Data Gap Block 2 1 of 2

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 6/5/2014
CarrierName: FedEx
AirbillNo: 770212567524

A-13013
G-1479956
S-7489903-09

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140605-02
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7470 (Water)	Mercury 7471 (Soil)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terpenvls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
FDG2-SL-631-SA8-SB-0.0-0.5	6/5/14 08:15	SO	None	1 - SS-Sleeve	10 day																				X																
FDG2-SL-631-SA8-SB-4.5-5.0	6/5/14 08:50	SO	None	1 - SS-Sleeve	10 day																				X																
FDG2-SL-631-SA8-SB-4.5-5.0	6/5/14 08:50	SO	None	2 - Encore	10 day																				X																
FDG2-SL-631-SA8-SB-7.0-8.0	6/5/14 09:40	SO	None	2 - SS-Sleeve	10 day	X	X					X			X									X																
FDG2-SL-631-SA8-SB-7.0-8.0	6/5/14 09:40	SO	None	2 - Encore	10 day																				X																
FDG2-SL-631-SA8-SB-7.0-8.0	6/5/14 09:40	SO	None	1 - 4 oz glass	10 day													X							X																
TB1-060514	6/5/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																				X																
FDG2-SL-624-SA8-SB-0.0-0.5	6/5/14 13:00	SO	None	1 - SS-Sleeve	10 day																					X																
FDG2-SL-625-SA8-SB-0.0-0.5	6/5/14 13:55	SO	None	1 - SS-Sleeve	10 day																					X																

Special Instructions:
For all EFH, silica gel cleanup required on half the extract. Analyze both extracts for EFH.

Sampler: R Roberts

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Steph Mype	06/05/14	1600									
									Brun Mm	6.6.14	915

Final Data Gap Block 2 2of2

Sample Delivery Group

PH221

acct# 13[illegible]3 Gap# 1480241 Sample# 7491482-87

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 6/6/2014
CarrierName: FedEx
AirbillNo: 770224383242

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140606-01
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7470 (Water)	Mercury 7471 (Soil)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc. Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
TB1-060614	6/6/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																																				
FDG2-SL-626-SA8-SB-0.0-0.5	6/6/14 07:45	SO	None	1 - SS-Sleeve	10 day																				X																
FDG2-SL-626-SA8-SB-4.0-5.0	6/6/14 08:20	SO	None	1 - SS-Sleeve	10 day																					X															
FDG2-SL-626-SA8-SB-4.0-5.0	6/6/14 08:20	SO	None	2 - Encore	10 day																					X															
FDG2-SL-691-SA6-SB-0.0-0.5	6/6/14 09:35	SO	None	1 - SS-Sleeve	10 day																				X																
FDG2-SL-692-SA6-SB-0.0-0.5	6/6/14 11:40	SO	None	1 - SS-Sleeve	10 day																					X															
FDG2-SL-693-SA6-SB-0.0-0.5	6/6/14 10:30	SO	None	1 - SS-Sleeve	10 day																					X															

Special Instructions: For all EFH, silica gel cleanup required on half the extract. Analyze both extracts for EFH.

Sampler: Rudy Robertson

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
[signature]	6/6/14	1500									
									[signature]	6/7/14	0915

Final Data Gap Block 2 1 of 1

Sample Delivery Group

PH222

acct#1013 Qp#1480242 samp6#7491488-89

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 6/6/2014
CarrierName: FedEx
AirbillNo: 770224383242

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140606-02
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Contaiers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331.	Perchlorate Confirm 6850/6860	pH 9040 (Water)	pH 9045 (Soil)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate_Nitrite_TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
TB2-060614	6/6/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																																			
SVL-627-SA5A-SB-3.0-3.5	6/6/14 09:13	SO	None	3 - Encore	10 day																		X																		
SVL-627-SA5A-SB-3.0-3.5	6/6/14 09:13	SO	None	1 - 4 oz glass	10 day																		X																		Soil Moisture

Special Instructions:

Sampler:

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
										6/7/14	0915

Sample Delivery Group

PH223

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 6/9/2014
CarrierName: FedEx
AirbillNo: 770243934110

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140609-02
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike Lancaster, PA 17601

Revised COC NLM 6/16/14

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terpenoids 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate_Nitrite_TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
SVL-611-SA5A-SB-1.35-1.85	6/9/14 10:39	SO	None	3 - Encore	10 day																	X																			
SVL-611-SA5A-SB-1.35-1.85	6/9/14 10:39	SO	None	1 - 4 oz glass	10 day																	X																			Soil Moisture
TB-060914	6/9/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																	X																			
SVL-527-SA6-SB-2.0-3.0	6/9/14 13:25	SO	None	3 - Encore	10 day																	X																			
SVL-527-SA6-SB-2.0-3.0	6/9/14 13:25	SO	None	1 - 4 oz glass	10 day																	X																			Soil Moisture
SVL-574-SA6-SB-3.8-4.3	6/9/14 14:48	SO	None	3 - Encore	10 day																	X																			
SVL-574-SA6-SB-3.8-4.3	6/9/14 14:48	SO	None	1 - 4 oz glass	10 day																	X																			Soil Moisture
SVL-630-SA5A-SB-1.5-2.0	6/9/14 13:54	SO	None	3 - Encore	10 day																	X																			
SVL-630-SA5A-SB-1.5-2.0	6/9/14 13:54	SO	None	1 - 4 oz glass	10 day																	X																			Soil Moisture

Special Instructions:

Sampler: Andrew Payne Rob Ellis

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Shey Mypeface	6/9/14	1600									

COC Rev 4

COC: 20140609-02, Page 1 of 1

Sample Delivery Group

PH224

SSFL Phase 3 Chain of Custody 13013 1480552 749286 09

CDM Smith

DateShipped: 6/9/2014
CarrierName: FedEx
AirbillNo: 770243934110

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140609-01
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCIs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
FDG2-SL-558-NBZ-SB-0.0-0.5MS	6/9/14 08:30	SO	None	6 - SS-Sleeve	10 day	X	X					X		X	X						X	X			X															MS/MSD
FDG2-SL-558-NBZ-SB-0.0-0.5MS	6/9/14 08:30	SO	None	2 - 4 oz glass	10 day													X																							MS/MSD
FDG2-SL-559-NBZ-SB-0.0-0.5	6/9/14 09:25	SO	None	2 - SS-Sleeve	10 day	X	X					X		X	X						X				X																	
FDG2-SL-559-NBZ-SB-0.0-0.5	6/9/14 09:25	SO	None	1 - 4 oz glass	10 day													X																							
FDG2-SL-632-SA8-SB-0.0-0.5	6/9/14 10:50	SO	None	1 - SS-Sleeve	10 day																				X																
FDG2-SL-858-NBZ-SB-0.0-0.5	6/9/14 08:35	SO	None	2 - SS-Sleeve	10 day	X	X					X		X	X						X	X			X																
FDG2-SL-858-NBZ-SB-0.0-0.5	6/9/14 08:35	SO	None	1 - 4 oz glass	10 day													X																							

For all EFH, silica gel cleanup required on half the extract. Analyze both extracts for EFH.

Special Instructions:

Sampler: Craig Nochajski

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Craig Nochajski	06/09/14	1600									
									Brian Mh	6.10.14	910

Final Data Gap Block 2 1 of 1

Sample Delivery Group

PH226

SSFL Phase 3 Chain of Custody

13013 1480924 7494355-59

CDM Smith

DateShipped: 6/10/2014
CarrierName: FedEx
AirbillNo: 770258229814

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140610-02
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
TB2-061014	6/10/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																		X																		
SVL-551-SA6-SB-4.0-5.0	6/10/14 09:45	SO	None	3 - Encore	10 day																		X																		
SVL-551-SA6-SB-4.0-5.0	6/10/14 09:45	SO	None	1 - 4 oz glass	10 day																		X																		Soil Moisture
SVL-562-SA5B-SB-8.0-9.0	6/10/14 14:45	SO	None	3 - Encore	10 day																		X																		
SVL-562-SA5B-SB-8.0-9.0	6/10/14 14:45	SO	None	1 - 4 oz glass	10 day																		X																		Soil Moisture
SVL-549-SA5C-SB-6.3-6.8	6/10/14 14:23	SO	None	3 - Encore	10 day																		X																		
SVL-549-SA5C-SB-6.3-6.8	6/10/14 14:23	SO	None	1 - 4 oz glass	10 day																		X																		Soil Moisture
SVL-561-SA5C-SB-10.5-11.0	6/10/14 13:24	SO	None	3 - Encore	10 day																		X																		
SVL-561-SA5C-SB-10.5-11.0	6/10/14 13:24	SO	None	1 - 4 oz glass	10 day																		X																		Soil Moisture

Special Instructions:

Sampler: Andrew Payne Rob Ellis

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Steff Myself	06/10/14	1600									
									[signature]	6-11-14	915

Soil Vapor 1 of 1

COC Rev 4

COC: 20140610-02, Page 1 of 1 1 of 1

Sample Delivery Group

PH227

SSFL Phase 3 Chain of Custody

13013 1480926 7494361 5

CDM Smith

DateShipped: 6/10/2014
CarrierName: FedEx
AirbillNo: 770258229814

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140610-01
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate_Nitrite_TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
TB1-061014	6/10/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																				X																	
FDG2-SL-630-SA8-SB-0.0-0.5	6/10/14 07:55	SO	None	1 - SS-Sleeve	10 day																					X																	
FDG2-SL-630-SA8-SB-4.0-5.0MS	6/10/14 08:30	SO	None	2 - 16 oz glass	10 day																					X																	MS/MSD
FDG2-SL-630-SA8-SB-4.0-5.0MS	6/10/14 08:30	SO	None	6 - Encore	10 day																				X																	MS/MSD
FDG2-SL-930-SA8-SB-4.0-5.0	6/10/14 08:40	SO	None	2 - 8 oz glass	10 day																					X																	
FDG2-SL-930-SA8-SB-4.0-5.0	6/10/14 08:40	SO	None	2 - Encore	10 day																				X																	
FDG2-SL-630-SA8-SB-7.0-8.0	6/10/14 09:05	SO	None	1 - SS-Sleeve	10 day																					X																	
FDG2-SL-630-SA8-SB-7.0-8.0	6/10/14 09:05	SO	None	2 - Encore	10 day																				X																	
FDG2-SL-612-SA5D-SB-0.0-0.5	6/10/14 11:00	SO	None	1 - SS-Sleeve	10 day																					X																	
FDG2-SL-564-NBZ-SB-0.0-0.5	6/10/14 10:05	SO	None	2 - SS-Sleeve	10 day	X	X					X			X											X																	
FDG2-SL-564-NBZ-SB-0.0-0.5	6/10/14 10:05	SO	None	1 - 4 oz glass	10 day														X																							
FDG2-SL-565-NBZ-SB-0.0-0.5	6/10/14 09:35	SO	None	2 - SS-Sleeve	10 day	X	X					X			X											X																	
FDG2-SL-565-NBZ-SB-0.0-0.5	6/10/14 09:35	SO	None	1 - 4 oz glass	10 day														X																							
FDG2-SL-566-NBZ-SB-0.0-0.5	6/10/14 08:50	SO	None	2 - SS-Sleeve	10 day	X	X								X											X																	
FDG2-SL-566-NBZ-SB-0.0-0.5	6/10/14 08:50	SO	None	1 - 4 oz glass	10 day														X																							
FDG2-SL-576-NBZ-SB-0.0-0.5	6/10/14 12:35	SO	None	1 - SS-Sleeve	10 day										X											X																	
FDG2-SL-576-NBZ-SB-2.0-3.0	6/10/14 13:15	SO	None	2 - 8 oz glass	10 day										X											X																	
FDG2-SL-576-NBZ-SB-2.0-3.0	6/10/14 13:15	SO	None	2 - Encore	10 day																				X																	
FDG2-SL-613-SA5D-SB-0.0-0.5	6/10/14 13:25	SO	None	1 - SS-Sleeve	10 day																					X																	
FDG2-SL-614-SA5D-SB-0.0-0.5	6/10/14 12:45	SO	None	1 - SS-Sleeve	10 day																					X																	

Final Data Gap Block 2 1 of 1

COC Rev 4

Rec by Brianca Ban ECLE 6.11.14 915

SSFL Phase 3 Chain of Custody

13013 1480926 7494361-75

CDM Smith

DateShipped: 6/10/2014
CarrierName: FedEx
AirbillNo: 770258229814

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140610-01
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terpheny ls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other

Special Instructions: For all EFH, silica gel cleanup required on half the extract. Analyze both extracts for EFH.

Sampler: Randy Roberts Sandy Do

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Stacy Mupel	06/10/14	1600									
									6-11-14	915	

Final Data Gap Block 2 1 of 1

Sample Delivery Group

PH228

SSFL Phase 3 Chain of Custody

13013 1481296 7496166-74

CDM Smith

DateShipped: 6/11/2014
CarrierName: FedEx
AirbillNo: 770273213274

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140611-02
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terpheryls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
TB2-061114	6/11/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																		X																		
SVL-563-SA5B-SB-4.5-5.0	6/11/14 08:34	SO	None	3 - Encore	10 day																		X																		
SVL-563-SA5B-SB-4.5-5.0	6/11/14 08:34	SO	None	1 - 4 oz glass	10 day																		X																		Soil Moisture
SVL-536-SA5B-SB-1.5-2.0	6/11/14 10:02	SO	None	3 - Encore	10 day																		X																		
SVL-536-SA5B-SB-1.5-2.0	6/11/14 10:02	SO	None	1 - 4 oz glass	10 day																		X																		Soil Moisture
SVL-577-SA6-SB-1.0-2.0	6/11/14 11:45	SO	None	3 - Encore	10 day																		X																		
SVL-577-SA6-SB-1.0-2.0	6/11/14 11:45	SO	None	1 - 4 oz glass	10 day																		X																		Soil Moisture
SVL-569-SA5B-SB-2.5-3.0	6/11/14 10:54	SO	None	3 - Encore	10 day																		X																		
SVL-569-SA5B-SB-2.5-3.0	6/11/14 10:54	SO	None	1 - 4 oz glass	10 day																		X																		Soil Moisture

Special Instructions:

Sampler: Andrew Payne Rob Ellis

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Skyler Mupel	6/11/14	1600									
									Bruce Mc	6.12.14	915

Soil Vapor 1 of 2

13013 1481296 7496166-74

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 6/11/2014
CarrierName: FedEx
AirbillNo: 770273213274

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140611-03
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7470 (Water)	Mercury 7471 (Soil)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9040 (Water)	pH 9045 (Soil)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terpenvls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
EB1-061114	6/11/14 07:18	WQ	HCl	3 - 40 mL Vial	10 day																		X																		
EB2-061114	6/11/14 07:20	WQ	HCl	3 - 40 mL Vial	10 day																		X																		
EB3-061114	6/11/14 07:22	WQ	HCl	3 - 40 mL Vial	10 day																		X																		
EB4-061114	6/11/14 07:24	WQ	HCl	3 - 40 mL Vial	10 day																		X																		

Special Instructions:

Sampler: Andrew Payne Rob Ellis

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
[illegible]	6/11/14	1600									
									[illegible]	6-12-14	915

Soil Vapor Sampling 2 of 2

Sample Delivery Group

PH229

SSFL Phase 3 Chain of Custody

13013 1481297 749617[illegible]3

CDM Smith

DateShipped: 6/11/2014
CarrierName: FedEx
AirbillNo: 770273213274

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140611-01
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
TB1-061114	6/11/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																				X																
FDG2-SL-878-SA5A-SB-0.0-0.5	6/11/14 08:25	SO	None	1 - SS-Sleeve	10 day										X											X															
FDG2-SL-878-SA5A-SB-4.0-5.0	6/11/14 08:55	SO	None	2 - SS-Sleeve	10 day	X	X					X			X											X															
FDG2-SL-878-SA5A-SB-4.0-5.0	6/11/14 08:55	SO	None	1 - 16 oz glass	10 day													X																							
FDG2-SL-878-SA5A-SB-4.0-5.0	6/11/14 08:55	SO	None	2 - Encore	10 day																				X																
FDG2-SL-694-SA6-SB-0.0-0.5	6/11/14 11:10	SO	None	1 - SS-Sleeve	10 day																					X															
FDG2-SL-695-SA6-SB-0.0-0.5	6/11/14 10:30	SO	None	1 - SS-Sleeve	10 day																					X															
FDG2-SL-560-NBZ-SB-0.0-0.5	6/11/14 11:35	SO	None	2 - SS-Sleeve	10 day	X	X					X			X											X															
FDG2-SL-560-NBZ-SB-0.0-0.5	6/11/14 11:35	SO	None	1 - 4 oz glass	10 day													X																							
FDG2-SL-577-NBZ-SB-0.0-0.5	6/11/14 13:45	SO	None	1 - SS-Sleeve	10 day																					X															
FDG2-SL-629-SA8-SB-0.0-0.5	6/11/14 14:05	SO	None	1 - SS-Sleeve	10 day																					X															
FDG2-SL-571-NBZ-SB-0.0-0.5	6/11/14 14:40	SO	None	1 - SS-Sleeve	10 day																					X															

Special Instructions: For all EFH, silica gel cleanup required on half the extract. Analyze both extracts for EFH.

Sampler: Randy Roberts Sandy Do

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Sleep Myself	06/11/14	1600									
									[illegible]	6-12-14	915

Final Data Gap Block 2 1 of 1

COC Rev 4

COC: 20140611-01, Page 1 of 1

Sample Delivery Group

PH230

SSFL Phase 3 Chain of Custody

13013 1481663 7497906-11

CDM Smith

DateShipped: 6/12/2014
CarrierName: FedEx
AirbillNo: 770288260743

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140612-04
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate_Nitrite_TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
SVL-532-SA8-SB-3.5-4.0	6/12/14 12:30	SO	None	3 - Encore	10 day																	X																			
SVL-532-SA8-SB-3.5-4.0	6/12/14 12:30	SO	None	1 - 4 oz glass	10 day																	X																			Soil Moisture
TB-061214	6/12/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																	X																			
SVL-546-SA8-SB-4.4-4.9MS	6/12/14 10:25	SO	None	9 - Encore	10 day																	X																			MS/MSD
SVL-546-SA8-SB-4.4-4.9MS	6/12/14 10:25	SO	None	1 - 8 oz glass	10 day																	X																			Soil Moisture. MS/MSD
SVL-846-SA8-SB-4.4-4.9	6/12/14 10:30	SO	None	3 - Encore	10 day																	X																			
SVL-846-SA8-SB-4.4-4.9	6/12/14 10:30	SO	None	1 - 4 oz glass	10 day																	X																			Soil Moisture

Special Instructions:

Sampler: Van Vathasin Rob Ellis

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Shey Mypelae	6/12/14	1620									
									6-13-14	930	

Soil Vapor 1 of 1

COC Rev 4

Sample Delivery Group

PH231

SSFL Phase 3 Chain of Custody

13013 1481665 7497920-2

CDM Smith

DateShipped: 6/12/2014
CarrierName: FedEx
AirbillNo: 770288260743

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140612-01
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate_Nitrite_TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
FDG2-SL-562-NBZ-SB-0.0-0.5	6/12/14 08:50	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X				X			X															
FDG2-SL-563-NBZ-SB-0.0-0.5	6/12/14 09:25	SO	None	2 - SS-Sleeve	10 day	X	X					X		X	X							X			X															sample is wet
FDG2-SL-563-NBZ-SB-0.0-0.5	6/12/14 09:25	SO	None	1 - 4 oz glass	10 day													X																						sample is wet
FDG2-SL-569-NBZ-SB-0.0-0.5	6/12/14 08:55	SO	None	2 - SS-Sleeve	10 day	X	X					X			X										X															
FDG2-SL-569-NBZ-SB-0.0-0.5	6/12/14 08:55	SO	None	1 - 4 oz glass	10 day													X																						
FDG2-SL-570-NBZ-SB-0.0-0.5	6/12/14 08:10	SO	None	2 - SS-Sleeve	10 day	X	X					X			X										X															
FDG2-SL-570-NBZ-SB-0.0-0.5	6/12/14 08:10	SO	None	1 - 4 oz glass	10 day													X																						
FDG2-SL-583-NBZ-SB-0.0-0.5	6/12/14 13:35	SO	None	1 - SS-Sleeve	10 day										X										X															

Special Instructions: For all EFH, silica gel cleanup required on half the extract. Analyze both extracts for EFH.

Sampler: Randy Roberts Sandy Do

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Stephanie Lopez	6/12/14	16:00									
										6/13/14	930

Final Data Gap Block 2 1 of 3

COC Rev 4

SSFL Phase 3 Chain of Custody

13013 1481665 7497920-26

CDM Smith

DateShipped: 6/12/2014
CarrierName: FedEx
AirbillNo: 770288260743

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140612-02
Cooler #: 2
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate_Nitrite_TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
EB1-061214	6/12/14 15:00	WQ	HNO3 pH<2	1 - 250 mL Poly	10 day	X		X																																	
EB1-061214	6/12/14 15:00	WQ	None	4 - 1 L Amber	10 day									X							X																				
EB1-061214	6/12/14 15:00	WQ	None	1 - 250 mL Poly	10 day														X																					
EB1-061214	6/12/14 15:00	WQ	HCl	2 - 1 L Amber	10 day																					X														
EB1-061214	6/12/14 15:00	WQ	HCl	3 - 40 mL Vial	10 day																				X															
EB2-061214	6/12/14 15:30	WQ	HNO3 pH<2	1 - 250 mL Poly	10 day	X		X																																
EB2-061214	6/12/14 15:30	WQ	None	1 - 250 mL Poly	10 day														X																				
EB2-061214	6/12/14 15:30	WQ	HCl	2 - 1 L Amber	10 day																					X													
EB2-061214	6/12/14 15:30	WQ	HCl	3 - 40 mL Vial	10 day																				X														

For all EFH, silica gel cleanup required on half the extract. Analyze both extracts for EFH.

Special Instructions:

Sampler: Pam Hart

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
										6.13.14	930

FDG BLOCK 2 2 of 3

SSFL Phase 3 Chain of Custody

13013 1481665 7497920-26

CDM Smith

DateShipped: 6/12/2014
CarrierName: FedEx
AirbillNo: 770288260743

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140612-03
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
EB1-061214	6/12/14 15:00	WQ	None	3 - 250 mL Amber	10 day							X			X							X																			
EB2-061214	6/12/14 15:30	WQ	None	3 - 250 mL Amber	10 day							X			X							X																			
EB2-061214	6/12/14 15:30	WQ	None	2 - 1 L Amber	10 day									X																											

Special Instructions:

Sampler: Pam Hartman

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Steve Myers	6/12/14	1600									
									[illegible]	6-13-14	930

FDG Block 2 3 of 3

CDC Rev 4

COC: 20140612-03, Page 1 of 1

Sample Delivery Group

PH233

acct# 13[illegible] Gp# 1481960 Sample# 1481960

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 6/13/2014
CarrierName: FedEx
AirbillNo: 770297913914

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140613-01
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
TB-061314	6/13/14 08:00	WQ	HCl	3 - 40 mL Vial	10 day																			X																		
FDG2-SL-582-NBZ-SB-0.0-0.5	6/13/14 07:50	SO	None	1 - SS-Sleeve	10 day										X										X																	
FDG2-SL-582-NBZ-SB-3.0-3.5	6/13/14 08:05	SO	None	1 - SS-Sleeve	10 day										X										X																	
FDG2-SL-582-NBZ-SB-3.0-3.5	6/13/14 08:05	SO	None	2 - Encore	0																			X																	
FDG2-SL-584-NBZ-SB-0.0-0.5	6/13/14 09:50	SO	None	1 - SS-Sleeve	10 day										X										X																	
FDG2-SL-585-NBZ-SB-0.0-0.5	6/13/14 09:25	SO	None	1 - SS-Sleeve	10 day										X										X																	
FDG2-SL-586-NBZ-SB-0.0-0.5	6/13/14 09:00	SO	None	1 - SS-Sleeve	10 day										X										X																	

Special Instructions: For all EFH, silica gel cleanup required on half the extract. Analyze both extracts for EFH.

Sampler: Sandy Do

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Sandy Mupel	6/13/14	1400									
										6/14/14	920

Final Data Gap Block 2 1 of 1

Sample Delivery Group

PH234

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 6/16/2014
CarrierName: FedEx
AirbillNo: 770318721323

A-13013
G-1482333
S-7501186-96

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140616-01
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
TB-061614	6/16/14 08:00	WQ	HCl	9 - 40 mL Vial	10 day																		X	X	X																	
FDG2-SL-875-SA5A-SB-0.0-0.5	6/16/14 08:20	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X								X																
FDG2-SL-875-SA5A-SB-2.0-3.0MS	6/16/14 08:45	SO	None	6 - 16 oz glass	10 day	X	X					X		X	X			X								X																MS/MSD
FDG2-SL-875-SA5A-SB-2.0-3.0MS	6/16/14 08:45	SO	None	24 - Encore	10 day																		X	X	X																	MS/MSD
FDG2-SL-876-SA5A-SB-0.0-0.5	6/16/14 09:15	SO	None	1 - 16 oz glass	10 day							X														X																
FDG2-SL-876-SA5A-SB-4.0-5.0	6/16/14 09:45	SO	None	1 - 16 oz glass	10 day							X		X												X																
FDG2-SL-876-SA5A-SB-4.0-5.0	6/16/14 09:45	SO	None	2 - Encore	10 day																				X																
FDG2-SL-1175-SA5A-SB-2.0-3.0	6/16/14 08:50	SO	None	2 - 16 oz glass	10 day	X	X					X		X	X			X								X																
FDG2-SL-1175-SA5A-SB-2.0-3.0	6/16/14 08:50	SO	None	8 - Encore	10 day																		X	X	X																	
FDG2-SL-877-SA5A-SB-0.0-0.5	6/16/14 10:55	SO	None	1 - 16 oz glass	10 day							X														X																
FDG2-SL-877-SA5A-SB-3.0-4.0	6/16/14 11:10	SO	None	1 - 16 oz glass	10 day							X		X												X																
FDG2-SL-877-SA5A-SB-3.0-4.0	6/16/14 11:10	SO	None	2 - Encore	10 day																				X																

For all EFH, silica gel cleanup required on half the extract. Analyze both extracts for EFH.

Special Instructions:

Sampler: Sandy Do

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Mypelo	6/16/14	1600									
										6/17/14	0915

Final Data Gap 1 of 1

COC Rev 4

Sample Delivery Group

PH235

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 6/17/2014
CarrierName: FedEx
AirbillNo: 770330975227

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

A-13013
G-1482731
S-7502707-09

COC No: 20140617-01
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike, Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
FDG2-SL-567-NBZ-SB-0.0-0.5	6/17/14 08:55	SO	None	2 - SS-Sleeve	10 day	X	X					X			X											X															
FDG2-SL-567-NBZ-SB-0.0-0.5	6/17/14 08:55	SO	None	1 - 4 oz glass	10 day													X								X															
FDG2-SL-568-NBZ-SB-0.0-0.5	6/17/14 07:55	SO	None	2 - SS-Sleeve	10 day	X	X					X			X											X															
FDG2-SL-568-NBZ-SB-0.0-0.5	6/17/14 07:55	SO	None	1 - 4 oz glass	10 day													X								X															
FDG2-SL-572-NBZ-SB-0.0-0.5	6/17/14 11:45	SO	None	1 - SS-Sleeve	10 day																					X															

For all EFH, silica gel cleanup required on half the extract. Analyze both extracts for EFH.

Special Instructions:

Sampler: Sandy Do

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Sandy Mygel	06/17/14	1600									
										6/18/14	1005

Final Data Gap Block 2 1 of 1

COC Rev 4

COC: 20140617-01. Page 1 of 1

Sample Delivery Group

PH237

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 6/18/2014
CarrierName: FedEx
AirbillNo: 770345474930

A-13013
G-1483089
S-7504493-96

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

COC No: 20140618-01
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike
Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
FDG2-SL-573-NBZ-SB-0.0-0.5	6/18/14 09:40	SO	None	1 - SS-Sleeve	10 day																					X															
FDG2-SL-574-NBZ-SB-0.0-0.5	6/18/14 08:20	SO	None	2 - SS-Sleeve	10 day	X	X								X											X															
FDG2-SL-574-NBZ-SB-0.0-0.5	6/18/14 08:20	SO	None	1 - 4 oz glass	10 day													X																							
FDG2-SL-575-NBZ-SB-0.0-0.5	6/18/14 07:55	SO	None	2 - SS-Sleeve	10 day	X	X					X			X											X															
FDG2-SL-575-NBZ-SB-0.0-0.5	6/18/14 07:55	SO	None	1 - 4 oz glass	10 day													X																							

Special Instructions: For all EFH, silica gel cleanup required on half the extract. Analyze both extracts for EFH.

Sampler: Sandy Do

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Steve Myers	6/18/14	1600									
									[signature]	6/19/14	0920

Final Data Gap Block 2 1 of 2

COC Rev 1

SSFL Phase 3 Chain of Custody

CDM Smith

DateShipped: 6/18/2014
CarrierName: FedEx
AirbillNo: 770345474930

Contact Name: Pam Hartman
Contact Phone: (818)466-8007

A-13013
G-1483089
S-7504493-96

COC No: 20140618-02
Cooler #: 1
Lab: Lancaster
Lab Phone: 717-556-7259
Lab Address: 2425 New Holland Pike Lancaster, PA 17601

Sample	Date/ Time	Matrix	Preserv.	Type/No of Containers	Turn Around Time	Metals 6010 and 6020	Mercury 7471 (Soil)	Mercury 7470 (Water)	Fluoride 300.0/9056	SVOC 8270	TIC 8270	PAHs 8270 SIM	1,4 Dioxane 8270 SIM	Dioxins 1613	PCBs/PCTs 8082	Perchlorate 314.0/331	Perchlorate Confirm 6850/6860	pH 9045 (Soil)	pH 9040 (Water)	Hex Cr 7196/7199	Herbicides 8151	Pesticides 8081	VOCs 8260	1,4 Dioxane 8260 SIM	TPH-GRO 8015	TPH-EFH 8015	Glycols 8015	Alcohols 8015	Terphenyls 8015	Nitrates 300.0/9056	Energetics 8330	Cyanide 9012	Formaldehyde 8315	NDMA 1625	Organotin	Methyl Mercury 1630	Mercury Speciation 3200	Calc Nitrate, Nitrite, TKN	TOC SM 5310B	Grain Size ASTM 2488-09a	Other
EB1-061814	6/18/14 15:00	WQ	HNO3 pH<2	1 - 250 mL Poly	10 day	X		X																																	
EB1-061814	6/18/14 15:00	WQ	None	2 - 250 mL Amber	10 day							X			X																											
EB1-061814	6/18/14 15:00	WQ	None	2 - 1 L Amber	10 day									X																											
EB1-061814	6/18/14 15:00	WQ	None	1 - 250 mL Poly	10 day														X																					
EB1-061814	6/18/14 15:00	WQ	HCl	9 - 40 mL Vial	10 day																		X	X	X															
EB1-061814	6/18/14 15:00	WQ	HCl	2 - 1 L Amber	10 day																					X														

Special Instructions:
For all EFH, silica gel cleanup required on half the extract. Analyze both extracts for EFH.

Sampler: Steph Mupell

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time	Received by	Date	Time
Steph Mupell	06/18/14	1600									
									C Eash	6/19/14	0920

Final Data Gap Block 2 2 of 2

Appendix G
MWH Trench Report

TECHNICAL MEMORANDUM
SUMMARY OF PHASE 3 TRENCH INVESTIGATION ACTIVITIES IN AREA IV SANTA SUSANA FIELD LABORATORY, VENTURA COUNTY, CALIFORNIA

Prepared For:

THE DEPARTMENT OF ENERGY

SEPTEMBER 2014



Shelby Valenzuela, P.G. 7852
MWH Field Team Leader

David Collins, P.E.
MWH Project Manager

MWH

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LIST OF ABBREVIATIONS AND ACRONYMS

°C	Celsius (°C)
AOC	Administrative Order of Consent
ASTM	American Standard of Testing and Materials
bgs	below ground surface
COC	chain of custody
DOE	United States Department of Energy
DQO	data quality objective
DTSC	California Environmental Protection Agency, Department of Toxic Substances Control
EFH	extractable fuel hydrocarbons
EPA	U.S. Environmental Protection Agency
ft	feet
GPS	global positioning system
GRO	Gasoline Range Organics
HEPA	High-efficiency particulate air
id	Identification
IDW	Investigation derived waste
MBTA	Migratory Bird Treaty Act
MFSP	Master Field Sampling Plan
MWH	Montgomery Watson Harza
mg/m^3	milligrams per cubic meter
NAMG	Native America Monitoring Group
NDMA	*N*-Nitrosodimethylamine
PAH	Polyaromatic hydrocarbons
PCB	Polychlorinated biphenyl
PCT	Polychlorinated Triphenyl
PPE	Personal Protective Equipment
PID	photoionization detector
QC	quality control

LIST OF ABBREVIATIONS AND ACRONYMS
(Continued)

QAPP	Quality Assurance Project Plan
Santa Susana	Santa Susana Field Laboratory
SVOC	Semi volatile organic compound
SOP	standard operating procedure
TM	Technical Memorandum
TPH	Total Petroleum Hydrocarbons
USA	Underground Service Alert
ULS	Underground Location Service
USCS	Unified Soil Classification System
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound

1.0 INTRODUCTION

This technical memorandum (TM) has been prepared to present the trench investigation observations and soil sampling procedures completed during the Phase 3 Chemical Data Gap Investigation within Area IV of the Santa Susana Field Laboratory (SSFL). Trenching and soil sampling activities were conducted in accordance with the Master Field Sampling Plan (MFSP) for Chemical Data Gap Investigation, Phase 3 Soil Chemical Sampling at Area IV, Santa Susana Field Laboratory (Phase 3 Work Plan) (CDM Smith [CDM], 2012). Soil samples collected from trenches addressed data gaps proposed in the Final Phase 3 Data Gap Analysis Technical Memoranda for Subarea 5A (MWH, 2012c), Subarea 5B (MWH, 2012b), Subarea 5C (MWH, 2012a), Subarea 5D (MWH, 2013c), Subarea 3/6 (MWH, 2012d), Subarea 7 (MWH, 2013a), and Subarea 8 (MWH, 2013b). This TM was prepared for the Department of Energy (DOE) and is in compliance with the Administrative Order of Consent (AOC) for Remedial Action (AOC; Docket No. HSA-CO 10/11 - 037).

The purpose of this TM is to describe the completed field investigation associated with the trench soil sampling within Area IV of the SSFL. Soil samples were provided to CDM for coordination of laboratory analysis and data management. Therefore, chemical soil sampling results are not included as part of this TM.

1.1 TRENCH INVESTIGATION OBJECTIVES

The objective of the trench investigation conducted within Area IV of the SSFL was to obtain chemical soil data identified in the Phase 3 data gap analysis that will be used to evaluate whether the nature and extent of contamination at potential source areas within DOE sites are sufficiently characterized for remediation per the AOC. The trench locations were selected based on a targeted approach that focused on known or suspected subsurface features identified during previous geophysical surveys, aerial photo analysis, debris surveys and historical document review. Soil sampling locations were selected based on data gap recommendations and visual observations during field activities.

1.2 REPORT ORGANIZATION

This information presented in this TM is organized as follows:

- **Section 1.0 – Introduction.**

  This section presents the purpose and objective of this technical memorandum.

- **Section 2.0 –Trench Investigation.**

  This section describes the details of field preparation, implementation activities, observations, debris removal and deviations from the field sampling plan.

- **Section 3.0 – References.**
  The section provides the references cited in this site report.

2.0 TRENCH INVESTIGATION

Trenching activities and sampling within Area IV was performed by MWH between May 19th and June 4th of 2014. Locations, sample depths, and rationale for proposed trenches are provided in the Final Phase 3 Data Gap Analysis Technical Memoranda for Subarea 5A (MWH, 2012c), Subarea 5B (MWH, 2012b), Subarea 5C (MWH, 2012a), Subarea 5D (MWH, 2013c), Subarea 3/6 (MWH, 2012d), Subarea 7 (MWH, 2013a), and Subarea 8 (MWH, 2013b). Trench locations implemented as part of the field effort are shown on Figure 1-1.

2.1 PREPARATION ACTIVITIES

Prior to the trenching investigation, a series of preparation activities were completed including an underground utility survey, geophysical survey, biological survey, screening for surficial archaeological surficial artifacts, surficial radiological screening, vegetation clearance, and trench locating using a global position system (GPS) device and staking.

All proposed trench locations were staked using a GPS device in the field. Trench locations were adjusted in the field to target features identified in the sampling plan. Underground Service Alert (USA) was notified to mark subsurface utilities within a 50 foot buffer around the proposed trench. In addition, geophysical clearance of subsurface utilities in the general vicinity of each trench was completed on April 29, 2014 and May 5, 2014, by Underground Location Services (ULS) Service Corporation, a geophysical company subcontracted by MWH. A geophysical survey was also completed by Spectrum Geophysical to identify known and potentially unknown subsurface structures and readily identifiable subsurface utilities in Subarea 5D. Final trench locations were modified based on field observations, USA, and geophysical clearances.

A senior biologist with Leidos performed the initial oak tree and biological survey at each trench location. Trench locations were either adjusted or the trenching activities were rescheduled if sensitive or protected species were affected. The biologist returned to the site on a weekly basis until the trenching activities were completed. Trench locations and access areas that needed vegetation clearance were inspected by the biologist and every effort was made to remove evasive plants and protect native plants within these areas.

An archaeologist with Leidos conducted screening of surficial soil prior to and during trenching for Native American artifacts. No trenches were proposed in previously known Native American sensitive areas.

Before any subsurface work was performed a project specific hazard analysis was completed. This assessment determined that personal dust monitors would be worn by the MWH Field geologist and the subcontractor providing the dust control measures. Trenching activities would stop if dust measurements exceeded 0.1 milligrams per cubic meter (mg/m^3). All other subcontractors or observers would be up wind and out of the exclusion zone of the trenching activities. Dust measurements throughout trenching activities did not exceed 0.1 mg/m^3. Level D personal protective equipment (PPE) was selected for this work with a Level C upgrade to a half face respirator w/ organic vapor/ High-efficiency particulate air (HEPA) cartridges if dust levels exceeded 0.1 mg/m^3.

A certified health physicist from CDM was onsite to oversee radiation survey activities, confirm background levels and provide field direction to the onsite radiological screening technician. The onsite radiological technician used a field screening instrument to screen the surface of all trench locations prior to soil disturbance. All radiological screening activates were conducted according to Standard Operating Procedures (SOP) 7 of the Phase 3 Work Plan (CDM, 2012).

2.2 TRENCH ACTIVITIES

Nineteen trenches were advanced using a Deere 310 SJ backhoe. The trench locations are shown on Figure 1-1. A total of 53 primary soil samples were collected from the trench locations. Table 2-1 presents the sampling summary including sample identification (ID), sample depth, analytical suite, and rationale.

Trenching was conducted under the supervision of a competent person and a state of California professional geologist. Subsurface trenching activities were observed by an archaeologist from Leidos and a Native American from the Native America Monitoring Group (NAMG) for any Native American artifacts that could have been unearthed during trenching activities. Trench spoils were stockpiled at a minimum of 3 feet from the edge of the excavation and no personnel entered the trenches. Trenching was advanced until targeted features were exhumed or until bedrock was encountered. A water sprayer attached to a 500 gallon water buffalo with potable water was used throughout trenching activities for dust suppression.

Radiological screening was performed on the soil within the backhoe bucket according to SOP 7 of the Phase 3 Work Plan (CDM, 2012). During the collection of soil samples a Bicron MicroR Detector was used to monitor for potential gamma radiation by a CDM health and safety of field worker. A Ludlum 2360 Radiation Monitor was used to screen each soil sample to identify potential radiological activity. Any debris recovered or removed from the trench was also

screened for radiation. Readings were recorded in the field logbook and on the CDM field data sample sheet.

Volatile organic compound (VOC) vapor measurements were collected according to SOP 6 of the Phase 3 Work Plan (CDM, 2012). A photoionization detector (PID) was used to measure VOC vapors from subsurface soil. Measurements were collected for every soil sample, stained soil, stock piles and ambient conditions downwind of trenching activities. PID concentrations will be recorded on the field logbooks and trench logs.

Once radiological and VOC screening was preformed, soil samples were collected at targeted features or at 5 foot intervals until bedrock. Samples collected from back hoe trenches were collected according to SOP 5 of the Phase 3 Work Plan (CDM, 2012) and are further described below. A trench log was prepared detailing descriptions of soil, bedrock and targeted features along the trench wall in accordance with the Unified Soil Classification System (USCS) (American Standard for Testing and Materials [ASTM], 2009) and following the procedures outlined in SOP 9 of the Phase 3 Work Plan (CDM, 2012). Trench logs are included in Appendix A. GPS coordinates and photos were collected at each trench location, soil sample and feature within the trench. Photos of each trench are provided in Appendix B. Following sample collection and geologic logging, trenches were backfilled with trench spoils and compacted using the weight of the backhoe.

After backfilling activities, the backhoe bucket was decontaminated between each trench location. A decontamination area was built using plastic sheeting with bermed sides that was large enough to fully contain the bucket to be cleaned. The decontamination area was located in the Area IV waste accumulation yard south of Building 4038. The backhoe bucket and arm was screened for radioactivity. The backhoe bucket was sprayed with a hand sprayer with potable water, washed with bushes, water and Liquinox to remove any soil, and sprayed with American Society of Testing and Materials (ASTM) Type II water on a final rinse. The backhoe was then removed from the decontamination pool and allowed to air dry before moving on to the next trench location. All decontamination wastewater was placed in 55-gallon liquid waste drums. All plastic sheeting and PPE was stored in separate solid waste containers. All investigation derived waste (IDW) containers were properly labeled and stored at the Area IV waste accumulation yard for proper disposal according to SOP 20 of the Phase 3 Work Plan (CDM, 2012).

2.3 TRENCH SOIL SAMPLE COLLECTION

Soil samples for chemical analysis were collected from the trenches using the backhoe bucket that was firmly planted on the ground per SOP 5 of the Phase 3 Work Plan (CDM, 2012). Soil samples were either collected at the targeted feature or adjusted based on observations, field instrument readings, or unexpected features. If the targeted feature was not encountered then samples were collected at 0.5 feet below ground surface (bgs) and every five feet until bedrock.

2.3.1 Sample Collection Methods

Soil samples were collected directly from the bucket of the backhoe and placed into a clean sample container according to SOP 2 and 5 of the Phase 3 Work Plan (CDM, 2012). Soil collected for VOCs, 1-4-dioxane, and total petroleum hydrocarbons (TPH) - gasoline range organics (GRO) were collected directly from the bottom of the sample jars using EnCore® samplers. All other samples were collected in appropriate sample containers.

2.3.2 Field Quality Control Procedures

Soil duplicates were collected in separate containers, but from the same location of the original parent samples. Field duplicates were collected at a frequency of one per twenty primary soil samples. An equipment rinsate blank was collected from the backhoe bucket and submitted for analysis on a weekly basis throughout trench sampling activities. One trip blank was submitted in each cooler that contained soil samples to be analyzed for VOCs, 1,4-dioxane, and/or TPH-GRO. One source blank was prepared and submitted for each lot number of ASTM Type II water used during the sampling event. All field QC samples were collected in accordance to the QAPP in the Phase 3 Work Plan (CDM, 2012). Laboratory QC data will be provided with the analytical results in a separate TM (to be prepared by CDM at a future date).

2.3.3 Sample Handling

All containers were labeled immediately after collection and samples identifications (IDs) were applied per CDM sample container labeling procedures outlined in the Phase 3 Work Plan. The exteriors of sample containers were wiped clean with a paper towel to remove residual soil from the exterior of the containers prior to labeling. Each labeled container was placed in a zip-top plastic bag, sealed, and placed in a cooler containing ice. Soil samples were maintained at a temperature of 4 degrees Celsius (°C) with an acceptable range between 2 and 6 °C. Sample collection documentation was tracked on a CDM field data sample sheet and chain-of-custody (COC) according to SOP 10 of the Phase 2 Work Plan (CDM, 2012). Soil samples and sample documentation was handed over to the CDM field staff for final packaging and shipping to the chemical laboratory.

2.3.4 Chemical Analysis

Samples are to be analyzed according to the Final Phase 3 Data Gap Analysis Technical Memoranda using the following EPA Methods:

- VOCs and 1,4-dioxane by EPA Method 8260B and 8260B SIM;
- Metals by EPA Methods 6010B/6020/7471A/7199;
- Biphenyls by EPA Method 8270C;
- Terphenyls by EPA Method 8015B;
- Glycols by EPA Method 8015B;
- Morpholine by EPA Method 8260 TIC;
- Polyaromatic hydrocarbons (PAHs) by EPA Method 8270 SIM;
- Polychlorinated biphenyl (PCBs) and PCTs by EPA Method 8082;
- Pesticides by EPA Method 8081;
- Herbicides by EPA Method 8151A;
- Dioxins/furans by EPA Method 1613B;
- Perchlorate by EPA Method 314.0 with confirmation by EPA Method 6850;
- TPH by EPA Method 8015B;
- Energetics by EPA Method 8330A;
- pH by EPA Method 9045C; and
- Soil Moisture by ASTM D2216/EPA Method 160.3.

2.4 FINDINGS

During trenching activities MWH personal observed anticipated features targeted for investigation and sampling and unexpected subsurface features, which were documented and sampled if warranted. A summary of observations recorded during trenching including descriptions of targeted features and unanticipated subsurface features is presented in Table 2-2.

2.5 DEBRIS REMOVAL

If debris was observed in the trench or removed during trenching activities, it was screened for radiation and VOCs. All debris was segregated and placed on plastic for disposal according to SOP 20 of the Phase 3 Work Plan (CDM, 2012). GPS coordinates and photo documentation was collected and a description summary was recorded on the trench log for each piece of debris. Debris removal logs are included in Appendix C.

2.6 DEVIATIONS FROM THE TRENCH FIELD SAMPLING PLAN

Deviations from proposed trenching sample rationale in the field sampling plan were documented and are summarized in Table 2-3. Trench locations were adjusted in the field for a variety reasons including geophysical survey results (e.g., trench moved to target a geophysical anomaly identified adjacent to proposed trench location), features observed at the ground surface (e.g., clay pipe indicating potential leach field location), trenching proposed in a biologically sensitive area, and topographic features (e.g., adjusted to target low spot where water could pond or collect). Similarly, sample depths were adjusted when necessary based on field observations including fill, subsurface features (e.g., pipelines, debris), and depth to bedrock.

During sampling activities, three trench locations in Subarea 5A (i.e., 5ASV_DG-615, -616, and -617) were identified within an active bird nesting area and could not be excavated. DOE communicated the decision to defer trenching to the remedial planning phase along with rationale for each location in a letter to DTSC dated July 31, 2014 (DOE, 2014). If VOC data at these locations is deemed necessary during the remedial planning phase, trenches will be excavated.

3.0 SAMPLING RESULTS

CDM Smith. 2012. Work Plan for Chemical Data Gap Investigation Phase 3 Soil Chemical Sampling at Area IV, Santa Susana Field Laboratory, Ventura County, California. April.

MWH, 2012a. Addendum No. 1 to Master Field Sampling Plan for Chemical Data Gap Investigation Phase 3 Soil Chemical Sampling at Area IV – Subarea 5C, Santa Susana Field Laboratory, Ventura County, California. April.

MWH, 2012b. Addendum No. 2 to Master Field Sampling Plan for Chemical Data Gap Investigation Phase 3 Soil Chemical Sampling at Area IV – Subarea 5B, Santa Susana Field Laboratory, Ventura County, California. June.

MWH, 2012c. Addendum No. 4 to Master Field Sampling Plan for Chemical Data Gap Investigation Phase 3 Soil Chemical Sampling at Area IV – Subarea 5A, Santa Susana Field Laboratory, Ventura County, California. August.

MWH, 2012d. Addendum No. 5 to Master Field Sampling Plan for Chemical Data Gap Investigation Phase 3 Soil Chemical Sampling at Area IV – Subarea 3/6, Santa Susana Field Laboratory, Ventura County, California. October.

MWH, 2013a. Addendum No. 6 to Master Field Sampling Plan for Chemical Data Gap Investigation Phase 3 Soil Chemical Sampling at Area IV – Subarea 7, Santa Susana Field Laboratory, Ventura County, California. March.

MWH, 2013b. Addendum No. 7 to Master Field Sampling Plan for Chemical Data Gap Investigation Phase 3 Soil Chemical Sampling at Area IV – Subarea 8, Santa Susana Field Laboratory, Ventura County, California. August.

MWH, 2013c. Addendum No. 8 to Master Field Sampling Plan for Chemical Data Gap Investigation Phase 3 Soil Chemical Sampling at Area IV – Subarea 5D, Santa Susana Field Laboratory, Ventura County, California. August.

MWH, 2014. Remaining Sampling Locations Within Bird Nesting Areas, Final Phase 3 Data Gap Analysis, Santa Susana Field Laboratory, Ventura County, California. July.

TABLES

Table 2-1
Phase 3 Trench Sampling and Analytical Summary
Santa Susana Field Laboratory
Ventura County, California
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Location ID	Location Type	Location Description	Sample ID	Sample Type	Soil Type	Depth	Collection Date	PAHs (EPA Method 8270C [SIM])	PCBs / PCTs (EPA Method 8082)	Dioxins/Furans (EPA Method 1613)	Metals (EPA Methods 6010B/6010C/6020/6020A/7471A/7471B)	Cr(VI) (EPA Method 7196A)	Biphenyls (EPA Method 8270C)	Terphenyls (EPA Method 8015B)	Glycols (EPA Method 8015B)	Perchlorate (EPA Method 314.0/6850/6860)	Energetics (EPA Method 8330A)	TPH GRO (EPA Method 8015B)	TPH EFH w/ SGC (EPA Method 8015B/3630)	VOCs (SM) (EPA Method 8260B)	Morpholine (EPA Method 8260 TIC)	Pesticides (EPA Method 8081)	Herbicides (EPA Method 8151A)	pH (EPA Method 9045C)	Soil Moisture (ASTM D2216/ EPA Method 160.3)	Rationale
5A_DG-587	Test Pit	Within Building 4023 Footprint	SL-SA5A-587-TR-0.5	Primary	Fill	0.5	5/22/2014	X	X	X	X								X					X	X	Location targets AST with unknown contents (Unknown-AT-L9-3) and linear magnetometer anomaly; positioned within medium toned mounded material identified i EPA TM and fill of unknown origin observed in borings within B4023. Bedrock is anticipated ~10 feet bgs. **Collect deepest sample targeting soil just above bedrock.** Conduct adjacent test pit for linear magnetometer anomaly and adjust 5-foot sample to target feature (or sample pit as appropriate).
5A_DG-587	Test Pit	Within Building 4023 Footprint	SL-SA5A-587-TR-5.5MS	Primary/MS/MSD	Fill	5.5	5/22/2014	X	X	X	X							X	X					X	X	
5A_DG-587	Test Pit	Within Building 4023 Footprint	SL-SA5A-887-TR-5.5	Field Duplicate	Fill	5.5	5/22/2014	X	X	X	X							X	X					X	X	
5A_DG-636	Test Pit	East of Building 4042	SL-SA5A-636-TR-0.5	Primary	Fill	0.5	5/23/2014	X	X	X	X								X					X	X	Location targets geophysical anomaly; also characterizes operational area. Bedrock anticipated <10 feet bgs. **Collect deepest sample targeting soil just above bedrock** Conduct adjacent test pit for geophysical anomaly. Adjust 5-foot sample to target feature (or sample pit as appropriate).
5A_DG-636	Test Pit	East of Building 4042	SL-SA5A-636-TR-3.5	Primary	Fill	3.5	5/23/2014	X	X	X	X							X	X					X	X	
5A_DG-636	Test Pit	East of Building 4042	SL-SA5A-636-TR-7.5	Primary	Alluvium	7.5	5/23/2014	X	X	X	X							X	X					X	X	
5A_DG-730	Test Pit	Open Space West of Building 4453	SL-SA5A-730-TR-0.5	Primary	Fill	0.5	5/22/2014	X	X	X	X								X					X	X	Location targets three point magnetometer anomalies and inline with interpreted drain remnant. Bedrock anticipated <10 feet bgs.**Collect deepest sample targeting soil just above bedrock.** Conduct adjacent test pit for three point magnetometer anomalies and interpreted drain remnant and adjust 5-foot sample to target feature (or sample pit as appropriate).
5A_DG-730	Test Pit	Open Space West of Building 4453	SL-SA5A-730-TR-6.0	Primary	Alluvium	6	5/22/2014	X	X	X	X							X	X					X	X	
5B_DG-529	Trench	South of B4012	SL-SA5B-529-TR-0.5	Primary	Fill	0.5	5/28/2014	X	X	X	X								X		X			X	X	Targets AST with unknown contents; also targets southern portion of fill and potential leach field location. Excavate exploratory trench perpendicular to leach field orientation to investigate leach field location (inspect for signs of fill, gravel, leach lines, etc.). Analyze for corrosion inhibitors due to cooling tower operations in area. Analyze at depth due to potential fill, potential leach field impacts, and soil movement/fill. 15 foot sample targets native soil just above bedrock; analyze for full suite plus VOCs (SM) to evaluate potential migration pathway to groundwater.
5B_DG-529	Trench	South of B4012	SL-SA5B-529-TR-2.0	Primary	Fill	2	5/28/2014	X	X	X	X							X	X		X			X	X	
5B_DG-529	Trench	South of B4012	SL-SA5B-529-TR-3.0	Primary	Fill	3	5/28/2014	X	X	X	X							X	X		X			X	X	
5B_DG-529	Trench	South of B4012	SL-SA5B-529-TR-11.0	Primary	Fill	11	5/28/2014	X	X	X	X							X	X	X	X			X	X	
5B_DG-693	Trench	East of B4005/B4006 Leach Field	SL-693-SA5B-TR-0.5	Primary	Fill	0.5	5/27/2014	X	X	X	X								X			X		X	X	Excavate trench in east/west orientation to target leach line, linear geophysical anomaly, and northern terminus of above ground fuel line. Extend trench approximately 20 feet eastward to investigate the northern terminus of the fuel line (i.e., determine if the pipeline goes underground at this location and has been removed). Collect sample targeting geophysical anomaly; adjust 5 foot sample to target soil beneath anomaly if observed. Collect an additional sample at the terminus of the pipeline if subsurface piping is identified or soil staining observed**Collect additional samples at 5-foot intervals to bedrock with the deepest sample targeting soil just above bedrock.**
5B_DG-693	Trench	East of B4005/B4006 Leach Field	SL-693-SA5B-TR-3.0	Primary	Fill	3	5/28/2014	X	X	X	X							X	X			X		X	X	
5B_DG-693	Trench	East of B4005/B4006 Leach Field	SL-693-SA5B-TR-3.5	Primary	Fill	3.5	5/27/2014	X	X	X	X							X	X			X		X	X	
5B_DG-693	Trench	East of B4005/B4006 Leach Field	SL-693-SA5B-TR-5.0	Primary	Alluvium	5	5/27/2014	X	X	X	X							X	X			X		X	X	
5B_DG-699	Test Pit	Open Area South of SCTL PowerPak Interconnecting Facility	SL-699-SA5B-TR-0.5	Primary	Fill	0.5	5/28/2014	X	X	X	X								X			X		X	X	Excavate test pit to investigate linear geophysical anomaly. If observed, adjust 5 foot boring sample to target soil immediately beneath the anomaly**Collect additional samples at 5-foot intervals to bedrock with the deepest sample targeting soil just above bedrock.**
5B_DG-699	Test Pit	Open Area South of SCTL PowerPak Interconnecting Facility	SL-699-SA5B-TR-3.0	Primary	Alluvium	3	5/28/2014	X	X	X	X							X	X			X		X	X	
5B_DG-699	Test Pit	Open Area South of SCTL PowerPak Interconnecting Facility	SL-699-SA5B-TR-8.0	Primary	Alluvium	8	5/28/2014	X	X	X	X							X	X			X		X	X	
5B_DG-707	Test Pit	Former aboveground tank T-735	SL-707-SA5B-TR-0.5	Primary	Fill	0.5	5/27/2014	X	X	X	X								X			X		X	X	Stepout for TPH detections to the south and dioxins/pesticides to the north; also targets fuel pipeline from T-735. **Collect samples at 5' intervals to bedrock with deepest sample just above bedrock; analyze all depths.**
5B_DG-707	Test Pit	Former aboveground tank T-735	SL-707-SA5B-TR-3.0	Primary	Alluvium	3	5/27/2014	X	X	X	X							X	X			X		X	X	
5C_DG-503	Trench	Fill area east of B4015	SL-503-SA5C-TR-0.5	Primary	Fill	0.5	5/29/2014	X	X	X	X					X			X					X	X	Complete characterization in downslope, eastern portion of fill area based on results observed in clearly contaminated fill area to the west. If fill observed, collect sample within fill and in top of native soil beneath fill to evaluate vertical migration**Collect deepest sample targeting soil just above bedrock.**
5C_DG-503	Trench	Fill area east of B4015	SL-503-SA5C-TR-5.0	Primary	Fill	5	5/29/2014	X	X	X	X					X		X	X					X	X	
5C_DG-503	Trench	Fill area east of B4015	SL-503-SA5C-TR-7.5	Primary	Alluvium	7.5	5/29/2014	X	X	X	X					X		X	X					X	X	
5C_DG-605	Trench	Field east of B4100	SL-605-SA5C-TR-0.5	Primary	Fill	0.5	5/29/2014	X	X	X	X					X			X					X	X	Representative sample targetting mounded material observed in EPA aerial photo review. Analytical suites selected since detected in other portions of the area. Excavat exploratory trench and collect samples based on field observation. Conditions should be observed in the trench and sample depths should target fill and native soil immediately beneath it.
5C_DG-605	Trench	Field east of B4100	SL-605-SA5C-TR-5.0	Primary	Fill	5	5/29/2014	X	X	X	X					X		X	X					X	X	
5C_DG-605	Trench	Field east of B4100	SL-605-SA5C-TR-10.0	Primary	Alluvium	10	5/29/2014	X	X	X	X					X		X	X					X	X	
5C_DG-646	Trench	Southern Screening Area	SL-646-SA5C-TR-0.5	Primary	Fill	0.5	6/4/2014	X	X	X	X	X	X	X	X	X	X		X			X	X	X	X	The geophysical survey performed as part of the Phase 3 activities to investigate the new potential fill area identified ("Loose Earth Fill") in historical drawings found two magnetometer anomalies and potential fill at thicknesses up to 12 feet. Excavate four trenches to evaluate vertical and lateral extent of potential fill and and one of the magnetometer anomalies (5C_DG-653). Collect surface samples at each location to characterize area for potential aerial deposition from burning activities at the B100 Trench; analyze for PAHs, metals, and dioxins.**Collect one sample from each trench at 5' bgs. Collect additional samples targeting fill, native below fill, debris, staining, and/or elevated PID readings based on field observations. If no impacts are observed, collect the deepest sample in soil just above bedrock (~10' bgs).** Analyze all samples for the standard investigation suite (PAHs, PCBs/PCTs, metals, and TPH) and for documented chemicals used in historical Area IV operations (dioxins, Cr(VI), biphenyls, terphenyls, glycols, perchlorate, and energetics).
5C_DG-646	Trench	Southern Screening Area	SL-646-SA5C-TR-5.0	Primary	Alluvium	5	6/4/2014	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	
5C_DG-651	Trench	Southern Screening Area	SL-651-SA5C-TR-0.5	Primary	Fill	0.5	5/30/2014	X	X	X	X	X	X	X	X	X	X		X			X	X	X	X	
5C_DG-651	Trench	Southern Screening Area	SL-651-SA5C-TR-5.0MS	Primary/MS/MSD	Fill	5	5/30/2014	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	
5C_DG-651	Trench	Southern Screening Area	SL-951-SA5C-TR-5.0	Split Sample	Fill	5	5/30/2014	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	
5C_DG-651	Trench	Southern Screening Area	SL-651-SA5C-TR-10.0	Primary	Fill	10	5/30/2014	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	
5C_DG-651	Trench	Southern Screening Area	SL-651-SA5C-TR-15.0	Primary	Fill	15	5/30/2014	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	
5C_DG-653	Trench	Southern Screening Area	SL-653-SA5C-TR-0.5	Primary	Fill	0.5	6/2/2014	X	X	X	X	X	X	X	X	X	X		X			X	X	X	X	
5C_DG-653	Trench	Southern Screening Area	SL-653-SA5C-TR-5.0	Primary/MS/MSD	Fill	5	6/2/2014	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	
5C_DG-653	Trench	Southern Screening Area	SL-653-SA5C-TR-10.0	Primary	Fill	10	6/2/2014	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	
5C_DG-653	Trench	Southern Screening Area	SL-653-SA5C-TR-15.0	Primary	Fill	15	6/2/2014	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	
5C_DG-655	Trench	Southern Screening Area	SL-655-SA5C-TR-0.5	Primary	Fill	0.5	6/4/2014	X	X	X	X	X	X	X	X	X	X		X			X	X	X	X	
5C_DG-655	Trench	Southern Screening Area	SL-655-SA5C-TR-5.0	Primary	Fill	5	6/4/2014	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	
6_DG-569	Test Pit	West of Parking Lot 4513 Area	SL-569-SA6-TR-0.5	Primary	Fill	0.5	5/20/2014	X	X	X	X								X					X	X	Stepout for TPH at L4BS1018 and SL-171-SA6. Conduct exploratory test pit to investigate linear terrain conductivity anomaly; if fill observed, collect sample at top of native immediately beneath fill.**Collect deepest sample just above bedrock; analyze all depths.**
6_DG-569	Test Pit	West of Parking Lot 4513 Area	SL-569-SA6-TR-2.5	Primary	Alluvium	2.5	5/20/2014	X	X	X	X							X	X					X	X	
6_DG-570	Test Pit	Parking Lot 4513 Area	SL-570-SA6-TR-0.5	Primary	Fill	0.5	5/20/2014	X	X	X	X								X					X	X	Stepout for TPH at L4BS1018; analyze standard suite since characterizing area for potential storage. Conduct exploratory test pit to investigate linear magnetic anomaly; if pipe or buried metal observed, collect sample in soil beneath feature**Collect deepest sample just above bedrock; analyze all depths.**
6_DG-570	Test Pit	Parking Lot 4513 Area	SL-570-SA6-TR-2.0	Primary	Alluvium	2	5/20/2014	X	X	X	X							X	X					X	X	
6_DG-570	Test Pit	Parking Lot 4513 Area	SL-570-SA6-TR-6.0	Primary	Alluvium	6	5/20/2014	X	X	X	X							X	X					X	X	
6_DG-686	Test Pit	West of ESG Storage Yard	SL-686-SA6-TR-0.5	Primary	Alluvium	0.5	5/21/2014	X	X	X	X								X					X	X	Location characterizes area west of ESG storage yard identified in 1988 Radiological Survey Report and targets surface water flow pathway at end of historical dirt road; also addresses potential aerial dispersion/deposition to the northwest of incinerator at B4040. Conduct exploratory test pit to investigate ground penetrating radar anomaly area; if fill with debris is present,**collect and analyze sample within fill and just above bedrock.** Bedrock anticipated <2'.
6_DG-686	Test Pit	West of ESG Storage Yard	SL-686-SA6-TR-5.0	Primary	Alluvium	5	5/21/2014	X	X	X	X							X	X					X	X	
6_DG-686	Test Pit	West of ESG Storage Yard	SL-686-SA6-TR-11.0	Primary	Weathered Bedrock	11	5/21/2014	X	X	X	X							X	X					X	X	
8_DG-534	Test Pit	Northwest of ESADA	SL-534-SA8-TR-0.5	Primary	Fill	0.5	5/19/2014	X	X	X	X								X					X	X	Conduct exploratory test pit to investigate hummocky area identified during 2008 debris survey. Location of test pit will be based on field observation of hummocky terrain. If fill, staining, debris, or other impacts are observed, collect sample targeting top of native soil. Bedrock anticipated ~5 feet bgs. If deep soils encountered, sample and place on hold pending shallow results.
8_DG-534	Test Pit	Northwest of ESADA	SL-534-SA8-TR-5.0	Primary	Alluvium	5	5/19/2014	X	X	X	X							X	X					X	X	Conduct exploratory test pit to investigate hummocky area identified during 2008 debris survey. Location of test pit will be based on field observation of hummocky terrain. If fill, staining, debris, or other impacts are observed, collect sample targeting top of native soil. Bedrock anticipated ~5 feet bgs. If deep soils encountered, sample and place on hold pending shallow results.

Table 2-1
Phase 3 Trench Sampling and Analytical Summary
Santa Susana Field Laboratory
Ventura County, California
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Location ID	Location Type	Location Description	Sample ID	Sample Type	Soil Type	Depth	Collection Date	PAHs (EPA Method 8270C [SIM])	PCBs / PCTs (EPA Method 8082)	Dioxins/Furans (EPA Method 1613)	Metals (EPA Methods 6010B/6010C /6020/6020A/ 7471A/7471B)	Cr(VI) (EPA Method 7196A)	Biphenyls (EPA Method 8270C)	Terphenyls (EPA Method 8015B)	Glycols (EPA Method 8015B)	Perchlorate (EPA Method 314.0/6850/6860)	Energetics (EPA Method 8330A)	TPH GRO (EPA Method 8015B)	TPH EFH w/ SGC (EPA Method 8015B/3630)	VOCs (SM) (EPA Method 8260B)	Morpholine (EPA Method 8260 TIC)	Pesticides (EPA Method 8081)	Herbicides (EPA Method 8151A)	pH (EPA Method 9045C)	Soil Moisture (ASTM D2216/ EPA Method 160.3)	Rationale
8_DG-548	Trench	West of the Solar Concentrator Facility	SL-548-SA8-TR-0.5	Primary	Alluvium	0.5	5/19/2014	X	X	X	X								X					X	X	Conduct exploratory trench to investigate topographic low spot adjacent to the debris area identified during 2008 debris survey. Also targets terrain conductivity anomaly. Fill anticipated based on previous sampling in the area and historical aerial photographs. Excavate until top of native soils encountered. Bedrock anticipated >10 feet bgs. Collect and analyze samples at 5-foot intervals to bedrock beginning at 5 feet bgs. **Collect deepest sample targeting soil just above bedrock.**
8_DG-548	Trench	West of the Solar Concentrator Facility	SL-548-SA8-TR-5.0MS	Primary/MS/MSD	Alluvium	5	5/19/2014	X	X	X	X							X	X					X	X	
8_DG-548	Trench	West of the Solar Concentrator Facility	SL-848-SA8-TR-5.0	Field Duplicate	Alluvium	5	5/19/2014	X	X	X	X							X	X					X	X	
8_DG-548	Trench	West of the Solar Concentrator Facility	SL-548-SA8-TR-10.0	Primary	Alluvium	10	5/19/2014	X	X	X	X							X	X					X	X	
8_DG-611	Test Pit	Southern Portion of Hillslope	SL-611-SA8-TR-0.5	Primary	Fill	0.5	5/20/2014	X	X	X	X								X					X	X	Characterizes hillslope southeast of the ESADA and targets debris area identified during the 2008 debris survey. Conduct exploratory test pit to investigate debris area. If fill, staining, debris, or other impacts are observed, collect sample targeting top of native soil. Bedrock anticipated <10 feet bgs. If deep soils encountered, sample and place on hold pending shallow results.
8_DG-611	Test Pit	Southern Portion of Hillslope	SL-611-SA8-TR-5.0	Primary	Alluvium	5	5/20/2014	X	X	X	X							X	X					X	X	
8_DG-611	Test Pit	Southern Portion of Hillslope	SL-611-SA8-TR-10.5	Primary	Alluvium	10.5	5/20/2014	X	X	X	X							X	X					X	X	

Acronyms
AST = above ground storage tank
ASTM = American Society for Testing and Materials
bgs = below ground surface
EFH = extractable fuel hydrocarbons
EPA = US Environmental Protection Agency
ESADA = Empire State Atomic Development Authority
MS/MSD = matrix spike/matrix duplicate
PAH = polyaromatic hydrocarbons
PCB = polychlorinated biphenyl
PCT = polychlorinated terphenyl
PID = photoionization detector
SCTL= Small Component Test Loop
SIM = selective ion monitoring
SM = standard method
TPH = total petroleum hydrocarbons
TM = technical memorandum
VOC = volatile organic compound

Table 2-2
PHASE 3 TRENCH FEATURE SUMMARY
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Location ID	Date of trench	Samples collected	Targeted Subsurface Feature(s)	Were geophysical anomaly whiskers present?	Was targeted feature in SAP encountered?	Were unexpected features encountered?
5A-DG-587	5/22/2014	SL-587-SA5A-TR-0.5 SL-587-SA5A-TR-5.5 SL-887-SA5A-TR-5.5 (Duplicate)	1) Linear magnetometer anomaly 2) medium toned mounded material 3) Fill of unknown origin	Yes, white whiskers along trend of linear magnetometer anomaly.	1) Yes: A 6-inch pipe was encountered ~5 ft. bgs that is likely the linear magnetometer anomaly. 2) No: Medium toned mounded material not observed (area was flat). 3) Yes: Fill was encountered.	1) An asphalt swale was also encountered ~2 ft. bgs that was not on the same trend as the pipe. 2) Plastic and asphalt debris at 1 foot bgs.
5A-DG-636	5/23/2014	SL-636-SA5A-TR-0.5 SL-636-SA5A-TR-3.5 SL-636-SA5A-TR-5.5	1) Linear terrain conductivity anomaly	Yes, white whiskers along trend of linear terrain conductivity anomaly.	1) Yes: An 8- to 12-inch section of red concrete topped with copper braided cable (grounding wire from existing transformer) was encountered ~2 ft. bgs that is likely the linear terrain conductivity anomaly.	1) Asphalt debris at 1 foot bgs.
5A-DG-730	5/22/2014	SL-730-SA5A-TR-0.5 SL-730-SA5A-TR-6.0	1) 3 point magnetometer anomalies 2) Interpreted drain remnant	Yes, targeted line of whiskers	1) Yes: Various metal debris observed at surface likely the point magnetometer anomalies. 2) No: Drain remnant not encountered.	No
5B-DG-529	5/28/2014	SL-529-SA5B-TR-0.5 SL-529-SA5B-TR-2.0 SL-529-SA5B-TR-3.0 SL-529-SA5B-TR-6.0	1) Fill material 2) Potential leach field	Yes, targeted whiskers and clay pipe at the surface.	1) Yes: Fill was encountered. 2) No: Evidence of former leach field not encountered.	- Clay pipe and other debris at the surface. - Encountered 1-inch metal pipe and 6-inch wrapped water line - Mixed debris (concrete, asphalt, a copper wire, etc.) throughout fill (0.5 - 11 ft. bgs [total depth]) - Red concrete and plastic between 2.0 and 4.0 ft. bgs. - Stained/discolored soil throughout fill (0.5 - 11 ft. bgs [total depth])
5B-DG-693	5/27/2014	SL-636-SA5A-TR-0.5 SL-636-SA5A-TR-3.5 SL-636-SA5A-TR-5.0	1) Leach line 2) Linear terrain conductivity anomaly 3) Northern terminus of above ground fuel line	Yes, whiskers were targeted and low spot with clay pipe debris	1) Yes: Leach lines not encountered, but gravel fill encountered 3 ft. bgs likely associated with former leach line. 2) Yes: 1-inch metal pipe encountered 3 ft. bgs likely the linear terrain conductivity anomaly. 3) No: Evidence that former above ground fuel line went below ground not observed.	- Clay pipe and other debris at the surface. - Encountered 8 ft. long metal utility pole anchor (3/4" dia.) and 8 ft. long metal utility pole anchor (1" dia.) 4 ft. bgs.
5B-DG-699	5/28/2014	SL-699-SA5B-TR-0.5 SL-699-SA5B-TR-3.0 SL-699-SA5B-TR-8.0	1) Linear terrain conductivity anomaly	Yes, white whiskers along trend of linear terrain conductivity anomaly.	1) Yes: 1-inch metal pipe encountered 2 ft. bgs likely the linear terrain conductivity anomaly (appeared same pipe as encountered in 5B_DG-693)	No
5B-DG-707	5/27/2014	SL-707-SA5B-TR-0.5 SL-707-SA5B-TR-3.0	--	--	--	No

Table 2-2
PHASE 3 TRENCH FEATURE SUMMARY
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Location ID	Date of trench	Samples collected	Targeted Subsurface Feature(s)	Were geophysical anomaly whiskers present?	Was targeted feature in SAP encountered?	Were unexpected features encountered?
5C-DG-503	5/29/2014	SL-503-SA5C-TR-0.5 SL-503-SA5C-TR-5.0 SL-503-SA5C-TR-7.5	1) Fill material	N/A	1) Yes: Hummocky conditions on surface and fill observed to 5 ft. bgs.	No
5C-DG-605	5/29/2014	SL-605-SA5C-TR-0.5 SL-605-SA5C-TR-5.0 SL-605-SA5C-TR-10.0	1) Mounded material.	N/A	1) Yes: Mounding on surface observed and fill with mixed debris (concrete, gravel, and metal debris) was encountered to 11 ft. bgs.	No
5C-DG-646	6/4/2014	SL-646-SA5C-TR-0.5 SL-646-SA5C-TR-5.0	1) New potential fill area identified ("Loose Earth Fill") in historical drawings	N/A	1) Yes: Fill with particle size debris encountered to 8 ft. bgs (thin layer of native and then bedrock).	No
5C-DG-651	5/30/2014	SL-651-SA5C-TR-0.5 SL-651-SA5C-TR-5.0MS SL-951-SA5C-TR-5.0 (split) SL-651-SA5C-TR-10.0 SL-651-SA5C-TR-15.0	1) New potential fill area identified ("Loose Earth Fill") in historical drawings	Yes, whisker present along northern edge of excavation.	1) Yes: Fill with mixed debris (wire, rebar, paint can lid, brick/cinder block) observed to bedrock (15 ft. bgs) with more debris below 5 ft. bgs.	No
5C-DG-653	6/2/2014	SL-653-SA5C-TR-0.5 SL-653-SA5C-TR-5.0 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0	1) New potential fill area identified ("Loose Earth Fill") in historical drawings 2) Magnetometer anomaly.	Yes, whisker present along northern edge of excavation.	1) Yes: Fill comprised primarily of disturbed soil and SS bedrock chunks with some debris (asphalt, concrete, potential ACM, brick) encountered to 13 feet bgs (thin layer of native and then bedrock). 2) Possibly: Metal debris encountered may be anomaly.	No
5C-DG-655	6/4/2014	SL-655-SA5C-TR-0.5 SL-655-SA5C-TR-5.0	1) New potential fill area identified ("Loose Earth Fill") in historical drawings	N/A	1) Yes: Fill encountered to 8 ft. bgs (thing layer of native and then bedrock). Trenching in progress, Blasting wire observed	No
6-DG-569	5/20/2014	SL-569-SA6-TR-0.5 SL-569-SA6-TR-2.5	1) Linear terrain conductivity anomaly 2) Fill material	Yes, white whiskers along trend of linear terrain conductivity anomaly.	1) Yes: Clay pipe and asphalt chunks at surface likely linear terrain conductivity anomaly. 2) Yes: Fill encountered to 2 ft. bgs.	No
6-DG-570	5/20/2014	SL-570-SA6-TR-0.5 SL-570-SA6-TR-2.0 SL-570-SA6-TR-6.0	1) Linear magnetometer anomaly 2) Fill material	Yes, whiskers were present and targeted	1) Yes: Pipe encountered at 0.5 ft. bgs. 2) Yes: Fill encountered to 1 ft. bgs.	No
6-DG-686	5/21/2014	SL-686-SA6-TR-0.5 SL-686-SA6-TR-5.0 SL-686-SA6-TR-11.0	1) Ground penetrating radar area. 2) Historic dirt road.	Yes, whiskers were present and targeted but could have been magnetometer and not GPR whiskers.	1) No: No fill or evidence of disturbed soil encountered. Note: anomaly could not be targeted because located in drip line of oak tree. 2) No: Historic dirt road not observed.	- Weathered bedrock with roots encountered from 6 to 12 ft. bgs.
8-DG-534	5/19/2014	SL-534-SA8-TR-0.5 SL-534-SA8-TR-5.0	--	--	--	No

Table 2-2
PHASE 3 TRENCH FEATURE SUMMARY
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Location ID	Date of trench	Samples collected	Targeted Subsurface Feature(s)	Were geophysical anomaly whiskers present?	Was targeted feature in SAP encountered?	Were unexpected features encountered?
8-DG-548	5/19/2014	SL-548-SA8-TR-0.5 SL-548-SA8-TR-5.0MS SL-848-SA8-TR-5.0 (duplicate) SL-548-SA8-TR-10.0	1) Topographic Low 2) Terrain Conductivity Anomaly.	N/A	1) Yes: topographic low spot found and targeted. 2) Yes: Localized metal debris with glass shards at surface and fill with burnt wood fragments encountered to 1.5 ft. bgs.	No
8-DG-611	5/20/2014	SL-611-SA8-TR-0.5 SL-611-SA8-TR-5.0 SL-611-SA8-TR-10.5	1) Debris area identified during 2008 debris survey.	N/A	1) Yes: Mound at surface targeted and fill limited to 1 ft bgs.	No

Notes
bgs - below ground surface
dia. - Diameter
ft - feet
N/A - not spplicable

Table 2-3
TRENCH FIELD INVESTIGATION PLAN DEVIATIONS
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Location ID	Completion Date	Samples collected	Sample Rationale	Sample deviations	Trench Location Deviation
5A-DG-587	5/22/2014	SL-587-SA5A-TR-0.5 SL-587-SA5A-TR-5.5 SL-887-SA5A-TR-5.5 (Duplicate)	Location targets AST with unknown contents (Unknown-AT-L9-3) and linear magnetometer anomaly; positioned within medium toned mounded material identified in EPA TM and fill of unknown origin observed in borings within B4023. Bedrock is anticipated ~10 feet bgs. Collect deepest sample targeting soil just above bedrock. Conduct adjacent test pit for linear magnetometer anomaly and adjust 5-foot sample to target feature (or sample pit as appropriate).	Shallow sample was collected at 0.5 feet above a buried asphalt swale and deep sample was collected at 5.5 feet immediately beneath a 6-inch pipe.	N/A
5A-DG-730	5/22/2014	SL-730-SA5A-TR-0.5 SL-730-SA5A-TR-6.0	Location targets three point magnetometer anomalies and inline with interpreted drain remnant. Bedrock anticipated <10 feet bgs. Collect deepest sample targeting soil just above bedrock. Conduct adjacent test pit for three point magnetometer anomalies and interpreted drain remnant and adjust 5-foot sample to target feature (or sample pit as appropriate).	N/A	Moved 6 feet to south of proposed location to target geophysical anomaly (whiskers) marked in the field.
5B-DG-529	5/28/2014	SL-529-SA5B-TR-0.5 SL-529-SA5B-TR-2.0 SL-529-SA5B-TR-3.0 SL-529-SA5B-TR-6.0	Targets AST with unknown contents; also targets southern portion of fill and potential leach field location. Excavate exploratory trench perpendicular to leach field orientation to investigate leach field location (inspect for signs of fill, gravel, leach lines, etc.). Analyze for corrosion inhibitors due to cooling tower operations in area. Analyze at depth due to potential fill, potential leach field impacts, and soil movement/fill. 15 foot sample targets native soil just above bedrock; analyze for full suite plus VOCs (SM) to evaluate potential migration pathway to groundwater.	2-foot sample was collected under potential 1-inch natural gas line; 3-foot sample located under a water line; and 11-foot sample targeted fill.	East west trending along anomaly (whisker) and clay pipe debris at surface.
5B-DG-707	5/27/2014	SL-707-SA5B-TR-0.5 SL-707-SA5B-TR-3.0	Step out for TPH detections to the south and dioxins/pesticides to the north; also targets fuel pipeline from T-735. Collect samples at 5' intervals to bedrock with deepest sample just above bedrock; analyze all depths.	N/A	Moved 11.0 feet. northwest to target location of former fuel pipeline elbow location. Targeted trench with concrete observed at ground surface which could have been concrete footing for the former fuel pipeline
5C-DG-605	5/29/2014	SL-605-SA5C-TR-0.5 SL-605-SA5C-TR-5.0 SL-605-SA5C-TR-10.0	Representative sample targeting mounded material observed in EPA aerial photo review. Analytical suites selected since detected in other portions of the area. Excavate exploratory trench and collect samples based on field observation. Conditions should be observed in the trench and sample depths should target fill and native soil immediately beneath it.	N/A	Moved 50.0 feet. west to target mound.
5C-DG-646	6/4/2014	SL-646-SA5C-TR-0.5 SL-646-SA5C-TR-5.0	The geophysical survey performed as part of the Phase 3 activities to investigate the new potential fill area identified ("Loose Earth Fill") in historical drawings found two magnetometer anomalies and potential fill at thicknesses up to 12 feet. Excavate four trenches to evaluate vertical and lateral extent of potential fill and and one of the magnetometer anomalies (5C_DG-653). Collect surface samples at each location to characterize area for potential aerial deposition from burning activities at the B100 Trench; analyze for PAHs, metals, and dioxins. Collect one sample from each trench at 5' bgs. Collect additional samples targeting fill, native below fill, debris, staining, and/or elevated PID readings based on field observations. If no impacts are observed, collect the deepest sample in soil just above bedrock (~10' bgs). Analyze all samples for the standard investigation suite (PAHs, PCBs/PCTs, metals, and TPH) and for documented chemicals used in historical Area IV operations (dioxins, Cr(VI), biphenyls, terphenyls, glycols, perchlorate, and energetics).	N/A	Moved to target west portion of the disturbed soil.

Table 2-3
TRENCH FIELD INVESTIGATION PLAN DEVIATIONS
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Location ID	Completion Date	Samples collected	Sample Rationale	Sample deviations	Trench Location Deviation
5C-DG-651	5/30/2014	SL-651-SA5C-TR-0.5 SL-651-SA5C-TR-5.0MS SL-951-SA5C-TR-5.0 (split) SL-651-SA5C-TR-10.0 SL-651-SA5C-TR-15.0	The geophysical survey performed as part of the Phase 3 activities to investigate the new potential fill area identified ("Loose Earth Fill") in historical drawings found two magnetometer anomalies and potential fill at thicknesses up to 12 feet. Excavate four trenches to evaluate vertical and lateral extent of potential fill and and one of the magnetometer anomalies (5C_DG-653). Collect surface samples at each location to characterize area for potential aerial deposition from burning activities at the B100 Trench; analyze for PAHs, metals, and dioxins. Collect one sample from each trench at 5' bgs. Collect additional samples targeting fill, native below fill, debris, staining, and/or elevated PID readings based on field observations. If no impacts are observed, collect the deepest sample in soil just above bedrock (~10' bgs). Analyze all samples for the standard investigation suite (PAHs, PCBs/PCTs, metals, and TPH) and for documented chemicals used in historical Area IV operations (dioxins, Cr(VI), biphenyls, terphenyls, glycols, perchlorate, and energetics).	Samples collected at 0.5. 5.0, 10 and 15. 10 and 15 foot sample collected in interval of debris (pipe, rebar, piece of I-beam, and piece of a paint can lid).	Moved 12.0 ft. southwest to target lateral extent of disturbed soil.
5C-DG-653	6/2/2014	SL-653-SA5C-TR-0.5 SL-653-SA5C-TR-5.0 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0		Samples collected at 0.5. 5.0, 10 and 15. 15 foot sample collected near possible ACM	Moved to target disturbed soil in the northern edge and geophysical anomaly.
5C-DG-655	6/4/2014	SL-655-SA5C-TR-0.5 SL-655-SA5C-TR-5.0		Samples collected at 0.5 in fill and 5.0 feet in native above bedrock. TD= 8.0	Moved to target eastern portion of disturbed soil.
6-DG-686	5/21/2014	SL-686-SA6-TR-0.5 SL-686-SA6-TR-5.0 SL-686-SA6-TR-11.0	Location characterizes area west of ESG storage yard identified in 1988 Radiological Survey Report and targets surface water flow pathway at end of historical dirt road; also addresses potential aerial dispersion/deposition to the northwest of incinerator at Building 4040. Conduct exploratory test pit to investigate ground penetrating radar anomaly area; if fill with debris is present, collect and analyze sample within fill and just above bedrock. Bedrock anticipated <2'.	N/A	Moved 20 feet WNW out of drip line of oak tree.
8-DG-548	5/19/2014	SL-548-SA8-TR-0.5 SL-548-SA8-TR-5.0MS SL-848-SA8-TR-5.0 (duplicate) SL-548-SA8-TR-10.0	Conduct exploratory trench to investigate topographic low spot adjacent to the debris area identified during 2008 debris survey. Also targets terrain conductivity anomaly. Fill anticipated based on previous sampling in the area and historical aerial photographs. Excavate until top of native soils encountered. Bedrock anticipated >10 feet bgs. Collect and analyze samples at 5-foot intervals to bedrock beginning at 5 feet bgs. Collect deepest sample targeting soil just above bedrock.	N/A	Moved 2 feet to east to target metal debris at surface and low spot.
8-DG-611	5/20/2014	SL-611-SA8-TR-0.5 SL-611-SA8-TR-5.0 SL-611-SA8-TR-10.5	Characterizes hillslope southeast of the ESADA and targets debris area identified during the 2008 debris survey. Conduct exploratory test pit to investigate debris area. If fill, staining, debris, or other impacts are observed, collect sample targeting top of native soil. Bedrock anticipated <10 feet bgs. If deep soils encountered, sample and place on hold pending shallow results.	Sample collected at 0.5, 5.0 and 10.5. Sample at 0.5 feet targeted fill; samples at 5.0 and 10.5 was collected in native soil.	Adjusted to target soil mound near road.

Acronyms
AST - Aboveground storage tank
bgs - below ground surface
Cr IV - Hexavalent Chromium
EPA = Environmental Protection Agency
dia. - Diameter
ESADA = Empire State Atomic Development Authority
ESG - Energy Systems Group
ft - feet
N/A - not spplicable
PAH = polyaromatic hydrocarbons
PCB = polychlorinated biphenyls
PCT = polychlorinated terphenyls
SM - Soil matrix
TPH = total petroleum hydrocarbons
WNW - West Northwest

FIGURES


Subarea 3
6_DG-686
Subarea 7
6_DG-570
6_DG-569
Area IV
Area III
Subarea 6
Northwest Buffer Zone
5A_DG-730
5A_DG-587
5B_DG-529
5A_DG-636
Northern Buffer Zone
Area IV
Subarea 5A
5B_DG-693
5C_DG-655
5B_DG-699
5B_DG-707
5C_DG-653
5C_DG-651
5C_DG-646
5C_DG-605
Subarea 8 North
Subarea 5B
Subarea 5C
5C_DG-503
8_DG-548
8_DG-534
Subarea 5D North
5D_DG-615
5D_DG-616
5D_DG-617
Subarea 8 South
8_DG-611
Subarea 5D South
Please Note: The original version of this figure includes colorize features and shading. A black and white copy of the figure should not be used because it may not accurately represent the information
Basemap Legend
Administrative Boundaries
Area IV Subareas
Existing Structure
Removed Structure
Deferred Trench Location
Trench Location
Area IV Phase 3 Trench Locations
SANTA SUSANA FIELD LABORATORY
Document: C:\Rocketdyne_MXD\DOETrenches_SV.mxd
Date: 09/23/2014
0
300
600
Feet
FIGURE 1-1

APPENDIX A

TRENCH LOGS

Project Name	Phase 3 DOE Trenching Data Gap Sampling 2014									
Trench Number	5A-DG-587	Project Number	10503982.3050105/ 10503982.3060105	Elevation and Datum	N/A			Location	AFH, SETF, B4023	
Equipment Supplier	B.L. HALL	Operator	Ralph Hall	Date and Time Started	22 MAY 2014, 12:12			Date and Time Completed	22 MAY 2014, 14:06	
Equipment Type	Deere 310SJ NK5H83	Trench Orientation	WNW - ESE	Total Depth	8.0' bgs			Total Number of Samples	3 (incl. dupe / MS/MSD	
Bucket Width	24"	Trench Length	15.5'	Trench Width	30"	No. of Samples	3	Bulk	-	Grab
Drive	-	Hand Auger	-							
Geologist or Hydrogeologist/Date	Rob Ellis, 22 MAY 2014			Checked by/Date						

FIELD TRENCH LOG

Sheet 1 of 1

Refusal? (Circle One) Yes / No — If Yes Depth = 8.0' bgs

Photo? (Circle One) Yes / No — No.

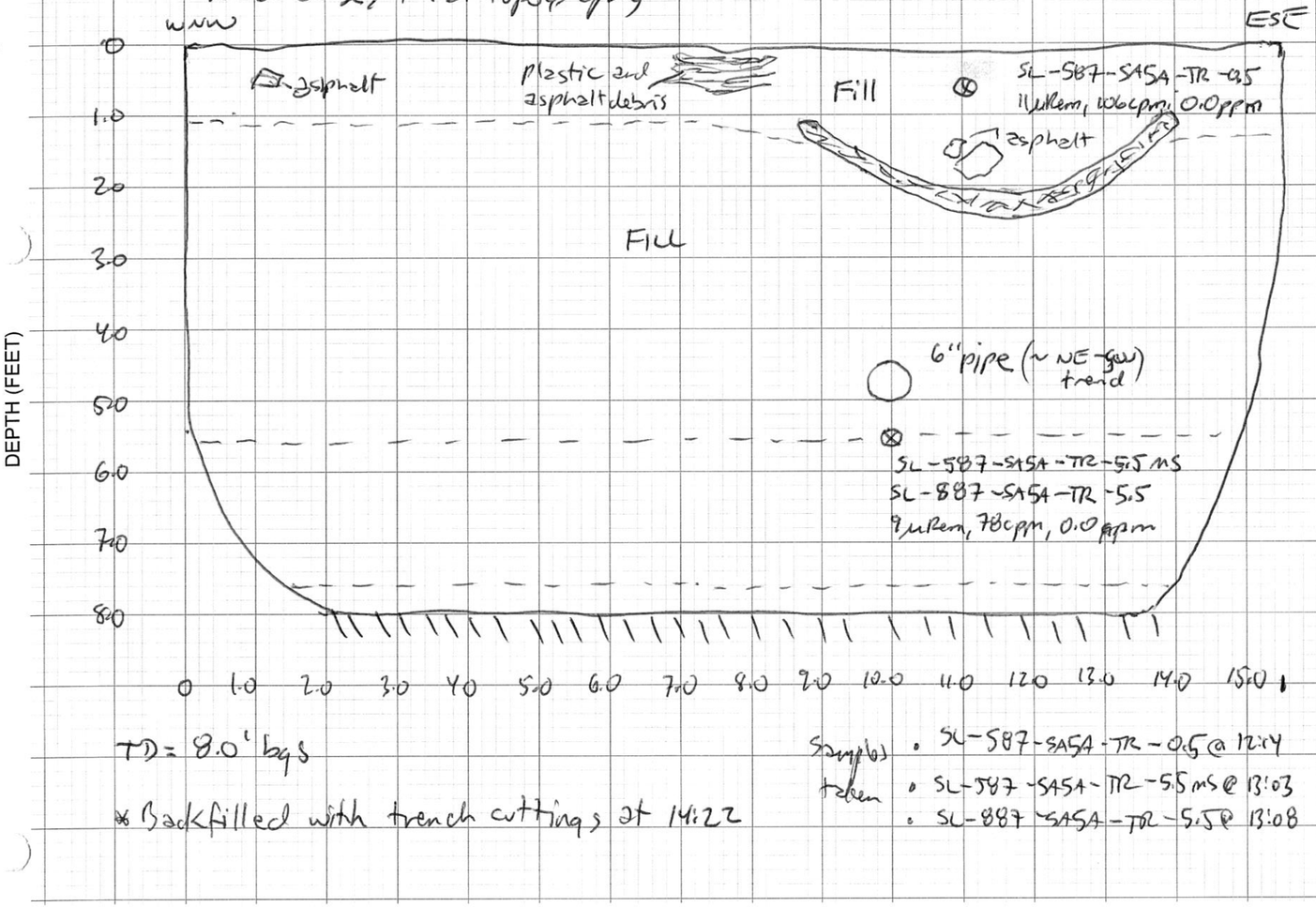
% Man-Made Debris ~5%

Wall of Trench Shown (Circle One)
N S E W (NE) NW SE SW

LENGTH (FEET)

ENTER TRENCH DIRECTION
SCALE:

Surface area covered with mustard, Palmer's goldenbush, some road base, Flat topography



TD = 8.0' bgs

* Backfilled with trench cuttings at 14:22

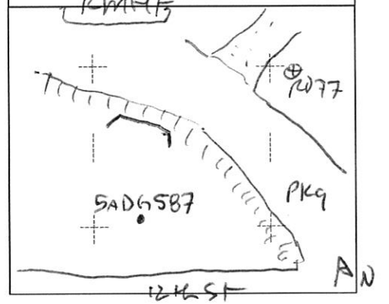
Samples taken
- SL-587-SASA-TR-0.5 @ 12:14
- SL-587-SASA-TR-5.5 MS @ 13:03
- SL-887-SASA-TR-5.5 @ 13:08

- 0.0-1.0 Silty Sand (SM), brown (10YR 4/3), medium dense, dry. Predominant fine sand (70), silt/clay (25%), and few medium sand (5%). Asphalt present in chunks and there is a section of plastic + mixed debris including asphalt, some clasts of sandstone. No stain, no odor. Fill material
- 1.0-5.5 Silty sand (SM), dark brown (7.5YR 3/3) transitioning to dark yellowish brown (10YR 4/4) ~3.5' bgs. Predominant fine sand (65%) some silt/clay (35%), and trace medium sand. In eastern portion of trench there is a remnant asphalt swale ~5' wide with asphalt debris filling in concave portion. No stain, no odor. Fill material.
- 5.5-7.5 silt/fine sand - clay (ML-CL), dark brown (10YR 3/3). stiff, moist, Predominant silt/clay (60%), fine sand (40%). medium plastic, low toughness and rapid dilatancy. No stain, no odor. Fill
- 7.5-8.0 Decomposed bedrock (WS), Sandstone, Grey (10YR 5/1) with brownish yellow staining (10YR 6/6), extremely weak (R0), very soft (H7). moldable, massive
- 8.0 Highly weathered bedrock (WX), Sandstone, like yellowish brown (10YR 6/4), stratified, weak (R2). moderately hard (H4) to moderately soft (H5).

All trench logs were prepared by a California Professional geologist.

MWH®

Plan View-Site Location
(Provide Sketch)



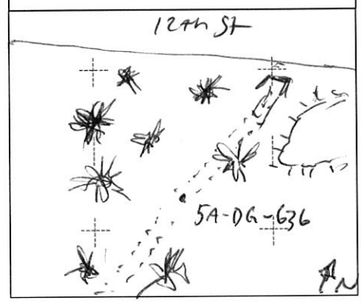
EXPLANATION

- SOIL TYPE CONTACT (SHARP)
- OTHER CONTACT (AS INDICATED ON LOG)
- FILL/NATIVE BOUNDARY
- X — ANALYTICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- G — GEOTECHNICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- SHADING TO DENOTE STAINING
- BASE OF EXCAVATION

Project Name	Phase 3 DOE Trenching Data Gap Sampling 2014								
Trench Number	5A-DG-636	Project Number	10503982.3050105/ 10503982.3060105	Elevation and Datum	N/A	Location	Area IV, B4042 East	Sheet 1 of 1	
Equipment Supplier	B.L. HALL	Operator	RALPH HALL	Date and Time Started	23 MAY 2014,	Date and Time Completed	23 MAY 2014,	Refusal? (Circle One) Yes / No	If Yes Depth =
Equipment Type	Deere 310SJ NK5H83	Trench Orientation	E-W	Total Depth	8.0' bgs	Total Number of Samples	3	Photo? (Circle One) Yes / No	No.
Bucket Width	24"	Trench Length	11.5'	Trench Width	30"	No. of Samples	3	Bulk –	Grab 3
Drive	–	Hand Auger	–	% Man-Made Debris	<5%				
Geologist or Hydrogeologist/Date	ROB ELLIS 23 MAY 2014	Checked by/Date		Wall of Trench Shown (Circle One)	N / S / E / W / NE / NW / SE / SW				

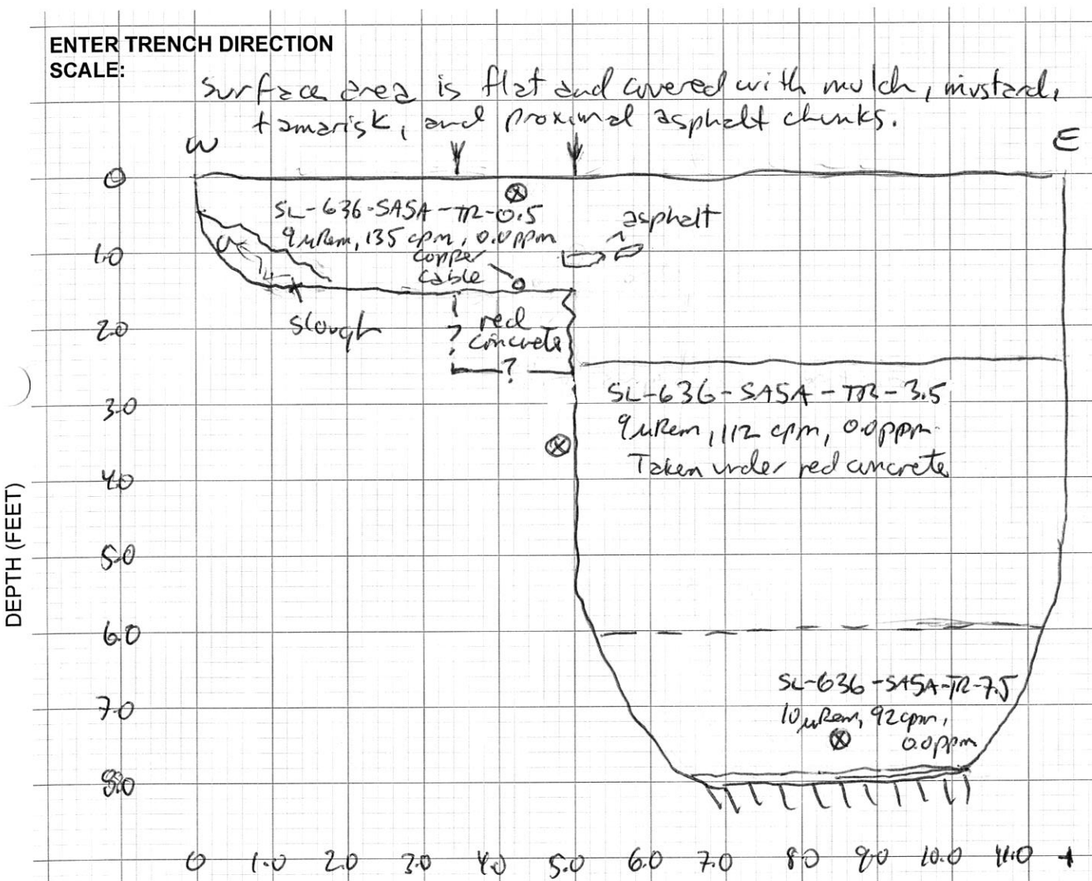
MWH®

Plan View-Site Location
(Provide Sketch)



LENGTH (FEET)

ENTER TRENCH DIRECTION
SCALE:



TD = 8.0' bgs
Backfilled w/ trench cuttings @ 09:12

Samples taken:
- SL-636-SASA-TR-0.5 @ 07:46
- SL-636-SASA-TR-3.5 @ 08:47
- SL-636-SASA-TR-7.5 @ 08:41

0-2.5 Silty sand with gravel (sm), yellowish brown (10YR 5/4) dense, dry. Predominantly fine sand (50%), some silt (30%), little gravel (15%) and few medium sand (5%). Gravels consist of sandstone clasts up to 2", some occasional road base rock, asphalt chunks and small brick material. At 18" there is an ~18" x 12" section of concrete ~N/S running topped w/ ½" copper braided cable (from existing transformer powering B 7042). No stain, odor. Fill material.

2.5-6.0 Silty sand (sm), dark yellowish brown (10YR 4/6), dense, dry. Predominantly fine sand (75%), little silt/clay (20%), and few medium sand (5%). Some brick material, sandstone fragments. No stain, no odor. Fill material. moist likely.

6.0-8.0 Silty sand (sm), dark yellowish brown (10YR 4/4), medium dense, dry. Predominant fine sand (65%), some silt/clay (35%), and trace medium sand. No stain, no odor. Native soil.
Highly weathered bedrock (WR). Sandstone, olive brown (2.5Y 4/4), fine-coarse grained, very weak (R1), soft (H6), with relict bedding, oxidized along planes.

EXPLANATION

- SOIL TYPE CONTACT (SHARP)
- OTHER CONTACT (AS INDICATED ON LOG)
- FILL/NATIVE BOUNDARY
- X — ANALYTICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- G — GEOTECHNICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- SHADING TO DENOTE STAINING
- BASE OF EXCAVATION

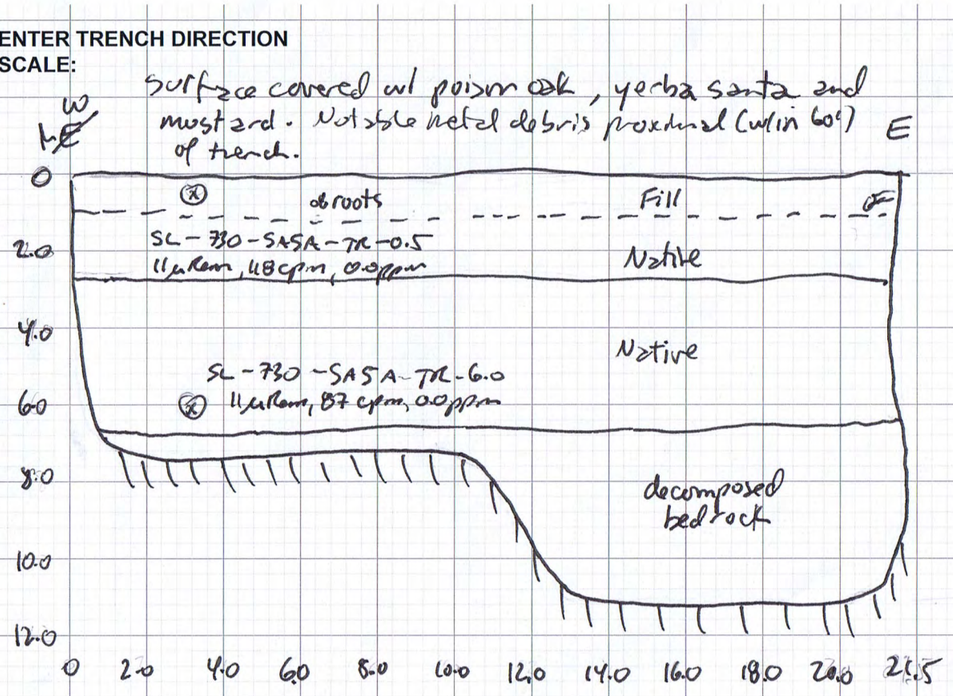
All trench logs were prepared by a California Professional geologist.

FIELD TRENCH LOG

Project Name: Phase 3 DOE Trenching Data Gap Sampling 2014					
Trench Number: 5A-DG-730	Project Number: 10503982.3050105/ 10503982.3060105	Elevation and Datum: NA	Location: SETF (W) of B4453 Area IV	Sheet 1 of 1	
Equipment Supplier: B.L. HALL	Operator: RALPH HALL	Date and Time Started: 22 MAY 2014, 07:44	Date and Time Completed: 22 MAY 2014, 10:10	Refusal? (Circle One) (Yes) No	If Yes Depth = 11.0'
Equipment Type: Deere 310 SJ NK5H83	Trench Orientation: E-W	Total Depth: 11.0' bgs	Total Number of Samples: 2	Photo? (Circle One) (Yes) No	No.
Bucket Width: 24" / Trench Length: 21.5'	Trench Width: 30"	No. of Samples: 2 / Bulk: — / Grab: 2	Drive: — / Hand Auger: —	% Man-Made Debris: 0%	
Geologist or Hydrogeologist/Date: ROB ELLIS 22 MAY 2014		Checked by/Date		Wall of Trench Shown (Circle One) (N) S E W NE NW SE SW	

LENGTH (FEET)

DEPTH (FEET)



TD = 11.0' bgs @ deepest point.

Samples taken:
- SL-730-SASA-TR-0.5 @ 09:56
- SL-730-SASA-TR-6.0 @ 10:09

- Backfilled trench @ 10:25.
- Sample from 0.5 taken from trench floor, sample 6.0 taken from backhoe bucket.

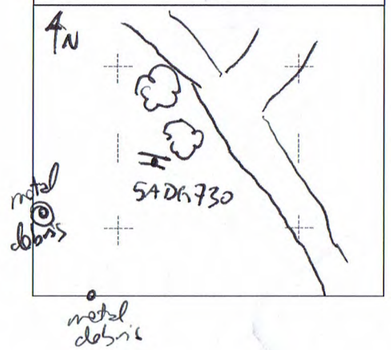
0.0-1.0 Silty sand (sm), dark brown (10YR3/3) loose, dry. Predominant fine sand (75%), little silt/clay (20%), and few medium sand (5%). No stain, no odor. Fill material. Roots up to 2" seen in (E) side of trench, most roots ~ 0.5"

1.0-2.5 Silty sand (sm). Brown (10YR 4/3), medium dense, dry. Predominant fine sand (75-80), little silt/clay (25%) with trace medium sand. No stain, no odor. Native soil. Some fine roots

2.5-7.0 Silty sand (sm). Dark yellowish brown (10YR 4/4). Predominant fine sand (75%). Little silt/clay (25%) w/ trace medium sand. Medium dense, dry; becomes loose, moist and strong brown (7.5YR 4/6) at ~5.0' bgs then matrix color change with same soil characteristics at 6.5-7.0 to dark yellowish brown (10YR 3/6). Bedrock contact gradational into decomposed rock. Roots still pervasive, but fine. No stain no odor. Native Soil. Sample @ 6.0'.

7.0-11.0 Highly weathered bedrock (W4), sandstone, fine to medium grained, weak (R2), soft (H6) w/ leaching around small roots. Brown (7.5 YR 4/4)

Plan View-Site Location
(Provide Sketch)



EXPLANATION

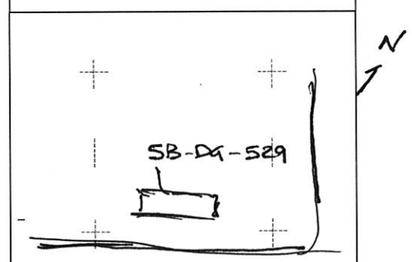
- SOIL TYPE CONTACT (SHARP)
- OTHER CONTACT (AS INDICATED ON LOG)
- FILL/NATIVE BOUNDARY
- X — ANALYTICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- G — GEOTECHNICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- SHADING TO DENOTE STAINING
- BASE OF EXCAVATION

Project Name	Phase 3 DOE Trenching Data Gap Sampling 2014								
Trench Number	SB-DG-529	Project Number	10503982.3050105/ 10503982.3060105	Elevation and Datum	—	Location	NEAR FORMER B4/10 ~~AREA IV~~	Sheet 1 of 1	
Equipment Supplier	B.L. HALL	Operator	DAN HALL	Date and Time Started	5/28/14 1300	Date and Time Completed	5/28/14 1530	Refusal? (Circle One) Yes / No	If Yes Depth = 11.75' BGS
Equipment Type	DEERE 310SJ BACK HOE	Trench Orientation	45°	Total Depth	11.75' BGS	Total Number of Samples	4	Photo? (Circle One) Yes / No	No.
Bucket Width	24"	Trench Length	34'	Trench Width	28"	No. of Samples 4	Bulk —	Grab 4	Drive —	Hand Auger —	% Man-Made Debris	80% – 90%
Geologist or Hydrogeologist/Date	ANDREW PAYNE 5/28/14			Checked by/Date					Wall of Trench Shown (Circle One) N S E W NE NW SE SW

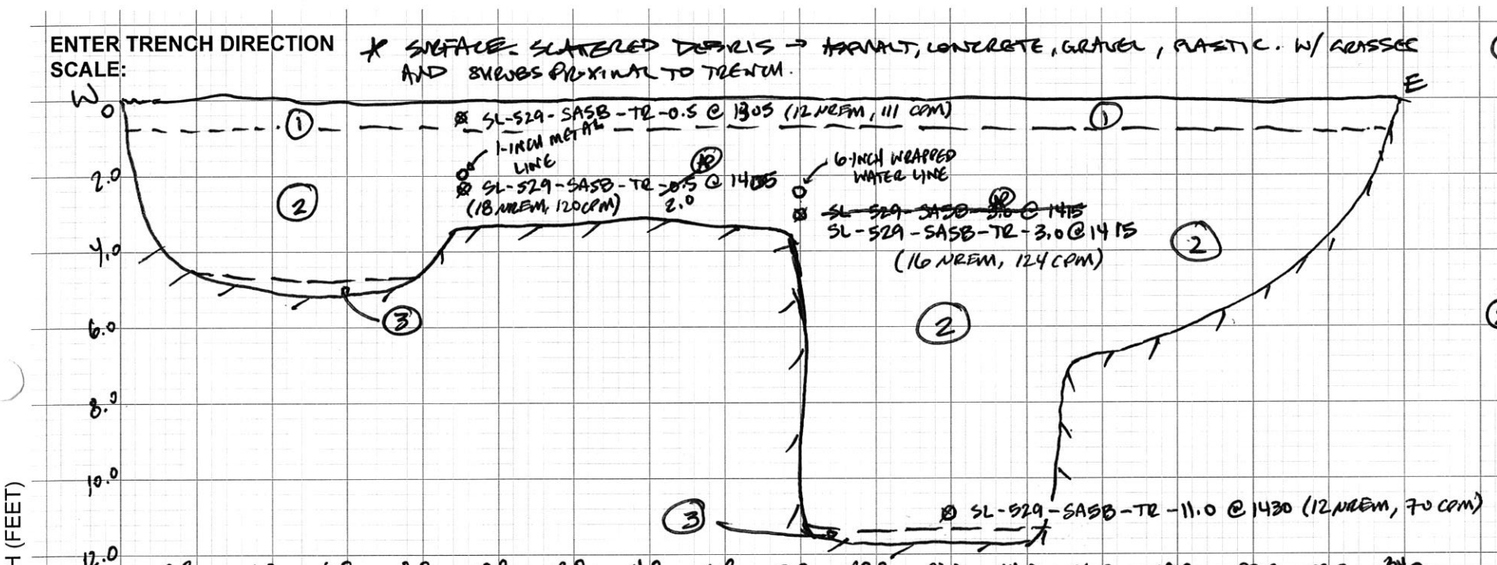
FIELD TRENCH LOG

MWH®

Plan View-Site Location
(Provide Sketch)



LENGTH (FEET)



① SILTY SAND (SM), DRY, VERY DARK GRAYISH BROWN (10YR 3/2), LOOSE, FINE TO MEDIUM, SUBANGULAR TO SUBROUNDED, 60% FINE SAND, 20% FINES (SILT/CLAY), 15% MED. SAND, LOOSE, 10% GRAVEL & MIXED DEBRIS; ASPHALT, CONCRETE, RED CONCRETE, PLASTIC, GRAVEL; FILL ROOTS.

② SILTY SAND (SM) MOIST, VERY DARK GRAYISH BROWN (10YR 3/2) TO (10YR 6/6) BROWNISH YELLOW, 50% FINE SAND 10% MEDIUM SAND, AND COARSE SAND, SUBANGULAR TO SUBROUNDED, 20% FINES (SILT/CLAY), 20% DEBRIS → MIXED DEBRIS OF CONCRETE, ASPHALT, COPPER WIRE, 1-INCH METAL LINE, 6-INCH WRAPPED WATER LINE, RED CONCRETE & PLASTIC; FILL, LOOSE; STAINED/DISCOLORED SOIL.

③ WEATHERED SANDSTONE (SS) FINE TO MEDIUM SAND, ANGULAR TO SUB-ROUNDED, MODERATELY SOFT, FRIABLE, LIGHT YELLOWISH BROWN (10YR 6/4)

NOTES

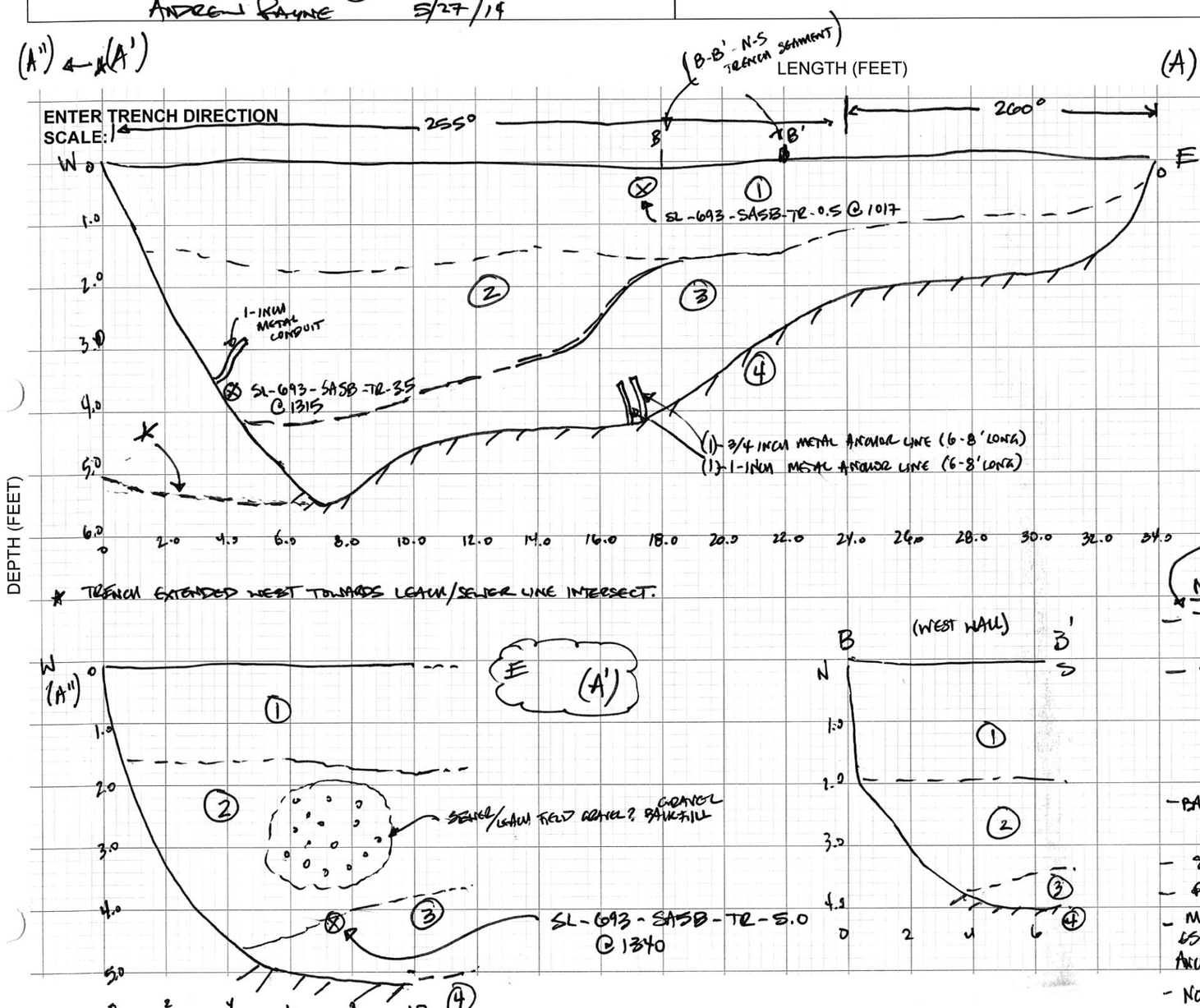
- SURFACE PROXIMAL TO TRENCH WAS SCATTERED W/ MIXED DEBRIS INCLUDING: CONCRETE, ASPHALT, PLASTIC, GRAVEL, RED CONCRETE AND CLAY PIECES.
- TD OF TRENCH = 11.75' BGS; STAINING WAS OBSERVED IN SOIL BELOW 0.5' BGS; STAINING FROM 0.5' TO DEPTH TO BEDROCK.
- PID READINGS WERE PREDOMINANTLY BETWEEN 0 AND 1.0 PPM; HOWEVER, 1.0 PPM MAY BE NOISE;
- BACKFILL TRENCH @ 1530
- SAMPLES COLLECTED
  - SL-529-SASB-TR-0.5 @ 1305 (12 NREM, 111 CPM)
  - SL-529-SASB-TR-2.0 @ 1405 (18 NREM, 120 CPM)
  - SL-529-SASB-TR-3.0 @ 1415 (16 NREM, 124 CPM)
  - SL-529-SASB-TR-11.0 @ 1430 (12 NREM, 70 CPM)
- A 1-INCH METAL PIPE AND 6-INCH WRAPPED WATER LINE ENCOUNTERED; SAMPLES COLLECTED BENEATH LINES.
- FILL MATERIAL ENCOUNTERED THROUGHOUT TRENCH; COPPER WIRE ALSO ENCOUNTERED; NO OBVIOUS EVIDENCE OF LEACH FIELD GRAVELS OR PIPING ENCOUNTERED.

EXPLANATION

- SOIL TYPE CONTACT (SHARP)
- OTHER CONTACT (AS INDICATED ON LOG)
- FILL/NATIVE BOUNDARY
- X — ANALYTICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- G — GEOTECHNICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- SHADING TO DENOTE STAINING
- BASE OF EXCAVATION

All trench logs were prepared by a California Professional geologist.

Project Name: Phase 3 DOE Trenching Data Gap Sampling 2014				**FIELD TRENCH LOG**	
Trench Number: SB DG 693	Project Number: 10503982.3050105/ 10503982.3060105	Elevation and Datum: —		Location: NORTH OF B4011 AREA IV	Sheet 1 of 1
Equipment Supplier: B.L. HALL	Operator: DAN HALL	Date and Time Started: 5/27/14 1015		Date and Time Completed: 5/27/14 1415	Refusal? (Circle One) (Yes) No — If Yes Depth = 5.5' BGS
Equipment Type: DEERE 310 SJ BACK HOE	Trench Orientation: 255° – 270° (E-W)	Total Depth: 5.5' BGS		Total Number of Samples: 3	Photo? (Circle One) (Yes) No — No.
Bucket Width: 24" / Trench Length: 35' (A-A') 10' (A'-A")	Trench Width: 6' (B-B') [28" TRENCH WIDTH]	No. of Samples: 3	Bulk: — / Grab: 3	Drive: — / Hand Auger: —	% Man-Made Debris: 10%
Geologist or Hydrogeologist/Date: ANDREW PAYNE 5/27/14		Checked by/Date:			Wall of Trench Shown (Circle One) (N) S E W NE NW SE SW



* TRENCH EXTENDED WEST TOWARDS LEACH/SEWER LINE INTERSECT.

(A)

(1) SILTY SAND (SM), BROWN (10YR 4/3), DRY, FINE TO COARSE SAND, PREDOMINANTLY FINE SAND, ~60% FINE SAND, 10% MEDIUM SAND, SUBANGULAR TO SUB-ROUNDED, ~20% FINES, 10% DEBRIS; FILL MATERIAL; PIECES OF ASPHALT, CONCRETE AND METAL. LOOSE. ROOTS.

(2) CLAYEY SAND (SC) DARK YELLOWISH BROWN, (10YR 4/6), MOIST, MEDIUM DENSE, HARD, FINE TO COARSE SAND, PREDOMINANTLY FINE SAND, 65% FINE SAND, 10% MEDIUM SAND, 5% COARSE SAND GRAVEL; NATIVE/ALLUVIUM; SAND SUBANGULAR TO SR.

(3) SILTY SAND (SM) YELLOWISH BROWN (10YR 5/4), MOIST, 70% FINE SAND, 10% MEDIUM SAND, PRED. FINE SAND, SAND IS SUBANG. TO SR, MED DENSE, SOFT TO HARD, NATIVE/ALLUVIUM.

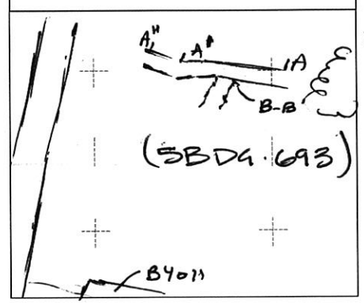
(4) WEATHERED SANDSTONE (SS) FINE TO MEDIUM SAND, ANGULAR TO SUBROUNDED, DRY, WEAK, MODERATELY SOFT, FRIABLE, LIGHT YELLOWISH BROWN (10YR 6/4).

* SURFACE COVERED W/ GRASSES W/ SOME SPORADIC ASPHALT AND CONCRETE DEBRIS;

NOTES:

- TD = 5.5' BGS AT LOWEST POINT IN TRENCH;
- SAMPLES COLLECTED:
  - SL-693-SASB-TR-0.5 @1017
  - SL-693-SASB-TR-3.5 @1315
  - SL-693-SASB-TR-5.0 @1340;
- BACKFILL TRENCH @ 1415;
- SAMPLE LOCATIONS ON TRENCH LOG 1 @ 1';
- PID READINGS DID NOT EXCEED 0.0 PPM;
- METAL PIPING/ANCHORS OBSERVED IN TRENCH MAY CORRESPOND TO ANOMOLY; UNEXPECTED MATERIALS INCLUDE METAL ANCHORS, CONCRETE, AND ASPHALT DEBRIS; AND
- NO LEACH FIELD LINES ENCOUNTERED; GRAVEL FILL/BACKFILL ENCOUNTERED @ EXPECTED LEACH/SEWER LINE INTERSECT.

Plan View-Site Location
(Provide Sketch)



EXPLANATION

- SOIL TYPE CONTACT (SHARP)
- OTHER CONTACT (AS INDICATED ON LOG)
- FILL/NATIVE BOUNDARY
- X — ANALYTICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- G — GEOTECHNICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- SHADING TO DENOTE STAINING
- BASE OF EXCAVATION

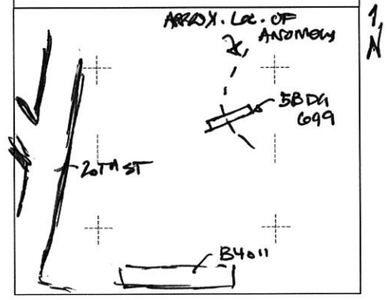
All trench logs were prepared by a California Professional geologist.

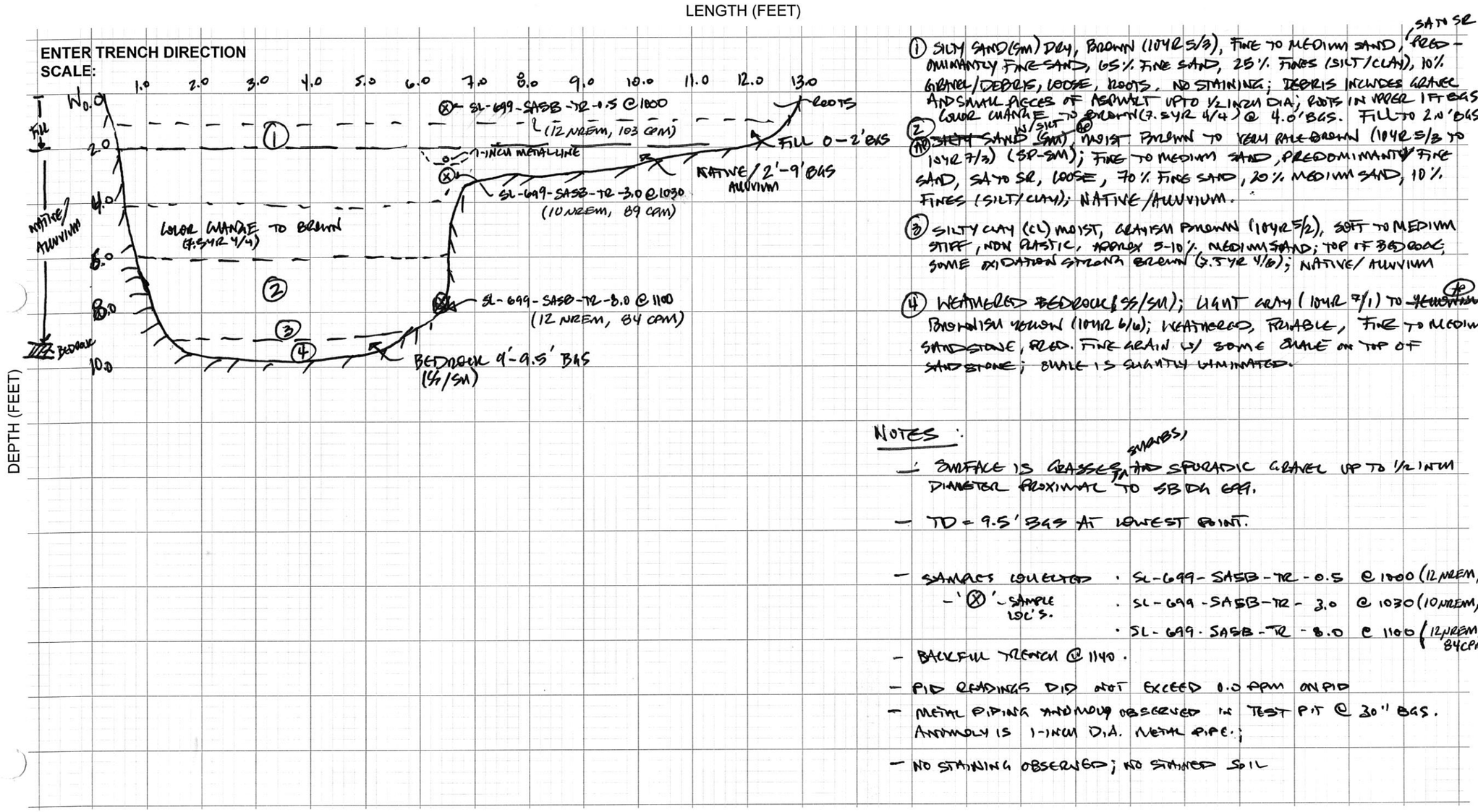
FIELD TRENCH LOG

Project Name: Phase 3 DOE Trenching Data Gap Sampling 2014					
Trench Number: SB-DG-699	Project Number: 10503982.3050105/ 10503982.3060105	Elevation and Datum: —	Location: NORTH OF B401 AREA IV	Sheet 1 of 1	
Equipment Supplier: B.L. HALL	Operator: RALPH HALL	Date and Time Started: 5/28/14 0958	Date and Time Completed: 5/28/14	Refusal? (Circle One) Yes / No	If Yes Depth = 9.5' BGS
Equipment Type: DEERE 310SJ BACKHOE	Trench Orientation: 50°	Total Depth: 9.5' BGS	Total Number of Samples: 3	Photo? (Circle One) Yes / No	No.
Bucket Width: 24" / Trench Length:	Trench Width: 28"	No. of Samples: 3 / Bulk: — / Grab: 3	Drive: — / Hand Auger: —	% Man-Made Debris: 5-10%	
Geologist or Hydrogeologist/Date: ANDREW JAYNE, P.G. 8465 5/28/14		Checked by/Date:		Wall of Trench Shown (Circle One) N S E W NE NW SE SW	

MWH®

Plan View-Site Location
(Provide Sketch)





(1) SILTY SAND (SM) DRY, BROWN (10YR 5/3), FINE TO MEDIUM SAND, SA TO SR, PREDOMINANTLY FINE SAND, 65% FINE SAND, 25% FINES (SILT/CLAY), 10% GRAVEL/DEBRIS, LOOSE, ROOTS. NO STAINING; DEBRIS INCLUDES GRAVEL AND SMALL PIECES OF ASPHALT UPTO ½ INCH DIA; ROOTS IN UPPER 1FT BGS. COLOR CHANGE TO BROWN (7.5YR 4/4) @ 4.0' BGS. FILL TO 2.0' BGS.

(2) SILTY SAND (SM), MOIST BROWN TO VERY PALE BROWN (10YR 5/3 TO 10YR 7/3) (SP-SM); FINE TO MEDIUM SAND, PREDOMINANTLY FINE SAND, SA TO SR, LOOSE, 70% FINE SAND, 20% MEDIUM SAND, 10% FINES (SILT/CLAY); NATIVE/ALLUVIUM.

(3) SILTY CLAY (CL) MOIST, GRAYISH BROWN (10YR 5/2), SOFT TO MEDIUM STIFF, NON PLASTIC, APPROX 5-10% MEDIUM SAND; TOP OF BEDROCK; SOME OXIDATION STAINS BROWN (7.5YR 4/6); NATIVE/ ALLUVIUM

(4) WEATHERED BEDROCK (SS/SM); LIGHT GRAY (10YR 7/1) TO YELLOWISH BROWN (10YR 6/6); WEATHERED, FRIABLE, FINE TO MEDIUM SANDSTONE, BED. FINE GRAIN W/ SOME SHALE ON TOP OF SANDSTONE; SHALE IS SLIGHTLY LAMINATED.

NOTES:

- SURFACE IS GRASSES AND SPORADIC GRAVEL UP TO ½ INCH DIAMETER PROXIMAL TO SB DG 699.
- TD = 9.5' BGS AT LOWEST POINT.
- SAMPLES COLLECTED
  - '⊗' - SAMPLE LOC'S.
  - SL-699-SASB-TR-0.5 @ 1000 (12 NREM, 103 CPM)
  - SL-699-SASB-TR-3.0 @ 1030 (10 NREM, 89 CPM)
  - SL-699-SASB-TR-8.0 @ 1100 (12 NREM, 84 CPM)
- BACKFILL TRENCH @ 1140.
- PID READINGS DID NOT EXCEED 0.0 PPM ON PID
- METAL PIPING AND MOUD OBSERVED IN TEST PIT @ 30" BGS. ANOMOLY IS 1-INCH D.I.A. METAL PIPE.;
- NO STAINING OBSERVED; NO STAINED SOIL

EXPLANATION

- SOIL TYPE CONTACT (SHARP)
- OTHER CONTACT (AS INDICATED ON LOG)
- FILL/NATIVE BOUNDARY
- X — ANALYTICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- G — GEOTECHNICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- SHADING TO DENOTE STAINING
- BASE OF EXCAVATION

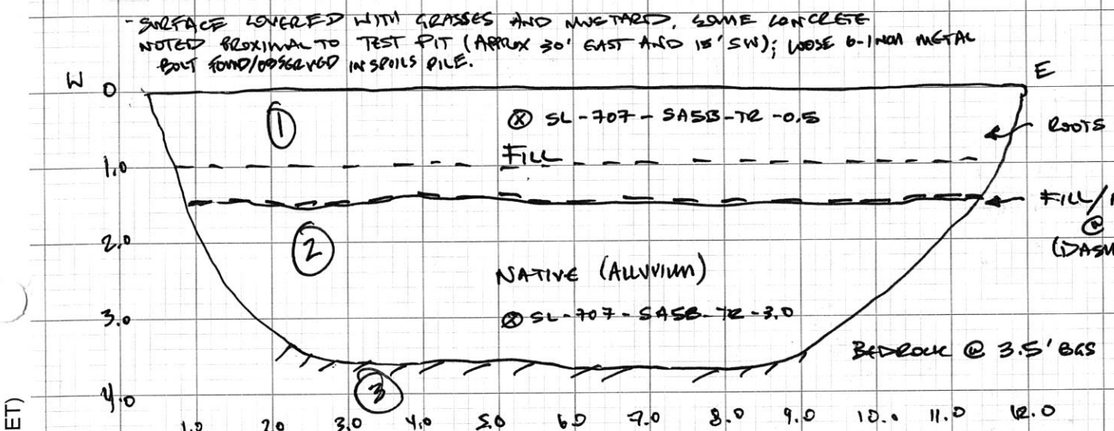
All trench logs were prepared by a California Professional geologist.

FIELD TRENCH LOG

Project Name: Phase 3 DOE Trenching Data Gap Sampling 2014					
Trench Number: SB-DG-707	Project Number: 10503982.3050105/ 10503982.3060105	Elevation and Datum: N/A	Location: North of Bldg 411 Area IV	Sheet 1 of 1	
Equipment Supplier: B.L. HALL	Operator: DAN HALL	Date and Time Started: 5/27/14 0800	Date and Time Completed: 5/29/14 0930	Refusal? (Circle One) Yes / No	If Yes Depth = 3.5
Equipment Type: DEERE 310SJ BACKHOE	Trench Orientation: E-W (270°)	Total Depth: 3.5' BGS	Total Number of Samples: 2	Photo? (Circle One) Yes / No	No.
Bucket Width: 24" / Trench Length: 12'	Trench Width: 24-30"	No. of Samples: 2 / Bulk: — / Grab: 2	Drive: — / Hand Auger: —	% Man-Made Debris: 5% (MINOR CONCRETE & METAL) (AP)	
Geologist or Hydrogeologist/Date: ANDREW PAYNE 5/27/14		Checked by/Date		Wall of Trench Shown (Circle One): (N) S E W NE NW SE SW	

LENGTH (FEET)

ENTER TRENCH DIRECTION
SCALE:



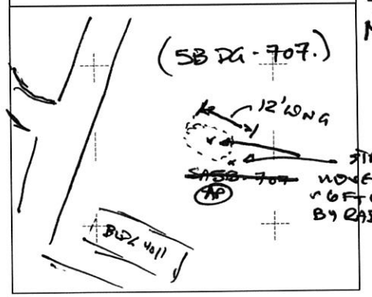
0.0 – 1.5 SILTY SAND (SM), BROWN (10YR 5/3, DRY, PREDOMINANTLY FINE SAND, FINE TO MEDIUM SAND, 65% FINE SAND 10% MEDIUM SAND, 25% FINES (SILT/CLAY); SAND IS ANGULAR TO SUBROUNDED, ROOTS IN UPPER 1.0 FT BGS; FILL LOOSE

1.5 – 3.5 SILTY SAND (SM), YELLOWISH BROWN (10YR 5/4), MOIST, FINE TO MEDIUM SAND, 60% FINE SAND, 15% MEDIUM, TRACE (5%) COARSE SAND, 20% FINES (SILT/CLAY), PREDOMINANTLY FINE SAND, ANGULAR TO SUBROUNDED, LOOSE, HARD. NATIVE/ALLUVIUM.

3.5 WEATHERED BEDROCK / SS, FINE TO MEDIUM SAND, ANGULAR TO SUBROUNDED, DRY, WEAK, MODERATELY SOFT, (10YR 6/4) LIGHT YELLOWISH BROWN; FRIABLE

NOTES:
- TD = 3.5' BGS IN MIDDLE OF TEST PIT
- SAMPLES COLLECTED
  - SL-707-SASB-TR-0.5 @ 0813
  - SL-707-SASB-TR-3.0 @ 0855
- BACKFILL TRENCH/TEST PIT @ 0930
- SAMPLE COLLECTED @ 0.5' BGS COLLECTED @ MIDDLE/CENTER OF TEST PIT/TRENCH; 3.0' BGS SAMPLE COLLECTED FROM BACKHOE BUCKET SCOOPED FROM CENTER OF TEST PIT/TRENCH.
- NO STAINED SOIL OBSERVED.
- PID READINGS DID ~~NOT~~ (AP) NOT EXCEED 0.0 PPM.

Plan View-Site Location
(Provide Sketch)



EXPLANATION

- SOIL TYPE CONTACT (SHARP)
- OTHER CONTACT (AS INDICATED ON LOG)
- FILL/NATIVE BOUNDARY
- X — ANALYTICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- G — GEOTECHNICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- SHADING TO DENOTE STAINING
- BASE OF EXCAVATION

All trench logs were prepared by a California Professional geologist.

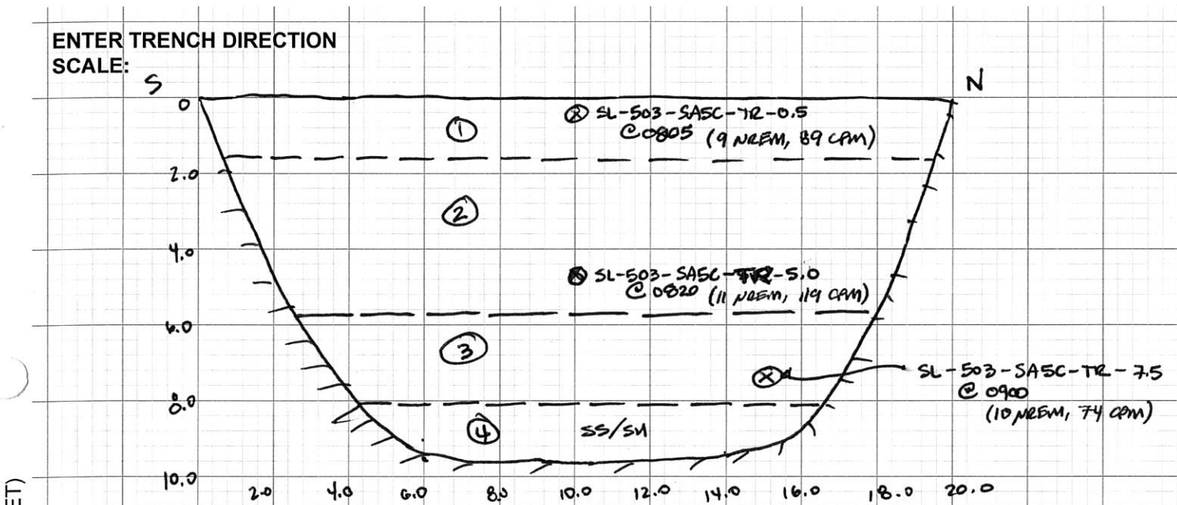
Project Name	Phase 3 DOE Trenching Data Gap Sampling 2014								
Trench Number	5C-DG-503	Project Number	10503982.3050105/ 10503982.3060105	Elevation and Datum	—	Location	BLDG 4015 AREA SUBAREA 5C WEST OF HYDROGEN LAB/EEL AREA IV	Sheet 1 of 1	
Equipment Supplier	BA HALL	Operator	RALPH HALL	Date and Time Started	5/29/14 0800	Date and Time Completed	5/29/14 0955	Refusal? (Circle One) Yes / No	If Yes Depth = 9.5'
Equipment Type	DEERE 310SJ BACKHOE	Trench Orientation	20° (SSW - NNE)	Total Depth	9.5'	Total Number of Samples	3	Photo? (Circle One) Yes / No	No.
Bucket Width	24"	Trench Length	20'	Trench Width	29"	No. of Samples	3	Bulk —	Grab 3
Drive	—	Hand Auger	—	% Man-Made Debris	0%				
Geologist or Hydrogeologist/Date	ANDREW RAYNE	Checked by/Date		Wall of Trench Shown (Circle One)	N S E W NE NW SE SW				

FIELD TRENCH LOG

MWH®

LENGTH (FEET)

DEPTH (FEET)



① SILT WITH SAND (ML), DRY, DARK BROWN (10YR 3/3), HARD, SILT ~ 85%, ~10% FINE SAND, 5% MEDIUM SAND, SUBANGULAR TO SUBROUNDED, ROOTS; FILL/DISTURBED SOIL; NON PLASTIC; NO DEBRIS.

② SILTY SAND (SM) MOIST, YELLOWISH BROWN (10YR 5/4), LOOSE TO MEDIUM DENSE, FINE TO MEDIUM SAND, PREDOMINANTLY FINE SAND, 55% FINE SAND, 10% MEDIUM SAND, TRACE (5%) COARSE SAND, SUBANGULAR TO SUBROUNDED, 30% FINES (MOSTLY CLAY SIZE GRAINS); DISTURBED SOIL; FILL, NO DEBRIS.

③ SAND WITH SILT (SP-SM), MOIST, YELLOWISH BROWN (10YR 5/4), LOOSE, FINE TO MEDIUM SAND, SUBANGULAR TO SUBROUNDED, 70% FINE SAND, 20% MEDIUM SAND, 10% FINES (SILT/CLAY). NATIVE/ALLUVIUM.

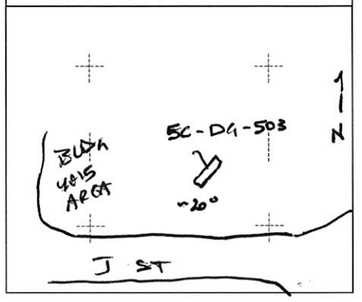
④ WEATHERED BEDROCK (SS/SM), YELLOWISH BROWN (10YR 5/4) SANDSTONE, FRIABLE WITH GRAYISH BROWN SHALE (10YR 5/2) INTERBEDDED; SS IS WEAK, SM IS HARD.

NOTES:

- GRASSES AND SHRUBS AT SURFACE; SCATTERED SS CHUNKS OBSERVED NE OF TRENCH; NO MAN MADE DEBRIS PROXIMAL TO TRENCH; HOWEVER METAL DEBRIS APPROX 60 FT ENE OF TRENCH.
- TD OF TRENCH = 9.5' BGS; NO STAINING OBSERVED;
- PID READINGS BETWEEN 0.0 TO 0.2 PPM (POTENTIALLY DUE TO MOISTURE)
- BACKFILL TRENCH @ 0955
- EXTENT OF ~~DEBRIS~~ FILL MATERIAL/DISTURBED SOIL WAS OBSERVED FROM 0 TO 5.5' BGS; NATIVE SP-SM @ 5.5' TO 8' BGS; BEDROCK OBSERVED FROM 8' TO 9.5' BGS (SS/SM - WEATHERED).
- FILL MATERIAL APPEARS TO BE NATIVE SOIL PUSHED INTO AREA.

- SAMPLES COLLECTED:
  - SL-503-SA5C-TR-0.5 @0805 (9 NREM, 89 CPM)
  - SL-503-SA5C-TR-5.0 @0820 (11 NREM, 119 CPM)
  - SL-503-SA5C-TR-7.5 @900 (10 NREM, 74 CPM)

Plan View-Site Location
(Provide Sketch)

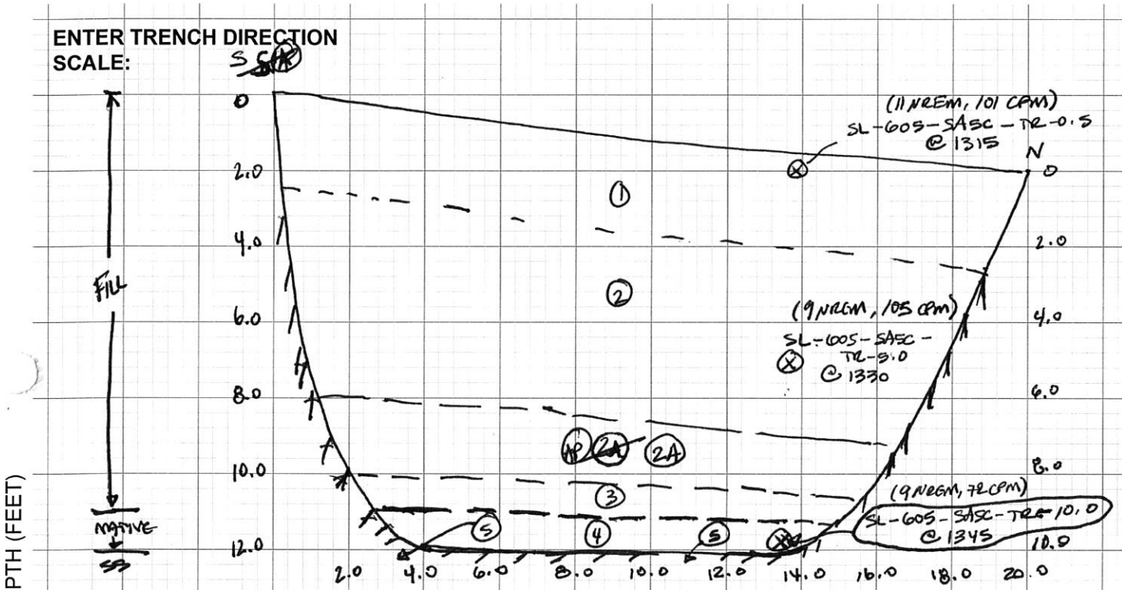


EXPLANATION

- SOIL TYPE CONTACT (SHARP)
- OTHER CONTACT (AS INDICATED ON LOG)
- FILL/NATIVE BOUNDARY
- X — ANALYTICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- G — GEOTECHNICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- SHADING TO DENOTE STAINING
- BASE OF EXCAVATION

Project Name	Phase 3 DOE Trenching Data Gap Sampling 2014								
FIELD TRENCH LOG									
Trench Number	SC-DG-605	Project Number	10503982.3050105/ 10503982.3060105	Elevation and Datum	—	Location	B4100 AREA AREA IV	Sheet 1 of 1	
Equipment Supplier	B.L. HALL	Operator	DAN HALL	Date and Time Started	5/29/14 1300	Date and Time Completed	5/29/14 1430	Refusal? (Circle One) Yes No	If Yes Depth = 12' BGS
Equipment Type	DEERE 310SJ BACKHOE	Trench Orientation	50°	Total Depth	12' BGS	Total Number of Samples	3	Photo? (Circle One) Yes No	No.
Bucket Width	24"	Trench Length	20'	Trench Width	28"	No. of Samples	3	Bulk —	Grab 3
Drive	—	Hand Auger	—	% Man-Made Debris	10-20 %				
Geologist or Hydrogeologist/Date	ANDREW RAYNE 5/29/14	Checked by/Date		Wall of Trench Shown (Circle One)	N S E (W) NE NW SE SW				

LENGTH (FEET)



① SILTY SAND WITH GRAVEL (SM) DRY, BROWN (10YR 4/3), LOOSE, FINE TO MEDIUM SAND, SUBANGULAR TO SUBROUNDED, 50% FINE SAND, 10% MEDIUM SAND, 25% FINES, 15% GRAVEL (UP TO 1/2" DIAMETER); FILL MATERIAL, SPORADIC CONCRETE PIECES AND TRACE METAL; ROOTS.

2A HP SANDY SILT (ML) MOIST, DARK BROWN (10YR 3/3), SOFT TO MEDIUM STIFF, LOW PLASTICITY, STRONG BROWN (7.5YR 4/6) OXIDATION/MOTTLING, FINE TO COARSE SAND ANGULAR TO ROUNDED; 70% FINES, 10% FINE SAND, 10% MEDIUM SAND, 5% COARSE SAND; TRACE/5% COBBLES ROUNDED; FILL MATERIAL.

③ SILTY CLAY/SANDY CLAY (CL) MOIST, DARK BROWN (10YR 3/3), MEDIUM STIFF TO HARD, MODERATE PLASTICITY, 20% SAND (15% MEDIUM, 5% FINE, 5% COARSE) SUBANGULAR TO ROUNDED; FILL MATERIAL.

② SAME AS ① WITHOUT ROOTS;

④ SILTY SAND (SM) MOIST, DARK YELLOWISH BROWN (10YR 4/4), LOOSE TO MEDIUM DENSE, FINE TO MEDIUM SAND, SUBANGULAR TO ROUNDED, 55% FINE SAND, 15% MEDIUM SAND, 30% FINES (CLAYEY FINES); NATIVE/ALLUVIUM ON TOP OF SS (WEATHERED) BEDROCK.

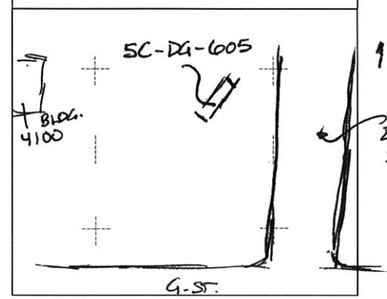
⑤ (SS) SANDSTONE, WEATHERED SS BEDROCK, MOIST, DARK YELLOWISH BROWN, FINE TO MEDIUM SAND, ANGULAR TO SUBROUNDED; WEAK

— SAMPLES COLLECTED
- SL-605-SASC-TR-0.5 @ 1315 (11 NREM, 101 CPM)
- SL-605-SASC-TR-5.0 @ 1330 (9 NREM, 105 CPM)
- SL-605-SAEC-TR-10.0 @ 1345 (9 NREM, 72 CPM)

NOTES:

- GRASSES AND SPORADIC PIECES OF CONCRETE AND GRAVEL DEBRIS OBSERVED PROXIMAL TO TRENCH.
- TD OF TRENCH = 12' BGS; NO STAINING OBSERVED;
- PID READINGS DID NOT EXCEED 0.0 PPM;
- BACK FILL TRENCH @ 1430
- EXTENT OF DEBRIS/FILL WAS OBSERVED TO 11' BGS IN SOUTHERN PORTION AND 9' BGS IN NORTHERN PORTION OF TRENCH; BEDROCK OBSERVED @ 12' BGS IN ~~WESTERN~~ SOUTHERN PORTION OF TRENCH AND @ 10' BGS IN NORTHERN PORTION OF TRENCH.
- FILL MATERIAL CONTAINED CONCRETE PIECES UP TO 1/2" DIA., GRAVEL UP TO 1/2" DIA., ROUNDED COBBLES UP TO 4" DIA., AND METAL DEBRIS.

Plan View-Site Location
(Provide Sketch)



EXPLANATION

- SOIL TYPE CONTACT (SHARP)
- OTHER CONTACT (AS INDICATED ON LOG)
- FILL/NATIVE BOUNDARY
- X — ANALYTICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- G — GEOTECHNICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- SHADING TO DENOTE STAINING
- BASE OF EXCAVATION

All trench logs were prepared by a California Professional geologist.

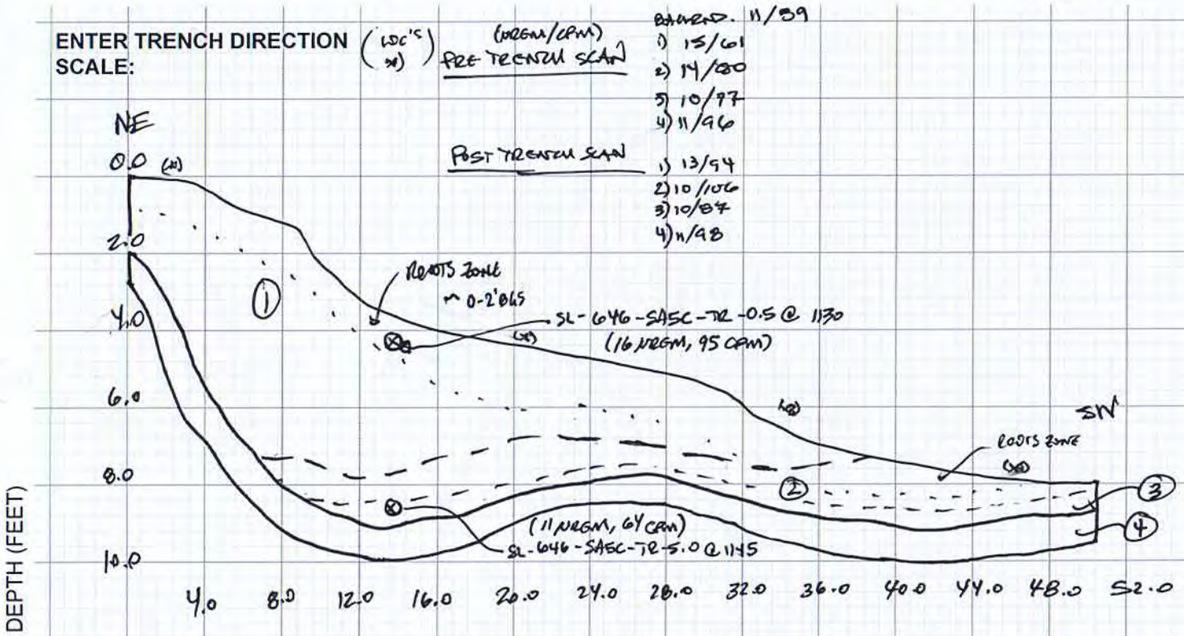
Project Name	Phase 3 DOE Trenching Data Gap Sampling 2014								
Trench Number	SC-DG-646	Project Number	10503982.3050105/ 10503982.3060105	Elevation and Datum	—	Location	B40GS	Sheet 1 of 1	
Equipment Supplier	B.L. HALL	Operator	RALPH HALL	Date and Time Started	6/4/14 1430 (GR) 1125	Date and Time Completed	6/4/14 1430	Refusal? (Circle One) Yes / No	If Yes Depth = 6.5' BGS
Equipment Type	DEERE 310ST BACKHOE	Trench Orientation	~ N60°E (NE-SW)	Total Depth	6.5' BGS	Total Number of Samples	2	Photo? (Circle One) Yes / No	No.
Bucket Width	24"	Trench Length	50'	Trench Width	28"	No. of Samples	2	Bulk —	Grab 2
Geologist or Hydrogeologist/Date	ANDREW PAYNE 6/4/14			Checked by/Date		Drive		Hand Auger	
								% Man-Made Debris	~ 30% DISTURBED SOIL
								Wall of Trench Shown (Circle One)	N S E W NE NW SE SW

FIELD TRENCH LOG

MWH®

LENGTH (FEET)

ENTER TRENCH DIRECTION SCALE: (LOC'S) (N)



(NRGM/CPM)

PRE TRENCH SCAN

1) 15/61
2) 14/80
3) 10/97
4) 11/96

BKGRND. 11/59

POST TRENCH SCAN

1) 13/94
2) 10/106
3) 10/84
4) n/98

① SILTY SAND (SM) DRY, BROWN (10YR 4/3), LOOSE, FINE TO MEDIUM SAND; ~ 30% MEDIUM SAND, ~ 25% FINE SAND, ~ 25% FINES, TRACE PARTICLE SIZE (~¼" EGR) OF POTENTIAL CLAY PIPE MATERIAL; FILL MATERIAL, DISTURBED SOIL; SUBANG TO SUBROUNDED; JOINT BROKEN UP SS PIECES.

② SILTY SAND (SM) DRY TO MOIST, BROWN (10YR 4/3 TO YELLOWISH BROWN (10YR 5/4); LOOSE, FINE TO MEDIUM SAND, ~ 50% FINE SAND, 20% MEDIUM SAND, 20% FINES, SAND IS ANGULAR TO SUBROUNDED; ROOTS IN PORTION OF ZONE; NATIVE MATERIAL/ALLUVIUM.

③ SAND W/ SILT (SP-SM); DRY, LIGHT YELLOWISH BROWN (10YR 6/4), LOOSE, FINE TO MED. SAND, ANG TO SUBROUNDED, ~ 50% FINE SAND, 30% MEDIUM SAND, 5% SS CHUNKS; ~ 15% FINES NATIVE/ALLUVIUM.

④ WEATHERED SANDSTONE BEDROCK (SS), LIGHT YELLOWISH BROWN, (10YR 6/4), DRY, FINE TO MEDIUM SAND, ANG. TO SUBROUNDED, WEAK, FRIABLE, WEATHERED.

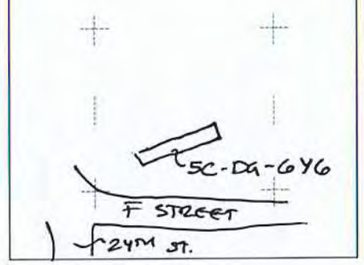
NOTES

- GRASSES, SANDSTONE OUTCROPS, OAK SHRUBS, SUMAC SHRUBS @ SURFACE NEAR TRENCH;
- TOTAL DEPTH => 6.5' BGS AT DEEPEST POINT; BEDROCK ENCOUNTERED THROUGHOUT TRENCH.
- TRENCH BACKFILLED @ 1430 ON 6/4/14
- PARTICLE SIZE DEBRIS OBSERVED IN FILL/DISTURBED SOIL MATERIAL; PIECE OF CLAY PIPE ~ FINE GRAIN SAND SIZE; BACKFILL MAT'L PINCHED OUT IN SW DIRECTION.
- NO MAGNETIC/GEOPHYSICAL ANOMALIES NEAR TRENCH; TRENCH ORIENTED ~ N60°E.

SAMPLES COLLECTED

- SL-646-SASC-TR-0.5 @ 1130 (16 NRGM, 95 CPM, 0.0 PPM)
  - ↳ FILL
- SL-646-SASC-TR-5.0 @ 1145 (11 NRGM, 64 CPM, 0.0 PPM)
  - ↳ NATIVE/ALLUVIUM.

Plan View-Site Location
(Provide Sketch)



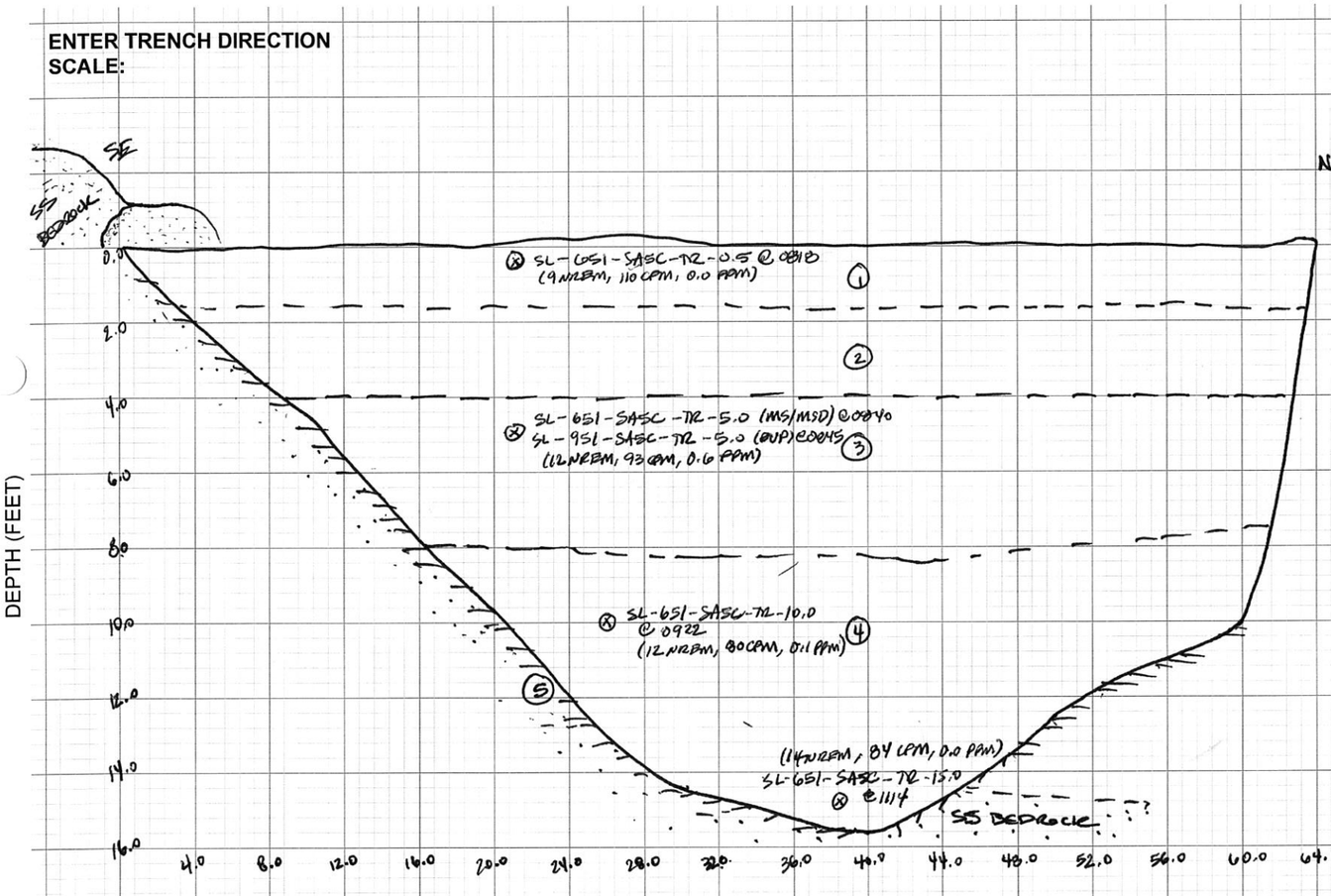
EXPLANATION

- SOIL TYPE CONTACT (SHARP)
- OTHER CONTACT (AS INDICATED ON LOG)
- FILL/NATIVE BOUNDARY
- X — ANALYTICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- G — GEOTECHNICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- SHADING TO DENOTE STAINING
- BASE OF EXCAVATION

All trench logs were prepared by a California Professional geologist.

Project Name: Phase 3 DOE Trenching Data Gap Sampling 2014			**FIELD TRENCH LOG**		
Trench Number: SC-DG-651	Project Number: 10503982.3050105/ 10503982.3060105	Elevation and Datum: —	Location: B4065 AREA - AREA II		Sheet 1 of 1
Equipment Supplier: B.L. HALL	Operator: RALPH HALL	Date and Time Started: 5/30/14 0805	Date and Time Completed: 5/30/14 1430		Refusal? (Circle One) (Yes) No — If Yes Depth = 15.5' BGS.
Equipment Type: DEERE 310SJ BACKHOE	Trench Orientation: N 52° W (308° AZ)	Total Depth: 15.5' BGS	Total Number of Samples: 4 (MS/MSD AND DUPLICATE)		Photo? (Circle One) (Yes) No — No.
Bucket Width: 24" — Trench Length: 64'	Trench Width: 28"	No. of Samples: 4 — Bulk: — — Grab: 4	Drive: —	Hand Auger: —	% Man-Made Debris: 10 - 20%
Geologist or Hydrogeologist/Date: ANDREW PAYNE 5/30/14		Checked by/Date:			Wall of Trench Shown (Circle One) N S E W NE NW SE (SW)

LENGTH (FEET)



① SILTY SAND (SM), DRY, DARK BROWN (10YR 3/3), FINE TO MEDIUM SAND, PREDOMINANTLY FINE SAND, 60% FINE SAND, 15% MEDIUM SAND, SUBANGULAR TO SUBROUNDED, 25% ~~FINES~~ (SILT/CLAY), SOME ROOTS; LOOSE, FILL MATERIAL/DISTURBED SOIL.

NW ② SILTY SAND (SM), MOIST, LIGHT YELLOWISH BROWN (10YR 6/4), LOOSE, FINE TO COARSE SAND, MED. FINE AND MEDIUM SAND, SUBANGULAR TO SUBROUNDED, 30% FINE SAND, 25% MEDIUM SAND, 15% COARSE SAND, 20% FINES (SILT/CLAY), 10% SANDSTONE PIECES, PIECES VARY IN SIZE - UP TO 1.5 FT DIAMETER; FILL MATERIAL; TRACE DEBRIS - PIECE OF WIRE; DISTURBED SOIL.

③ SILTY SAND / SANDY SILT (SM/ML), MOIST, BROWN (10YR 4/3), FINE TO COARSE SAND, (SM) - PREDOMINANTLY MEDIUM SAND, 50% MEDIUM SAND, 10% FINE SAND, 5% COARSE SAND, SUBANGULAR TO SUBROUNDED, 25% FINES (SILT/CLAY); 10% DEBRIS AND CHUNKS OF SANDSTONE, SS UP TO 1FT DIAMETER; PIECES OF SMALE UP TO 1FT DIAMETER; SS IS LIGHT YELLOWISH BROWN (10YR 6/4) AND SMALE IS BROWN TO OLIVISH BROWN (10YR 5/3 - 5/2); (ML) SANDY SILT - 45% FINES, 30% MEDIUM SAND, 15% COARSE SAND, 10% FINE SAND; SA TO SR. [DEBRIS → 1" DIA. METAL CONDUIT, PIECE OF METAL 'I-BEAM' & 6" LONG ½" THICK STEEL; ½" REBAR ~ 2.5' LONG; PIECES OF 4.5-GALLON METAL PAINT CAN LID, WIRE, AND PIECE OF 'CINDER BLOCK' BRICK. FILL/DEBRIS/ DISTURBED SOIL] → DEBRIS IN INTERVAL #4
W/SILT (SP-SM)

④ ~~SILTY SAND (SM)~~; DRY, DARK YELLOWISH BROWN (10YR 4/4) LOOSE, ~~60%~~ 45% MEDIUM SAND, 20% FINE SAND, 10% COARSE SAND, ~~20% FINES~~; 10% FINES ~~15% FINES~~; 5% SS/SH CHUNKS. ~~10% DEBRIS~~; SEE DEBRIS DESCRIPTION ABOVE

⑤ (SS) SANDSTONE BEDROCK, LIGHT YELLOWISH BROWN (10YR 4/4), WEAK, FINE TO MED. SAND; FRIABLE; WEATHERED; TRACE SMALE.

— EXTENT OF FILL TO BEDROCK (PID READINGS FROM 0.0 - 0.6 PPM.)

⊗ TD OF TRENCH @ 15.5' BGS.

— SAMPLES COLLECTED

- SL-651-SASC-TR-0.5 @ 0818 (9 NRBM, 110 CPM, 0.0 PPM)
- SL-651-SASC-TR-5.0 @ 0840 (MS/MSD) (12 NRBM, 93 CPM, 0.6 PPM)
- SL-951-SASC-TR-5.0 @ 0845 → DUPLICATE
- SL-651-SASC-TR-10.0 @ 0922 (12 NRBM, 80 CPM, 0.1 PPM)
- SL-651-SASC-TR-15.0 @ 1114 (14 NRBM, 84 CPM, 0.0 PPM)

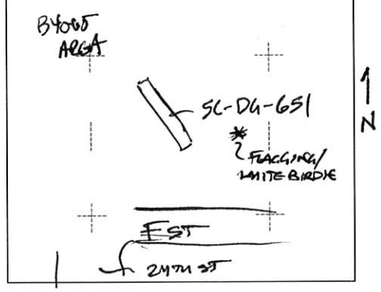
NOTES:

- GRASSES AND SHRUBS IN PROXIMAL AREA TO TRENCH W/ SPORADIC DEBRIS IN AREA (CONCRETE CHUNKS); SANDSTONE OUTCROPS ON BOUNDING SIDES OF AREA SE AND NW.
- NO STAINING OR ODORS OBSERVED; DEBRIS OBSERVED → METAL PIPE, I-BEAM PIECE, PIECE OF A ~~GAL~~ METAL 5 GALLON PAINT CAN LID, WIRE PIECE, PIECE OF 'CINDER BLOCK/BRICK (GRAY)'
- BACKFILL @ 1300
- ONE ~~INFLATE~~ WHITE STAINING/PIN FLAG BIRDIE - MAY INDICATE PATH OF GEOPHYSICAL SURVEY THAT RUNS ~ E-W THROUGH AREA; FLAG LOCATED ~ 30 FT EAST OF TRENCH;

All trench logs were prepared by a California Professional geologist.

MWH®

Plan View-Site Location
(Provide Sketch)



EXPLANATION

- SOIL TYPE CONTACT (SHARP)
- OTHER CONTACT (AS INDICATED ON LOG)
- FILL/NATIVE BOUNDARY
- X — ANALYTICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- G — GEOTECHNICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- SHADING TO DENOTE STAINING
- BASE OF EXCAVATION

Project Name: Phase 3 DOE Trenching Data Gap Sampling 2014							**FIELD TRENCH LOG**		
Trench Number: 5C-DG-653		Project Number: 10503982.3050105/ 10503982.3060105	Elevation and Datum: —				Location: (5C-DG-653) B4065 AREA	Sheet 1 of 1	
Equipment Supplier: B.L. HALL		Operator: RALPH HALL	Date and Time Started: 6/2/14 0805				Date and Time Completed: 6/2/14 1610	Refusal? (Circle One) Yes / No	If Yes Depth = 15' BGS
Equipment Type: DEERE 310SJ BACK HOE		Trench Orientation: N 60 W TO N 56 W	Total Depth: 15.0' BGS				Total Number of Samples: 4	Photo? (Circle One) Yes / No	No.
Bucket Width: 24"	Trench Length: 95'	Trench Width: 28"	No. of Samples: 4	Bulk: —	Grab: 4	Drive: —	Hand Auger: —	% Man-Made Debris: 100'/. (15% CONCRETE PIECE AND STICK) (85% DISTURBED SOIL)	
Geologist or Hydrogeologist/Date: ANDREW PAYNE			Checked by/Date					Wall of Trench Shown (Circle One) N S E W NE (NW) SE SW	

MWH®

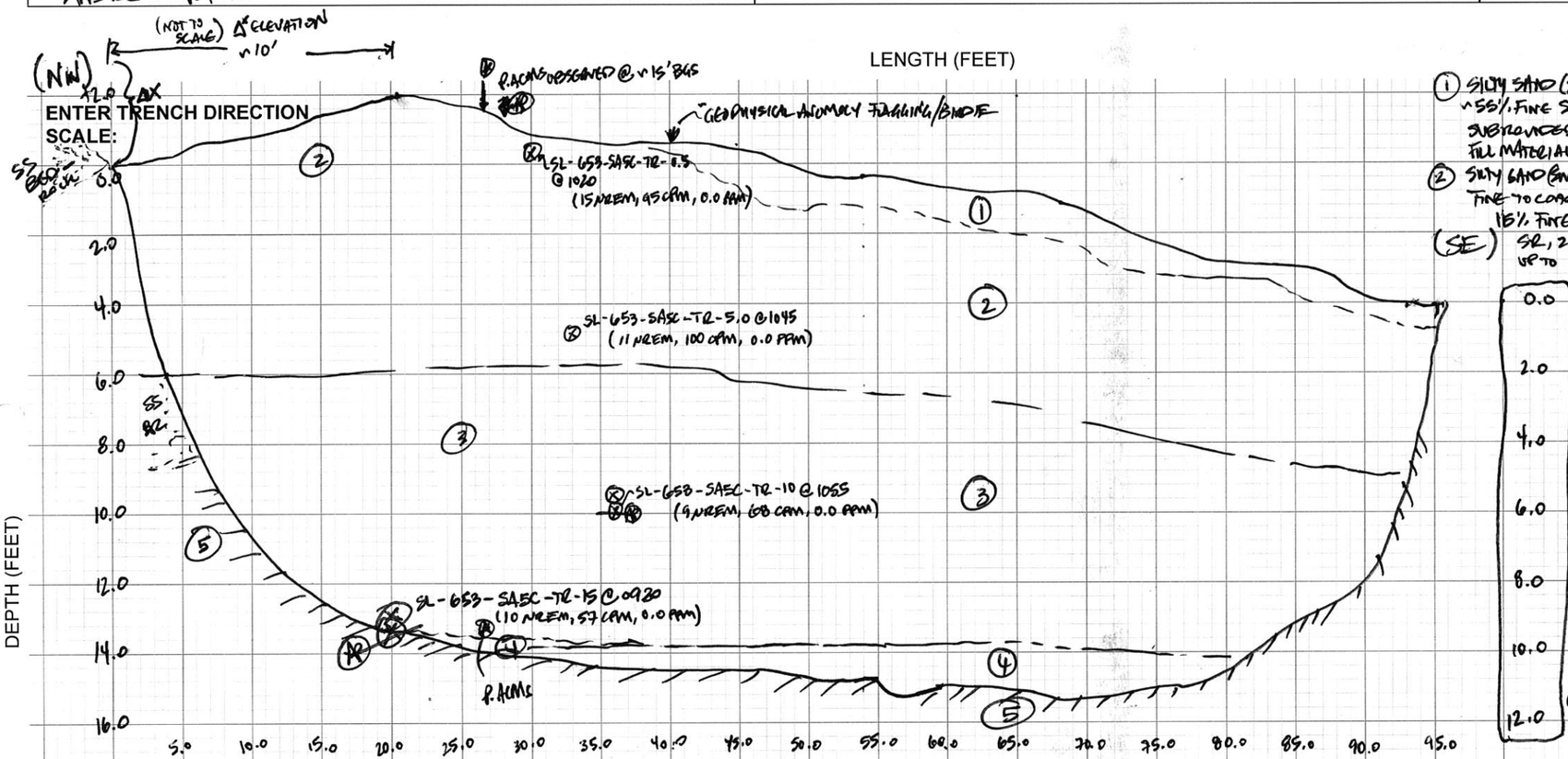
(NOT TO SCALE) Δ ELEVATION ≈ 10'

(NW) ENTER TRENCH DIRECTION

SCALE:

LENGTH (FEET)

DEPTH (FEET)



((10YR 3/3) (A), DRY,

(1) SILTY SAND (SM) DARK BRN, FINE TO MEDIUM SAND ≈ 55%. FINE SAND, 20%, MEDIUM SAND, SUBANG. TO SUBROUNDED, LOOSE, SPARSE ROOTS, 25% FINES, FILL MATERIAL/DISTURBED SOIL.

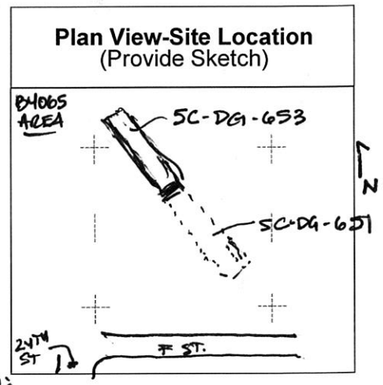
(2) SILTY SAND (SM) YELLOWISH BROWN (10YR 5/4), DRY, FINE TO COARSE SAND, 30% MED SAND, 15% FINE SAND, 10% COARSE SAND, LOOSE, SA TO SR, 20% FINES, 20% BROKEN UP SANDSTONE, UP TO 1'D:A; INTERMITTENT SANDY SILT (ML); ML IS DARK BROWN (10YR 3/3), 45% FINES, 30% MEDIUM SAND, 15% FINE SAND, 10% CS. SAND. DISTURBED SOIL/FILL MATL.

(3) SILTY SAND (SM), DRY, YELLOWISH BROWN (10YR 5/4), LOOSE, ≈ 35 MEDIUM SAND, 25% FINE SAND, 5% COARSE SAND, 15% SS CMNTD, 20% FINES; SAND IS ANGULAR TO ROUNDED, FILL MATERIAL/ DISTURBED MATL.

(4) SILTY SAND (SM) AND SANDY SILT (ML). SM IS BROWN (10YR 4/3), MED. FINE SAND, SA TO R, ≈ 60% FINE SAND, 20% MED SAND, 20% FINES, MOIST, ROOTS, TRACE ASPHALT FROM SIDEWALLS?, NATIVE. (ML) IS DARK BROWN (10YR 3/3) MOIST, HARD, LOW PLASTICITY, 50% FINES, 35% FINE SAND, 15% MED SAND, ROOTS; NATIVE.

(5) SS BEDROCK, SANDSTONE, LIGHT YELLOWISH BROWN (10YR 6/4) TO YELLOWISH BROWN (10YR 5/4), FINE TO MED SAND, ANG TO SUBROUNDED, WEATHERED, FRIABLE. WEAK.

Plan View-Site Location
(Provide Sketch)



EXPLANATION

- SOIL TYPE CONTACT (SHARP)
- OTHER CONTACT (AS INDICATED ON LOG)
- FILL/NATIVE BOUNDARY
- X — ANALYTICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- G — GEOTECHNICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- SHADING TO DENOTE STAINING
- BASE OF EXCAVATION

NOTES

- GRASSES, PIECES OF BURNT SAGEBRUSH, LOOSE SANDSTONE PIECES @ SURFACES; SS OUTCROP BOUNDING NW EXTENT OF TRENCH; AND SMALL COARSE BRANCHES
- NO STAINING OR ODORS OBSERVED; DEBRIS OBSERVED IN SOILS PILES INCLUDES: ASPHALT UP TO 2' D/A (SURFACE), SMALLER ASPHALT TO 5' BGS AND @ 15' BGS, ONE PIECE OF CONCRETE ≈ 1' D/A; AND A SMALL AMOUNT OF POTENTIAL ACMs; NO ONE SMALL PURPLE COLORED/REDISH CONCRETE/BRICK PIECE ≈ 3" D.A.
- OBSERVED GEOPHYSICAL ANOMALY FLAGGING/BIODIE IN MIDDLE OF TRENCH PATH AT APPROX. 40' FROM NW EXTENT OF TRENCH; BASE (A)
- BASE OF FILL MATERIAL APPEARED OR WAS OBSERVED TO BE PRESENT FROM (A) AT VARYING DEPTHS, DEPTHS TO NATIVE AND TO BEDROCK RANGED FROM 6.0 TO 15 FT BGS; ALONG BOTTOM PART OF TRENCH NATIVE SOIL AND BEDROCK WAS ENCOUNTERED. FILL WAS OBSERVED AT MAX. 14 FT THICK (APPROX.); BULK/ MAJORITY OF FILL WAS COMPRISED OF DISTURBED SOIL AND CHUNKS OF SS BEDROCK.
- PID READINGS DID NOT EXCEED 0.0 PPM
- BEFORE SCAN; (11 NREM, 60 CPM BEHIND);

SAMPLES COLLECTED

- SL-653-SASC-TR-0.5 @ 1020 (15 NREM, 95 CPM, 0.0 PPM)
- SL-653-SASC-TR-5.0 @ 1045 (11 NREM, 100 CPM, 0.0 PPM)
- SL-653-SASC-TR-10.0 @ 1055 (9 NREM, 68 CPM 0.0 PPM)
- SL-653-SASC-TR-15.0 @ 0920 (10 NREM, 57 CPM, 0.0 PPM)

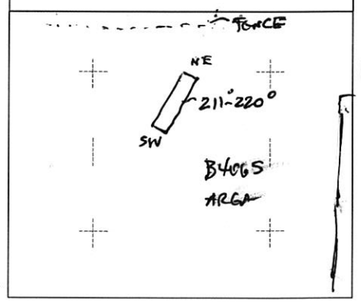
All trench logs were prepared by a California Professional geologist.

Project Name	Phase 3 DOE Trenching Data Gap Sampling 2014								
Trench Number	SL-DG-655	Project Number	10503982.3050105/ 10503982.3060105	Elevation and Datum	—	Location	SL-DG-655 B4065 AREA	Sheet 1 of 1	
Equipment Supplier	B.L. HALL	Operator	RALPH HALL	Date and Time Started	6/4/14 0740	Date and Time Completed	6/4/14 0940	Refusal? (Circle One) Yes / No	If Yes Depth = 8' DEGREST POINT
Equipment Type	DEERE 310SJ BACK HOE	Trench Orientation	NE-SW ~ 211°-220° (~N40°E)	Total Depth	8' BGS	Total Number of Samples	2	Photo? (Circle One) Yes / No	No.
Bucket Width	24"	Trench Length	40'	Trench Width	28"	No. of Samples	2	Bulk —	Grab 2
Drive	—	Hand Auger	—	% Man-Made Debris	100% DISTURBED SOIL				
Geologist or Hydrogeologist/Date	ANDREW PAYNE 6/4/14	Checked by/Date		Wall of Trench Shown (Circle One)	N S E W NE NW SE SW				

FIELD TRENCH LOG

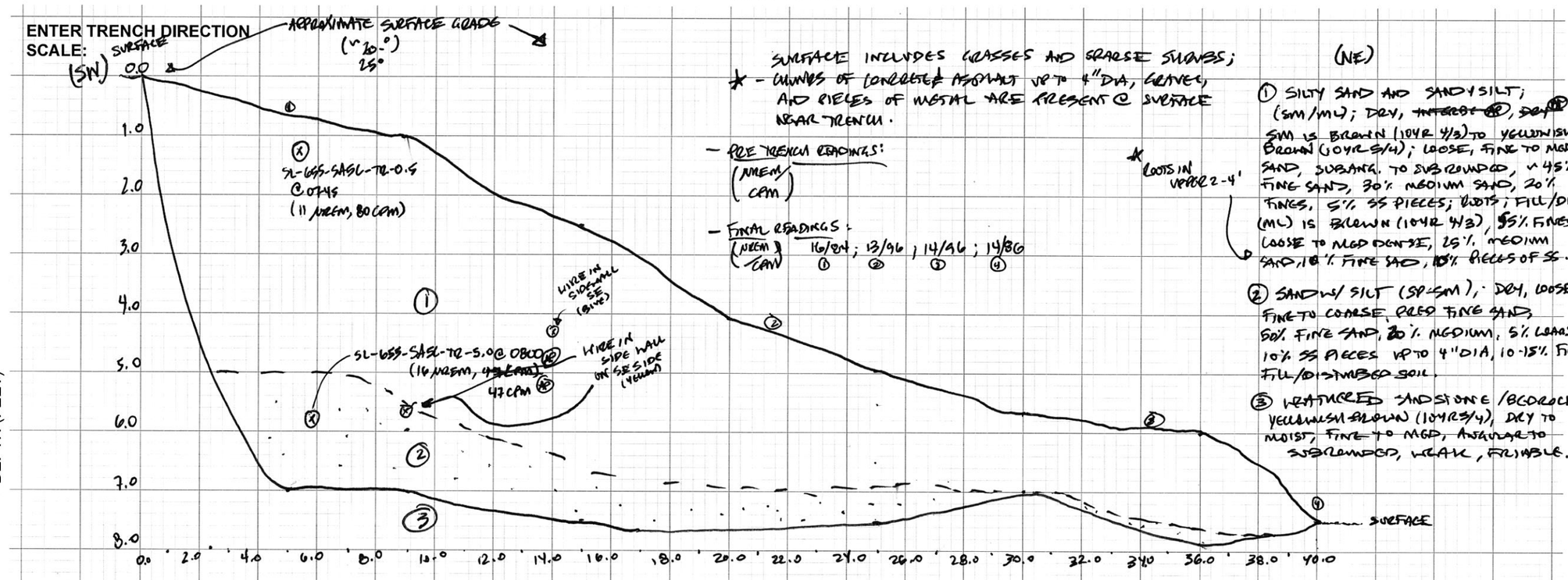
MWH®

Plan View-Site Location
(Provide Sketch)



LENGTH (FEET)

DEPTH (FEET)



★ - SURFACE INCLUDES GRASSES AND SPARSE SHRUBS; CHUNKS OF CONCRETE/ASPHALT UP TO 4" DIA, GRAVEL, AND PIECES OF METAL ARE PRESENT @ SURFACE NEAR TRENCH.

- PRE TRENCH READINGS: (NREM / CPM)
- FINAL READINGS: (NREM / CPM) 16/84 ① ; 13/96 ② ; 14/96 ③ ; 14/86 ④

★ ROOTS IN UPPER 2-4'

(NE)

① SILTY SAND AND SANDY SILT; (SM/ML); DRY, ~~INTERBEDDED~~, ~~DRAPED~~ SM IS BROWN (10YR 4/3) TO YELLOWISH BROWN (10YR 5/4); LOOSE, FINE TO MEDIUM SAND, SUBANG. TO SUBROUNDED, ~45% FINE SAND, 30% MEDIUM SAND, 20% FINES, 5% SS PIECES; ROOTS; FILL/DISTURBED SOIL (ML) IS BROWN (10YR 4/3), 95% FINES, LOOSE TO MED DENSE, 25% MEDIUM SAND, 10% FINE SAND, 15% PIECES OF SS.

② SAND W/ SILT (SP-SM), DRY, LOOSE FINE TO COARSE, MED FINE SAND, 50% FINE SAND, 30% MEDIUM, 5% COARSE 10% SS PIECES UP TO 4" DIA, 10-15% FINES. FILL/DISTURBED SOIL.

③ WEATHERED SANDSTONE/BEDROCK YELLOWISH BROWN (10YR 5/4), DRY TO MOIST, FINE TO MED, ANGULAR TO SUBROUNDED, WEAK, FRIABLE.

SURFACE

NOTES

- TOTAL DEPTH => 8' BGS; BACKFILL COMPLETED @ 0940.
- FILL MATERIAL/DISTURBED SOIL OBSERVED TO WHERE BEDROCK WAS ENCOUNTERED, APPROX. 8' THICK AT DEGREST POINT; FILL INCLUDED DISTURBED SOIL; SURFACE DEBRIS DESCRIBED ABOVE; 2 COLORED WIRES LOCATED IN SIDE WALL WERE DOCUMENTED ON TRENCH LOG.
- NO MAGNETIC/GEOPHYSICAL ANOMALIES NEAR TRENCH LOCATION.
- READINGS ON PID DID NOT EXCEED
- EQUIPMENT BLANK TO BE COLLECTED FROM BACK SIDE BUCKET ONCE DEEP COMPLETED.

SAMPLES COLLECTED:

- SL-655-SASC-TR-0.5 @0745 (11 NREM, 80 CPM, 0.0 PPM)
- SL-655-SASC-TR 5.0 @0800 (16 NREM, 47 CPM, 0.0 PPM)

EXPLANATION

- SOIL TYPE CONTACT (SHARP)
- OTHER CONTACT (AS INDICATED ON LOG)
- FILL/NATIVE BOUNDARY
- X — ANALYTICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- G — GEOTECHNICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- SHADING TO DENOTE STAINING
- BASE OF EXCAVATION

All trench logs were prepared by a California Professional geologist.

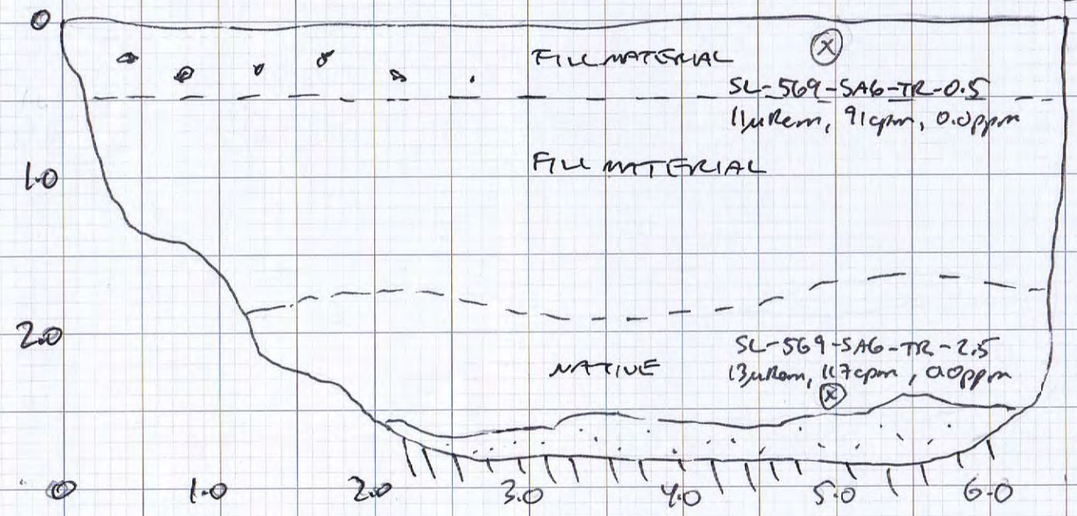
FIELD TRENCH LOG

Project Name: Phase 3 DOE Trenching Data Gap Sampling 2014					
Trench Number: 6 DG-569	Project Number: 10503982.3050105/ 10503982.3060105	Elevation and Datum: N/A	Location: AIV 4513 Parklot area	Sheet 1 of 1	
Equipment Supplier: B.L. HALL	Operator: DAN HALL	Date and Time Started: 20 MAY 2014, 10:53	Date and Time Completed: 20 MAY 2014, 11:37	Refusal? (Circle One) Yes / No	If Yes Depth = 2.8'
Equipment Type: Deere 310 SJ NKSA83	Trench Orientation: SW - NE	Total Depth: 2.8' bgs	Total Number of Samples: 2	Photo? (Circle One) Yes / No	No.
Bucket Width: 24" / Trench Length: 6.5'	Trench Width: 30"	No. of Samples: 2 / Bulk: — / Grab: 2	Drive: — / Hand Auger: —	% Man-Made Debris: ~0%	
Geologist or Hydrogeologist/Date: MM ELLIS 20 MAY 2014		Checked by/Date		Wall of Trench Shown (Circle One) N S E W NE NW SE SW	

LENGTH (FEET)

ENTER TRENCH DIRECTION
SCALE:

Surface covered with some base gravel, asphalt chunks, some clay (pipe) pieces, sandstone cobbles.



0.0-0.5 Silty sand (SM). Brown (10YR 4/3). Dense, dry. Predominant fine sand (45%), some silt+clay (30%), little medium sand (15%), few gravels (10%). Gravels consist of road base and native bedrock clasts. No stain. No odor. Fill material.

0.5-1.9 Silty sand (SM). Brown (10YR 4/3). Dense, dry. Same characteristics of 0.0-0.5 interval except gravels are reduced. Predominant fine sand (50%), some silt+clay (30%), little medium sand (15%), few gravel (~5%). No stain, no odor. Fill material.

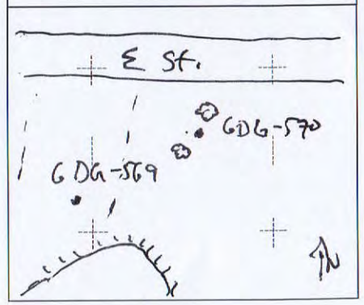
1.9-2.8 ~~Silty sand (SM)~~, Dark yellowish brown (10YR 4/4) → poorly graded sand (SP). Dense, dry. Predominant fine sand (85%), few silt clay (10%) and few medium sand (5%). No stain, no odor. Native soil.

2.8 TD on Bedrock, sandstone, (lite yellowish brown (2.5Y 6/4). moderately weathered (W3), weak (R2), moderately soft (H5) fine to medium grained, sub angular to subrounded grains.

Samples Taken
10:58 0.5' SL-569-SA6-TR-0.5
11:15 2.5' SL-569-SA6-TR-2.5

- Backfill trench with trench cuttings at 13:52.
- Samples taken from backhoe bucket

Plan View-Site Location
(Provide Sketch)

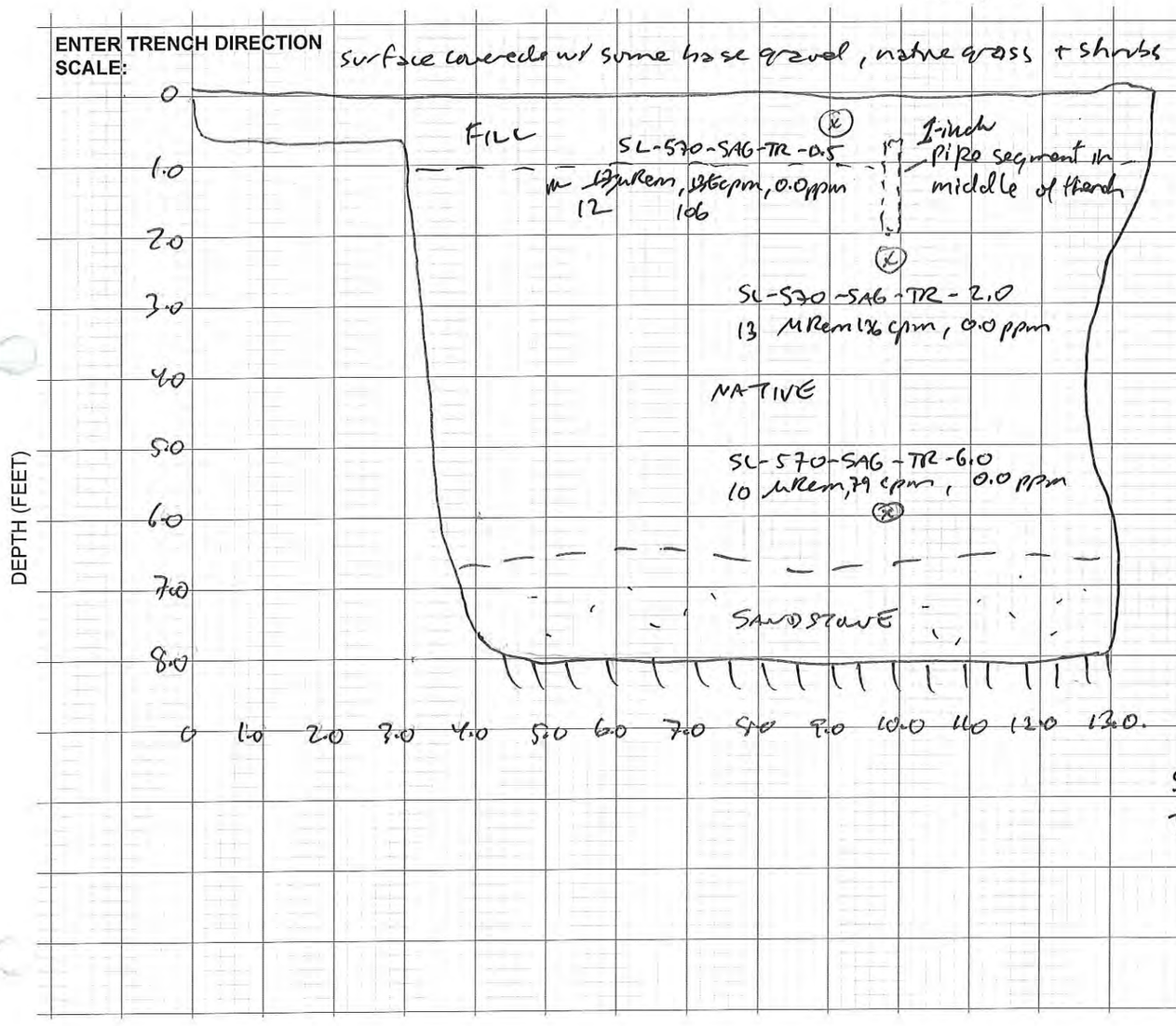


EXPLANATION

- SOIL TYPE CONTACT (SHARP)
- OTHER CONTACT (AS INDICATED ON LOG)
- FILL/NATIVE BOUNDARY
- X — ANALYTICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- G — GEOTECHNICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- SHADING TO DENOTE STAINING
- BASE OF EXCAVATION

Project Name: Phase 3 DOE Trenching Data Gap Sampling 2014				**FIELD TRENCH LOG**	
Trench Number: 6 DG-570	Project Number: 10503982.3050105/ 10503982.3060105	Elevation and Datum: N/A		Location: ATF 4513 Park lot area	Sheet 1 of 1
Equipment Supplier: B.L. HALL	Operator: DAN HALL	Date and Time Started: 20MAY2014, 13:43 12:05		Date and Time Completed: 20MAY2014, 13:43	Refusal? (Circle One) Yes / No — If Yes Depth = 8.0'
Equipment Type: Deere 310SJ MC54B3	Trench Orientation: SE - NW	Total Depth: 8.0' bgs		Total Number of Samples: 3	Photo? (Circle One) Yes / No — No.
Bucket Width: 24" / Trench Length: 13.5'	Trench Width: 30" - 40"	No. of Samples: 3 / Bulk: — / Grab: 3		Drive: — / Hand Auger: —	% Man-Made Debris: 0%
Geologist or Hydrogeologist/Date: R. BEERS 20 MAY 2014		Checked by/Date			Wall of Trench Shown (Circle One) N S E W NE NW SE SW

LENGTH (FEET)



0.0-1.0 Silty sand (SM). Brown (10YR 4/3), dense, dry. Predominant fine sand (55%), some silt/clay (40%), and few medium sand (5%). Some sand stone clasts up to 2"; angular. No stain, no odor. Fill material.

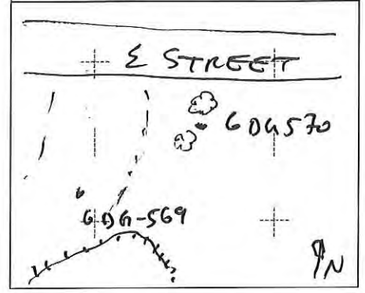
1.0-6.5 Silty sand (SM). Brown (10YR 4/3), medium dense to dense, dry. Predominant fine sand (70%), some silt/clay (30%), and trace medium sand. Some rust (oxid) around pipe found (~0.5' bgs). No stain. No odor. Native soil.

6.5-8.0 Moderately weathered bedrock (W3) sandstone. Dark yellowish brown (10YR 4/6). Fine to medium grained. Highly weathered (W4), very weak (R1) and soft (H6). Transitions to lite yellowish brown (2.5Y 6/4), moderately weathered (W3), weak (R2), moderately soft (H5) where met with refusal.

Samples Taken
- SL-570-SAG-TR-0.5 @ 12:10
- SL-570-SAG-TR-2.0 @ 13:00
- SL-570-SAG-TR-6.0 @ 13:43

- Backfill trench w/ trench cuttings at 14:06
- Samples taken from trench except at 6.0', which was taken from backhoe bucket.

Plan View-Site Location
(Provide Sketch)



EXPLANATION

- SOIL TYPE CONTACT (SHARP)
- OTHER CONTACT (AS INDICATED ON LOG)
- FILL/NATIVE BOUNDARY
- X — ANALYTICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- G — GEOTECHNICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- SHADING TO DENOTE STAINING
- BASE OF EXCAVATION

All trench logs were prepared by a California Professional geologist.

Project Name	Phase 3 DOE Trenching Data Gap Sampling 2014								
FIELD TRENCH LOG									
Trench Number	6-DG-686	Project Number	10503982.3050105/ 10503982.3060105	Elevation and Datum	N/A	Location	ATF W. of ESG Storage	Sheet 1 of 1	
Equipment Supplier	B.L. HALL	Operator	RALPH HALL	Date and Time Started	21 MAY 2014, 07:58	Date and Time Completed	21 MAY 2014, 09:00	Refusal? (Circle One) Yes / No	If Yes Depth = 12.5'
Equipment Type	Deere 310SJ NKSH883	Trench Orientation	SSW - NNE	Total Depth	12.5' bgs	Total Number of Samples	3	Photo? (Circle One) Yes / No	No.
Bucket Width	24"	Trench Length	12.0'	Trench Width	30"	No. of Samples	3	Bulk –	Grab 3
						Drive	–	Hand Auger	–
Geologist or Hydrogeologist/Date	RMS ELLIS, 21 MAY 2014			Checked by/Date				% Man-Made Debris	0%
								Wall of Trench Shown (Circle One) N S E W NE (NW) SE SW	

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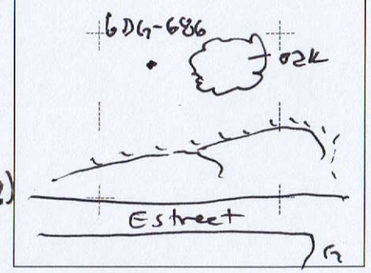
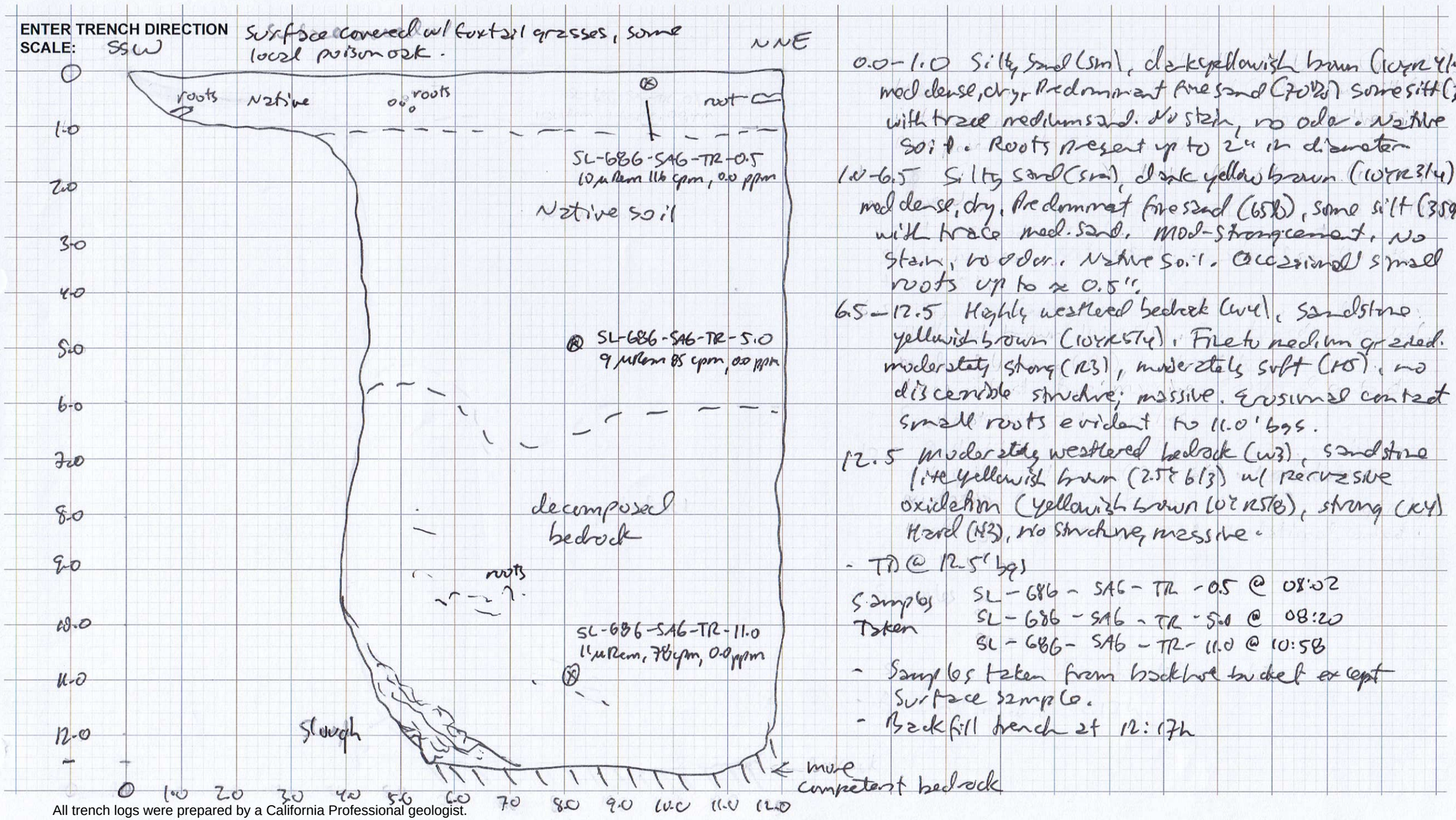
Plan View-Site Location
(Provide Sketch)



LENGTH (FEET)



0.0–1.0 Silty Sand (SM), dark yellowish brown (10YR 4/4) med dense, dry, Predominant fine sand (70%) some silt (30%) with trace medium sand. No stain, no odor. Native soil. Roots present up to 2" in diameter

1.0–6.5 Silty sand (SM), dark yellowish brown (10YR 3/4) med dense, dry, Predominat fine sand (65%), some silt (35%) with trace med. sand. Mod-strong cement, No stain, no odor. Native soil. Occasional small roots up to ≈ 0.5".

6.5–12.5 Highly weathered bedrock (WR), Sandstone yellowish brown (10YR 5/4). Fine to medium grained. moderately strong (R3), moderately soft (R5), no discernible structure; massive. Erosional contact small roots evident to 11.0' bgs.

12.5 moderately weathered bedrock (W3), sandstone light yellowish brown (2.5Y 6/3) w/ pervasive oxidation (yellowish brown (10YR 5/8), strong (R4) Hard (R3), no structure, massive.

- TD @ 12.5' bgs

Samples Taken
- SL-686-SA6-TR-0.5 @ 08:02
- SL-686-SA6-TR-5.0 @ 08:20
- SL-686-SA6-TR-11.0 @ 10:58

- Samples taken from backhoe bucket except surface samples.
- Backfill trench at 12:17h

EXPLANATION

- SOIL TYPE CONTACT (SHARP)
- OTHER CONTACT (AS INDICATED ON LOG)
- FILL/NATIVE BOUNDARY
- X — ANALYTICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- G — GEOTECHNICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- SHADING TO DENOTE STAINING
- BASE OF EXCAVATION

All trench logs were prepared by a California Professional geologist.

FIELD TRENCH LOG

Project Name: Phase 3 DOE Trenching Data Gap Sampling 2014			Location: NW of ESADA, AOI	Sheet 1 of 1
Trench Number: BDG-534	Project Number: 10503982.3050105/ 10503982.3060105	Elevation and Datum: N/A	Date and Time Completed: 19 MAY 2014, 09:07	Refusal? (Circle One) Yes / No — If Yes Depth = 5.5'
Equipment Supplier: B.L. HALL	Operator: Dan Hall	Date and Time Started: 19 MAY 2014, 08:32	Total Number of Samples: 2	Photo? (Circle One) Yes / No — No.
Equipment Type: Deere 310SJ SN: 1NL5H83	Trench Orientation: SW-NE	Total Depth: 5.5' bgs		
Bucket Width: 24" — Trench Length: 7.0'	Trench Width: 30"	No. of Samples: 2 — Bulk: — — Grab: 2	Drive: — — Hand Auger: —	% Man-Made Debris: 0%
Geologist or Hydrogeologist/Date: Rob Ewis, 19 MAY 2014		Checked by/Date		Wall of Trench Shown (Circle One): N S E W NE NW SE SW

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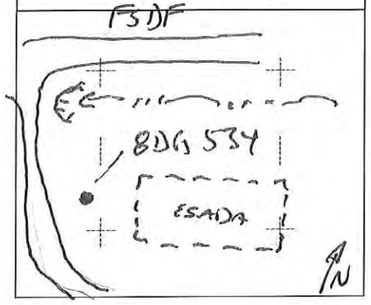
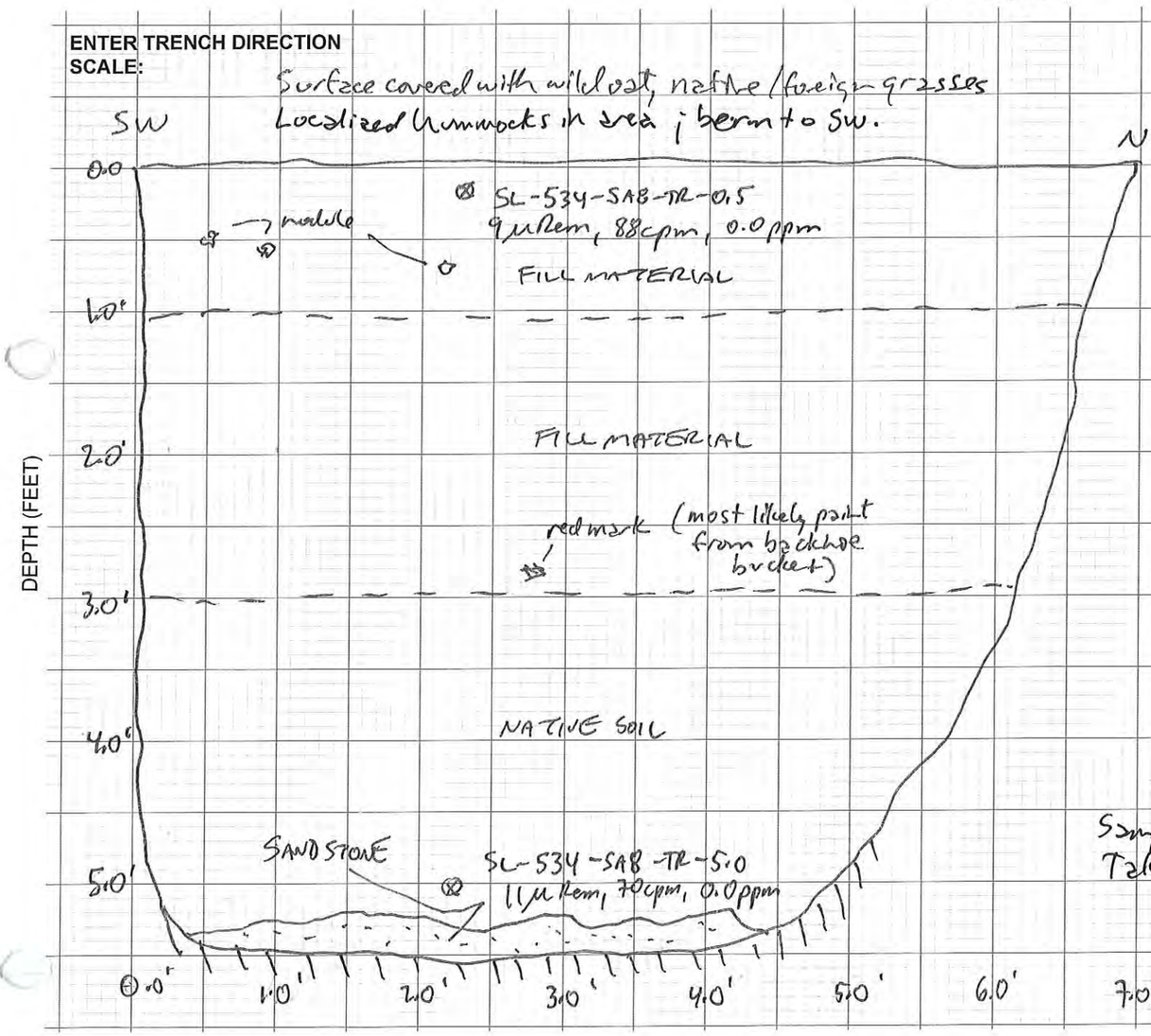
Plan View-Site Location
(Provide Sketch)



LENGTH (FEET)

ENTER TRENCH DIRECTION
SCALE:



0.0–1.0 Silty sand (SM), dark yellowish brown (10YR 4/4 to 4/6), med. dense to dense, dry predominantly fine sand (65%), little silt (25%) little med. sm sand (10%). Frag roots of white porous material (CaCO3), wood fragments No odor, no stain. Fill material.

1.0–3.0 Silty sand (SM), dark yellowish brown (10YR 4/6), med dense, dry, predominantly fine sand (60%), little silt (25%), little medium sand (15%). Occasional fragment of wood. No odor, no staining, Fill material.

3.0–5.0 Silty sand (SM), brown to dark yellowish brown (10YR 4/3–4/4), med dense, dry–moist, predominant fine sand (65%) some silt (30%) and few med sand (5%). Some oxidation and lighter grains. No stain, no odor. Native soil.

5.0 Moderately weathered bedrock (WR), sandstone. Dark yellowish brown (10YR 4/6). Fine to medium grained. Very weak (R1), moderately soft (R5). Massive. No visible staining or odor.

Samples Taken			
09:10	0.5' bgs	SL-534-SAB-TR-0.5
09:40	5.0' bgs	SL-534-SAB-TR-5.0

- Backfill Trench (11:09) w/ trench cuttings
- Samples taken from backhoe bucket.

EXPLANATION

- SOIL TYPE CONTACT (SHARP)
- OTHER CONTACT (AS INDICATED ON LOG)
- FILL/NATIVE BOUNDARY
- X — ANALYTICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- G — GEOTECHNICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- SHADING TO DENOTE STAINING
- BASE OF EXCAVATION

All trench logs were prepared by a California Professional geologist.

FIELD TRENCH LOG

Project Name: Phase 3 DOE Trenching Data Gap Sampling 2014				
Trench Number: SDG-548	Project Number: 10503982.3050105/ 10503982.3060105	Elevation and Datum: N/A	Location: NW of solar concentrator	Sheet 1 of 1
Equipment Supplier: B.C. HALL	Operator: Dan Hall	Date and Time Started: 19 MAY 2014, 11:51	Date and Time Completed: 19 MAY 2014, 12:42	Refusal? (Circle One) Yes / No — If Yes Depth = 12.5'
Equipment Type: Deere 310SJ NKSH883	Trench Orientation: SSE – NNW	Total Depth: 12.5' bgs	Total Number of Samples: 4 (incl dupe)	Photo? (Circle One) Yes / No — No.
Bucket Width: 24" / Trench Length: 14.0'	Trench Width: 30"	No. of Samples: 4 / Bulk: – / Grab: 4	Drive: – / Hand Auger: –	% Man-Made Debris: 0%
Geologist or Hydrogeologist/Date: RMB ELLIS 19 MAY 2014	Checked by/Date:			Wall of Trench Shown (Circle One): N S E W NE NW SE SW

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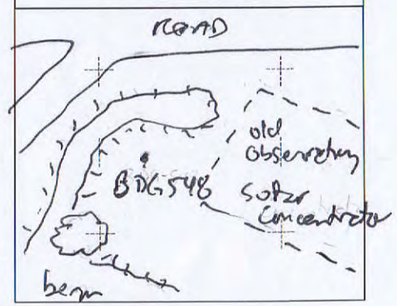
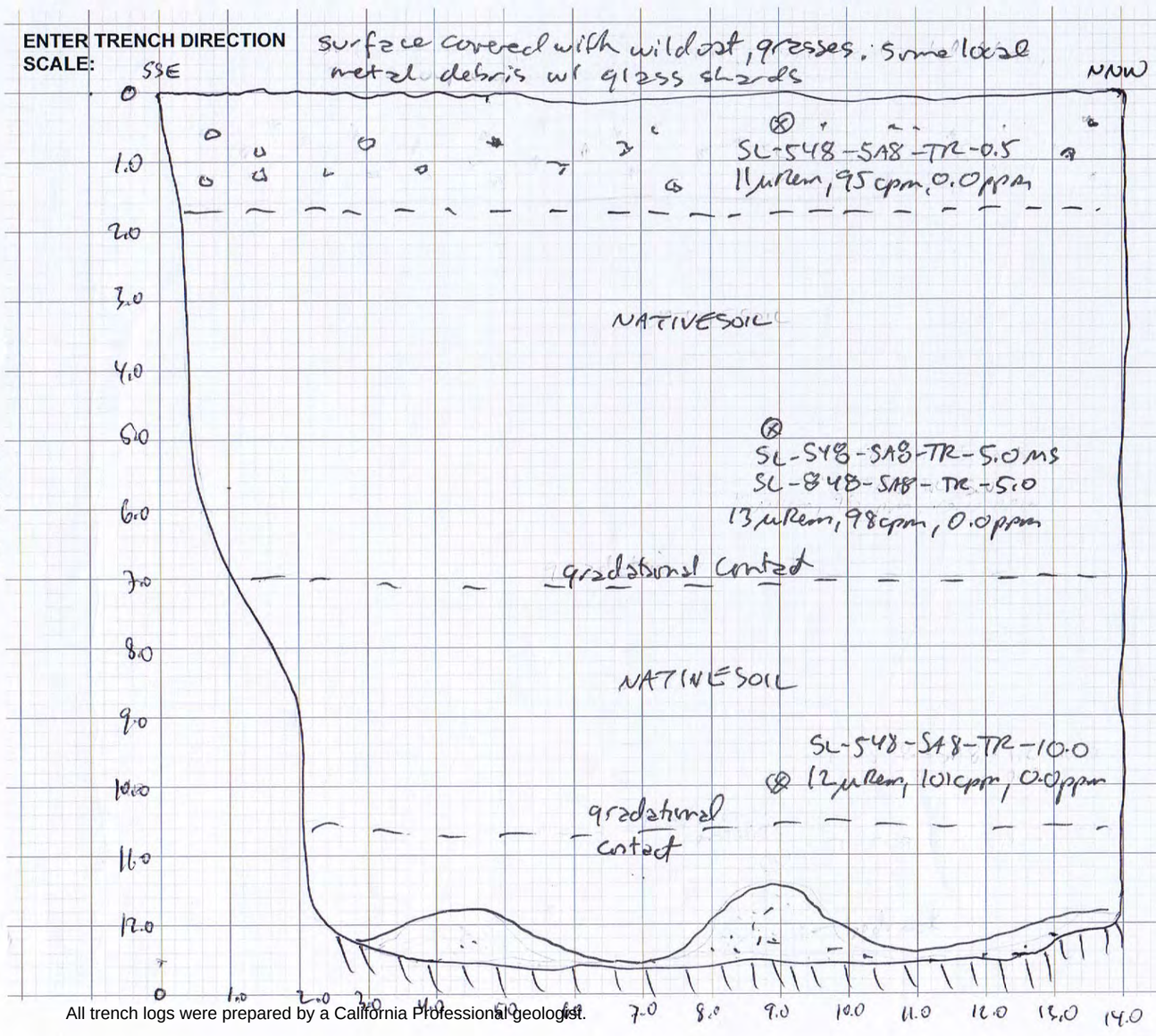
Plan View-Site Location
(Provide Sketch)



LENGTH (FEET)

ENTER TRENCH DIRECTION
SCALE:



0.0 – 1.5 Clayey sand (SC), dark yellowish brown (10YR 4/4), dense and hard, dry. Predominant silt/clay (45%), some fine sand (40%), little medium sand (15%). No stain, no odor. Several burnt wood fragments and woody material. Native soil.

1.5 – 7.0 Silt, very fine sand (ML), brown (7.5 Y 4/4), dense, hard, dry. Predominant silt/clay (55%), some fine sand (35%) and few medium sand (10%) No stain, no odor. Native soil.

7.0 – 12.5 Silt, very fine sand (ML), Brown (7.5 Y 4/3). Dense, hard, dry. Predominant silt (60%), some fine sand (35%) and little medium sand (5%) No stain no odor. In native soil; however gradational contact at ~10.5' bgs includes soil w/ similar characteristics w/ color change to strong brown (7.5 Y 4/6). Upper portion has white streaks of material ($CaCO_3$). Effervesces. Very firm soil also pervasive with fracture fill of carbonate. May be in decomposed/ residual soil. Sample at 10.0'.

12.5 – Decomposed, highly fractured bedrock (WS) Sandstone, dark yellowish brown (10YR 4/6), fragments with very pale brown (10YR 7/4) fracture fill. Extremely weak (R0), very soft (H7). Effervesces violently.

Samples Taken
13:37 SL-548-SA8-TR-0.5
13:17 SL-548-SA8-TR-5.0MS
13:22 SL-848-SA8-TR-5.0 (Dupe)
13:09 SL-548-SA8-TR-10.0

EXPLANATION

- SOIL TYPE CONTACT (SHARP)
- OTHER CONTACT (AS INDICATED ON LOG)
- FILL/NATIVE BOUNDARY
- X — ANALYTICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
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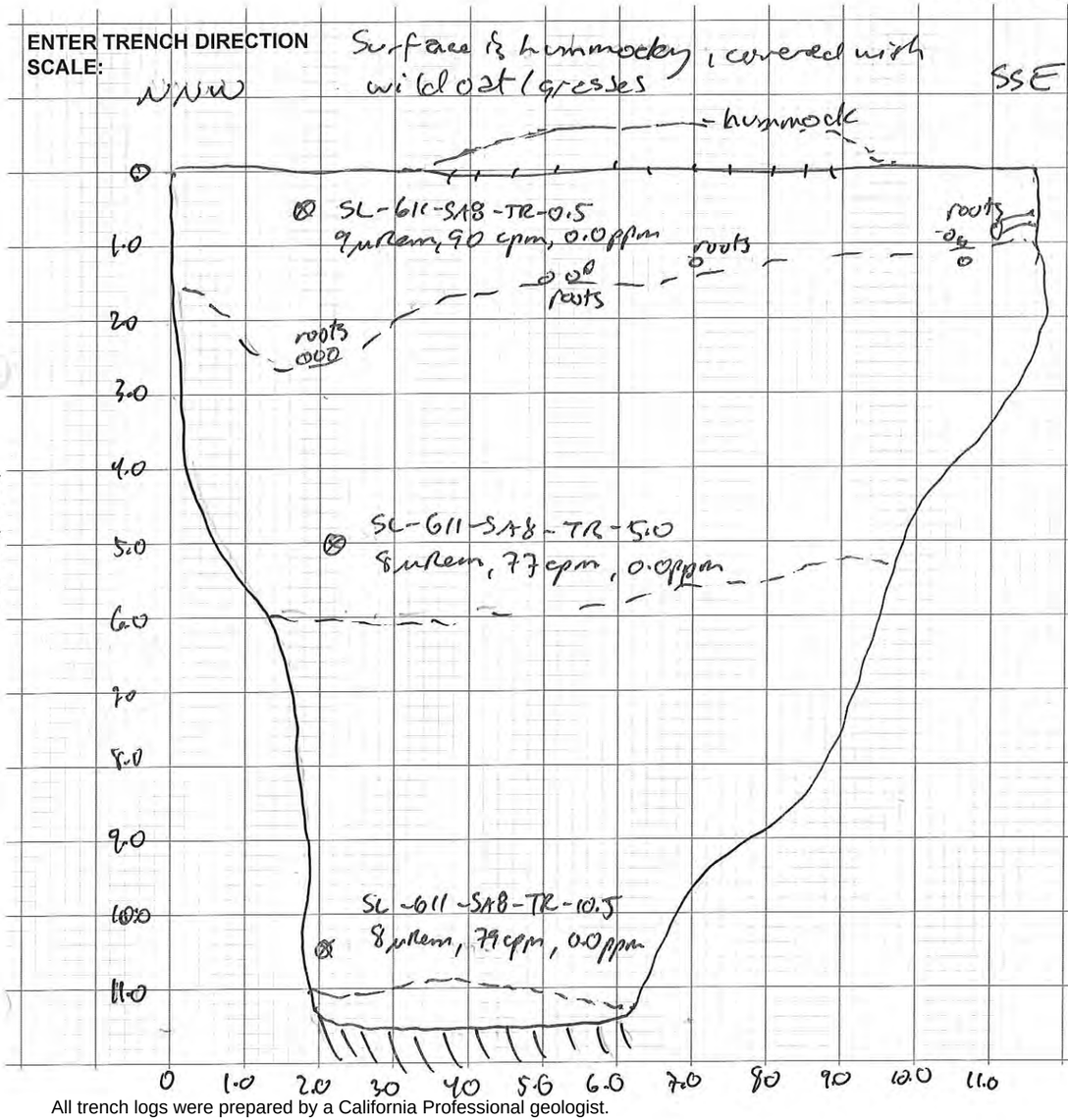
- SHADING TO DENOTE STAINING
- BASE OF EXCAVATION

* Backfilled w/ trench cuttings @ 13:48
* Samples taken from backhoe bucket except

All trench logs were prepared by a California Professional geologist.

Project Name: Phase 3 DOE Trenching Data Gap Sampling 2014						**FIELD TRENCH LOG**	
Trench Number: 8 DG-611	Project Number: 10503982.3050105/ 10503982.3060105	Elevation and Datum: N/A				Location: Hill (5) of ESADA	Sheet 1 of 1
Equipment Supplier: B.L. Hall	Operator: Dan Hall	Date and Time Started: 20 MAY 2014, 07:36				Date and Time Completed: 20 MAY 2014, 08:26	Refusal? (Circle One) (Yes) No — If Yes Depth = 11.5'
Equipment Type: Deere 310SJ NK	Trench Orientation: NNW - SSE	Total Depth				Total Number of Samples: 3	Photo? (Circle One) (Yes) No — No.
Bucket Width: 24" / Trench Length: 11.5'	Trench Width: 30"	No. of Samples: 3	Bulk: —	Grab: 3	Drive: —	Hand Auger: —	% Man-Made Debris: 0%
Geologist or Hydrogeologist/Date: RMGillis 20 MAY 2014		Checked by/Date					Wall of Trench Shown (Circle One) N S (E) W NE NW SE SW

LENGTH (FEET)

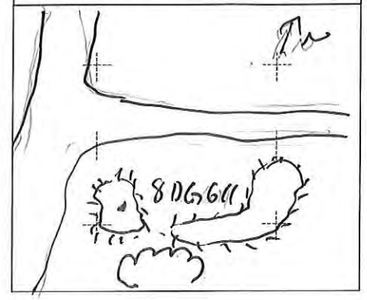


0.0 – 1.5	Silt-fine sand/clay (ML-CL). Dark grayish brown (10YR4/2). Hard-very hard, strong cementation, slight to medium plastic, slow dilatency to rapid dilatency, medium dry strength, medium toughness. Highly effervescent. No stain, no odor. ~~Native soil~~. Roots up to 3" in diameter. Possible fill; includes hummock
1.5 – 8.0	Silt-fine sand/clay (ML-CL). Brown (10YR4/3). Hard-very hard, strong $CaCO_3$ cement, slight to medium plastic, rapid dilatancy, med dry strength, medium toughness. Highly effervescent. No stain, no odor. Native soil. Some smaller root material present.
8.0 – 11.0	Silt-fine sand/clay (ML-CL). Brown (10YR4/3) to lite yellowish brown (10YR6/4). Hard, strong cement ($CaCO_3$). Medium plastic, slow to rapid dilatancy, medium dry strength, low toughness. Highly effervescent. No stain no odor. Native soil.
11.0 – 11.5	Decomposed bedrock (wS), sandstone, light yellowish brown (10YR6/4). Very weak (R1), soft (H6), massive, structureless. Effervescent.

Samples Taken
09:10
09:15
09:20

- Backfill w/ trench cuttings @ 10:10
- Samples taken from backhoe bucket, except 0.5 interval. Samples taken from west wall.

Plan View-Site Location
(Provide Sketch)



EXPLANATION

- SOIL TYPE CONTACT (SHARP)
- OTHER CONTACT (AS INDICATED ON LOG)
- FILL/NATIVE BOUNDARY
- X — ANALYTICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- G — GEOTECHNICAL SAMPLE LOCATION (WRITE SAMPLE NUMBER OUT TO SIDE)
- SHADING TO DENOTE STAINING
- BASE OF EXCAVATION

APPENDIX B

PHOTO LOG

MWH

Photographic Log

Client:	**DOE**	**Project:**	**Phase 3 Data Gaps**
Site Name:	**Santa Susana Field Laboratory**	**Site Location:**	**Area IV**

Photograph ID: 1

Photo Location:
Subarea 5A; 5A_DG-587

Direction:
Northwest

Survey Date:
5/22/2014

Comments:
Overview of 5A_DG-587 trench



Photograph ID: 2

Photo Location:
Subarea 5A; 5A_DG-587

Direction:
East-southeast

Survey Date:
5/22/2014

Comments:
View of 5A_DG-587 trench upon completion



Client:	**DOE**	**Project:**	**Phase 3 Data Gaps**
Site Name:	**Santa Susana Field Laboratory**	**Site Location:**	**Area IV**

Photograph ID: 3

Photo Location:
Subarea 5A; 5A_DG-636

Direction:
West-northwest

Survey Date:
5/23/2014

Comments:
Overview of 5A_DG-636 trench



Photograph ID: 4

Photo Location:
Subarea 5A; 5A_DG-636

Direction:
East-southeast

Survey Date:
5/23/2014

Comments:
View of 5A_DG-636 trench upon completion



Client:	**DOE**	**Project:**	**Phase 3 Data Gaps**
Site Name:	**Santa Susana Field Laboratory**	**Site Location:**	**Area IV**

Photograph ID: 5

Photo Location:
Subarea 5A; 5A_DG-730

Direction:
North-northeast

Survey Date:
5/22/2014

Comments:
Overview of 5A_DG-730 trench



Photograph ID: 6

Photo Location:
Subarea 5A; 5A_DG-730

Direction:
East

Survey Date:
5/22/2014

Comments:
View of 5A_DG-730 trench upon completion



Client:	**DOE**	**Project:**	**Phase 3 Data Gaps**
Site Name:	**Santa Susana Field Laboratory**	**Site Location:**	**Area IV**

Photograph ID: 7 **Photo Location:** Subarea 5A; 5A_DG-730 **Direction:** West **Survey Date:** 5/22/2014 **Comments:** View of 5A_DG-730 trench backfilled	
Photograph ID: 8 **Photo Location:** Subarea 5B; 5B_DG-529 **Direction:** Southwest **Survey Date:** 5/28/2014 **Comments:** Overview of 5B_DG-529 trench	

Client:	**DOE**	**Project:**	**Phase 3 Data Gaps**
Site Name:	**Santa Susana Field Laboratory**	**Site Location:**	**Area IV**

Photograph ID: 9 **Photo Location:** Subarea 5B; 5B_DG-529 **Direction:** Northeast **Survey Date:** 5/28/2014 **Comments:** View of 5B_DG-529 trench upon completion	
Photograph ID: 10 **Photo Location:** Subarea 5B; 5B_DG-529 **Direction:** Northeast **Survey Date:** 5/28/2014 **Comments:** View of 5B_DG-529 trench backfilled	

Client:	**DOE**	**Project:**	**Phase 3 Data Gaps**
Site Name:	**Santa Susana Field Laboratory**	**Site Location:**	**Area IV**

Photograph ID: 11 **Photo Location:** Subarea 5B; 5B_DG-693 **Direction:** West-northwest **Survey Date:** 5/27/2014 **Comments:** Overview of 5B_DG-693 trench	

Photograph ID: 12 **Photo Location:** Subarea 5B; 5B_DG-693 **Direction:** West **Survey Date:** 5/27/2014 **Comments:** View of 5B_DG-693 trench upon completion	

Client:	**DOE**	**Project:**	**Phase 3 Data Gaps**
Site Name:	**Santa Susana Field Laboratory**	**Site Location:**	**Area IV**

Photograph ID: 13 **Photo Location:** Subarea 5B; 5B_DG-693 **Direction:** Northwest **Survey Date:** 5/27/2014 **Comments:** View of 5B_DG-693 trench upon completion	
Photograph ID: 14 **Photo Location:** Subarea 5B; 5B_DG-693 **Direction:** Southeast **Survey Date:** 5/27/2014 **Comments:** View of 5B_DG-693 trench backfilled	

Client:	**DOE**	**Project:**	**Phase 3 Data Gaps**
Site Name:	**Santa Susana Field Laboratory**	**Site Location:**	**Area IV**

Photograph ID: 15 **Photo Location:** Need overview photo of Subarea 5B; 5B_DG-699 **Direction:** Southwest **Survey Date:** 5/28/2014 **Comments:** Need overview photo of Subarea 5B; 5B_DG-699	
Photograph ID: 16 **Photo Location:** Subarea 5B; 5B_DG-699 **Direction:** Northeast **Survey Date:** 5/28/2014 **Comments:** View of 5B_DG-699 trench upon completion	

Client:	**DOE**	**Project:**	**Phase 3 Data Gaps**
Site Name:	**Santa Susana Field Laboratory**	**Site Location:**	**Area IV**

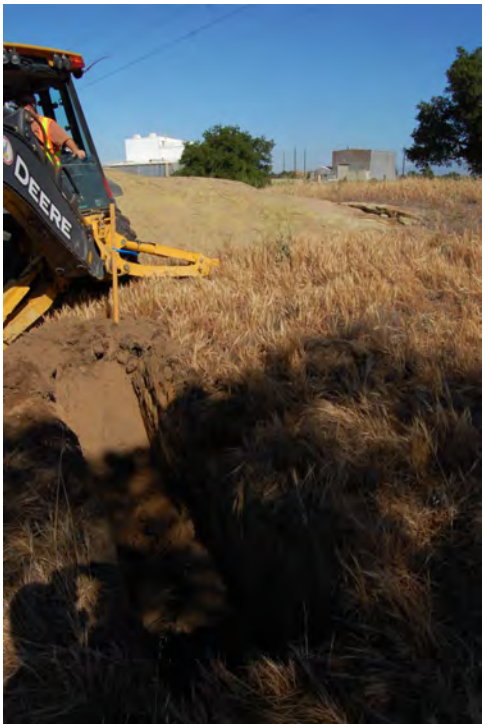
Photograph ID: 17

Photo Location:
Subarea 5B; 5B_DG-707

Direction:
Northwest

Survey Date:
5/27/2014

Comments:
Overview of 5B_DG-707 trench



Photograph ID: 18

Photo Location:
Subarea 5B; 5B_DG-707

Direction:
Southwest

Survey Date:
5/27/2014

Comments:
View of 5B_DG-707 trench upon completion



Client:	**DOE**	**Project:**	**Phase 3 Data Gaps**
Site Name:	**Santa Susana Field Laboratory**	**Site Location:**	**Area IV**

Photograph ID: 19 **Photo Location:** Subarea 5B; 5B_DG-707 **Direction:** Northeast **Survey Date:** 5/27/2014 **Comments:** View of 5B_DG-707 trench backfilled	
Photograph ID: 20 **Photo Location:** Subarea 5C; 5C_DG-503 **Direction:** West-northwest **Survey Date:** 5/29/2014 **Comments:** Overview of 5C_DG-503 trench	

Client:	**DOE**	**Project:**	**Phase 3 Data Gaps**
Site Name:	**Santa Susana Field Laboratory**	**Site Location:**	**Area IV**

Photograph ID: 21 **Photo Location:** Subarea 5C; 5C_DG-503 **Direction:** South-southwest **Survey Date:** 5/29/2014 **Comments:** View of 5C_DG-503 trench upon completion	
Photograph ID: 22 **Photo Location:** Subarea 5C; 5C_DG-503 **Direction:** West-northwest **Survey Date:** 5/29/2014 **Comments:** View of 5C_DG-503 trench backfilled	

Client:	**DOE**	**Project:**	**Phase 3 Data Gaps**
Site Name:	**Santa Susana Field Laboratory**	**Site Location:**	**Area IV**

Photograph ID: 23 **Photo Location:** Subarea 5C; 5C_DG-605 **Direction:** Southwest **Survey Date:** 5/29/2014 **Comments:** Overview of 5C_DG-605 trench	
Photograph ID: 24 **Photo Location:** Subarea 5C; 5C_DG-605 **Direction:** Northeast **Survey Date:** 5/29/2014 **Comments:** View of 5C_DG-605 trench upon completion	

Client:	**DOE**	**Project:**	**Phase 3 Data Gaps**
Site Name:	**Santa Susana Field Laboratory**	**Site Location:**	**Area IV**

Photograph ID: 25 **Photo Location:** Subarea 5C; 5C_DG-646 **Direction:** Southwest **Survey Date:** 6/4/2014 **Comments:** Overview of 5C_DG-646	
Photograph ID: 26 **Photo Location:** Subarea 5C; 5C_DG-646 **Direction:** Northeast **Survey Date:** 6/4/2014 **Comments:** View of 5C_DG-646 trench upon completion	

Client:	**DOE**	**Project:**	**Phase 3 Data Gaps**
Site Name:	**Santa Susana Field Laboratory**	**Site Location:**	**Area IV**

Photograph ID: 27 **Photo Location:** Subarea 5C; 5C_DG-646 **Direction:** Southwest **Survey Date:** 6/4/2014 **Comments:** View of 5C_DG-646 trench backfilled	
Photograph ID: 28 **Photo Location:** Subarea 5C; 5C_DG-651 **Direction:** Northwest **Survey Date:** 5/30/2014 **Comments:** Overview of 5C_DG-651	

Client:	**DOE**	**Project:**	**Phase 3 Data Gaps**
Site Name:	**Santa Susana Field Laboratory**	**Site Location:**	**Area IV**

Photograph ID: 29 **Photo Location:** Subarea 5C; 5C_DG-651 **Direction:** Southeast **Survey Date:** 5/30/2014 **Comments:** View of 5C_DG-651 trench upon completion	
Photograph ID: 30 **Photo Location:** Subarea 5C; 5C_DG-651 **Direction:** Northwest **Survey Date:** 5/30/2014 **Comments:** View of 5C_DG-651 trench backfilled	

Client:	**DOE**	**Project:**	**Phase 3 Data Gaps**
Site Name:	**Santa Susana Field Laboratory**	**Site Location:**	**Area IV**

Photograph ID: 31 **Photo Location:** Subarea 5C; 5C_DG-653 **Direction:** Down **Survey Date:** 6/2/2014 **Comments:** Overview of 5C_DG-653 trench	
Photograph ID: 32 **Photo Location:** Subarea 5C; 5C_DG-653 **Direction:** Northwest **Survey Date:** 6/2/2014 **Comments:** View of 5C_DG-653 trench upon completion	

Client:	**DOE**	**Project:**	**Phase 3 Data Gaps**
Site Name:	**Santa Susana Field Laboratory**	**Site Location:**	**Area IV**

Photograph ID: 33 **Photo Location:** Subarea 5C; 5C_DG-655 **Direction:** Southwest **Survey Date:** 6/4/2014 **Comments:** Overview of 5C_DG-655 trench	
Photograph ID: 34 **Photo Location:** Subarea 5C; 5C_DG-655 **Direction:** Southwest **Survey Date:** 6/4/2014 **Comments:** View of 5C_DG-655 trench upon completion	

Client:	**DOE**	**Project:**	**Phase 3 Data Gaps**
Site Name:	**Santa Susana Field Laboratory**	**Site Location:**	**Area IV**

Photograph ID: 35 **Photo Location:** Subarea 6; 6_DG-569 **Direction:** North-northeast **Survey Date:** 5/20/2014 **Comments:** Overview of 6_DG-569 trench	
Photograph ID: 36 **Photo Location:** Subarea 6; 6_DG-569 **Direction:** East **Survey Date:** 5/20/2014 **Comments:** View of 6_DG-569 trench upon completion	

Client:	**DOE**	**Project:**	**Phase 3 Data Gaps**
Site Name:	**Santa Susana Field Laboratory**	**Site Location:**	**Area IV**

Photograph ID: 37 **Photo Location:** Subarea 6; 6_DG-569 **Direction:** Southwest **Survey Date:** 5/20/2014 **Comments:** View of 6_DG-569 trench backfilled	
Photograph ID: 38 **Photo Location:** Subarea 6; 6_DG-570 **Direction:** Northwest **Survey Date:** 5/20/2014 **Comments:** Overview of 6_DG-570 trench	

Client:	**DOE**	**Project:**	**Phase 3 Data Gaps**
Site Name:	**Santa Susana Field Laboratory**	**Site Location:**	**Area IV**

Photograph ID: 39

Photo Location:
Subarea 6; 6_DG-570

Direction:
South

Survey Date:
5/20/2014

Comments:
View of 6_DG-570 trench upon completion



Photograph ID: 40

Photo Location:
Subarea 6; 6_DG-570

Direction:
South-southwest

Survey Date:
5/20/2014

Comments:
View of 6_DG-570 trench backfilled



Client:	**DOE**	**Project:**	**Phase 3 Data Gaps**
Site Name:	**Santa Susana Field Laboratory**	**Site Location:**	**Area IV**

Photograph ID: 41

Photo Location:
Subarea 6; 6_DG-686

Direction:
Northeast

Survey Date:
5/21/2014

Comments:
Overview of 6_DG-686 trench



Photograph ID: 42

Photo Location:
Subarea 6; 6_DG-686

Direction:
Northeast

Survey Date:
5/21/2014

Comments:
View of 6_DG-686 trench upon completion



Client:	**DOE**	**Project:**	**Phase 3 Data Gaps**
Site Name:	**Santa Susana Field Laboratory**	**Site Location:**	**Area IV**

Photograph ID: 43 **Photo Location:** Subarea 6; 6_DG-686 **Direction:** South **Survey Date:** 5/21/2014 **Comments:** View of 6_DG-686 trench backfilled	
Photograph ID: 44 **Photo Location:** Subarea 8; 8_DG-534 **Direction:** Northeast **Survey Date:** 5/19/2014 **Comments:** Overview of 8_DG-534 trench	

Client:	**DOE**	**Project:**	**Phase 3 Data Gaps**
Site Name:	**Santa Susana Field Laboratory**	**Site Location:**	**Area IV**

Photograph ID: 45 **Photo Location:** Subarea 8; 8_DG-534 **Direction:** Southwest **Survey Date:** 5/19/2014 **Comments:** View of 8_DG-534 trench upon completion	
Photograph ID: 46 **Photo Location:** Subarea 8; 8_DG-534 **Direction:** South-southeast **Survey Date:** 5/19/2014 **Comments:** View of 8_DG-534 trench backfilled	

Client:	**DOE**	**Project:**	**Phase 3 Data Gaps**
Site Name:	**Santa Susana Field Laboratory**	**Site Location:**	**Area IV**

Photograph ID: 47 **Photo Location:** Subarea 8; 8_DG-548 **Direction:** South **Survey Date:** 5/19/2014 **Comments:** Overview of 8_DG-548 trench	
Photograph ID: 48 **Photo Location:** Subarea 8; 8_DG-548 **Direction:** North **Survey Date:** 5/19/2014 **Comments:** View of 8_DG-548 trench upon completion	

Client:	**DOE**	**Project:**	**Phase 3 Data Gaps**
Site Name:	**Santa Susana Field Laboratory**	**Site Location:**	**Area IV**

Photograph ID: 49 **Photo Location:** Subarea 8; 8_DG-548 **Direction:** Southwest **Survey Date:** 5/19/2014 **Comments:** View of 8_DG-548 trench backfilled	
Photograph ID: 50 **Photo Location:** Subarea 8; 8_DG-611 **Direction:** East **Survey Date:** 5/20/2014 **Comments:** Overview of 8_DG-611 trench	

Client:	**DOE**	**Project:**	**Phase 3 Data Gaps**
Site Name:	**Santa Susana Field Laboratory**	**Site Location:**	**Area IV**

Photograph ID: 51

Photo Location:
Subarea 8; 8_DG-611

Direction:
South

Survey Date:
5/20/2014

Comments:
View of 8_DG-611 trench upon completion



Photograph ID: 52

Photo Location:
Subarea 8; 8_DG-611

Direction:
East-southeast

Survey Date:
5/20/2014

Comments:
View of 8_DG-611 trench backfilled



APPENDIX C

DEBRIS REMOVAL LOG

Debris Removal Log
Debris Number: 4006-029
Santa Susana Field Laboratory, Ventura County, California

Inspector: **Andrew Payne**
Date: May 27, 2014

Condition of Soil Beneath Debris:

• Condition of Soil: **Not impacted.**

• PID Headspace Reading: **0.0 ppm**

• Sample Collected: **Yes**

• Sample ID: **SL-693-SA5B-TR-3.5**

• Analyses: **Metals (including Hg), PAHs (SIM), Dioxins, PCB/PCT, pH, Pesticides, TPH-GRO, TPH-EFH**

• Comments: **Debris 4006-029 was a 1-inch subsurface metal pipe found in the western portion of PDU (4006 leach field) during Area IV Data Gap Soil Vapor and Trench Sampling (Trench ID 5B_DG-693) down to 3.5 ft bgs. Radiological information of soil adjacent to debris was 10 µREM, 76 CPM (counts per minute). No staining or odors observed during removal; soil appears to be native/alluvium material. No leach lines were encountered. GPS coordinates: 267083.785 Northing 1785172.911 Easting.**

Photo 1- Downward



Debris Removal Log
Debris Number: 4006-030
Santa Susana Field Laboratory, Ventura County, California

Inspector: **Andrew Payne**
Date: May 27, 2014

Condition of Soil Beneath Debris:

- Condition of Soil: **Not impacted.**
- PID Headspace Reading: **0.0 ppm**
- Sample Collected: **No**
- Sample ID: **N/A**
- Analyses: **N/A**
- Comments: **Debris 4006-030 was a 6-8 ft long 3/4-inch subsurface metal utility anchor found in the western portion of PDU (4006 leach field) during Area IV Data Gap Soil Vapor and Trench Sampling (Trench ID 5B_DG-693) down to 3.5-4.5 ft bgs. Radiological information of soil adjacent to debris was 10 µREM, 84 CPM (counts per minute). No staining or odors observed during removal; soil appears to be native/alluvium material. No leach lines were encountered. GPS coordinates: 267085.548 Northing 1785192.381 Easting.**

Photo 1- Downward



Debris Removal Log
Debris Number: 4006-031
Santa Susana Field Laboratory, Ventura County, California

Inspector: **Andrew Payne**
Date: May 27, 2014

Condition of Soil Beneath Debris:

- Condition of Soil: **Not impacted.**
- PID Headspace Reading: **0.0 ppm**
- Sample Collected: **No**
- Sample ID: **N/A**
- Analyses: **N/A**
- Comments: **Debris 4006-031 was a 6-8 ft long 1-inch subsurface metal utility anchor found in the western portion of PDU (4006 leach field) during Area IV Data Gap Soil Vapor and Trench Sampling (Trench ID 5B_DG-693) down to 3.5-4.5 ft bgs. Radiological information of soil adjacent to debris was 10 µREM, 84 CPM (counts per minute). No staining or odors observed during removal; soil appears to be native/alluvium material. No leach lines were encountered. GPS coordinates: 267082.61 Northing 1785189.452 Easting.**

Photo 1- Downward



Debris Removal Log
Debris Number: 4056-001
Santa Susana Field Laboratory, Ventura County, California

Inspector: **Andrew Payne**
Date: May 30, 2014

Condition of Soil Beneath Debris:

- Condition of Soil: **Not impacted.**
- PID Headspace Reading: **0.1 ppm**
- Sample Collected: **Yes**
- Sample ID: **SL-651-SA5C-TR-10.0**
- Analyses: **Metals (including Hg), SVOCs, PAHs (SIM), Dioxins, PCB/PCT, Perchlorate, pH, Hexavalent Chromium, Herbicides, Pesticides, TPH-GRO, TPH-EFH, Glycols, Terphenyls, Energetics**
- Comments: **Debris 4056-001 was a subsurface, ½-inch diameter, ~2.5 ft in length piece of rebar, found in B056 Landfill during Phase 3 DOE Soil Vapor and Trenching Data Gap Sampling 2014 (Trench ID 5C_DG-651) down to 8.0 ft bgs. Radiological information of soil adjacent to the debris was 10 µREM, 72 CPM (counts per minute). ULS survey did not detect any anomalies at this trench location. No staining or odors observed during removal; soil appears to be fill material. GPS coordinates: 266805.84 Northing 1784442.424 Easting.**

Photo 1- Downward



Debris Removal Log
Debris Number: 4056-002
Santa Susana Field Laboratory, Ventura County, California

Inspector: **Andrew Payne**
Date: May 30, 2014

Condition of Soil Beneath Debris:

• Condition of Soil: **Not impacted.**

• PID Headspace Reading: **0.1 ppm**

• Sample Collected: **Yes**

• Sample ID: **SL-651-SA5C-TR-10.0**

• Analyses: **Metals (including Hg), SVOCs, PAHs (SIM), Dioxins, PCB/PCT, Perchlorate, pH, Hexavalent Chromium, Herbicides, Pesticides, TPH-GRO, TPH-EFH, Glycols, Terphenyls, Energetics**

• Comments: **Debris 4056-002 was a subsurface piece of a 5-gallon paint can lid found in B056 Landfill during Phase 3 DOE Soil Vapor and Trenching Data Gap Sampling 2014 (Trench ID 5C_DG-651) down to 9.5 ft bgs. Radiological information of soil adjacent to the debris was 10 µREM, 72 CPM (counts per minute). ULS survey did not detect any anomalies at this trench location. No staining or odors observed during removal; soil appears to be fill material. GPS coordinates: 266801.748 Northing 1784447.653 Easting.**

Photo 1- Downward



Debris Removal Log
Debris Number: 4056-003
Santa Susana Field Laboratory, Ventura County, California

Inspector: **Andrew Payne**
Date: May 30, 2014

Condition of Soil Beneath Debris:

• Condition of Soil: **Not impacted.**

• PID Headspace Reading: **0.1 ppm**

• Sample Collected: **Yes**

• Sample ID: **SL-651-SA5C-TR-10.0**

• Analyses: **Metals (including Hg), SVOCs, PAHs (SIM), Dioxins, PCB/PCT, Perchlorate, pH, Hexavalent Chromium, Herbicides, Pesticides, TPH-GRO, TPH-EFH, Glycols, Terphenyls, Energetics**

• Comments: **Debris 4056-003 was a subsurface piece of a ¼-inch metal I-beam, ~8 inches in length, found in B056 Landfill during Phase 3 DOE Soil Vapor and Trenching Data Gap Sampling 2014 (Trench ID 5C_DG-651) down to 9.5 ft bgs. Radiological information of soil adjacent to the debris was 14 µREM, 79 CPM (counts per minute). ULS survey did not detect any anomalies at this trench location. No staining or odors observed during removal; soil appears to be fill material. GPS coordinates: 266801.748 Northing 1784447.653 Easting.**

Photo 1- Downward



Debris Removal Log
Debris Number: 4056-004
Santa Susana Field Laboratory, Ventura County, California

Inspector: **Andrew Payne**
Date: May 30, 2014

Condition of Soil Beneath Debris:

• Condition of Soil: **Not impacted.**

• PID Headspace Reading: **0.6 ppm**

• Sample Collected: **Yes**

• Sample ID: **SL-651-SA5C-TR-5.0**

• Analyses: **Metals (including Hg), SVOCs, PAHs (SIM), Dioxins, PCB/PCT, Perchlorate, pH, Hexavalent Chromium, Herbicides, Pesticides, TPH-GRO, TPH-EFH, Glycols, Terphenyls, Energetics**

• Comments: **Debris 4056-004 was a subsurface 1-inch metal pipe, ~1.5 ft in length, found in B056 Landfill during Area IV Data Gap Soil Vapor and Trench Sampling 2014 (Trench ID 5C_DG-651) down to 3.5-4.5 ft bgs. Radiological information of soil adjacent to the debris was 12 µREM, 89 CPM (counts per minute). ULS survey did not detect any anomalies at this trench location. No staining or odors observed during removal; soil appears to be fill material. GPS coordinates: 266809.617 Northing 1784439.246 Easting.**

Photo 1- Downward



Appendix H
MWH Soil Vapor Report

TECHNICAL MEMORANDUM
SUMMARY OF PHASE 3 SOIL VAPOR SAMPLING IN AREA IV, SANTA SUSANA FIELD LABORATORY, VENTURA COUNTY, CALIFORNIA

Prepared For:

THE DEPARTMENT OF ENERGY

SEPTEMBER 2014



Shelby Valenzuela, P.G. 7852
MWH Field Team Leader

David Collins, P.E.
MWH Project Manager

MWH

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LIST OF ABBREVIATIONS AND ACRONYMS

%D	percent difference
%RSD	relative standard deviation
AOC	Administrative Order of Consent
bgs	below ground surface
cc	cubic centimeter
CDM	CDM Smith
COC	chain of custody
DOE	United States Department of Energy
DQO	data quality objective
DTSC	California Environmental Protection Agency Department of Toxic Substances Control
DUAR	Data Usability Assessment Report
EPA	United States Environmental Protection Agency
EST	Environmental Support Technologies
ft	feet
GC	gas chromatography
GPS	global positioning system
ICV	initial calibration verification
ID	identification
LCS	laboratory control sample
MDL	method detection limit
MFSP	Master Field Sampling Plan
mL/min	milliliters per minute
MRL	method reporting limit
MS	mass spectrometry
MWH	MWH Americas, Inc.
NELAP	National Environmental Laboratory Accreditation Program
PID	photoionization detector
ppmv	parts per million by volume

LIST OF ABBREVIATIONS AND ACRONYMS (Continued)

QC	quality control
QAPP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SSFL	Santa Susana Field Laboratory
SDG	sample delivery group
SOP	standard operating procedure
TM	Technical Memorandum
USCS	Unified Soil Classification System
VOC	volatile organic compound

1.0 INTRODUCTION

This technical memorandum (TM) has been prepared to summarize activities associated with collection of soil vapor samples in Area IV of the Santa Susana Field Laboratory (SSFL) in accordance with Addendum 12 to the Master Field Sampling Plan (MFSP) for Chemical Data Gap Investigation, Phase 3 Soil Vapor Implementation for Area IV, Santa Susana Field Laboratory (Soil Vapor Implementation Plan) (MWH Americas, Inc. [MWH], 2014a) and the SSFL Standard Operating Procedure (SOP) 20 to Work Plan for Chemical Data Gap Investigation, Phase 3 Soil Chemical Sampling at Area IV (MFSP SOP 20) (MWH, 2014b). These documents describe the sample rationale and procedures for soil vapor sampling and supplement the Work Plan for Chemical Data Gap Investigation, Phase 3 Soil Chemical Sampling at Area IV, Santa Susana Field Laboratory (Phase 3 Work Plan) (CDM Smith [CDM], 2012). This TM was prepared for the United States Department of Energy (DOE) and is in compliance with the Administrative Order of Consent (AOC) for Remedial Action (AOC; Docket No. HSA-CO 10/11 - 037).

The purpose of this TM is to describe the completed field activities and present soil vapor analytical results and data quality associated with the sampling efforts performed under the Phase 3 Soil Vapor Implementation Plan. This TM does not include soil matrix analytical results for samples collected from the soil vapor investigation locations, or an evaluation/ interpretation of the soil and soil vapor analytical data. Analytical data from soil matrix samples will be presented in a separate TM prepared by CDM. The data evaluation and interpretation process will be a collective review process of all media and will be presented at a future date in a Final Data Summary Report.

1.1 SOIL VAPOR SAMPLING OBJECTIVES

The objective of the soil vapor sampling conducted within Area IV of the SSFL was to obtain volatile organic compound (VOC) data that will be used to evaluate whether the nature and extent of contamination at potential source areas are characterized sufficiently for remediation per the AOC. The sample locations were selected based on a targeted (or “biased”) approach that focused on known or suspected chemical use areas (such as tanks, buildings, and reactors). Soil vapor sampling was also performed in areas of groundwater VOC impacts where surface release sources could not be identified.

1.2 REPORT ORGANIZATION

The information in this TM is presented in sections organized as follows:

- **Section 1.0 – Introduction**

  This section presents the purpose and objective of this technical memorandum.

- **Section 2.0 –Field Sampling and Analytical Methods**

  This section describes field sampling procedures and laboratory analytical methods associated with the soil vapor sampling.

- **Section 3.0 –Sampling Results**

  This section summarizes analytical results for soil vapor samples.

- **Section 4.0 – Data Usability Assessment**

  This section summarizes the assessment of analytical results quality for soil vapor samples.

- **Section 5.0 – References**
  This section lists the references cited in this report.

2.0 FIELD SAMPLING AND ANALYTICAL METHODS

Field activities at the 153 planned soil vapor sample locations within Area IV were performed by MWH between May and June 2014. Specific rationale for targeting each soil vapor sample location and depth is provided in the California Environmental Protection Agency Department of Toxic Substances Control (DTSC) -approved Soil Vapor Implementation Plan (MWH, 2014a). The soil vapor sample locations are shown on Figure 2-1. A total of 177 primary soil vapor samples were collected from probes installed at 106 locations. A total of 66 primary soil matrix samples were collected from 56 locations and analyzed for VOCs when soil vapor samples could not be collected due to shallow bedrock or refusal (less than 5.5 feet [ft] below ground surface [bgs]), or there was anticipated or measured high vacuum conditions from the soil vapor probe based on lithology. Neither soil vapor or soil matrix were collected at 11 locations, including 6 locations that were inaccessible due to active bird nesting and 5 locations where soil was less than 3 feet thick (see Section 2.5 for additional information). Table 2-1 provides a summary of collected soil vapor and quality control (QC) samples.

2.1 SOIL VAPOR PROBE INSTALLATION

Before soil probe installation, a lithologic boring log was prepared detailing descriptions of soil removed from the boring via continuous coring or hand auger in accordance with the Unified Soil Classification System (USCS) (American Standard for Testing and Materials [ASTM], 2009) and following the procedures outlined in SOP 9 of the Phase 3 Work Plan (CDM, 2012). Borings were logged to bedrock or refusal and geologic interpretation of soils were used to determine the final soil vapor probe construction. Single and multiple depth soil vapor probe construction detail forms were completed to document compliance with, deviation from, or additional details associated with the installation of the vapor probes. Soil boring logs and soil vapor probe construction details are included in Appendix A. All field work logging was performed and supervised by a California Professional Geologist.

The selection of depth intervals for soil vapor probe installation and sampling involved site-specific decisions and took into consideration the thickness of the unconsolidated alluvium and the depth to the weathered bedrock. Sample depths were adjusted as needed to target the coarsest-grained material, photoionization detector (PID) headspace detections, and to avoid fine-grained materials.

Temporary soil vapor probes were installed using hand auger and direct-push methods according to procedures outlined in SOP 20 of the Phase 3 Work Plan (MWH, 2014b). However, due to the potential for bridging and clogging of hydrated bentonite in the annular space associated with using a tremie pipe, the method used for filling the annular space with hydrated bentonite was by 6-inch lifts (see Section 2.5 for additional information). Each lift was hydrated at a rate of one ounce of water for every inch of bentonite seal within the borehole. The drilling and soil vapor probe installation activities were performed by Environmental Support Technologies (EST) of Irvine, California.

Global positioning system (GPS) coordinates and photos were collected at each completed soil vapor sample location.

2.2 SOIL VAPOR SAMPLE COLLECTION

Soil vapor samples were collected in accordance with procedures outlined in SOP 20 of the Phase 3 Work Plan (MWH, 2014b). Before sample collection, a minimum 48-hour equilibrium time passed to allow subsurface conditions to equilibrate and vapor concentrations to stabilize after probe installation. Soil vapor probes were purged to remove stagnant or ambient air from the sampling system and samples collected were representative of subsurface conditions. A helium leak test was performed at every active vapor monitoring point each time a soil vapor sample was collected. Due to schedule constraints and limited resources, two methods of sample collection were employed during field work. Samples were either collected in glass bulbs and analyzed on site by a mobile laboratory or collected in summa canisters for analysis by an offsite stationary laboratory. Samples collected in glass bulbs were analyzed by United States Environmental Protection Agency (EPA) Method 8260B and samples collected in summa canisters were analyzed by EPA Method TO-15. All active soil vapor samples were collected during dry weather to limit soil moisture variability.

Soil vapor sample containers were labeled with unique sample identification (ID) following CDM's nomenclature as defined in the Phase 3 Work Plan (CDM, 2012). Container IDs previously assigned to reusable sample containers by the laboratory (such as Bulb IDs for glass bulbs) were recorded on soil vapor sampling form. Once the soil vapor sample was collected and disconnected from the probe, the sample container was immediately labeled with the sample ID information and collection date. Documentation of soil vapor sampling was recorded on the soil vapor sampling form and this information was used to generate the COC.

Glass bulb soil vapor samples were immediately submitted under proper COC to the onsite mobile laboratory for analysis. The mobile laboratory added surrogates to soil vapor samples collected in glass bulbs within 15 minutes of collection. Glass bulb soil vapor samples were wrapped in aluminum foil and stored out of direct sunlight to prevent the degradation of light-sensitive compounds.

Summa soil vapor samples were shipped under proper COC to an offsite stationary laboratory for analysis. The offsite stationary laboratory added surrogates to soil vapor samples collected in summa canisters before analysis. The shipment of summa soil vapor samples to offsite stationary laboratories was performed following the procedures outlined in SOP 11 of the Phase 3 Work Plan (CDM, 2012).

EST collected the soil vapor samples using glass bulbs and analyzed the samples in a mobile laboratory for VOCs using EPA Method 8260B. EST also collected the soil vapor samples using summa canisters for analysis at an offsite stationary laboratory using EPA Method TO-15. Eurofins Lancaster Laboratories Environmental (Lancaster), located in Lancaster, Pennsylvania; Eurofins Calscience Environmental Laboratory (Calscience), located in Garden Grove, California; and TestAmerica Laboratories, Inc (TestAmerica), located in Arvada, Colorado analyzed samples for VOCs using EPA Method TO-15. All laboratories that performed analysis for the soil vapor study are National Environmental Laboratory Accreditation Program (NELAP)-accredited environmental testing laboratories.

2.3 FIELD QUALITY CONTROL ACTIVITIES

A leak test using helium was performed at every active vapor probe location each time a soil vapor sample was collected. Helium was used because it has not been identified as a potential contaminant in Area IV at the SSFL and allows for leak detection in real-time so that corrective action can be taken before sampling. If a helium reading of greater than 5 percent or 50,000 parts per million by volume (ppmv) was measured, then the probe leak check failed and corrective action was required. All leaks identified during this soil vapor study were found in the sample train and were immediately corrected. No replacement vapor probes were installed as a result of ambient air break through.

Each glass bulb container was observed for condensation before and after soil vapor sampling. No condensation was noted in any glass bulbs used for sampling. The vacuum on each summa canister was checked on the vacuum gauge to confirm the proper flow rate of 100 to

200 milliliters per minute (mL/min) was maintained while sampling. One summa canister was discarded due to the lack of vacuum.

A sample flow rate of 100 to 200 mL/min must be achieved when sampling soil vapor probes. When high vacuum was measured at a sample probe (greater than 100 inches of water), then a sample was not collected from that probe. In general, if a soil matrix sample had not been collected during probe installation in anticipation of high vacuum conditions based on lithology, a new probe was installed and attempted to be sampled and a soil matrix sample was collected and analyzed for VOCs (see Section 2.5 see Section 2.5 for additional information).

2.3.1 Duplicates and Split Samples

At least one field duplicate sample and one split sample were collected per day for the mobile laboratory and one per 20 samples for the primary offsite stationary laboratory. Duplicate and split samples were collected at the same time as the primary sample, in separate sample containers at the same location and depth as the primary sample. The analysis of the duplicate sample was performed by the same laboratory that performs the primary sample analysis and the analysis of the split sample was performed by an offsite stationary laboratory different than the primary laboratory.

2.3.2 Field Blank Samples

One field blank was collected daily for each primary laboratory to assess the possibility of contamination from ambient air.

2.3.3 Sample Container Decontamination

Sample containers, both summa and glass bulb, were certified as clean by the supplier or verified to be clean by laboratory analysis. Glass bulb sample containers were decontaminated after each use by the mobile laboratory. To verify the glass bulb decontamination procedures, the mobile laboratory used one glass bulb as an equipment blank daily.

2.4 ACTIVE SOIL VAPOR ANALTICAL LABORATORY METHODS

Soil vapor sample analyses were performed by an onsite mobile laboratory and an offsite stationary laboratory. All laboratories used to analyze the active vapor samples are certified by the State of California for the method of analysis.

2.4.1 Target Analytes, Analytical Methods and Method Detection Limits

Target analytes and the method reporting limits (MRLs) for EPA Method 8260B and EPA TO-15 are included in SOP 20 of the Phase 3 Work Plan (MWH, 2014b). For onsite soil vapor sample analysis, the required MRLs were achieved using an onsite mobile laboratory equipped with a gas chromatography/mass chromatography (GC/MS) instrument and a purge and trap apparatus modified to accept a 100 cubic centimeter (cc) sample aliquot.

2.4.2 Analytical Laboratory Quality Control Procedures

Instrument setup and calibration for the onsite mobile laboratory and offsite stationary laboratory resulted in the complete resolution of targeted compounds provided in Table 4-1 of SOP 20. For the mobile laboratory, the initial calibration was performed upon arrival at the site and whenever:

- The mobile laboratory changed location;
- The GC column was changed; and
- The daily mid-point calibration check did not meet requirements.

For offsite stationary laboratories, daily calibration checks were performed prior to each instrument analyzing the first sample and whenever:

- The GC column was changed; and
- The daily mid-point calibration check did not meet requirements.

At a minimum, at least five different concentration levels were used for the initial calibration. The relative standard deviation (%RSD) for the target compound average response factor limits are listed in Table 4-1 of the SOP 20. Each initial calibration was verified by an initial calibration verification or laboratory control sample (LCS). The onsite mobile laboratory also performed an additional MRL level initial calibration verification (ICV)/LCS daily, prior to the analysis of any samples.

Each day that samples were analyzed by the onsite mobile or offsite stationary laboratory, the calibration was checked. The daily calibration check standard contained the target compounds at concentrations at or near the mid-point of the calibration. The percent difference (%D) for each response factor limits are summarized in Table 4-1 of SOP 20.

2.4.3 Data Review Processes

As data were reported by laboratories, a data review process was implemented to ensure appropriate feedback and correction of errors. These steps included:

- As samples were submitted to the laboratory, the COC would be checked against the laboratory acknowledgement of sample receipt form. Any sample log-in errors were identified and corrected at that time.
- A sample tracking spreadsheet was updated to track the samples collected, sample dates, lab receipts, laboratory sample delivery group (SDG) numbers, field QC sample information, sample location coordinates, and laboratory deliverables required including reports, electronic data deliverable, raw data, and the status of validation.
- When the laboratory report was received by e-mail, a preliminary review of the data was performed for accuracy.
- A check of the requested analysis on the COC against the reported data in the laboratory report was performed.
- A complete review of the laboratory case narratives was conducted.

2.5 DEVIATIONS FROM THE SOIL VAPOR IMPLEMENTATION PLAN

Deviations during field work and sample collection from the proposed sample rationale in the Soil Vapor Implementation Plan and SOPs in the Phase 3 Work Plan are discussed in the sections below. Deviations did not impact achieving the data quality objectives (DQOs) of this sampling event.

2.5.1 Soil Vapor

Soil vapor investigation locations were adjusted as necessary based on field conditions (e.g., infrastructure, sensitive animal and plant species, or archaeological artifacts). The modified locations did not impact achieving the DQOs of this sampling event. During probe installation, the preferred method for filling the annular space with hydrated bentonite was by addition of 6-inch lifts to avoid bridging and clogging of hydrated bentonite in the annular space associated with using a tremie pipe. Each lift was hydrated at a rate of one ounce of water for every inch of bentonite seal within the borehole. The method of hydrating the bentonite using six inch lifts is a standard practice at the SSFL and was discussed as an alternate approach in the procedures outlined in SOP 20. Therefore, this method of soil vapor probe construction was not a deviation, but is discussed in this section to clarify what was implemented.

As stated in Section 2.3, a sample flow rate of 100 to 200 mL/min must be achieved when sampling soil vapor probes. When high vacuum was measured at a sample probe (greater than

100 inches of water), a sample was not collected. Six soil vapor probes measured high vacuum, including 5BSV_DG-562 (10.5 to 11.5 ft bgs), 5BSV_DG-563 (4.5 to 5.5 ft bgs), 5CSV_DG-549 (7.0 to 8.0 ft bgs), 5CSV_DG-561 (11.5 to 12.5 ft bgs), 5DSV_DG-556 (10.0 to 11.0 ft bgs), and 6SV_DG-509 (20.0 to 21.0 ft bgs). A new probe was subsequently installed and successfully sampled at 5BSV_DG-549 and 5CSV_DG-562. A new probe was installed at 5BSV_DG-561 but high vacuum was still measured; therefore, a soil sample was collected and analyzed for VOCs. New probes were not installed at 5BSV_DG-563, 5DSV_DG-556, and 6SV_DG-509 either due to shallow soils, because a soil sample had been collected and analyzed for VOCs, or it was determined that data from nearby soil vapor probes provide sufficient data for remedial planning.

Prior to and during sampling, biological, archaeological, and Native American cultural monitors inspected proposed sampling locations for signs of sensitive species and archaeological artifacts. If sensitive species or artifacts were observed, the sampling area was protected and sampling postponed until the sensitive species was no longer present, or in the case of plant species and cultural artifacts, deferred indefinitely. During sampling activities, six soil vapor sampling locations in Subarea 5A (i.e., 5ASV_DG-549, -573, -589, -590, -602, -606) were identified within an active bird nesting area and could not be sampled. DOE communicated the decision to defer sampling to the remedial planning phase along with rationale for each location in a letter to DTSC dated July 31, 2014 (DOE, 2014c). If VOC data at these locations is deemed necessary during the remedial planning phase, samples will be collected.

There were no deviations from the analytical suites proposed in the Soil Vapor Implementation Plan.

2.5.2 **Soil Sampling**

- As discussed in the DTSC Soil Gas Advisory (DTSC, et all, 2012) and SOP 20, soil samples are to be collected in lieu of soil vapor samples and analyzed using EPA Method 8260B when soils were less than 5.5 ft bgs. In general, soil samples being analyzed for VOC are only collected if soils are at least 3 feet thick, except in cases where asphalt or concrete are present above the soil. However, to be consistent with CDM's soil sampling procedures, soil samples were collected for VOC analysis as shallow as 1.5 feet bgs, even when asphalt or concrete were not present above the soil. Soil samples were not collected from 4 locations due to thin soils and no asphalt or concrete present, including 5ASV_DG-623, 5BSV_DG-527, 5BSV_DG-582, and 5BSV_DG-597).

3.0 SAMPLING RESULTS

3.1 SOIL VAPOR SAMPLING RESULTS

Sampling activities were completed in accordance with the Phase 3 Work Plan (CDM, 2012) and the SOP 20 of the Phase 3 Work Plan (MWH, 2014b). A total of 177 primary soil vapor samples, 19 soil vapor field duplicate samples, 19 soil vapor split samples, 16 field/equipment blanks, and 23 ambient air blanks were collected from 106 locations. Table 2-1 provides a summary of the primary, duplicate, and split samples collected including sample name, sample types (e.g., primary, split), sample depth, matrix, and analysis. Table 3-1 is a summary of soil vapor data by analyte and includes the detection frequency, the minimum and maximum detected concentrations, the range of (method detection limit) MDL and MRLs, and the object name and depth of the maximum detected concentration. Appendix B is a complete set of all validated primary, duplicate, and split sample data organized by sample location in tabular format. The laboratory analytical reports for data collected during the soil vapor implementation are included as Appendix C.

3.2 SOIL SAMPLING RESULTS

Soil sample were collected for VOC analysis when soil vapor samples could not be collected due to shallow bedrock or refusal (less than 5.5 ft bgs), or there was anticipated or measured high vacuum conditions from the soil vapor probe based on lithology. A total of 66 primary soil samples, 2 soil duplicate samples, and 1 soil split samples were collected from 56 locations. Soil matrix sample analytical results will be presented by CDM in a separate technical memorandum.

4.0 DATA VALIDATION AND USABILITY ASSESSMENT

The purpose of the data usability assessment provided in Appendix D and discussed here is to: 1) summarize the data validation performed on the data sets, and 2) determine whether the sample results meet the DQOs outlined in the Phase 3 Work Plan (CDM, 2012).

4.1 DATA VALIDATION

The laboratories provided data reporting packages to MWH and an independent validation firm, MECx. A MECx chemist performed a Level V data validation of 100% of the data in accordance with the EPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (USEPA, 2008) and individual method requirements and guidelines from the SSFL Quality Assurance Project Plan (QAPP) (MECx, 2013). This encompassed an evaluation of sample collection procedures, holding times, instrument calibration summary information (to assess system performance), blanks (to assess contamination), sample duplicates (to assess precision), laboratory control samples (to assess accuracy), and matrix spike and surrogate spike recoveries (to assess accuracy and matrix effects). Upon completion of the data review process MECx provided a comprehensive data validation report for each data package and a Data Usability Assessment Report (DUAR) summarizing the review process and results in terms of precision, accuracy, representativeness, completeness, comparability, and sensitivity. The data validation reports and DUAR are included in Appendix D.

4.2 DATA QUALITY ASSESSMENT

Analytical data generated during the Phase 3 Soil Vapor Sampling in Area IV were validated according to the QAPP. No data were flagged as rejected, and all results are usable as qualified. A summary of data qualified as a result of the verification process is presented in Table 4-1. MWH reviewed the data validation reports and the DUAR, and assessed the qualified data against the DQOs for the project. MWH concluded that all DQOs specified in Final Phase 3 Work Plan were achieved.

5.0 REFERENCES

ASTM, 2009, Standard Method for Description and Identification of Soils) Visual-Manuel Method) D2488-09A.

CDM Smith. 2012. Work Plan for Chemical Data Gap Investigation Phase 3 Soil Chemical Sampling at Area IV, Santa Susana Field Laboratory, Ventura County, California. April.

Department of Toxic Substances Control (DTSC), Los Angeles Regional Water Quality Control Board – Los Angeles and San Francisco Regional Water Quality Control Board, 2012. Advisory – Active Soil Gas Investigations. April.

United States Environmental Protection Agency (USEPA), 2008. Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, Office of Soil Waste and Emergency response (OSWER) 9240.1-46, USEPA-540-R-08-01, June.

MECx, 2013. Quality Assurance Project Plan, SSFL Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Surficial Media Operable Unit, Revision 5. March.

MWH, 2014a. Addendum 12 to Master Field Sampling Plan for Chemical Data Gap Investigation, Phase 3 Soil Vapor Implementation Plan for Area VI, Santa Susana Field Laboratory, and Ventura County, California. May.

MWH, 2014b. SSFL Standard Operating Procedures (SOP) 20 to Work Plan for Chemical Data Gap Investigation Phase 3 Soil Chemical Sampling at Area IV, Santa Susana Field Laboratory, Ventura County, California – Final Soil Vapor SOP for DOE Sites. March.

MWH, 2014c. Remaining Sampling Locations Within Bird Nesting Areas, Final Phase 3 Data Gap Analysis, Santa Susana Field Laboratory, Ventura County, California. July.

TABLES

TABLE 2-1
PHASE 3 SOIL VAPOR
SAMPLING AND ANALYTICAL SUMMARY
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA
(Page 1 of 5)

Object Name	Sample Name	Sample Type	Parent Sample Name	Sampling Depth (ft bgs)	Collection Date	Matrix Type	Analysis	Validated	Remediation Status
5ASV_DG-504	SVL-504-SA5A-SV-5.0-6.0	Primary Sample	--	6.0	6/10/2014 8:24	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-504	SVL-504-SA5A-SV-10.0-11.0	Primary Sample	--	11.0	6/10/2014 8:51	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-504	SVL-504-SA5A-SV-15.0-16.0	Primary Sample	--	16.0	6/10/2014 9:12	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-504	SVL-504-SA5A-SV-20.0-21.0	Primary Sample	--	21.0	6/10/2014 9:54	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-504	SVL-504-SA5A-SV-25.0-26.0	Primary Sample	--	26.0	6/10/2014 10:56	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-509	SVL-509-SA5A-SV-5.0-6.0	Primary Sample	--	6.0	6/10/2014 11:30	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-509	SVL-509-SA5A-SV-10.0-11.0	Primary Sample	--	11.0	6/10/2014 12:04	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-509	SVL-509-SA5A-SV-15.0-16.0	Primary Sample	--	16.0	6/10/2014 12:39	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-509	SVL-509-SA5A-SV-20.0-21.0	Primary Sample	--	21.0	6/10/2014 13:03	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-509	SVL-509-SA5A-SV-25.0-26.0	Primary Sample	--	26.0	6/10/2014 14:19	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-509	SVL-909-SA5A-SV-25.0-26.0	Split Sample	SVL-509-SA5A-SV-25.0-26.0	26.0	6/10/2014 14:19	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-512	SVL-512-SA5A-SV-5.5-6.5	Primary Sample	--	6.5	6/11/2014 7:54	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-521	SVL-521-SA5A-SV-5.0-6.0	Primary Sample	--	6.0	6/11/2014 8:24	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-521	SVL-521-SA5A-SV-10.0-11.0	Primary Sample	--	11.0	6/11/2014 8:50	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-522	SVL-522-SA5A-SV-7.5-8.5	Primary Sample	--	8.5	6/11/2014 10:50	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-528	SVL-528-SA5A-SV-5.0-6.0	Primary Sample	--	6.0	6/11/2014 9:31	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-528	SVL-528-SA5A-SV-9.0-10.0	Primary Sample	--	10.0	6/11/2014 10:02	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-537	SVL-537-SA5A-SV-4.5-5.5	Primary Sample	--	5.5	6/10/2014 10:23	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-540	SVL-540-SA5A-SV-4.5-5.5	Primary Sample	--	5.5	6/10/2014 10:57	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-540	SVL-540-SA5A-SV-8.5-9.5	Primary Sample	--	9.5	6/10/2014 11:24	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-543	SVL-543-SA5A-SV-5.0-6.0	Primary Sample	--	6.0	6/10/2014 12:26	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-546	SVL-546-SA5A-SV-6.0-7.0	Primary Sample	--	7.0	6/10/2014 12:57	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-547	SVL-547-SA5A-SV-6.0-7.0	Primary Sample	--	7.0	6/10/2014 13:42	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-560	SVL-560-SA5A-SV-5.0-6.0	Primary Sample	--	6.0	6/11/2014 11:26	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-560	SVL-560-SA5A-SV-10.5-11.5	Primary Sample	--	11.5	6/11/2014 11:54	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-565	SVL-565-SA5A-SV-5.0-6.0	Primary Sample	--	6.0	6/11/2014 13:35	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-565	SVL-865-SA5A-SV-5.0-6.0	Field Duplicate	SVL-565-SA5A-SV-5.0-6.0	6.0	6/11/2014 13:43	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-565	SVL-565-SA5A-SV-12.0-13.0	Primary Sample	--	13.0	6/11/2014 14:10	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-568	SVL-568-SA5A-SV-6.0-7.0	Primary Sample	--	7.0	6/11/2014 11:24	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-570	SVL-570-SA5A-SV-7.0-8.0	Primary Sample	--	8.0	6/11/2014 12:34	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-582	SVL-582-SA5A-SV-5.0-6.0	Primary Sample	--	6.0	6/11/2014 13:03	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-592	SVL-592-SA5A-SV-5.0-6.0	Primary Sample	--	6.0	6/11/2014 13:43	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-595	SVL-595-SA5A-SV-5.0-6.0	Primary Sample	--	6.0	6/12/2014 9:16	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-609	SVL-609-SA5A-SV-7.0-8.0	Primary Sample	--	8.0	6/12/2014 13:20	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-609	SVL-1009-SA5A-SV-7.0-8.0	Split Sample	SVL-609-SA5A-SV-7.0-8.0	8.0	6/12/2014 13:20	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-616	SVL-616-SA5A-SV-6.5-7.5	Primary Sample	--	7.5	6/12/2014 10:03	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-618	SVL-618-SA5A-SV-5.0-6.0	Primary Sample	--	6.0	6/12/2014 11:01	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-619	SVL-619-SA5A-SV-4.5-5.5	Primary Sample	--	5.5	6/12/2014 10:33	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-622	SVL-622-SA5A-SV-6.0-7.0	Primary Sample	--	7.0	6/12/2014 11:25	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-626	SVL-626-SA5A-SV-5.5-6.5	Primary Sample	--	6.5	6/12/2014 7:48	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-626	SVL-926-SA5A-SV-5.5-6.5	Field Duplicate	SVL-626-SA5A-SV-5.5-6.5	6.5	6/12/2014 7:48	Soil Vapor	VOCs	Yes	In Place
5ASV_DG-629	SVL-629-SA5A-SV-7.0-8.0	Primary Sample	--	8.0	6/12/2014 12:01	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-503	SVL-503-SA5B-SV-7.0-8.0	Primary Sample	--	8.0	5/21/2014 15:50	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-512	SVL-512-SA5B-SV-6.75-7.75	Primary Sample	--	7.8	5/21/2014 11:11	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-516	SVL-516-SA5B-SV-6.0-7.0	Primary Sample	--	7.0	5/21/2014 12:23	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-516	SVL-516-SA5B-SV-12.5-13.5	Primary Sample	--	13.5	5/21/2014 12:47	Soil Vapor	VOCs	Yes	In Place

TABLE 2-1
PHASE 3 SOIL VAPOR
SAMPLING AND ANALYTICAL SUMMARY
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA
(Page 2 of 5)

Object Name	Sample Name	Sample Type	Parent Sample Name	Sampling Depth (ft bgs)	Collection Date	Matrix Type	Analysis	Validated	Remediation Status
5BSV_DG-516	SVL-916-SA5B-SV-12.5-13.5	Split Sample	SVL-516-SA5B-SV-12.5-13.5	13.5	5/21/2014 12:55	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-525	SVL-525-SA5B-SV-8.0-9.0	Primary Sample	--	9.0	6/13/2014 8:35	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-525	SVL-825-SA5B-SV-8.0-9.0	Field Duplicate	SVL-525-SA5B-SV-8.0-9.0	9.0	6/13/2014 8:35	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-525	SVL-525-SA5B-SV-13.0-14.0	Primary Sample	--	14.0	6/13/2014 8:59	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-525	SVL-925-SA5B-SV-13.0-14.0	Split Sample	SVL-525-SA5B-SV-13.0-14.0	14.0	6/13/2014 9:05	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-526	SVL-526-SA5B-SV-5.0-6.0	Primary Sample	--	6.0	5/21/2014 9:15	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-526	SVL-526-SA5B-SV-12.5-13.5	Primary Sample	--	13.5	5/21/2014 9:57	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-530	SVL-530-SA5B-SV-6.75-7.75	Primary Sample	--	7.75	5/21/2014 14:31	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-531	SVL-531-SA5B-SV-5.0-6.0	Primary Sample	--	6.0	6/4/2014 11:40	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-531	SVL-531-SA5B-SV-10.0-11.0	Primary Sample	--	11.0	6/4/2014 12:53	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-531	SVL-531-SA5B-SV-16.75-17.75	Primary Sample	--	17.75	6/4/2014 13:20	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-552	SVL-552-SA5B-SV-5.3-6.3	Primary Sample	--	6.3	6/5/2014 11:53	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-552	SVL-952-SA5B-SV-5.3-6.3	Split Sample	SVL-552-SA5B-SV-5.3-6.3	6.3	6/5/2014 12:00	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-555	SVL-555-SA5B-SV-7.2-8.2	Primary Sample	--	8.2	6/5/2014 13:02	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-557	SVL-557-SA5B-SV-4.5-5.5	Primary Sample	--	5.5	6/11/2014 8:08	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-557	SVL-857-SA5B-SV-4.5-5.5	Field Duplicate	SVL-557-SA5B-SV-4.5-5.5	5.5	6/11/2014 8:08	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-560	SVL-560-SA5B-SV-7.0-8.0	Primary Sample	--	8.0	5/22/2014 14:30	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-560	SVL-960-SA5B-SV-7.0-8.0	Split Sample	SVL-560-SA5B-SV-7.0-8.0	8.0	5/22/2014 14:38	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-561	SVL-561-SA5B-SV-9.0-10.0	Primary Sample	--	10.0	6/13/2014 9:35	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-562	SVL-562-SA5B-SV-5.0-6.0	Primary Sample	--	6.0	5/22/2014 12:09	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-562	SVL-562-SA5B-SV-8.0-9.0	Primary Sample	--	9.0	6/13/2014 10:05	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-567	SVL-567-SA5B-SV-4.5-5.5	Primary Sample	--	5.5	6/11/2014 8:56	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-567	SVL-967-SA5B-SV-4.5-5.5	Split Sample	SVL-567-SA5B-SV-4.5-5.5	5.5	6/11/2014 9:01	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-577	SVL-577-SA5B-SV-5.2-6.2	Primary Sample	--	6.2	6/11/2014 10:56	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-578	SVL-578-SA5B-SV-8.0-9.0	Primary Sample	--	9.0	6/6/2014 12:30	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-579	SVL-579-SA5B-SV-6.5-7.5	Primary Sample	--	7.5	6/11/2014 9:36	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-580	SVL-580-SA5B-SV-7.0-8.0	Primary Sample	--	8.0	6/18/2014 8:09	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-580	SVL-880-SA5B-SV-7.0-8.0	Field Duplicate	SVL-580-SA5B-SV-7.0-8.0	8.0	6/18/2014 8:09	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-584	SVL-584-SA5B-SV-5.0-6.0	Primary Sample	--	6.0	6/9/2014 11:03	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-584	SVL-584-SA5B-SV-10.0-11.0	Primary Sample	--	11.0	6/9/2014 11:31	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-584	SVL-584-SA5B-SV-15.0-16.0	Primary Sample	--	16.0	6/9/2014 12:25	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-584	SVL-584-SA5B-SV-20.0-21.0	Primary Sample	--	21.0	6/9/2014 12:49	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-590	SVL-590-SA5B-SV-6.0-7.0	Primary Sample	--	7.0	6/6/2014 9:27	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-593	SVL-593-SA5B-SV-5.0-6.0	Primary Sample	--	6.0	6/11/2014 10:21	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-594	SVL-594-SA5B-SV-5.0-6.0	Primary Sample	--	6.0	6/6/2014 10:18	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-599	SVL-599-SA5B-SV-8.0-9.0	Primary Sample	--	9.0	6/18/2014 9:10	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-599	SVL-999-SA5B-SV-8.0-9.0	Split Sample	SVL-599-SA5B-SV-8.0-9.0	9.0	6/18/2014 9:18	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-606	SVL-606-SA5B-SV-5.5-6.5	Primary Sample	--	6.5	6/6/2014 10:45	Soil Vapor	VOCs	Yes	In Place
5BSV_DG-612	SVL-612-SA5B-SV-4.5-5.5	Primary Sample	--	5.5	6/6/2014 11:19	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-505	SVL-505-SA5C-SV-5.0-6.0	Primary Sample	--	6.0	6/2/2014 10:52	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-505	SVL-505-SA5C-SV-10.0-11.0	Primary Sample	--	11.0	6/2/2014 11:24	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-505	SVL-805-SA5C-SV-10.0-11.0	Field Duplicate	SVL-505-SA5C-SV-10.0-11.0	11.0	6/2/2014 11:24	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-505	SVL-505-SA5C-SV-15.0-16.0	Primary Sample	--	16.0	6/2/2014 11:59	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-505	SVL-905-SA5C-SV-15.0-16.0	Split Sample	SVL-505-SA5C-SV-15.0-16.0	16.0	6/2/2014 12:08	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-507	SVL-507-SA5C-SV-5.0-6.0	Primary Sample	--	6.0	6/3/2014 9:15	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-507	SVL-807-SA5C-SV-5.0-6.0	Field Duplicate	SVL-507-SA5C-SV-5.0-6.0	6.0	6/3/2014 9:15	Soil Vapor	VOCs	Yes	In Place

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Object Name	Sample Name	Sample Type	Parent Sample Name	Sampling Depth (ft bgs)	Collection Date	Matrix Type	Analysis	Validated	Remediation Status
5CSV_DG-507	SVL-507-SA5C-SV-10.5-11.5	Primary Sample	--	11.5	6/3/2014 9:41	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-508	SVL-508-SA5C-SV-8.25-9.25	Primary Sample	--	9.25	6/3/2014 10:14	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-511	SVL-511-SA5C-SV-7.0-8.0	Primary Sample	--	8.0	6/18/2014 11:08	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-511	SVL-511-SA5C-SV-13.0-14.0	Primary Sample	--	14.0	6/18/2014 11:53	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-513	SVL-513-SA5C-SV-5.0-6.0	Primary Sample	--	6.0	6/18/2014 10:20	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-515	SVL-515-SA5C-SV-5.0-6.0	Primary Sample	--	6.0	6/10/2014 8:28	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-515	SVL-815-SA5C-SV-5.0-6.0	Field Duplicate	SVL-515-SA5C-SV-5.0-6.0	6.0	6/10/2014 8:28	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-515	SVL-515-SA5C-SV-12.5-13.5	Primary Sample	--	13.5	6/10/2014 9:10	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-515	SVL-915-SA5C-SV-12.5-13.5	Split Sample	SVL-515-SA5C-SV-12.5-13.5	13.5	6/10/2014 9:16	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-516	SVL-516-SA5C-SV-5.0-6.0	Primary Sample	--	6.0	6/5/2014 10:43	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-516	SVL-516-SA5C-SV-11.0-12.0	Primary Sample	--	12.0	6/5/2014 11:08	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-516	SVL-516-SA5C-SV-18.0-19.0	Primary Sample	--	19.0	6/6/2014 12:02	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-518	SVL-518-SA5C-SV-5.0-6.0	Primary Sample	--	6.0	6/5/2014 8:41	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-518	SVL-518-SA5C-SV-10.5-11.5	Primary Sample	--	11.5	6/5/2014 9:06	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-525	SVL-525-SA5C-SV-5.0-6.0	Primary Sample	--	6.0	6/5/2014 13:41	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-525	SVL-525-SA5C-SV-10.0-11.0	Primary Sample	--	11.0	6/6/2014 7:46	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-525	SVL-925-SA5C-SV-10.0-11.0	Split Sample	SVL-525-SA5C-SV-10.0-11.0	11.0	6/6/2014 7:56	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-525	SVL-525-SA5C-SV-15.0-16.0	Primary Sample	--	16.0	6/6/2014 8:22	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-525	SVL-525-SA5C-SV-20.0-21.0	Primary Sample	--	21.0	6/6/2014 8:49	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-525	SVL-825-SA5C-SV-20.0-21.0	Field Duplicate	SVL-525-SA5C-SV-20.0-21.0	21.0	6/6/2014 8:49	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-528	SVL-528-SA5C-SV-5.5-6.5	Primary Sample	--	6.5	6/5/2014 10:02	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-528	SVL-828-SA5C-SV-5.5-6.5	Field Duplicate	SVL-528-SA5C-SV-5.5-6.5	6.5	6/5/2014 10:02	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-530	SVL-530-SA5C-SV-6.5-7.5	Primary Sample	--	7.5	5/29/2014 8:42	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-530	SVL-930-SA5C-SV-6.5-7.5	Split Sample	SVL-530-SA5C-SV-6.5-7.5	7.5	5/29/2014 8:49	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-535	SVL-535-SA5C-SV-5.0-6.0	Primary Sample	--	6.0	6/3/2014 10:59	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-535	SVL-535-SA5C-SV-10.0-11.0	Primary Sample	--	11.0	6/3/2014 11:22	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-535	SVL-535-SA5C-SV-15.0-16.0	Primary Sample	--	16.0	6/3/2014 11:50	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-535	SVL-935-SA5C-SV-15.0-16.0	Split Sample	SVL-535-SA5C-SV-15.0-16.0	16.0	6/3/2014 11:56	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-543	SVL-543-SA5C-SV-5.0-6.0	Primary Sample	--	6.0	6/3/2014 12:56	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-543	SVL-543-SA5C-SV-11.0-12.0	Primary Sample	--	12.0	6/3/2014 13:15	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-543	SVL-543-SA5C-SV-18.0-19.0	Primary Sample	--	19.0	6/4/2014 7:28	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-549	SVL-549-SA5C-SV-6.0-7.0	Primary Sample	--	7.0	6/13/2014 10:34	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-554	SVL-554-SA5C-SV-5.0-6.0	Primary Sample	--	6.0	6/5/2014 7:39	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-554	SVL-554-SA5C-SV-13.0-14.0	Primary Sample	--	14.0	6/5/2014 7:58	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-561	SVL-561-SA5C-SV-5.5-6.0	Primary Sample	--	6.0	6/10/2014 9:44	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-570	SVL-570-SA5C-SV-5.0-6.0	Primary Sample	--	6.0	6/4/2014 8:32	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-570	SVL-870-SA5C-SV-5.0-6.0	Field Duplicate	SVL-570-SA5C-SV-5.0-6.0	6.0	6/4/2014 8:32	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-570	SVL-570-SA5C-SV-10.0-11.0	Primary Sample	--	11.0	6/4/2014 8:51	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-570	SVL-570-SA5C-SV-15.0-16.0	Primary Sample	--	16.0	6/4/2014 9:09	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-570	SVL-570-SA5C-SV-20.0-21.0	Primary Sample	--	21.0	6/4/2014 9:29	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-570	SVL-570-SA5C-SV-30.0-31.0	Primary Sample	--	31.0	6/4/2014 9:49	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-570	SVL-570-SA5C-SV-40.0-41.0	Primary Sample	--	41.0	6/4/2014 10:10	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-570	SVL-970-SA5C-SV-40.0-41.0	Split Sample	SVL-570-SA5C-SV-40.0-41.0	41.0	6/4/2014 10:16	Soil Vapor	VOCs	Yes	In Place
5CSV_DG-572	SVL-572-SA5C-SV-6.8-7.8	Primary Sample	--	7.8	5/29/2014 13:39	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-502	SVL-502-SA5D-SV-5.0-6.0	Primary Sample	--	6.0	5/27/2014 8:32	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-502	SVL-802-SA5D-SV-5.0-6.0	Field Duplicate	SVL-502-SA5D-SV-5.0-6.0	6.0	5/27/2014 8:32	Soil Vapor	VOCs	Yes	In Place

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Object Name	Sample Name	Sample Type	Parent Sample Name	Sampling Depth (ft bgs)	Collection Date	Matrix Type	Analysis	Validated	Remediation Status
5DSV_DG-502	SVL-502-SA5D-SV-13.0-14.0	Primary Sample	--	14.0	5/27/2014 9:09	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-502	SVL-502-SA5D-SV-18.0-19.0	Primary Sample	--	19.0	5/27/2014 9:42	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-510	SVL-510-SA5D-SV-7.5-8.5	Primary Sample	--	8.5	5/28/2014 12:50	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-511	SVL-511-SA5D-SV-4.5-5.5	Primary Sample	--	5.5	5/28/2014 9:46	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-511	SVL-511-SA5D-SV-9.5-10.5	Primary Sample	--	10.5	5/28/2014 10:19	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-512	SVL-512-SA5D-SV-5.0-6.0	Primary Sample	--	6.0	5/27/2014 12:32	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-512	SVL-512-SA5D-SV-11.0-12.0	Primary Sample	--	12.0	5/27/2014 13:03	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-512	SVL-512-SA5D-SV-16.75-17.75	Primary Sample	--	17.75	5/27/2014 13:34	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-513	SVL-513-SA5D-SV-5.0-6.0	Primary Sample	--	6.0	5/27/2014 10:15	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-513	SVL-513-SA5D-SV-10.0-11.0	Primary Sample	--	11.0	5/27/2014 10:45	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-513	SVL-513-SA5D-SV-15.5-16.5	Primary Sample	--	16.5	5/27/2014 11:22	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-515	SVL-515-SA5D-SV-5.0-6.0	Primary Sample	--	6.0	5/28/2014 8:16	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-515	SVL-815-SA5D-SV-5.0-6.0	Field Duplicate	SVL-515-SA5D-SV-5.0-6.0	6.0	5/28/2014 8:16	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-515	SVL-515-SA5D-SV-12.5-13.8	Primary Sample	--	13.8	5/28/2014 8:57	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-515	SVL-915-SA5D-SV-12.5-13.8	Split Sample	SVL-515-SA5D-SV-12.5-13.8	13.8	5/28/2014 9:05	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-516	SVL-516-SA5D-SV-6.0-7.0	Primary Sample	--	6.0	5/28/2014 10:55	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-516	SVL-516-SA5D-SV-14.0-15.0	Primary Sample	--	15.0	5/28/2014 11:26	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-519	SVL-519-SA5D-SV-8.5-9.5	Primary Sample	--	9.5	5/29/2014 9:30	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-526	SVL-526-SA5D-SV-7.5-8.5	Primary Sample	--	8.5	5/29/2014 10:12	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-530	SVL-530-SA5D-SV-5.0-6.0	Primary Sample	--	6.0	5/29/2014 10:46	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-531	SVL-531-SA5D-SV-5.0-6.0	Primary Sample	--	6.0	5/29/2014 11:20	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-539	SVL-539-SA5D-SV-4.5-5.5	Primary Sample	--	5.5	5/29/2014 12:29	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-539	SVL-539-SA5D-SV-8.5-9.5	Primary Sample	--	9.5	5/29/2014 13:00	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-544	SVL-544-SA5D-SV-4.5-5.5	Primary Sample	--	5.0	5/28/2014 13:25	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-544	SVL-544-SA5D-SV-10.0-11.0	Primary Sample	--	11.0	5/29/2014 7:50	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-544	SVL-844-SA5D-SV-10.0-11.0	Field Duplicate	SVL-544-SA5D-SV-10.0-11.0	11.0	5/29/2014 7:50	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-546	SVL-546-SA5D-SV-5.0-6.0	Primary Sample	--	6.0	5/30/2014 7:46	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-546	SVL-846-SA5D-SV-5.0-6.0	Field Duplicate	SVL-546-SA5D-SV-5.0-6.0	6.0	5/30/2014 7:46	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-546	SVL-546-SA5D-SV-10.0-11.0	Primary Sample	--	11.0	5/30/2014 8:19	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-546	SVL-946-SA5D-SV-10.0-11.0	Split Sample	SVL-546-SA5D-SV-10.0-11.0	11.0	5/30/2014 8:25	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-546	SVL-546-SA5D-SV-16.0-17.0	Primary Sample	--	17.0	5/30/2014 11:21	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-550	SVL-550-SA5D-SV-5.0-6.0	Primary Sample	--	6.0	5/30/2014 9:39	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-550	SVL-550-SA5D-SV-11.0-12.0	Primary Sample	--	12.0	5/30/2014 10:07	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-550	SVL-550-SA5D-SV-17.0-18.0	Primary Sample	--	18.0	5/30/2014 10:42	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-553	SVL-553-SA5D-SV-4.5-5.5	Primary Sample	--	5.5	6/9/2014 8:28	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-553	SVL-853-SA5D-SV-4.5-5.5	Field Duplicate	SVL-553-SA5D-SV-4.5-5.5	5.5	6/9/2014 8:28	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-553	SVL-553-SA5D-SV-9.0-10.0	Primary Sample	--	10.0	6/9/2014 9:08	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-553	SVL-953-SA5D-SV-9.0-10.0	Split Sample	SVL-553-SA5D-SV-9.0-10.0	10.0	6/9/2014 9:14	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-553	SVL-553-SA5D-SV-14.0-15.0	Primary Sample	--	15.0	6/9/2014 9:50	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-553	SVL-553-SA5D-SV-19.0-20.0	Primary Sample	--	20.0	6/9/2014 10:27	Soil Vapor	VOCs	Yes	In Place
5DSV_DG-556	SVL-556-SA5D-SV-4.5-5.5	Primary Sample	--	5.5	6/9/2014 13:40	Soil Vapor	VOCs	Yes	In Place
6SV_DG-509	SVL-509-SA6-SV-5.0-6.0	Primary Sample	--	6.0	6/12/2014 10:04	Soil Vapor	VOCs	Yes	In Place
6SV_DG-509	SVL-509-SA6-SV-10.0-11.0	Primary Sample	--	11.0	6/12/2014 10:36	Soil Vapor	VOCs	Yes	In Place
6SV_DG-509	SVL-509-SA6-SV-15.0-16.0	Primary Sample	--	16.0	6/12/2014 11:07	Soil Vapor	VOCs	Yes	In Place
6SV_DG-515	SVL-515-SA6-SV-7.9-8.9	Primary Sample	--	8.9	6/12/2014 9:28	Soil Vapor	VOCs	Yes	In Place
6SV_DG-528	SVL-528-SA6-SV-5.5-6.5	Primary Sample	--	6.5	6/12/2014 8:38	Soil Vapor	VOCs	Yes	In Place

TABLE 2-1
PHASE 3 SOIL VAPOR
SAMPLING AND ANALYTICAL SUMMARY
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Object Name	Sample Name	Sample Type	Parent Sample Name	Sampling Depth (ft bgs)	Collection Date	Matrix Type	Analysis	Validated	Remediation Status
6SV_DG-528	SVL-928-SA6-SV-5.5-6.5	Split Sample	SVL-528-SA6-SV-5.5-6.5	6.5	6/12/2014 8:48	Soil Vapor	VOCs	Yes	In Place
6SV_DG-543	SVL-543-SA6-SV-7.5-8.5	Primary Sample	--	8.5	6/19/2014 11:35	Soil Vapor	VOCs	Yes	In Place
6SV_DG-544	SVL-544-SA6-SV-5.0-6.0	Primary Sample	--	6.0	6/13/2014 10:56	Soil Vapor	VOCs	Yes	In Place
6SV_DG-544	SVL-544-SA6-SV-10.0-11.0	Primary Sample	--	11.0	6/13/2014 11:22	Soil Vapor	VOCs	Yes	In Place
6SV_DG-544	SVL-844-SA6-SV-10.0-11.0	Field Duplicate	SVL-544-SA6-SV-10.0-11.0	11.0	6/13/2014 11:22	Soil Vapor	VOCs	Yes	In Place
6SV_DG-551	SVL-551-SA6-SV-4.5-5.5	Primary Sample	--	5.5	6/13/2014 10:16	Soil Vapor	VOCs	Yes	In Place
7SV_DG-503	SVL-503-SA7-SV-7.0-8.0	Primary Sample	--	8.0	6/13/2014 8:53	Soil Vapor	VOCs	Yes	In Place
7SV_DG-503	SVL-503-SA7-SV-12.0-13.0	Primary Sample	--	13.0	6/13/2014 9:24	Soil Vapor	VOCs	Yes	In Place
8SV_DG-502	SVL-502-SA8-SV-4.45-5.45	Primary Sample	--	5.45	6/19/2014 11:09	Soil Vapor	VOCs	Yes	In Place
8SV_DG-503	SVL-503-SA8-SV-4.5-5.5	Primary Sample	--	5.5	6/3/2014 7:55	Soil Vapor	VOCs	Yes	In Place
8SV_DG-506	SVL-506-SA8-SV-7.0-8.0	Primary Sample	--	8.0	5/22/2014 10:05	Soil Vapor	VOCs	Yes	In Place
8SV_DG-512	SVL-512-SA8-SV-8.0-9.0	Primary Sample	--	9.0	5/23/2014 9:34	Soil Vapor	VOCs	Yes	In Place
8SV_DG-512	SVL-812-SA8-SV-8.0-9.0	Field Duplicate	SVL-512-SA8-SV-8.0-9.0	9.0	5/23/2014 8:44	Soil Vapor	VOCs	Yes	In Place
8SV_DG-515	SVL-515-SA8-SV-6.0-7.0	Primary Sample	--	7.0	5/22/2014 10:50	Soil Vapor	VOCs	Yes	In Place
8SV_DG-517	SVL-517-SA8-SV-5.0-6.0	Primary Sample	--	6.0	5/23/2014 8:23	Soil Vapor	VOCs	Yes	In Place
8SV_DG-517	SVL-517-SA8-SV-10.0-11.0	Primary Sample	--	11.0	5/23/2014 8:44	Soil Vapor	VOCs	Yes	In Place
8SV_DG-517	SVL-517-SA8-SV-15.5-16.5	Primary Sample	--	16.5	5/23/2014 9:02	Soil Vapor	VOCs	Yes	In Place
8SV_DG-519	SVL-519-SA8-SV-7.0-8.0	Primary Sample	--	8.0	5/22/2014 8:49	Soil Vapor	VOCs	Yes	In Place
8SV_DG-524	SVL-524-SA8-SV-4.5-5.5	Primary Sample	--	5.5	5/23/2014 10:36	Soil Vapor	VOCs	Yes	In Place
8SV_DG-524	SVL-524-SA8-SV-10.5-11.5	Primary Sample	--	11.5	5/23/2014 10:59	Soil Vapor	VOCs	Yes	In Place
8SV_DG-528	SVL-528-SA8-SV-5.0-6.0	Primary Sample	--	6.0	6/2/2014 9:08	Soil Vapor	VOCs	Yes	In Place
8SV_DG-528	SVL-528-SA8-SV-11.0-12.0	Primary Sample	--	12.0	6/2/2014 9:35	Soil Vapor	VOCs	Yes	In Place
8SV_DG-528	SVL-528-SA8-SV-18.5-19.5	Primary Sample	--	19.5	6/2/2014 9:58	Soil Vapor	VOCs	Yes	In Place
8SV_DG-529	SVL-529-SA8-SV-4.5-5.5	Primary Sample	--	5.5	6/18/2014 12:57	Soil Vapor	VOCs	Yes	In Place
8SV_DG-529	SVL-529-SA8-SV-8.5-9.5	Primary Sample	--	9.5	6/18/2014 13:34	Soil Vapor	VOCs	Yes	In Place
8SV_DG-531	SVL-531-SA8-SV-4.5-5.5	Primary Sample	--	5.5	6/19/2014 9:28	Soil Vapor	VOCs	Yes	In Place
8SV_DG-531	SVL-931-SA8-SV-4.5-5.5	Split Sample	SVL-531-SA8-SV-4.5-5.5	5.5	6/19/2014 9:34	Soil Vapor	VOCs	Yes	In Place
8SV_DG-534	SVL-834-SA8-SV-6.0-7.0	Primary Sample	--	7.0	6/3/2014 8:34	Soil Vapor	VOCs	Yes	In Place
8SV_DG-543	SVL-543-SA8-SV-6.25-7.25	Primary Sample	--	7.25	6/19/2014 8:34	Soil Vapor	VOCs	Yes	In Place
8SV_DG-543	SVL-843-SA8-SV-6.25-7.25	Field Duplicate	SVL-543-SA8-SV-6.25-7.25	7.25	6/19/2014 8:34	Soil Vapor	VOCs	Yes	In Place
8SV_DG-545	SVL-545-SA8-SV-6.75-7.25	Primary Sample	--	7.25	6/19/2014 10:37	Soil Vapor	VOCs	Yes	In Place

Total Number of Primary Soil Vapor Samples	Total QC Samples[1]	Total Validated Samples
177	38	215

Acronyms:
"--" - not applicable
ft bgs - feet below ground surface
QC - quality control
VOCs - volatile organic compounds by Environmental Protection Agency Method 8260B or TO-15

Notes:
1. QC samples include co-located duplicates and laboratory split samples.

Table 3-1
PHASE 3 SOIL VAPOR
DATA FREQUENCY SUMMARY
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Analyte	CAS Number	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Practical Quantitation Limit	Result Value Units	Object Name	Depth of Maximum Concentration (ft bgs)
1,1,1-Trichloroethane	71556	16 / 215	0.001	0.11	0.00043 - 0.11	0.0027 - 0.4	µg/L	8SV_DG-503	4.5 - 5.5
1,1,2-Trichloro-1,2,2-trifluoroethane	76131	25 / 215	0.00086	86	0.00054 - 0.24	0.011 - 0.4	µg/L	5DSV_DG-513	10 - 11
1,1,2-Trichloroethane	79005	2 / 215	0.0015	0.0029	0.001 - 0.13	0.0027 - 0.4	µg/L	5CSV_DG-570	40 - 41
1,1-Dichloroethane	75343	8 / 215	0.0011	0.0096	0.00026 - 0.12	0.002 - 0.4	µg/L	8SV_DG-512	8 - 9
1,1-Dichloroethene	75354	6 / 215	0.0014	0.16	0.00079 - 0.14	0.002 - 0.4	µg/L	8SV_DG-503	4.5 - 5.5
1,2-Dichloroethane	107062	5 / 215	0.00084	0.0037	0.00028 - 0.21	0.002 - 0.4	µg/L	5ASV_DG-509	5 - 6
Benzene	71432	52 / 215	0.00066	0.061	0.00027 - 0.081	0.0016 - 0.4	µg/L	8SV_DG-524	4.5 - 5.5
Carbon Tetrachloride	56235	5 / 215	0.0011	0.072	0.00039 - 0.23	0.0031 - 0.4	µg/L	8SV_DG-512	8 - 9
Chloroethane	75003	4 / 215	0.021	0.054	0.00053 - 0.32	0.0013 - 0.4	µg/L	5DSV_DG-502	18 - 19
Chloroform	67663	20 / 215	0.00098	0.28	0.00034 - 0.12	0.0024 - 0.4	µg/L	8SV_DG-512	8 - 9
cis-1,2-Dichloroethene	156592	8 / 215	0.00048	0.026	0.00035 - 0.19	0.002 - 0.4	µg/L	5CSV_DG-530	6.5 - 7.5
Dichlorodifluoromethane	75718	16 / 215	0.0026	0.11	0.00029 - 0.22	0.0025 - 0.4	µg/L	5ASV_DG-509	10 - 11
Ethylbenzene	100414	61 / 215	0.00097	0.1	0.00063 - 0.06	0.0022 - 0.4	µg/L	6SV_DG-509	15 - 16
Methylene chloride	75092	4 / 215	0.00082	0.081	0.00069 - 0.21	0.0035 - 0.4	µg/L	5ASV_DG-622	6 - 7
m-Xylene & p-Xylene	179601231	67 / 215	0.00218	0.29	0.00087 - 0.16	0.0043 - 0.4	µg/L	5CSV_DG-525	10 - 11
o-Xylene	95476	55 / 215	0.0011	0.14	0.00068 - 0.18	0.0022 - 0.4	µg/L	5BSV_DG-526	12.5 - 13.5
Tetrachloroethene	127184	47 / 215	0.00051	0.16	0.00046 - 0.11	0.0034 - 0.4	µg/L	5ASV_DG-565	5 - 6
Toluene	108883	82 / 215	0.00082	0.32	0.00051 - 0.085	0.0019 - 0.4	µg/L	5BSV_DG-526	12.5 - 13.5
trans-1,2-Dichloroethene	156605	2 / 215	0.00075	0.088	0.0005 - 0.078	0.002 - 0.4	µg/L	5ASV_DG-622	6 - 7
Trichloroethene	79016	25 / 215	0.00075	1.6	0.00037 - 0.23	0.0027 - 0.4	µg/L	8SV_DG-512	8 - 9
Trichlorofluoromethane	75694	26 / 215	0.0016	10	0.00096 - 0.22	0.0056 - 4.5	µg/L	5BSV_DG-531	16.75 - 17.75
Vinyl chloride	75014	2 / 215	0.00074	0.0009	0.00051 - 0.2	0.0013 - 0.4	µg/L	5CSV_DG-570	40 - 41

Acronyms:
CAS - chemical abstract service
µg/L - micrograms per litter
ft bgs - feet below ground surface

Notes:
Samples were analyized for volatile organic compounds (VOCs) by Environmental Protection Agency Method 8260B or TO-15
Soil samples collected for VOCs are not summarized in this report.

TABLE 4-1
PHASE 3 SOIL VAPOR
SUMMARY OF QUALIFIED DATA
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Object Name	Sample Name	Parent Sample Name	Lab Sample Name	Collection Date	Matrix Type	Sample Type	Result Type	Analysis Method	Analyte	CAS Number	Result Value (µg/L)	Validator Qualifier Code	Validator Qualifier Description	Lab Name	Validation Level	Validation Notes	Validation Report Identifier
5ASV_DG-504	SVL-504-SA5A-SV-10.0-11.0	--	7498162	6/10/2014 8:51	Soil Vapor	Primary Sample	Primary Result	TO-15	Carbon Tetrachloride	56235	0.013	UJ	Non-Detect Estimated Value	Lancaster	V	C	1481734
5ASV_DG-504	SVL-504-SA5A-SV-10.0-11.0	--	7498162	6/10/2014 8:51	Soil Vapor	Primary Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0099	U	Non-Detect	Lancaster	V	F, result changed from 0.0072	1481734
5ASV_DG-504	SVL-504-SA5A-SV-10.0-11.0	--	7498162	6/10/2014 8:51	Soil Vapor	Primary Sample	Primary Result	TO-15	Ethylbenzene	100414	0.0087	U	Non-Detect	Lancaster	V	F, result changed from 0.0062	1481734
5ASV_DG-504	SVL-504-SA5A-SV-10.0-11.0	--	7498162	6/10/2014 8:51	Soil Vapor	Primary Sample	Primary Result	TO-15	m-Xylene & p-Xylene	179601231	0.019	U	Non-Detect	Lancaster	V	F, RL changed from 0.0087	1481734
5ASV_DG-504	SVL-504-SA5A-SV-10.0-11.0	--	7498162	6/10/2014 8:51	Soil Vapor	Primary Sample	Primary Result	TO-15	o-Xylene	95476	0.011	U	Non-Detect	Lancaster	V	F, RL changed from 0.0087	1481734
5ASV_DG-504	SVL-504-SA5A-SV-10.0-11.0	--	7498162	6/10/2014 8:51	Soil Vapor	Primary Sample	Primary Result	TO-15	Toluene	108883	0.0075	U	Non-Detect	Lancaster	V	F, result changed from 0.0073	1481734
5ASV_DG-504	SVL-504-SA5A-SV-15.0-16.0	--	7498163	6/10/2014 9:12	Soil Vapor	Primary Sample	Primary Result	TO-15	Carbon Tetrachloride	56235	0.013	UJ	Non-Detect Estimated Value	Lancaster	V	C	1481734
5ASV_DG-504	SVL-504-SA5A-SV-15.0-16.0	--	7498163	6/10/2014 9:12	Soil Vapor	Primary Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0099	U	Non-Detect	Lancaster	V	F, result changed from 0.0077	1481734
5ASV_DG-504	SVL-504-SA5A-SV-15.0-16.0	--	7498163	6/10/2014 9:12	Soil Vapor	Primary Sample	Primary Result	TO-15	Ethylbenzene	100414	0.0087	U	Non-Detect	Lancaster	V	F, result changed from 0.0069	1481734
5ASV_DG-504	SVL-504-SA5A-SV-15.0-16.0	--	7498163	6/10/2014 9:12	Soil Vapor	Primary Sample	Primary Result	TO-15	m-Xylene & p-Xylene	179601231	0.023	U	Non-Detect	Lancaster	V	F, RL changed from 0.0087	1481734
5ASV_DG-504	SVL-504-SA5A-SV-15.0-16.0	--	7498163	6/10/2014 9:12	Soil Vapor	Primary Sample	Primary Result	TO-15	o-Xylene	95476	0.011	U	Non-Detect	Lancaster	V	F, RL changed from 0.0087	1481734
5ASV_DG-504	SVL-504-SA5A-SV-15.0-16.0	--	7498163	6/10/2014 9:12	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.011	U	Non-Detect	Lancaster	V	F, result changed from 0.0025	1481734
5ASV_DG-504	SVL-504-SA5A-SV-20.0-21.0	--	7498164	6/10/2014 9:54	Soil Vapor	Primary Sample	Primary Result	TO-15	Carbon Tetrachloride	56235	0.013	UJ	Non-Detect Estimated Value	Lancaster	V	C	1481734
5ASV_DG-504	SVL-504-SA5A-SV-20.0-21.0	--	7498164	6/10/2014 9:54	Soil Vapor	Primary Sample	Primary Result	TO-15	Ethylbenzene	100414	0.0087	U	Non-Detect	Lancaster	V	F, result changed from 0.0056	1481734
5ASV_DG-504	SVL-504-SA5A-SV-20.0-21.0	--	7498164	6/10/2014 9:54	Soil Vapor	Primary Sample	Primary Result	TO-15	m-Xylene & p-Xylene	179601231	0.015	U	Non-Detect	Lancaster	V	F, RL changed from 0.0087	1481734
5ASV_DG-504	SVL-504-SA5A-SV-20.0-21.0	--	7498164	6/10/2014 9:54	Soil Vapor	Primary Sample	Primary Result	TO-15	o-Xylene	95476	0.0087	U	Non-Detect	Lancaster	V	F, result changed from 0.0082	1481734
5ASV_DG-504	SVL-504-SA5A-SV-25.0-26.0	--	7498165	6/10/2014 10:56	Soil Vapor	Primary Sample	Primary Result	TO-15	Carbon Tetrachloride	56235	0.063	UJ	Non-Detect Estimated Value	Lancaster	V	C	1481734
5ASV_DG-504	SVL-504-SA5A-SV-25.0-26.0	--	7498165	6/10/2014 10:56	Soil Vapor	Primary Sample	Primary Result	TO-15	m-Xylene & p-Xylene	179601231	0.043	U	Non-Detect	Lancaster	V	F, result changed from 0.018	1481734
5ASV_DG-504	SVL-504-SA5A-SV-5.0-6.0	--	7498166	6/10/2014 8:24	Soil Vapor	Primary Sample	Primary Result	TO-15	Carbon Tetrachloride	56235	0.013	UJ	Non-Detect Estimated Value	Lancaster	V	C	1481734
5ASV_DG-504	SVL-504-SA5A-SV-5.0-6.0	--	7498166	6/10/2014 8:24	Soil Vapor	Primary Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0099	U	Non-Detect	Lancaster	V	F, result changed from 0.0077	1481734
5ASV_DG-504	SVL-504-SA5A-SV-5.0-6.0	--	7498166	6/10/2014 8:24	Soil Vapor	Primary Sample	Primary Result	TO-15	Ethylbenzene	100414	0.011	U	Non-Detect	Lancaster	V	F, RL changed from 0.0087	1481734
5ASV_DG-504	SVL-504-SA5A-SV-5.0-6.0	--	7498166	6/10/2014 8:24	Soil Vapor	Primary Sample	Primary Result	TO-15	o-Xylene	95476	0.016	U	Non-Detect	Lancaster	V	F, RL changed from 0.0087	1481734
5ASV_DG-504	SVL-504-SA5A-SV-5.0-6.0	--	7498166	6/10/2014 8:24	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.011	U	Non-Detect	Lancaster	V	F, result changed from 0.0054	1481734
5ASV_DG-509	SVL-509-SA5A-SV-15.0-16.0	--	7498168	6/10/2014 12:39	Soil Vapor	Primary Sample	Primary Result	TO-15	Methylene chloride	75092	0.0035	U	Non-Detect	Lancaster	V	F, result changed from 0.00088	1481734
5ASV_DG-509	SVL-509-SA5A-SV-15.0-16.0	--	7498168	6/10/2014 12:39	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0055	1481734
5ASV_DG-509	SVL-509-SA5A-SV-20.0-21.0	--	7498169	6/10/2014 13:03	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.002	1481734
5ASV_DG-509	SVL-509-SA5A-SV-25.0-26.0	--	7498170	6/10/2014 14:19	Soil Vapor	Primary Sample	Primary Result	TO-15	Ethylbenzene	100414	0.0044	U	Non-Detect	Lancaster	V	F, RL changed from 0.0043	1481734
5ASV_DG-509	SVL-509-SA5A-SV-25.0-26.0	--	7498170	6/10/2014 14:19	Soil Vapor	Primary Sample	Primary Result	TO-15	m-Xylene & p-Xylene	179601231	0.012	U	Non-Detect	Lancaster	V	F, RL changed from 0.0043	1481734
5ASV_DG-509	SVL-509-SA5A-SV-25.0-26.0	--	7498170	6/10/2014 14:19	Soil Vapor	Primary Sample	Primary Result	TO-15	o-Xylene	95476	0.0073	U	Non-Detect	Lancaster	V	F, RL changed from 0.0043	1481734
5ASV_DG-509	SVL-509-SA5A-SV-25.0-26.0	--	7498170	6/10/2014 14:19	Soil Vapor	Primary Sample	Primary Result	TO-15	Toluene	108883	0.0038	U	Non-Detect	Lancaster	V	F, result changed from 0.0022	1481734
5ASV_DG-509	SVL-509-SA5A-SV-25.0-26.0	--	7498170	6/10/2014 14:19	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0015	1481734
5ASV_DG-509	SVL-509-SA5A-SV-5.0-6.0	--	7498171	6/10/2014 11:30	Soil Vapor	Primary Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0085	U	Non-Detect	Lancaster	V	F, RL changed from 0.0049	1481734
5ASV_DG-509	SVL-509-SA5A-SV-5.0-6.0	--	7498171	6/10/2014 11:30	Soil Vapor	Primary Sample	Primary Result	TO-15	m-Xylene & p-Xylene	179601231	0.0043	U	Non-Detect	Lancaster	V	F, result changed from 0.0011	1481734
5ASV_DG-509	SVL-509-SA5A-SV-5.0-6.0	--	7498171	6/10/2014 11:30	Soil Vapor	Primary Sample	Primary Result	TO-15	Toluene	108883	0.0055	U	Non-Detect	Lancaster	V	F, RL changed from 0.0038	1481734
5ASV_DG-509	SVL-509-SA5A-SV-5.0-6.0	--	7498171	6/10/2014 11:30	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0035	1481734
5ASV_DG-509	SVL-909-SA5A-SV-25.0-26.0	SVL-509-SA5A-SV-25.0-26.0	280-56665-2	6/10/2014 14:19	Soil Vapor	Split Sample	Primary Result	TO-15	1,1-Dichloroethene	75354	0.0159	UJ	Non-Detect Estimated Value	TestAmerica - Denver	V	C	280-56665-1
5ASV_DG-512	SVL-512-SA5A-SV-5.5-6.5	--	7498173	6/11/2014 7:54	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0019	1481735
5ASV_DG-521	SVL-521-SA5A-SV-10.0-11.0	--	7498174	6/11/2014 8:50	Soil Vapor	Primary Sample	Primary Result	TO-15	Methylene chloride	75092	0.0035	U	Non-Detect	Lancaster	V	F, result changed from 0.0017	1481735
5ASV_DG-521	SVL-521-SA5A-SV-10.0-11.0	--	7498174	6/11/2014 8:50	Soil Vapor	Primary Sample	Primary Result	TO-15	m-Xylene & p-Xylene	179601231	0.0043	U	Non-Detect	Lancaster	V	F, result changed from 0.0033	1481735
5ASV_DG-521	SVL-521-SA5A-SV-10.0-11.0	--	7498174	6/11/2014 8:50	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0016	1481735
5ASV_DG-521	SVL-521-SA5A-SV-5.0-6.0	--	7498175	6/11/2014 8:24	Soil Vapor	Primary Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0049	U	Non-Detect	Lancaster	V	F, result changed from 0.0032	1481735
5ASV_DG-521	SVL-521-SA5A-SV-5.0-6.0	--	7498175	6/11/2014 8:24	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0017	1481735
5ASV_DG-522	SVL-522-SA5A-SV-7.5-8.5	--	7498176	6/11/2014 10:50	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0018	1481735
5ASV_DG-528	SVL-528-SA5A-SV-9.0-10.0	--	7498178	6/11/2014 10:02	Soil Vapor	Primary Sample	Primary Result	TO-15	Methylene chloride	75092	0.0035	U	Non-Detect	Lancaster	V	F, result changed from 0.0011	1481735
5ASV_DG-528	SVL-528-SA5A-SV-9.0-10.0	--	7498178	6/11/2014 10:02	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0021	1481735
5ASV_DG-537	SVL-537-SA5A-SV-4.5-5.5	--	3F41001-06	6/10/2014 10:23	Soil Vapor	Primary Sample	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	L	3F41001
5ASV_DG-537	SVL-537-SA5A-SV-4.5-5.5	--	3F41001-06	6/10/2014 10:23	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41001
5ASV_DG-540	SVL-540-SA5A-SV-4.5-5.5	--	3F41001-07	6/10/2014 10:57	Soil Vapor	Primary Sample	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	L	3F41001
5ASV_DG-540	SVL-540-SA5A-SV-4.5-5.5	--	3F41001-07	6/10/2014 10:57	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41001
5ASV_DG-540	SVL-540-SA5A-SV-8.5-9.5	--	3F41001-08	6/10/2014 11:24	Soil Vapor	Primary Sample	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	L	3F41001
5ASV_DG-540	SVL-540-SA5A-SV-8.5-9.5	--	3F41001-08	6/10/2014 11:24	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.0058	J	Estimated Value	EST	V	C	3F41001
5ASV_DG-543	SVL-543-SA5A-SV-5.0-6.0	--	3F41001-09	6/10/2014 12:26	Soil Vapor	Primary Sample	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	L	3F41001
5ASV_DG-543	SVL-543-SA5A-SV-5.0-6.0	--	3F41001-09	6/10/2014 12:26	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.0062	J	Estimated Value	EST	V	C	3F41001
5ASV_DG-546	SVL-546-SA5A-SV-6.0-7.0	--	3F41001-10	6/10/2014 12:57	Soil Vapor	Primary Sample	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	L	3F41001
5ASV_DG-546	SVL-546-SA5A-SV-6.0-7.0	--	3F41001-10	6/10/2014 12:57	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41001
5ASV_DG-547	SVL-547-SA5A-SV-6.0-7.0	--	3F41001-11	6/10/2014 13:42	Soil Vapor	Primary Sample	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	L	3F41001
5ASV_DG-547	SVL-547-SA5A-SV-6.0-7.0	--	3F41001-11	6/10/2014 13:42	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41001
5ASV_DG-560	SVL-560-SA5A-SV-10.5-11.5	--	7498179	6/11/2014 11:54	Soil Vapor	Primary Sample	Primary Result	TO-15	m-Xylene & p-Xylene	179601231	0.0043	U	Non-Detect	Lancaster	V	F, result changed from 0.0029	1481735
5ASV_DG-560	SVL-560-SA5A-SV-10.5-11.5	--	7498179	6/11/2014 11:54	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0014	1481735
5ASV_DG-560	SVL-560-SA5A-SV-5.0-6.0	--	7498180	6/11/2014 11:26	Soil Vapor	Primary Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0049	U	Non-Detect	Lancaster	V	F, result changed from 0.0025	1481735
5ASV_DG-560	SVL-560-SA5A-SV-5.0-6.0	--	7498180	6/11/2014 11:26	Soil Vapor	Primary Sample	Primary Result	TO-15	m-Xylene & p-Xylene	179601231	0.0044	U	Non-Detect	Lancaster	V	F, RL changed from 0.0043	1481735
5ASV_DG-560	SVL-560-SA5A-SV-5.0-6.0	--	7498180	6/11/2014 11:26	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0013	1481735
5ASV_DG-565	SVL-565-SA5A-SV-12.0-13.0	--	7498181	6/11/2014 14:10	Soil Vapor	Primary Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0049	U	Non-Detect	Lancaster	V	F, result changed from 0.003	1481735
5ASV_DG-565	SVL-565-SA5A-SV-12.0-13.0	--	7498181	6/11/2014 14:10	Soil Vapor	Primary Sample	Primary Result	TO-15	m-Xylene & p-Xylene	179601231	0.0043	U	Non-Detect	Lancaster	V	F, result changed from 0.0035	1481735
5ASV_DG-565	SVL-565-SA5A-SV-12.0-13.0	--	7498181	6/11/2014 14:10	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0015	1481735
5ASV_DG-565	SVL-565-SA5A-SV-5.0-6.0	--	7498182	6/11/2014 13:35	Soil Vapor	Primary Sample	Primary Result	TO-15	1,1-Dichloroethene	75354	0.011	J	Estimated Value	Lancaster	V	*III	1481735
5ASV_DG-565	SVL-565-SA5A-SV-5.0-6.0	--	7498182	6/11/2014 13:35	Soil Vapor	Primary Sample	Primary Result	TO-15	Ethylbenzene	100414	0.041	J	Estimated Value	Lancaster	V	*III	1481735
5ASV_DG-565	SVL-565-SA5A-SV-5.0-6.0	--	7498182	6/11/2014 13:35	Soil Vapor	Primary Sample	Primary Result	TO-15	o-Xylene	95476	0.11	J	Estimated Value	Lancaster	V	*III	1481735
5ASV_DG-565	SVL-565-SA5A-SV-5.0-6.0	--	7498182	6/11/2014 13:35	Soil Vapor	Primary Sample	Primary Result	TO-15	Tetrachloroethene	127184	0.16	J	Estimated Value	Lancaster	V	*III	1481735
5ASV_DG-565	SVL-565-SA5A-SV-5.0-6.0	--	7498182	6/11/2014 13:35	Soil Vapor	Primary Sample	Primary Result	TO-15	Toluene	108883	0.0052	J	Estimated Value	Lancaster	V	*III	1481735
5ASV_DG-565	SVL-565-SA5A-SV-5.0-6.0	--	7498182	6/11/2014 13:35	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichloroethene	79016	0.018	J	Estimated Value	Lancaster	V	*III	1481735
5ASV_DG-565	SVL-565-SA5A-SV-5.0-6.0	--	7498182	6/11/2014 13:35	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0016	1481735
5ASV_DG-565	SVL-865-SA5A-SV-5.0-6.0	SVL-565-SA5A-SV-5.0-6.0	7498183	6/11/2014 13:43	Soil Vapor	Field Duplicate	Primary Result	TO-15	1,1-Dichloroethene	75354	0.004	UJ	Non-Detect Estimated Value	Lancaster	V	*III	1481735
5ASV_DG-565	SVL-865-SA5A-SV-5.0-6.0	SVL-565-SA5A-SV-5.0-6.0	7498183	6/11/2014 13:43	Soil Vapor	Field Duplicate	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0049	U	Non-Detect	Lancaster	V	F, result changed from 0.0029	1481735
5ASV_DG-565	SVL-865-SA5A-SV-5.0-6.0	SVL-565-SA5A-SV-5.0-6.0	7498183	6/11/2014 13:43	Soil Vapor	Field Duplicate	Primary Result	TO-15	Ethylbenzene	100414	0.0015	J	Estimated Value	Lancaster	V	*III	1481735
5ASV_DG-565	SVL-865-SA5A-SV-5.0-6.0	SVL-565-SA5A-SV-5.0-6.0	7498183	6/11/2014 13:43	Soil Vapor	Field Duplicate	Primary Result	TO-15	o-Xylene	95476	0.0033	J	Estimated Value	Lancaster	V	*III	1481735
5ASV_DG-565	SVL-865-SA5A-SV-5.0-6.0	SVL-565-SA5A-SV-5.0-6.0	7498183	6/11/2014 13:43	Soil Vapor	Field Duplicate	Primary Result	TO-15	Tetrachloroethene	127184	0.0068	UJ	Non-Detect Estimated Value	Lancaster	V	*III	1481735
5ASV_DG-565	SVL-865-SA5A-SV-5.0-6.0	SVL-565-SA5A-SV-5.0-6.0	7498183	6/11/2014 13:43	Soil Vapor	Field Duplicate	Primary Result	TO-15	Toluene	108883	0.0017	J	Estimated Value	Lancaster	V	*III	1481735
5ASV_DG-565	SVL-865-SA5A-SV-5.0-6.0	SVL-565-SA5A-SV-5.0-6.0	7498183	6/11/2014 13:43	Soil Vapor	Field Duplicate	Primary Result	TO-15	Trichloroethene	79016	0.0054	UJ	Non-Detect Estimated Value	Lancaster	V	*III	1481735
5ASV_DG-565	SVL-865-SA5A-SV-5.0-6.0	SVL-565-SA5A-SV-5.0-6.0	7498183	6/11/2014 13:43	Soil Vapor	Field Duplicate	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0015	1481735
5ASV_DG-568	SVL-568-SA5A-SV-6.0-7.0	--	3F41101-08	6/11/2014 11:24	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41101

TABLE 4-1
PHASE 3 SOIL VAPOR
SUMMARY OF QUALIFIED DATA
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA
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Object Name	Sample Name	Parent Sample Name	Lab Sample Name	Collection Date	Matrix Type	Sample Type	Result Type	Analysis Method	Analyte	CAS Number	Result Value (µg/L)	Validator Qualifier Code	Validator Qualifier Description	Lab Name	Validation Level	Validation Notes	Validation Report Identifier
5ASV_DG-568	SVL-568-SA5A-SV-6.0-7.0	--	3F41101-08	6/11/2014 11:24	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41101
5ASV_DG-568	SVL-568-SA5A-SV-6.0-7.0	--	3F41101-08	6/11/2014 11:24	Soil Vapor	Primary Sample	Primary Result	8260B	Trichlorofluoromethane	75694	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41101
5ASV_DG-570	SVL-570-SA5A-SV-7.0-8.0	--	3F41101-09	6/11/2014 12:34	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41101
5ASV_DG-570	SVL-570-SA5A-SV-7.0-8.0	--	3F41101-09	6/11/2014 12:34	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41101
5ASV_DG-570	SVL-570-SA5A-SV-7.0-8.0	--	3F41101-09	6/11/2014 12:34	Soil Vapor	Primary Sample	Primary Result	8260B	Trichlorofluoromethane	75694	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41101
5ASV_DG-582	SVL-582-SA5A-SV-5.0-6.0	--	3F41101-10	6/11/2014 13:03	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41101
5ASV_DG-582	SVL-582-SA5A-SV-5.0-6.0	--	3F41101-10	6/11/2014 13:03	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41101
5ASV_DG-582	SVL-582-SA5A-SV-5.0-6.0	--	3F41101-10	6/11/2014 13:03	Soil Vapor	Primary Sample	Primary Result	8260B	Trichlorofluoromethane	75694	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41101
5ASV_DG-592	SVL-592-SA5A-SV-5.0-6.0	--	3F41101-11	6/11/2014 13:43	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41101
5ASV_DG-592	SVL-592-SA5A-SV-5.0-6.0	--	3F41101-11	6/11/2014 13:43	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41101
5ASV_DG-592	SVL-592-SA5A-SV-5.0-6.0	--	3F41101-11	6/11/2014 13:43	Soil Vapor	Primary Sample	Primary Result	8260B	Trichlorofluoromethane	75694	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41101
5ASV_DG-595	SVL-595-SA5A-SV-5.0-6.0	--	7500235	6/12/2014 9:16	Soil Vapor	Primary Sample	Primary Result	TO-15	Carbon Tetrachloride	56235	0.0063	UJ	Non-Detect Estimated Value	Lancaster	V	C	1482106
5ASV_DG-595	SVL-595-SA5A-SV-5.0-6.0	--	7500235	6/12/2014 9:16	Soil Vapor	Primary Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0049	U	Non-Detect	Lancaster	V	F, result changed from 0.0025	1482106
5ASV_DG-595	SVL-595-SA5A-SV-5.0-6.0	--	7500235	6/12/2014 9:16	Soil Vapor	Primary Sample	Primary Result	TO-15	Ethylbenzene	100414	0.0043	U	Non-Detect	Lancaster	V	F, result changed from 0.0012	1482106
5ASV_DG-595	SVL-595-SA5A-SV-5.0-6.0	--	7500235	6/12/2014 9:16	Soil Vapor	Primary Sample	Primary Result	TO-15	Methylene chloride	75092	0.0049	U	Non-Detect	Lancaster	V	F, RL changed from 0.0035	1482106
5ASV_DG-595	SVL-595-SA5A-SV-5.0-6.0	--	7500235	6/12/2014 9:16	Soil Vapor	Primary Sample	Primary Result	TO-15	m-Xylene & p-Xylene	179601231	0.0043	U	Non-Detect	Lancaster	V	F, result changed from 0.0029	1482106
5ASV_DG-595	SVL-595-SA5A-SV-5.0-6.0	--	7500235	6/12/2014 9:16	Soil Vapor	Primary Sample	Primary Result	TO-15	o-Xylene	95476	0.0043	U	Non-Detect	Lancaster	V	F, result changed from 0.0015	1482106
5ASV_DG-595	SVL-595-SA5A-SV-5.0-6.0	--	7500235	6/12/2014 9:16	Soil Vapor	Primary Sample	Primary Result	TO-15	Toluene	108883	0.0038	U	Non-Detect	Lancaster	V	F, result changed from 0.0035	1482106
5ASV_DG-595	SVL-595-SA5A-SV-5.0-6.0	--	7500235	6/12/2014 9:16	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0013	1482106
5ASV_DG-609	SVL-1009-SA5A-SV-7.0-8.0	SVL-609-SA5A-SV-7.0-8.0	280-56665-1	6/12/2014 13:20	Soil Vapor	Split Sample	Primary Result	TO-15	1,1-Dichloroethene	75354	0.0159	UJ	Non-Detect Estimated Value	TestAmerica - Denver	V	C	280-56665-1
5ASV_DG-609	SVL-609-SA5A-SV-7.0-8.0	--	7500236	6/12/2014 13:20	Soil Vapor	Primary Sample	Primary Result	TO-15	Carbon Tetrachloride	56235	0.0063	UJ	Non-Detect Estimated Value	Lancaster	V	C	1482106
5ASV_DG-609	SVL-609-SA5A-SV-7.0-8.0	--	7500236	6/12/2014 13:20	Soil Vapor	Primary Sample	Primary Result	TO-15	Ethylbenzene	100414	0.0043	U	Non-Detect	Lancaster	V	F, result changed from 0.0012	1482106
5ASV_DG-609	SVL-609-SA5A-SV-7.0-8.0	--	7500236	6/12/2014 13:20	Soil Vapor	Primary Sample	Primary Result	TO-15	Methylene chloride	75092	0.0035	U	Non-Detect	Lancaster	V	F, result changed from 0.0008	1482106
5ASV_DG-609	SVL-609-SA5A-SV-7.0-8.0	--	7500236	6/12/2014 13:20	Soil Vapor	Primary Sample	Primary Result	TO-15	m-Xylene & p-Xylene	179601231	0.0043	U	Non-Detect	Lancaster	V	F, result changed from 0.0032	1482106
5ASV_DG-609	SVL-609-SA5A-SV-7.0-8.0	--	7500236	6/12/2014 13:20	Soil Vapor	Primary Sample	Primary Result	TO-15	o-Xylene	95476	0.0043	U	Non-Detect	Lancaster	V	F, result changed from 0.0016	1482106
5ASV_DG-609	SVL-609-SA5A-SV-7.0-8.0	--	7500236	6/12/2014 13:20	Soil Vapor	Primary Sample	Primary Result	TO-15	Toluene	108883	0.0038	U	Non-Detect	Lancaster	V	F, result changed from 0.001	1482106
5ASV_DG-609	SVL-609-SA5A-SV-7.0-8.0	--	7500236	6/12/2014 13:20	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0013	1482106
5ASV_DG-616	SVL-616-SA5A-SV-6.5-7.5	--	7500237	6/12/2014 10:03	Soil Vapor	Primary Sample	Primary Result	TO-15	Carbon Tetrachloride	56235	0.0063	UJ	Non-Detect Estimated Value	Lancaster	V	C	1482106
5ASV_DG-616	SVL-616-SA5A-SV-6.5-7.5	--	7500237	6/12/2014 10:03	Soil Vapor	Primary Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0049	U	Non-Detect	Lancaster	V	F, result changed from 0.0023	1482106
5ASV_DG-616	SVL-616-SA5A-SV-6.5-7.5	--	7500237	6/12/2014 10:03	Soil Vapor	Primary Sample	Primary Result	TO-15	Ethylbenzene	100414	0.0043	U	Non-Detect	Lancaster	V	F, result changed from 0.0016	1482106
5ASV_DG-616	SVL-616-SA5A-SV-6.5-7.5	--	7500237	6/12/2014 10:03	Soil Vapor	Primary Sample	Primary Result	TO-15	m-Xylene & p-Xylene	179601231	0.0043	U	Non-Detect	Lancaster	V	F, result changed from 0.004	1482106
5ASV_DG-616	SVL-616-SA5A-SV-6.5-7.5	--	7500237	6/12/2014 10:03	Soil Vapor	Primary Sample	Primary Result	TO-15	o-Xylene	95476	0.0043	U	Non-Detect	Lancaster	V	F, result changed from 0.0023	1482106
5ASV_DG-616	SVL-616-SA5A-SV-6.5-7.5	--	7500237	6/12/2014 10:03	Soil Vapor	Primary Sample	Primary Result	TO-15	Toluene	108883	0.0038	U	Non-Detect	Lancaster	V	F, result changed from 0.0013	1482106
5ASV_DG-616	SVL-616-SA5A-SV-6.5-7.5	--	7500237	6/12/2014 10:03	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0011	1482106
5ASV_DG-618	SVL-618-SA5A-SV-5.0-6.0	--	7500238	6/12/2014 11:01	Soil Vapor	Primary Sample	Primary Result	TO-15	Carbon Tetrachloride	56235	0.0063	UJ	Non-Detect Estimated Value	Lancaster	V	C	1482106
5ASV_DG-618	SVL-618-SA5A-SV-5.0-6.0	--	7500238	6/12/2014 11:01	Soil Vapor	Primary Sample	Primary Result	TO-15	Ethylbenzene	100414	0.0043	U	Non-Detect	Lancaster	V	F, result changed from 0.00097	1482106
5ASV_DG-618	SVL-618-SA5A-SV-5.0-6.0	--	7500238	6/12/2014 11:01	Soil Vapor	Primary Sample	Primary Result	TO-15	Methylene chloride	75092	0.0035	U	Non-Detect	Lancaster	V	F, result changed from 0.00074	1482106
5ASV_DG-618	SVL-618-SA5A-SV-5.0-6.0	--	7500238	6/12/2014 11:01	Soil Vapor	Primary Sample	Primary Result	TO-15	m-Xylene & p-Xylene	179601231	0.0043	U	Non-Detect	Lancaster	V	F, result changed from 0.0022	1482106
5ASV_DG-618	SVL-618-SA5A-SV-5.0-6.0	--	7500238	6/12/2014 11:01	Soil Vapor	Primary Sample	Primary Result	TO-15	o-Xylene	95476	0.0043	U	Non-Detect	Lancaster	V	F, result changed from 0.0012	1482106
5ASV_DG-618	SVL-618-SA5A-SV-5.0-6.0	--	7500238	6/12/2014 11:01	Soil Vapor	Primary Sample	Primary Result	TO-15	Toluene	108883	0.0038	U	Non-Detect	Lancaster	V	F, result changed from 0.0015	1482106
5ASV_DG-618	SVL-618-SA5A-SV-5.0-6.0	--	7500238	6/12/2014 11:01	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0014	1482106
5ASV_DG-619	SVL-619-SA5A-SV-4.5-5.5	--	7500239	6/12/2014 10:33	Soil Vapor	Primary Sample	Primary Result	TO-15	Carbon Tetrachloride	56235	0.0063	UJ	Non-Detect Estimated Value	Lancaster	V	C	1482106
5ASV_DG-619	SVL-619-SA5A-SV-4.5-5.5	--	7500239	6/12/2014 10:33	Soil Vapor	Primary Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0049	U	Non-Detect	Lancaster	V	F, result changed from 0.0022	1482106
5ASV_DG-619	SVL-619-SA5A-SV-4.5-5.5	--	7500239	6/12/2014 10:33	Soil Vapor	Primary Sample	Primary Result	TO-15	Ethylbenzene	100414	0.0043	U	Non-Detect	Lancaster	V	F, result changed from 0.002	1482106
5ASV_DG-619	SVL-619-SA5A-SV-4.5-5.5	--	7500239	6/12/2014 10:33	Soil Vapor	Primary Sample	Primary Result	TO-15	m-Xylene & p-Xylene	179601231	0.0047	U	Non-Detect	Lancaster	V	F, RL changed from 0.0043	1482106
5ASV_DG-619	SVL-619-SA5A-SV-4.5-5.5	--	7500239	6/12/2014 10:33	Soil Vapor	Primary Sample	Primary Result	TO-15	o-Xylene	95476	0.0043	U	Non-Detect	Lancaster	V	F, result changed from 0.0028	1482106
5ASV_DG-619	SVL-619-SA5A-SV-4.5-5.5	--	7500239	6/12/2014 10:33	Soil Vapor	Primary Sample	Primary Result	TO-15	Toluene	108883	0.0038	U	Non-Detect	Lancaster	V	F, result changed from 0.0021	1482106
5ASV_DG-619	SVL-619-SA5A-SV-4.5-5.5	--	7500239	6/12/2014 10:33	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0012	1482106
5ASV_DG-622	SVL-622-SA5A-SV-6.0-7.0	--	7500240	6/12/2014 11:25	Soil Vapor	Primary Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0049	U	Non-Detect	Lancaster	V	F, result changed from 0.0029	1482106
5ASV_DG-622	SVL-622-SA5A-SV-6.0-7.0	--	7500240	6/12/2014 11:25	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0017	1482106
5ASV_DG-626	SVL-626-SA5A-SV-5.5-6.5	--	3F41201-02	6/12/2014 7:48	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41201
5ASV_DG-626	SVL-626-SA5A-SV-5.5-6.5	--	3F41201-02	6/12/2014 7:48	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41201
5ASV_DG-626	SVL-626-SA5A-SV-5.5-6.5	--	3F41201-02	6/12/2014 7:48	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41201
5ASV_DG-626	SVL-926-SA5A-SV-5.5-6.5	SVL-626-SA5A-SV-5.5-6.5	3F41201-03	6/12/2014 7:48	Soil Vapor	Field Duplicate	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41201
5ASV_DG-626	SVL-926-SA5A-SV-5.5-6.5	SVL-626-SA5A-SV-5.5-6.5	3F41201-03	6/12/2014 7:48	Soil Vapor	Field Duplicate	Primary Result	8260B	Dichlorodifluoromethane	75718	0.011	J	Estimated Value	EST	V	C	3F41201
5ASV_DG-626	SVL-926-SA5A-SV-5.5-6.5	SVL-626-SA5A-SV-5.5-6.5	3F41201-03	6/12/2014 7:48	Soil Vapor	Field Duplicate	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41201
5ASV_DG-629	SVL-629-SA5A-SV-7.0-8.0	--	7500241	6/12/2014 12:01	Soil Vapor	Primary Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0049	U	Non-Detect	Lancaster	V	F, result changed from 0.0029	1482106
5ASV_DG-629	SVL-629-SA5A-SV-7.0-8.0	--	7500241	6/12/2014 12:01	Soil Vapor	Primary Sample	Primary Result	TO-15	Ethylbenzene	100414	0.0043	U	Non-Detect	Lancaster	V	F, result changed from 0.0021	1482106
5ASV_DG-629	SVL-629-SA5A-SV-7.0-8.0	--	7500241	6/12/2014 12:01	Soil Vapor	Primary Sample	Primary Result	TO-15	Methylene chloride	75092	0.0035	U	Non-Detect	Lancaster	V	F, result changed from 0.00076	1482106
5ASV_DG-629	SVL-629-SA5A-SV-7.0-8.0	--	7500241	6/12/2014 12:01	Soil Vapor	Primary Sample	Primary Result	TO-15	m-Xylene & p-Xylene	179601231	0.0059	U	Non-Detect	Lancaster	V	F, RL changed from 0.0043	1482106
5ASV_DG-629	SVL-629-SA5A-SV-7.0-8.0	--	7500241	6/12/2014 12:01	Soil Vapor	Primary Sample	Primary Result	TO-15	o-Xylene	95476	0.0043	U	Non-Detect	Lancaster	V	F, result changed from 0.0034	1482106
5ASV_DG-629	SVL-629-SA5A-SV-7.0-8.0	--	7500241	6/12/2014 12:01	Soil Vapor	Primary Sample	Primary Result	TO-15	Toluene	108883	0.0038	U	Non-Detect	Lancaster	V	F, result changed from 0.0029	1482106
5ASV_DG-629	SVL-629-SA5A-SV-7.0-8.0	--	7500241	6/12/2014 12:01	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0015	1482106
5BSV_DG-503	SVL-503-SA5B-SV-7.0-8.0	--	7476664	5/21/2014 15:50	Soil Vapor	Primary Sample	Primary Result	TO-15	Toluene	108883	0.28	J	Estimated Value	Lancaster	V	*III	1476964
5BSV_DG-512	SVL-512-SA5B-SV-6.75-7.75	--	7476665	5/21/2014 11:11	Soil Vapor	Primary Sample	Primary Result	TO-15	Ethylbenzene	100414	0.0043	U	Non-Detect	Lancaster	V	F, result changed from 0.0041	1476964
5BSV_DG-512	SVL-512-SA5B-SV-6.75-7.75	--	7476665	5/21/2014 11:11	Soil Vapor	Primary Sample	Primary Result	TO-15	m-Xylene & p-Xylene	179601231	0.012	U	Non-Detect	Lancaster	V	F, RL changed from 0.0043	1476964
5BSV_DG-512	SVL-512-SA5B-SV-6.75-7.75	--	7476665	5/21/2014 11:11	Soil Vapor	Primary Sample	Primary Result	TO-15	o-Xylene	95476	0.008	U	Non-Detect	Lancaster	V	F, RL changed from 0.0043	1476964
5BSV_DG-516	SVL-516-SA5B-SV-12.5-13.5	--	7476666	5/21/2014 12:47	Soil Vapor	Primary Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0049	U	Non-Detect	Lancaster	V	F, result changed from 0.0021	1476964
5BSV_DG-516	SVL-516-SA5B-SV-6.0-7.0	--	7476667	5/21/2014 12:23	Soil Vapor	Primary Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0049	U	Non-Detect	Lancaster	V	F, result changed from 0.0019	1476964
5BSV_DG-516	SVL-516-SA5B-SV-6.0-7.0	--	7476667	5/21/2014 12:23	Soil Vapor	Primary Sample	Primary Result	TO-15	Ethylbenzene	100414	0.0043	U	Non-Detect	Lancaster	V	F, result changed from 0.00089	1476964
5BSV_DG-516	SVL-516-SA5B-SV-6.0-7.0	--	7476667	5/21/2014 12:23	Soil Vapor	Primary Sample	Primary Result	TO-15	m-Xylene & p-Xylene	179601231	0.0067	U	Non-Detect	Lancaster	V	F, RL changed from 0.0043	1476964
5BSV_DG-516	SVL-516-SA5B-SV-6.0-7.0	--	7476667	5/21/2014 12:23	Soil Vapor	Primary Sample	Primary Result	TO-15	o-Xylene	95476	0.0043	U	Non-Detect	Lancaster	V	F, result changed from 0.004	1476964
5BSV_DG-516	SVL-916-SA5B-SV-12.5-13.5	SVL-516-SA5B-SV-12.5-13.5	14051846-1	5/21/2014 12:55	Soil Vapor	Split Sample	Primary Result	TO-15	Ethylbenzene	100414	0.0038	U	Non-Detect	Calscience	V	F, RL changed from 0.0024	14-05-1846
5BSV_DG-516	SVL-916-SA5B-SV-12.5-13.5	SVL-516-SA5B-SV-12.5-13.5	14051846-1	5/21/2014 12:55	Soil Vapor	Split Sample	Primary Result	TO-15	Methylene chloride	75092	0.019	U	Non-Detect	Calscience	V	B, result changed from 0.002	14-05-1846
5BSV_DG-516	SVL-916-SA5B-SV-12.5-13.5	SVL-516-SA5B-SV-12.5-13.5	14051846-1	5/21/2014 12:55	Soil Vapor	Split Sample	Primary Result	TO-15	o-Xylene	95476	0.0076	U	Non-Detect	Calscience	V	F, RL changed from 0.0024	14-05-1846
5BSV_DG-525	SVL-525-SA5B-SV-13.0-14.0	--	3F41301-04	6/13/2014 8:59	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41301
5BSV_DG-525	SVL-525-SA5B-SV-13.0-14.0	--	3F41301-04	6/13/2014 8:59	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41301
5BSV_DG-525	SVL-525-SA5B-SV-13.0-14.0	--	3F41301-04	6/13/2014 8:59	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41301
5BSV_DG-525	SVL-525-SA5B-SV-8.0-9.0	--	3F41301-02	6/13/2014 8:35	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41301
5BSV_DG-525	SVL-525-SA5B-SV-8.0-9.0	--	3F41301-02	6/13/2014 8:35	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.014	J	Estimated Value	EST	V	C, *III	3F41301
5BSV_DG-525	SVL-525-SA5B-SV-8.0-9.0	--	3F41301-02	6/13/2014 8:35	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41301

TABLE 4-1
PHASE 3 SOIL VAPOR
SUMMARY OF QUALIFIED DATA
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA
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Object Name	Sample Name	Parent Sample Name	Lab Sample Name	Collection Date	Matrix Type	Sample Type	Result Type	Analysis Method	Analyte	CAS Number	Result Value (µg/L)	Validator Qualifier Code	Validator Qualifier Description	Lab Name	Validation Level	Validation Notes	Validation Report Identifier
5BSV_DG-525	SVL-825-SA5B-SV-8.0-9.0	SVL-525-SA5B-SV-8.0-9.0	3F41301-03	6/13/2014 8:35	Soil Vapor	Field Duplicate	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41301
5BSV_DG-525	SVL-825-SA5B-SV-8.0-9.0	SVL-525-SA5B-SV-8.0-9.0	3F41301-03	6/13/2014 8:35	Soil Vapor	Field Duplicate	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41301
5BSV_DG-525	SVL-825-SA5B-SV-8.0-9.0	SVL-525-SA5B-SV-8.0-9.0	3F41301-03	6/13/2014 8:35	Soil Vapor	Field Duplicate	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41301
5BSV_DG-525	SVL-925-SA5B-SV-13.0-14.0	SVL-525-SA5B-SV-13.0-14.0	14061132-2	6/13/2014 9:05	Soil Vapor	Split Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0074	U	Non-Detect	Calscience	V	F, RL changed from 0.0027	14-06-1132
5BSV_DG-525	SVL-925-SA5B-SV-13.0-14.0	SVL-525-SA5B-SV-13.0-14.0	14061132-2	6/13/2014 9:05	Soil Vapor	Split Sample	Primary Result	TO-15	Methylene chloride	75092	0.019	U	Non-Detect	Calscience	V	B, result changed from 0.0022	14-06-1132
5BSV_DG-525	SVL-925-SA5B-SV-13.0-14.0	SVL-525-SA5B-SV-13.0-14.0	14061132-2	6/13/2014 9:05	Soil Vapor	Split Sample	Primary Result	TO-15	m-Xylene & p-Xylene	179601231	0.0094	U	Non-Detect	Calscience	V	F, result changed from 0.0032	14-06-1132
5BSV_DG-525	SVL-925-SA5B-SV-13.0-14.0	SVL-525-SA5B-SV-13.0-14.0	14061132-2	6/13/2014 9:05	Soil Vapor	Split Sample	Primary Result	TO-15	Toluene	108883	0.002	U	Non-Detect	Calscience	V	F, result changed from 0.0018	14-06-1132
5BSV_DG-526	SVL-526-SA5B-SV-12.5-13.5	--	7476668	5/21/2014 9:57	Soil Vapor	Primary Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.012	U	Non-Detect	Lancaster	V	F, RL changed from 0.0049	1476964
5BSV_DG-526	SVL-526-SA5B-SV-5.0-6.0	--	7476669	5/21/2014 9:15	Soil Vapor	Primary Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0049	U	Non-Detect	Lancaster	V	F, result changed from 0.0035	1476964
5BSV_DG-530	SVL-530-SA5B-SV-6.75-7.75	--	7476670	5/21/2014 14:31	Soil Vapor	Primary Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0049	U	Non-Detect	Lancaster	V	F, result changed from 0.0025	1476964
5BSV_DG-531	SVL-531-SA5B-SV-10.0-11.0	--	3F40401-11	6/4/2014 12:53	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40401
5BSV_DG-531	SVL-531-SA5B-SV-10.0-11.0	--	3F40401-11	6/4/2014 12:53	Soil Vapor	Primary Sample	Primary Result	8260B	Chloroform	67663	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40401
5BSV_DG-531	SVL-531-SA5B-SV-10.0-11.0	--	3F40401-11	6/4/2014 12:53	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3F40401
5BSV_DG-531	SVL-531-SA5B-SV-16.75-17.75	--	3F40401-12	6/4/2014 13:20	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.2	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40401
5BSV_DG-531	SVL-531-SA5B-SV-16.75-17.75	--	3F40401-12	6/4/2014 13:20	Soil Vapor	Primary Sample	Primary Result	8260B	Chloroform	67663	0.2	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40401
5BSV_DG-531	SVL-531-SA5B-SV-16.75-17.75	--	3F40401-12	6/4/2014 13:20	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.2	UJ	Non-Detect Estimated Value	Lancaster	V	C	3F40401
5BSV_DG-531	SVL-531-SA5B-SV-5.0-6.0	--	3F40401-10	6/4/2014 11:40	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40401
5BSV_DG-531	SVL-531-SA5B-SV-5.0-6.0	--	3F40401-10	6/4/2014 11:40	Soil Vapor	Primary Sample	Primary Result	8260B	Chloroform	67663	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40401
5BSV_DG-531	SVL-531-SA5B-SV-5.0-6.0	--	3F40401-10	6/4/2014 11:40	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3F40401
5BSV_DG-552	SVL-552-SA5B-SV-5.3-6.3	--	3F40501-10	6/5/2014 11:53	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40501
5BSV_DG-552	SVL-552-SA5B-SV-5.3-6.3	--	3F40501-10	6/5/2014 11:53	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3F40501
5BSV_DG-552	SVL-952-SA5B-SV-5.3-6.3	SVL-552-SA5B-SV-5.3-6.3	14060556-4	6/5/2014 12:00	Soil Vapor	Split Sample	Primary Result	TO-15	Methylene chloride	75092	0.017	U	Non-Detect	Calscience	V	B, result changed from 0.0017	14-06-0556
5BSV_DG-555	SVL-555-SA5B-SV-7.2-8.2	--	3F40501-11	6/5/2014 13:02	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40501
5BSV_DG-555	SVL-555-SA5B-SV-7.2-8.2	--	3F40501-11	6/5/2014 13:02	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3F40501
5BSV_DG-557	SVL-557-SA5B-SV-4.5-5.5	--	3F41101-02	6/11/2014 8:08	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41101
5BSV_DG-557	SVL-557-SA5B-SV-4.5-5.5	--	3F41101-02	6/11/2014 8:08	Soil Vapor	Primary Sample	Primary Result	8260B	Chloroethane	75003	0.048	J	Estimated Value	EST	V	*III	3F41101
5BSV_DG-557	SVL-557-SA5B-SV-4.5-5.5	--	3F41101-02	6/11/2014 8:08	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41101
5BSV_DG-557	SVL-557-SA5B-SV-4.5-5.5	--	3F41101-02	6/11/2014 8:08	Soil Vapor	Primary Sample	Primary Result	8260B	Trichlorofluoromethane	75694	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41101
5BSV_DG-557	SVL-857-SA5B-SV-4.5-5.5	SVL-557-SA5B-SV-4.5-5.5	3F41101-03	6/11/2014 8:08	Soil Vapor	Field Duplicate	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41101
5BSV_DG-557	SVL-857-SA5B-SV-4.5-5.5	SVL-557-SA5B-SV-4.5-5.5	3F41101-03	6/11/2014 8:08	Soil Vapor	Field Duplicate	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41101
5BSV_DG-557	SVL-857-SA5B-SV-4.5-5.5	SVL-557-SA5B-SV-4.5-5.5	3F41101-03	6/11/2014 8:08	Soil Vapor	Field Duplicate	Primary Result	8260B	Trichlorofluoromethane	75694	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41101
5BSV_DG-560	SVL-560-SA5B-SV-7.0-8.0	--	7476675	5/22/2014 14:30	Soil Vapor	Primary Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0049	U	Non-Detect	Lancaster	V	F, result changed from 0.002	1476965
5BSV_DG-560	SVL-560-SA5B-SV-7.0-8.0	--	7476675	5/22/2014 14:30	Soil Vapor	Primary Sample	Primary Result	TO-15	o-Xylene	95476	0.019	U	Non-Detect	Lancaster	V	F, RL changed from 0.0043	1476965
5BSV_DG-560	SVL-560-SA5B-SV-7.0-8.0	--	7476675	5/22/2014 14:30	Soil Vapor	Primary Sample	Primary Result	TO-15	Toluene	108883	0.0047	U	Non-Detect	Lancaster	V	F, RL changed from 0.0038	1476965
5BSV_DG-560	SVL-560-SA5B-SV-7.0-8.0	--	7476675	5/22/2014 14:30	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0023	1476965
5BSV_DG-560	SVL-960-SA5B-SV-7.0-8.0	SVL-560-SA5B-SV-7.0-8.0	14051846-2	5/22/2014 14:38	Soil Vapor	Split Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.004	U	Non-Detect	Calscience	V	F, RL changed from 0.0025	14-05-1846
5BSV_DG-560	SVL-960-SA5B-SV-7.0-8.0	SVL-560-SA5B-SV-7.0-8.0	14051846-2	5/22/2014 14:38	Soil Vapor	Split Sample	Primary Result	TO-15	Ethylbenzene	100414	0.0059	U	Non-Detect	Calscience	V	F, RL changed from 0.0022	14-05-1846
5BSV_DG-560	SVL-960-SA5B-SV-7.0-8.0	SVL-560-SA5B-SV-7.0-8.0	14051846-2	5/22/2014 14:38	Soil Vapor	Split Sample	Primary Result	TO-15	Methylene chloride	75092	0.018	U	Non-Detect	Calscience	V	B, result changed from 0.0024	14-05-1846
5BSV_DG-560	SVL-960-SA5B-SV-7.0-8.0	SVL-560-SA5B-SV-7.0-8.0	14051846-2	5/22/2014 14:38	Soil Vapor	Split Sample	Primary Result	TO-15	m-Xylene & p-Xylene	179601231	0.02	U	Non-Detect	Calscience	V	F, RL changed from 0.0088	14-05-1846
5BSV_DG-560	SVL-960-SA5B-SV-7.0-8.0	SVL-560-SA5B-SV-7.0-8.0	14051846-2	5/22/2014 14:38	Soil Vapor	Split Sample	Primary Result	TO-15	o-Xylene	95476	0.011	U	Non-Detect	Calscience	V	F, RL changed from 0.0022	14-05-1846
5BSV_DG-560	SVL-960-SA5B-SV-7.0-8.0	SVL-560-SA5B-SV-7.0-8.0	14051846-2	5/22/2014 14:38	Soil Vapor	Split Sample	Primary Result	TO-15	Toluene	108883	0.006	U	Non-Detect	Calscience	V	F, RL changed from 0.0019	14-05-1846
5BSV_DG-560	SVL-960-SA5B-SV-7.0-8.0	SVL-560-SA5B-SV-7.0-8.0	14051846-2	5/22/2014 14:38	Soil Vapor	Split Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0057	U	Non-Detect	Calscience	V	F, result changed from 0.0046	14-05-1846
5BSV_DG-561	SVL-561-SA5B-SV-9.0-10.0	--	3F41301-05	6/13/2014 9:35	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41301
5BSV_DG-561	SVL-561-SA5B-SV-9.0-10.0	--	3F41301-05	6/13/2014 9:35	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41301
5BSV_DG-561	SVL-561-SA5B-SV-9.0-10.0	--	3F41301-05	6/13/2014 9:35	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41301
5BSV_DG-562	SVL-562-SA5B-SV-5.0-6.0	--	7476676	5/22/2014 12:09	Soil Vapor	Primary Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0049	U	Non-Detect	Lancaster	V	F, result changed from 0.0021	1476965
5BSV_DG-562	SVL-562-SA5B-SV-5.0-6.0	--	7476676	5/22/2014 12:09	Soil Vapor	Primary Sample	Primary Result	TO-15	Toluene	108883	0.022	U	Non-Detect	Lancaster	V	F, RL changed from 0.0038	1476965
5BSV_DG-562	SVL-562-SA5B-SV-5.0-6.0	--	7476676	5/22/2014 12:09	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0015	1476965
5BSV_DG-562	SVL-562-SA5B-SV-8.0-9.0	--	3F41301-06	6/13/2014 10:05	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41301
5BSV_DG-562	SVL-562-SA5B-SV-8.0-9.0	--	3F41301-06	6/13/2014 10:05	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41301
5BSV_DG-562	SVL-562-SA5B-SV-8.0-9.0	--	3F41301-06	6/13/2014 10:05	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.0064	J	Estimated Value	EST	V	C	3F41301
5BSV_DG-567	SVL-567-SA5B-SV-4.5-5.5	--	3F41101-04	6/11/2014 8:56	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41101
5BSV_DG-567	SVL-567-SA5B-SV-4.5-5.5	--	3F41101-04	6/11/2014 8:56	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41101
5BSV_DG-567	SVL-567-SA5B-SV-4.5-5.5	--	3F41101-04	6/11/2014 8:56	Soil Vapor	Primary Sample	Primary Result	8260B	Trichlorofluoromethane	75694	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41101
5BSV_DG-567	SVL-967-SA5B-SV-4.5-5.5	SVL-567-SA5B-SV-4.5-5.5	280-56666-2	6/11/2014 9:01	Soil Vapor	Split Sample	Primary Result	TO-15	1,1-Dichloroethene	75354	0.0159	UJ	Non-Detect Estimated Value	TestAmerica - Denver	V	C	280-56666-1
5BSV_DG-577	SVL-577-SA5B-SV-5.2-6.2	--	3F41101-07	6/11/2014 10:56	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41101
5BSV_DG-577	SVL-577-SA5B-SV-5.2-6.2	--	3F41101-07	6/11/2014 10:56	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41101
5BSV_DG-577	SVL-577-SA5B-SV-5.2-6.2	--	3F41101-07	6/11/2014 10:56	Soil Vapor	Primary Sample	Primary Result	8260B	Trichlorofluoromethane	75694	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41101
5BSV_DG-578	SVL-578-SA5B-SV-8.0-9.0	--	3F40601-11	6/6/2014 12:30	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40601
5BSV_DG-578	SVL-578-SA5B-SV-8.0-9.0	--	3F40601-11	6/6/2014 12:30	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2-Trichloroethane	79005	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40601
5BSV_DG-578	SVL-578-SA5B-SV-8.0-9.0	--	3F40601-11	6/6/2014 12:30	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C, F, result changed from 0.016	3F40601
5BSV_DG-579	SVL-579-SA5B-SV-6.5-7.5	--	3F41101-05	6/11/2014 9:36	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41101
5BSV_DG-579	SVL-579-SA5B-SV-6.5-7.5	--	3F41101-05	6/11/2014 9:36	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41101
5BSV_DG-579	SVL-579-SA5B-SV-6.5-7.5	--	3F41101-05	6/11/2014 9:36	Soil Vapor	Primary Sample	Primary Result	8260B	Trichlorofluoromethane	75694	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41101
5BSV_DG-580	SVL-580-SA5B-SV-7.0-8.0	--	3F41801-02	6/18/2014 8:09	Soil Vapor	Primary Sample	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	L	3F41801
5BSV_DG-580	SVL-580-SA5B-SV-7.0-8.0	--	3F41801-02	6/18/2014 8:09	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41801
5BSV_DG-580	SVL-880-SA5B-SV-7.0-8.0	SVL-580-SA5B-SV-7.0-8.0	3F41801-03	6/18/2014 8:09	Soil Vapor	Field Duplicate	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	L	3F41801
5BSV_DG-580	SVL-880-SA5B-SV-7.0-8.0	SVL-580-SA5B-SV-7.0-8.0	3F41801-03	6/18/2014 8:09	Soil Vapor	Field Duplicate	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41801
5BSV_DG-584	SVL-584-SA5B-SV-10.0-11.0	--	3F40901-08	6/9/2014 11:31	Soil Vapor	Primary Sample	Primary Result	8260B	Chloroform	67663	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40901
5BSV_DG-584	SVL-584-SA5B-SV-10.0-11.0	--	3F40901-08	6/9/2014 11:31	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40901
5BSV_DG-584	SVL-584-SA5B-SV-10.0-11.0	--	3F40901-08	6/9/2014 11:31	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40901
5BSV_DG-584	SVL-584-SA5B-SV-15.0-16.0	--	3F40901-09	6/9/2014 12:25	Soil Vapor	Primary Sample	Primary Result	8260B	Chloroform	67663	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40901
5BSV_DG-584	SVL-584-SA5B-SV-15.0-16.0	--	3F40901-09	6/9/2014 12:25	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40901
5BSV_DG-584	SVL-584-SA5B-SV-15.0-16.0	--	3F40901-09	6/9/2014 12:25	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40901
5BSV_DG-584	SVL-584-SA5B-SV-20.0-21.0	--	3F40901-10	6/9/2014 12:49	Soil Vapor	Primary Sample	Primary Result	8260B	Chloroform	67663	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40901
5BSV_DG-584	SVL-584-SA5B-SV-20.0-21.0	--	3F40901-10	6/9/2014 12:49	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40901
5BSV_DG-584	SVL-584-SA5B-SV-20.0-21.0	--	3F40901-10	6/9/2014 12:49	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40901
5BSV_DG-584	SVL-584-SA5B-SV-5.0-6.0	--	3F40901-07	6/9/2014 11:03	Soil Vapor	Primary Sample	Primary Result	8260B	Chloroform	67663	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40901
5BSV_DG-584	SVL-584-SA5B-SV-5.0-6.0	--	3F40901-07	6/9/2014 11:03	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40901
5BSV_DG-584	SVL-584-SA5B-SV-5.0-6.0	--	3F40901-07	6/9/2014 11:03	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40901
5BSV_DG-590	SVL-590-SA5B-SV-6.0-7.0	--	3F40601-06	6/6/2014 9:27	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40601

TABLE 4-1
PHASE 3 SOIL VAPOR
SUMMARY OF QUALIFIED DATA
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Object Name	Sample Name	Parent Sample Name	Lab Sample Name	Collection Date	Matrix Type	Sample Type	Result Type	Analysis Method	Analyte	CAS Number	Result Value (µg/L)	Validator Qualifier Code	Validator Qualifier Description	Lab Name	Validation Level	Validation Notes	Validation Report Identifier
5BSV_DG-590	SVL-590-SA5B-SV-6.0-7.0	--	3F40601-06	6/6/2014 9:27	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2-Trichloroethane	79005	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40601
5BSV_DG-590	SVL-590-SA5B-SV-6.0-7.0	--	3F40601-06	6/6/2014 9:27	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40601
5BSV_DG-593	SVL-593-SA5B-SV-5.0-6.0	--	3F41101-06	6/11/2014 10:21	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41101
5BSV_DG-593	SVL-593-SA5B-SV-5.0-6.0	--	3F41101-06	6/11/2014 10:21	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41101
5BSV_DG-593	SVL-593-SA5B-SV-5.0-6.0	--	3F41101-06	6/11/2014 10:21	Soil Vapor	Primary Sample	Primary Result	8260B	Trichlorofluoromethane	75694	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41101
5BSV_DG-594	SVL-594-SA5B-SV-5.0-6.0	--	3F40601-07	6/6/2014 10:18	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40601
5BSV_DG-594	SVL-594-SA5B-SV-5.0-6.0	--	3F40601-07	6/6/2014 10:18	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2-Trichloroethane	79005	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40601
5BSV_DG-594	SVL-594-SA5B-SV-5.0-6.0	--	3F40601-07	6/6/2014 10:18	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40601
5BSV_DG-599	SVL-599-SA5B-SV-8.0-9.0	--	3F41801-04	6/18/2014 9:10	Soil Vapor	Primary Sample	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	L	3F41801
5BSV_DG-599	SVL-599-SA5B-SV-8.0-9.0	--	3F41801-04	6/18/2014 9:10	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41801
5BSV_DG-599	SVL-999-SA5B-SV-8.0-9.0	SVL-599-SA5B-SV-8.0-9.0	280-56908-2	6/18/2014 9:18	Soil Vapor	Split Sample	Primary Result	TO-15	1,1-Dichloroethene	75354	0.0159	UJ	Non-Detect Estimated Value	TestAmerica - Denver	V	C	280-56908-1
5BSV_DG-606	SVL-606-SA5B-SV-5.5-6.5	--	3F40601-08	6/6/2014 10:45	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40601
5BSV_DG-606	SVL-606-SA5B-SV-5.5-6.5	--	3F40601-08	6/6/2014 10:45	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2-Trichloroethane	79005	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40601
5BSV_DG-606	SVL-606-SA5B-SV-5.5-6.5	--	3F40601-08	6/6/2014 10:45	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C, F, result changed from 0.005	3F40601
5BSV_DG-612	SVL-612-SA5B-SV-4.5-5.5	--	3F40601-09	6/6/2014 11:19	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40601
5BSV_DG-612	SVL-612-SA5B-SV-4.5-5.5	--	3F40601-09	6/6/2014 11:19	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2-Trichloroethane	79005	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40601
5BSV_DG-612	SVL-612-SA5B-SV-4.5-5.5	--	3F40601-09	6/6/2014 11:19	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40601
5CSV_DG-505	SVL-505-SA5C-SV-10.0-11.0	--	3F40201-06	6/2/2014 11:24	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2-Trichloro-1,2,2-trifluoroethane	76131	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	L	3F40201
5CSV_DG-505	SVL-505-SA5C-SV-10.0-11.0	--	3F40201-06	6/2/2014 11:24	Soil Vapor	Primary Sample	Primary Result	8260B	1,1-Dichloroethane	75343	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	L	3F40201
5CSV_DG-505	SVL-505-SA5C-SV-10.0-11.0	--	3F40201-06	6/2/2014 11:24	Soil Vapor	Primary Sample	Primary Result	8260B	cis-1,2-Dichloroethene	156592	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3F40201
5CSV_DG-505	SVL-505-SA5C-SV-10.0-11.0	--	3F40201-06	6/2/2014 11:24	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.017	J	Estimated Value	Lancaster	V	L	3F40201
5CSV_DG-505	SVL-505-SA5C-SV-10.0-11.0	--	3F40201-06	6/2/2014 11:24	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3F40201
5CSV_DG-505	SVL-505-SA5C-SV-15.0-16.0	--	3F40201-08	6/2/2014 11:59	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2-Trichloro-1,2,2-trifluoroethane	76131	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	L	3F40201
5CSV_DG-505	SVL-505-SA5C-SV-15.0-16.0	--	3F40201-08	6/2/2014 11:59	Soil Vapor	Primary Sample	Primary Result	8260B	1,1-Dichloroethane	75343	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	L	3F40201
5CSV_DG-505	SVL-505-SA5C-SV-15.0-16.0	--	3F40201-08	6/2/2014 11:59	Soil Vapor	Primary Sample	Primary Result	8260B	cis-1,2-Dichloroethene	156592	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3F40201
5CSV_DG-505	SVL-505-SA5C-SV-15.0-16.0	--	3F40201-08	6/2/2014 11:59	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.0054	J	Estimated Value	Lancaster	V	C, L	3F40201
5CSV_DG-505	SVL-505-SA5C-SV-5.0-6.0	--	3F40201-05	6/2/2014 10:52	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2-Trichloro-1,2,2-trifluoroethane	76131	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	L	3F40201
5CSV_DG-505	SVL-505-SA5C-SV-5.0-6.0	--	3F40201-05	6/2/2014 10:52	Soil Vapor	Primary Sample	Primary Result	8260B	1,1-Dichloroethane	75343	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	L	3F40201
5CSV_DG-505	SVL-505-SA5C-SV-5.0-6.0	--	3F40201-05	6/2/2014 10:52	Soil Vapor	Primary Sample	Primary Result	8260B	cis-1,2-Dichloroethene	156592	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3F40201
5CSV_DG-505	SVL-505-SA5C-SV-5.0-6.0	--	3F40201-05	6/2/2014 10:52	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.009	J	Estimated Value	Lancaster	V	C, L	3F40201
5CSV_DG-505	SVL-805-SA5C-SV-10.0-11.0	SVL-505-SA5C-SV-10.0-11.0	3F40201-07	6/2/2014 11:24	Soil Vapor	Field Duplicate	Primary Result	8260B	1,1,2-Trichloro-1,2,2-trifluoroethane	76131	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	L	3F40201
5CSV_DG-505	SVL-805-SA5C-SV-10.0-11.0	SVL-505-SA5C-SV-10.0-11.0	3F40201-07	6/2/2014 11:24	Soil Vapor	Field Duplicate	Primary Result	8260B	1,1-Dichloroethane	75343	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	L	3F40201
5CSV_DG-505	SVL-805-SA5C-SV-10.0-11.0	SVL-505-SA5C-SV-10.0-11.0	3F40201-07	6/2/2014 11:24	Soil Vapor	Field Duplicate	Primary Result	8260B	cis-1,2-Dichloroethene	156592	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3F40201
5CSV_DG-505	SVL-805-SA5C-SV-10.0-11.0	SVL-505-SA5C-SV-10.0-11.0	3F40201-07	6/2/2014 11:24	Soil Vapor	Field Duplicate	Primary Result	8260B	Toluene	108883	0.0076	J	Estimated Value	Lancaster	V	C, L	3F40201
5CSV_DG-505	SVL-905-SA5C-SV-15.0-16.0	SVL-505-SA5C-SV-15.0-16.0	14060556-1	6/2/2014 12:08	Soil Vapor	Split Sample	Primary Result	TO-15	Methylene chloride	75092	0.019	U	Non-Detect	Calscience	V	B, result changed from 0.002	14-06-0556
5CSV_DG-507	SVL-507-SA5C-SV-10.5-11.5	--	3F40301-06	6/3/2014 9:41	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-507	SVL-507-SA5C-SV-10.5-11.5	--	3F40301-06	6/3/2014 9:41	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-507	SVL-507-SA5C-SV-10.5-11.5	--	3F40301-06	6/3/2014 9:41	Soil Vapor	Primary Sample	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-507	SVL-507-SA5C-SV-10.5-11.5	--	3F40301-06	6/3/2014 9:41	Soil Vapor	Primary Sample	Primary Result	8260B	cis-1,2-Dichloroethene	156592	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40301
5CSV_DG-507	SVL-507-SA5C-SV-10.5-11.5	--	3F40301-06	6/3/2014 9:41	Soil Vapor	Primary Sample	Primary Result	8260B	Methylene chloride	75092	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-507	SVL-507-SA5C-SV-10.5-11.5	--	3F40301-06	6/3/2014 9:41	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40301
5CSV_DG-507	SVL-507-SA5C-SV-10.5-11.5	--	3F40301-06	6/3/2014 9:41	Soil Vapor	Primary Sample	Primary Result	8260B	trans-1,2-Dichloroethene	156605	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40301
5CSV_DG-507	SVL-507-SA5C-SV-10.5-11.5	--	3F40301-06	6/3/2014 9:41	Soil Vapor	Primary Sample	Primary Result	8260B	Trichlorofluoromethane	75694	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-507	SVL-507-SA5C-SV-5.0-6.0	--	3F40301-05	6/3/2014 9:15	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-507	SVL-507-SA5C-SV-5.0-6.0	--	3F40301-05	6/3/2014 9:15	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-507	SVL-507-SA5C-SV-5.0-6.0	--	3F40301-05	6/3/2014 9:15	Soil Vapor	Primary Sample	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-507	SVL-507-SA5C-SV-5.0-6.0	--	3F40301-05	6/3/2014 9:15	Soil Vapor	Primary Sample	Primary Result	8260B	cis-1,2-Dichloroethene	156592	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40301
5CSV_DG-507	SVL-507-SA5C-SV-5.0-6.0	--	3F40301-05	6/3/2014 9:15	Soil Vapor	Primary Sample	Primary Result	8260B	Methylene chloride	75092	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-507	SVL-507-SA5C-SV-5.0-6.0	--	3F40301-05	6/3/2014 9:15	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.0052	J	Estimated Value	EST	V	C	3F40301
5CSV_DG-507	SVL-507-SA5C-SV-5.0-6.0	--	3F40301-05	6/3/2014 9:15	Soil Vapor	Primary Sample	Primary Result	8260B	trans-1,2-Dichloroethene	156605	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40301
5CSV_DG-507	SVL-507-SA5C-SV-5.0-6.0	--	3F40301-05	6/3/2014 9:15	Soil Vapor	Primary Sample	Primary Result	8260B	Trichlorofluoromethane	75694	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-507	SVL-807-SA5C-SV-5.0-6.0	SVL-507-SA5C-SV-5.0-6.0	3F40301-04	6/3/2014 9:15	Soil Vapor	Field Duplicate	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-507	SVL-807-SA5C-SV-5.0-6.0	SVL-507-SA5C-SV-5.0-6.0	3F40301-04	6/3/2014 9:15	Soil Vapor	Field Duplicate	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-507	SVL-807-SA5C-SV-5.0-6.0	SVL-507-SA5C-SV-5.0-6.0	3F40301-04	6/3/2014 9:15	Soil Vapor	Field Duplicate	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-507	SVL-807-SA5C-SV-5.0-6.0	SVL-507-SA5C-SV-5.0-6.0	3F40301-04	6/3/2014 9:15	Soil Vapor	Field Duplicate	Primary Result	8260B	cis-1,2-Dichloroethene	156592	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40301
5CSV_DG-507	SVL-807-SA5C-SV-5.0-6.0	SVL-507-SA5C-SV-5.0-6.0	3F40301-04	6/3/2014 9:15	Soil Vapor	Field Duplicate	Primary Result	8260B	Methylene chloride	75092	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-507	SVL-807-SA5C-SV-5.0-6.0	SVL-507-SA5C-SV-5.0-6.0	3F40301-04	6/3/2014 9:15	Soil Vapor	Field Duplicate	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40301
5CSV_DG-507	SVL-807-SA5C-SV-5.0-6.0	SVL-507-SA5C-SV-5.0-6.0	3F40301-04	6/3/2014 9:15	Soil Vapor	Field Duplicate	Primary Result	8260B	trans-1,2-Dichloroethene	156605	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40301
5CSV_DG-507	SVL-807-SA5C-SV-5.0-6.0	SVL-507-SA5C-SV-5.0-6.0	3F40301-04	6/3/2014 9:15	Soil Vapor	Field Duplicate	Primary Result	8260B	Trichlorofluoromethane	75694	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-508	SVL-508-SA5C-SV-8.25-9.25	--	3F40301-07	6/3/2014 10:14	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-508	SVL-508-SA5C-SV-8.25-9.25	--	3F40301-07	6/3/2014 10:14	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-508	SVL-508-SA5C-SV-8.25-9.25	--	3F40301-07	6/3/2014 10:14	Soil Vapor	Primary Sample	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-508	SVL-508-SA5C-SV-8.25-9.25	--	3F40301-07	6/3/2014 10:14	Soil Vapor	Primary Sample	Primary Result	8260B	cis-1,2-Dichloroethene	156592	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40301
5CSV_DG-508	SVL-508-SA5C-SV-8.25-9.25	--	3F40301-07	6/3/2014 10:14	Soil Vapor	Primary Sample	Primary Result	8260B	Methylene chloride	75092	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-508	SVL-508-SA5C-SV-8.25-9.25	--	3F40301-07	6/3/2014 10:14	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.011	J	Estimated Value	EST	V	C	3F40301
5CSV_DG-508	SVL-508-SA5C-SV-8.25-9.25	--	3F40301-07	6/3/2014 10:14	Soil Vapor	Primary Sample	Primary Result	8260B	trans-1,2-Dichloroethene	156605	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40301
5CSV_DG-508	SVL-508-SA5C-SV-8.25-9.25	--	3F40301-07	6/3/2014 10:14	Soil Vapor	Primary Sample	Primary Result	8260B	Trichlorofluoromethane	75694	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-511	SVL-511-SA5C-SV-13.0-14.0	--	3F41801-07	6/18/2014 11:53	Soil Vapor	Primary Sample	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	L	3F41801
5CSV_DG-511	SVL-511-SA5C-SV-13.0-14.0	--	3F41801-07	6/18/2014 11:53	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41801
5CSV_DG-511	SVL-511-SA5C-SV-7.0-8.0	--	3F41801-06	6/18/2014 11:08	Soil Vapor	Primary Sample	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	L	3F41801
5CSV_DG-511	SVL-511-SA5C-SV-7.0-8.0	--	3F41801-06	6/18/2014 11:08	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41801
5CSV_DG-513	SVL-513-SA5C-SV-5.0-6.0	--	3F41801-05	6/18/2014 10:20	Soil Vapor	Primary Sample	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	L	3F41801
5CSV_DG-513	SVL-513-SA5C-SV-5.0-6.0	--	3F41801-05	6/18/2014 10:20	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41801
5CSV_DG-515	SVL-515-SA5C-SV-12.5-13.5	--	3F41001-04	6/10/2014 9:10	Soil Vapor	Primary Sample	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	L	3F41001
5CSV_DG-515	SVL-515-SA5C-SV-12.5-13.5	--	3F41001-04	6/10/2014 9:10	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41001
5CSV_DG-515	SVL-515-SA5C-SV-5.0-6.0	--	3F41001-02	6/10/2014 8:28	Soil Vapor	Primary Sample	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	L	3F41001
5CSV_DG-515	SVL-515-SA5C-SV-5.0-6.0	--	3F41001-02	6/10/2014 8:28	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41001
5CSV_DG-515	SVL-815-SA5C-SV-5.0-6.0	SVL-515-SA5C-SV-5.0-6.0	3F41001-03	6/10/2014 8:28	Soil Vapor	Field Duplicate	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	L	3F41001
5CSV_DG-515	SVL-815-SA5C-SV-5.0-6.0	SVL-515-SA5C-SV-5.0-6.0	3F41001-03	6/10/2014 8:28	Soil Vapor	Field Duplicate	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41001
5CSV_DG-515	SVL-915-SA5C-SV-12.5-13.5	SVL-515-SA5C-SV-12.5-13.5	14061132-1	6/10/2014 9:16	Soil Vapor	Split Sample	Primary Result	TO-15	Methylene chloride	75092	0.018	U	Non-Detect	Calscience	V	B, result changed from 0.0016	14-06-1132
5CSV_DG-515	SVL-915-SA5C-SV-12.5-13.5	SVL-515-SA5C-SV-12.5-13.5	14061132-1	6/10/2014 9:16	Soil Vapor	Split Sample	Primary Result	TO-15	m-Xylene & p-Xylene	179601231	0.0091	U	Non-Detect	Calscience	V	F, result changed from 0.0022	14-06-1132

TABLE 4-1
PHASE 3 SOIL VAPOR
SUMMARY OF QUALIFIED DATA
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA
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Object Name	Sample Name	Parent Sample Name	Lab Sample Name	Collection Date	Matrix Type	Sample Type	Result Type	Analysis Method	Analyte	CAS Number	Result Value (µg/L)	Validator Qualifier Code	Validator Qualifier Description	Lab Name	Validation Level	Validation Notes	Validation Report Identifier
5CSV_DG-515	SVL-915-SA5C-SV-12.5-13.5	SVL-515-SA5C-SV-12.5-13.5	14061132-1	6/10/2014 9:16	Soil Vapor	Split Sample	Primary Result	TO-15	o-Xylene	95476	0.0023	U	Non-Detect	Calscience	V	F, result changed from 0.0012	14-06-1132
5CSV_DG-515	SVL-915-SA5C-SV-12.5-13.5	SVL-515-SA5C-SV-12.5-13.5	14061132-1	6/10/2014 9:16	Soil Vapor	Split Sample	Primary Result	TO-15	Toluene	108883	0.002	U	Non-Detect	Calscience	V	F, result changed from 0.0015	14-06-1132
5CSV_DG-515	SVL-915-SA5C-SV-12.5-13.5	SVL-515-SA5C-SV-12.5-13.5	14061132-1	6/10/2014 9:16	Soil Vapor	Split Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0059	U	Non-Detect	Calscience	V	F, result changed from 0.0019	14-06-1132
5CSV_DG-516	SVL-516-SA5C-SV-11.0-12.0	--	3F40501-09	6/5/2014 11:08	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40501
5CSV_DG-516	SVL-516-SA5C-SV-11.0-12.0	--	3F40501-09	6/5/2014 11:08	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3F40501
5CSV_DG-516	SVL-516-SA5C-SV-18.0-19.0	--	3F40601-10	6/6/2014 12:02	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40601
5CSV_DG-516	SVL-516-SA5C-SV-18.0-19.0	--	3F40601-10	6/6/2014 12:02	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2-Trichloroethane	79005	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40601
5CSV_DG-516	SVL-516-SA5C-SV-18.0-19.0	--	3F40601-10	6/6/2014 12:02	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C, F, result changed from 0.0046	3F40601
5CSV_DG-516	SVL-516-SA5C-SV-5.0-6.0	--	3F40501-08	6/5/2014 10:43	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40501
5CSV_DG-516	SVL-516-SA5C-SV-5.0-6.0	--	3F40501-08	6/5/2014 10:43	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3F40501
5CSV_DG-518	SVL-518-SA5C-SV-10.5-11.5	--	3F40501-05	6/5/2014 9:06	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40501
5CSV_DG-518	SVL-518-SA5C-SV-10.5-11.5	--	3F40501-05	6/5/2014 9:06	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.008	J	Estimated Value	Lancaster	V	C	3F40501
5CSV_DG-518	SVL-518-SA5C-SV-5.0-6.0	--	3F40501-04	6/5/2014 8:41	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40501
5CSV_DG-518	SVL-518-SA5C-SV-5.0-6.0	--	3F40501-04	6/5/2014 8:41	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.012	J	Estimated Value	Lancaster	V	C	3F40501
5CSV_DG-525	SVL-525-SA5C-SV-10.0-11.0	--	3F40601-02	6/6/2014 7:46	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40601
5CSV_DG-525	SVL-525-SA5C-SV-10.0-11.0	--	3F40601-02	6/6/2014 7:46	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2-Trichloroethane	79005	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40601
5CSV_DG-525	SVL-525-SA5C-SV-10.0-11.0	--	3F40601-02	6/6/2014 7:46	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.099	J	Estimated Value	EST	V	C	3F40601
5CSV_DG-525	SVL-525-SA5C-SV-15.0-16.0	--	3F40601-03	6/6/2014 8:22	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40601
5CSV_DG-525	SVL-525-SA5C-SV-15.0-16.0	--	3F40601-03	6/6/2014 8:22	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2-Trichloroethane	79005	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40601
5CSV_DG-525	SVL-525-SA5C-SV-15.0-16.0	--	3F40601-03	6/6/2014 8:22	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.026	UJ	Non-Detect Estimated Value	EST	V	C, F, RL changed from 0.02	3F40601
5CSV_DG-525	SVL-525-SA5C-SV-20.0-21.0	--	3F40601-04	6/6/2014 8:49	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40601
5CSV_DG-525	SVL-525-SA5C-SV-20.0-21.0	--	3F40601-04	6/6/2014 8:49	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2-Trichloroethane	79005	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40601
5CSV_DG-525	SVL-525-SA5C-SV-20.0-21.0	--	3F40601-04	6/6/2014 8:49	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40601
5CSV_DG-525	SVL-525-SA5C-SV-5.0-6.0	--	3F40501-12	6/5/2014 13:41	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40501
5CSV_DG-525	SVL-525-SA5C-SV-5.0-6.0	--	3F40501-12	6/5/2014 13:41	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.04	J	Estimated Value	Lancaster	V	C	3F40501
5CSV_DG-525	SVL-825-SA5C-SV-20.0-21.0	SVL-525-SA5C-SV-20.0-21.0	3F40601-05	6/6/2014 8:49	Soil Vapor	Field Duplicate	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40601
5CSV_DG-525	SVL-825-SA5C-SV-20.0-21.0	SVL-525-SA5C-SV-20.0-21.0	3F40601-05	6/6/2014 8:49	Soil Vapor	Field Duplicate	Primary Result	8260B	1,1,2-Trichloroethane	79005	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40601
5CSV_DG-525	SVL-825-SA5C-SV-20.0-21.0	SVL-525-SA5C-SV-20.0-21.0	3F40601-05	6/6/2014 8:49	Soil Vapor	Field Duplicate	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40601
5CSV_DG-528	SVL-528-SA5C-SV-5.5-6.5	--	3F40501-06	6/5/2014 10:02	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40501
5CSV_DG-528	SVL-528-SA5C-SV-5.5-6.5	--	3F40501-06	6/5/2014 10:02	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.005	J	Estimated Value	Lancaster	V	C	3F40501
5CSV_DG-528	SVL-828-SA5C-SV-5.5-6.5	SVL-528-SA5C-SV-5.5-6.5	3F40501-07	6/5/2014 10:02	Soil Vapor	Field Duplicate	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40501
5CSV_DG-528	SVL-828-SA5C-SV-5.5-6.5	SVL-528-SA5C-SV-5.5-6.5	3F40501-07	6/5/2014 10:02	Soil Vapor	Field Duplicate	Primary Result	8260B	Toluene	108883	0.005	J	Estimated Value	Lancaster	V	C	3F40501
5CSV_DG-530	SVL-530-SA5C-SV-6.5-7.5	--	3E42901-04	5/29/2014 8:42	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5CSV_DG-530	SVL-530-SA5C-SV-6.5-7.5	--	3E42901-04	5/29/2014 8:42	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5CSV_DG-530	SVL-530-SA5C-SV-6.5-7.5	--	3E42901-04	5/29/2014 8:42	Soil Vapor	Primary Sample	Primary Result	8260B	1,1-Dichloroethene	75354	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5CSV_DG-530	SVL-530-SA5C-SV-6.5-7.5	--	3E42901-04	5/29/2014 8:42	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E42901
5CSV_DG-530	SVL-930-SA5C-SV-6.5-7.5	SVL-530-SA5C-SV-6.5-7.5	14060002-2	5/29/2014 8:49	Soil Vapor	Split Sample	Primary Result	TO-15	Methylene chloride	75092	0.022	U	Non-Detect	Calscience	V	B, result changed from 0.0027	14-06-0002
5CSV_DG-535	SVL-535-SA5C-SV-10.0-11.0	--	3F40301-09	6/3/2014 11:22	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-535	SVL-535-SA5C-SV-10.0-11.0	--	3F40301-09	6/3/2014 11:22	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-535	SVL-535-SA5C-SV-10.0-11.0	--	3F40301-09	6/3/2014 11:22	Soil Vapor	Primary Sample	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-535	SVL-535-SA5C-SV-10.0-11.0	--	3F40301-09	6/3/2014 11:22	Soil Vapor	Primary Sample	Primary Result	8260B	cis-1,2-Dichloroethene	156592	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40301
5CSV_DG-535	SVL-535-SA5C-SV-10.0-11.0	--	3F40301-09	6/3/2014 11:22	Soil Vapor	Primary Sample	Primary Result	8260B	Methylene chloride	75092	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-535	SVL-535-SA5C-SV-10.0-11.0	--	3F40301-09	6/3/2014 11:22	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.0056	J	Estimated Value	EST	V	C	3F40301
5CSV_DG-535	SVL-535-SA5C-SV-10.0-11.0	--	3F40301-09	6/3/2014 11:22	Soil Vapor	Primary Sample	Primary Result	8260B	trans-1,2-Dichloroethene	156605	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40301
5CSV_DG-535	SVL-535-SA5C-SV-10.0-11.0	--	3F40301-09	6/3/2014 11:22	Soil Vapor	Primary Sample	Primary Result	8260B	Trichlorofluoromethane	75694	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-535	SVL-535-SA5C-SV-15.0-16.0	--	3F40301-10	6/3/2014 11:50	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-535	SVL-535-SA5C-SV-15.0-16.0	--	3F40301-10	6/3/2014 11:50	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-535	SVL-535-SA5C-SV-15.0-16.0	--	3F40301-10	6/3/2014 11:50	Soil Vapor	Primary Sample	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-535	SVL-535-SA5C-SV-15.0-16.0	--	3F40301-10	6/3/2014 11:50	Soil Vapor	Primary Sample	Primary Result	8260B	cis-1,2-Dichloroethene	156592	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40301
5CSV_DG-535	SVL-535-SA5C-SV-15.0-16.0	--	3F40301-10	6/3/2014 11:50	Soil Vapor	Primary Sample	Primary Result	8260B	Methylene chloride	75092	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-535	SVL-535-SA5C-SV-15.0-16.0	--	3F40301-10	6/3/2014 11:50	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.007	J	Estimated Value	EST	V	C	3F40301
5CSV_DG-535	SVL-535-SA5C-SV-15.0-16.0	--	3F40301-10	6/3/2014 11:50	Soil Vapor	Primary Sample	Primary Result	8260B	trans-1,2-Dichloroethene	156605	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40301
5CSV_DG-535	SVL-535-SA5C-SV-15.0-16.0	--	3F40301-10	6/3/2014 11:50	Soil Vapor	Primary Sample	Primary Result	8260B	Trichlorofluoromethane	75694	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-535	SVL-535-SA5C-SV-5.0-6.0	--	3F40301-08	6/3/2014 10:59	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-535	SVL-535-SA5C-SV-5.0-6.0	--	3F40301-08	6/3/2014 10:59	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-535	SVL-535-SA5C-SV-5.0-6.0	--	3F40301-08	6/3/2014 10:59	Soil Vapor	Primary Sample	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-535	SVL-535-SA5C-SV-5.0-6.0	--	3F40301-08	6/3/2014 10:59	Soil Vapor	Primary Sample	Primary Result	8260B	cis-1,2-Dichloroethene	156592	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40301
5CSV_DG-535	SVL-535-SA5C-SV-5.0-6.0	--	3F40301-08	6/3/2014 10:59	Soil Vapor	Primary Sample	Primary Result	8260B	Methylene chloride	75092	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-535	SVL-535-SA5C-SV-5.0-6.0	--	3F40301-08	6/3/2014 10:59	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.011	J	Estimated Value	EST	V	C	3F40301
5CSV_DG-535	SVL-535-SA5C-SV-5.0-6.0	--	3F40301-08	6/3/2014 10:59	Soil Vapor	Primary Sample	Primary Result	8260B	trans-1,2-Dichloroethene	156605	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40301
5CSV_DG-535	SVL-535-SA5C-SV-5.0-6.0	--	3F40301-08	6/3/2014 10:59	Soil Vapor	Primary Sample	Primary Result	8260B	Trichlorofluoromethane	75694	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-535	SVL-935-SA5C-SV-15.0-16.0	SVL-535-SA5C-SV-15.0-16.0	14060556-3	6/3/2014 11:56	Soil Vapor	Split Sample	Primary Result	TO-15	1,1,2-Trichloro-1,2,2-trifluoroethane	76131	0.015	U	Non-Detect	Calscience	V	F, RL changed from 0.015	14-06-0556
5CSV_DG-535	SVL-935-SA5C-SV-15.0-16.0	SVL-535-SA5C-SV-15.0-16.0	14060556-3	6/3/2014 11:56	Soil Vapor	Split Sample	Primary Result	TO-15	Methylene chloride	75092	0.022	U	Non-Detect	Calscience	V	B, result changed from 0.0035	14-06-0556
5CSV_DG-543	SVL-543-SA5C-SV-11.0-12.0	--	3F40301-12	6/3/2014 13:15	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-543	SVL-543-SA5C-SV-11.0-12.0	--	3F40301-12	6/3/2014 13:15	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-543	SVL-543-SA5C-SV-11.0-12.0	--	3F40301-12	6/3/2014 13:15	Soil Vapor	Primary Sample	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-543	SVL-543-SA5C-SV-11.0-12.0	--	3F40301-12	6/3/2014 13:15	Soil Vapor	Primary Sample	Primary Result	8260B	cis-1,2-Dichloroethene	156592	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40301
5CSV_DG-543	SVL-543-SA5C-SV-11.0-12.0	--	3F40301-12	6/3/2014 13:15	Soil Vapor	Primary Sample	Primary Result	8260B	Methylene chloride	75092	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-543	SVL-543-SA5C-SV-11.0-12.0	--	3F40301-12	6/3/2014 13:15	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.01	J	Estimated Value	EST	V	C	3F40301
5CSV_DG-543	SVL-543-SA5C-SV-11.0-12.0	--	3F40301-12	6/3/2014 13:15	Soil Vapor	Primary Sample	Primary Result	8260B	trans-1,2-Dichloroethene	156605	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40301
5CSV_DG-543	SVL-543-SA5C-SV-11.0-12.0	--	3F40301-12	6/3/2014 13:15	Soil Vapor	Primary Sample	Primary Result	8260B	Trichlorofluoromethane	75694	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-543	SVL-543-SA5C-SV-18.0-19.0	--	3F40401-02	6/4/2014 7:28	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40401
5CSV_DG-543	SVL-543-SA5C-SV-18.0-19.0	--	3F40401-02	6/4/2014 7:28	Soil Vapor	Primary Sample	Primary Result	8260B	Chloroform	67663	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40401
5CSV_DG-543	SVL-543-SA5C-SV-18.0-19.0	--	3F40401-02	6/4/2014 7:28	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C, F, result changed from 0.016	3F40401
5CSV_DG-543	SVL-543-SA5C-SV-5.0-6.0	--	3F40301-11	6/3/2014 12:56	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-543	SVL-543-SA5C-SV-5.0-6.0	--	3F40301-11	6/3/2014 12:56	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-543	SVL-543-SA5C-SV-5.0-6.0	--	3F40301-11	6/3/2014 12:56	Soil Vapor	Primary Sample	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-543	SVL-543-SA5C-SV-5.0-6.0	--	3F40301-11	6/3/2014 12:56	Soil Vapor	Primary Sample	Primary Result	8260B	cis-1,2-Dichloroethene	156592	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40301
5CSV_DG-543	SVL-543-SA5C-SV-5.0-6.0	--	3F40301-11	6/3/2014 12:56	Soil Vapor	Primary Sample	Primary Result	8260B	Methylene chloride	75092	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-543	SVL-543-SA5C-SV-5.0-6.0	--	3F40301-11	6/3/2014 12:56	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.0096	J	Estimated Value	EST	V	C	3F40301
5CSV_DG-543	SVL-543-SA5C-SV-5.0-6.0	--	3F40301-11	6/3/2014 12:56	Soil Vapor	Primary Sample	Primary Result	8260B	trans-1,2-Dichloroethene	156605	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40301

TABLE 4-1
PHASE 3 SOIL VAPOR
SUMMARY OF QUALIFIED DATA
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA
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Object Name	Sample Name	Parent Sample Name	Lab Sample Name	Collection Date	Matrix Type	Sample Type	Result Type	Analysis Method	Analyte	CAS Number	Result Value (µg/L)	Validator Qualifier Code	Validator Qualifier Description	Lab Name	Validation Level	Validation Notes	Validation Report Identifier
5CSV_DG-543	SVL-543-SA5C-SV-5.0-6.0	--	3F40301-11	6/3/2014 12:56	Soil Vapor	Primary Sample	Primary Result	8260B	Trichlorofluoromethane	75694	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
5CSV_DG-549	SVL-549-SA5C-SV-6.0-7.0	--	3F41301-07	6/13/2014 10:34	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41301
5CSV_DG-549	SVL-549-SA5C-SV-6.0-7.0	--	3F41301-07	6/13/2014 10:34	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41301
5CSV_DG-549	SVL-549-SA5C-SV-6.0-7.0	--	3F41301-07	6/13/2014 10:34	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.014	J	Estimated Value	EST	V	C	3F41301
5CSV_DG-554	SVL-554-SA5C-SV-13.0-14.0	--	3F40501-03	6/5/2014 7:58	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40501
5CSV_DG-554	SVL-554-SA5C-SV-13.0-14.0	--	3F40501-03	6/5/2014 7:58	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3F40501
5CSV_DG-554	SVL-554-SA5C-SV-5.0-6.0	--	3F40501-02	6/5/2014 7:39	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40501
5CSV_DG-554	SVL-554-SA5C-SV-5.0-6.0	--	3F40501-02	6/5/2014 7:39	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3F40501
5CSV_DG-561	SVL-561-SA5C-SV-5.5-6.0	--	3F41001-05	6/10/2014 9:44	Soil Vapor	Primary Sample	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	L	3F41001
5CSV_DG-561	SVL-561-SA5C-SV-5.5-6.0	--	3F41001-05	6/10/2014 9:44	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41001
5CSV_DG-570	SVL-570-SA5C-SV-10.0-11.0	--	3F40401-05	6/4/2014 8:51	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40401
5CSV_DG-570	SVL-570-SA5C-SV-10.0-11.0	--	3F40401-05	6/4/2014 8:51	Soil Vapor	Primary Sample	Primary Result	8260B	Chloroform	67663	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40401
5CSV_DG-570	SVL-570-SA5C-SV-10.0-11.0	--	3F40401-05	6/4/2014 8:51	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C, F, result changed from 0.0054	3F40401
5CSV_DG-570	SVL-570-SA5C-SV-15.0-16.0	--	3F40401-06	6/4/2014 9:09	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40401
5CSV_DG-570	SVL-570-SA5C-SV-15.0-16.0	--	3F40401-06	6/4/2014 9:09	Soil Vapor	Primary Sample	Primary Result	8260B	Chloroform	67663	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40401
5CSV_DG-570	SVL-570-SA5C-SV-15.0-16.0	--	3F40401-06	6/4/2014 9:09	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C, F, result changed from 0.0052	3F40401
5CSV_DG-570	SVL-570-SA5C-SV-20.0-21.0	--	3F40401-07	6/4/2014 9:29	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40401
5CSV_DG-570	SVL-570-SA5C-SV-20.0-21.0	--	3F40401-07	6/4/2014 9:29	Soil Vapor	Primary Sample	Primary Result	8260B	Chloroform	67663	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40401
5CSV_DG-570	SVL-570-SA5C-SV-20.0-21.0	--	3F40401-07	6/4/2014 9:29	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C, F, result changed from 0.0066	3F40401
5CSV_DG-570	SVL-570-SA5C-SV-30.0-31.0	--	3F40401-08	6/4/2014 9:49	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40401
5CSV_DG-570	SVL-570-SA5C-SV-30.0-31.0	--	3F40401-08	6/4/2014 9:49	Soil Vapor	Primary Sample	Primary Result	8260B	Chloroform	67663	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40401
5CSV_DG-570	SVL-570-SA5C-SV-30.0-31.0	--	3F40401-08	6/4/2014 9:49	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C, F, result changed from 0.0084	3F40401
5CSV_DG-570	SVL-570-SA5C-SV-40.0-41.0	--	3F40401-09	6/4/2014 10:10	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40401
5CSV_DG-570	SVL-570-SA5C-SV-40.0-41.0	--	3F40401-09	6/4/2014 10:10	Soil Vapor	Primary Sample	Primary Result	8260B	Chloroform	67663	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40401
5CSV_DG-570	SVL-570-SA5C-SV-40.0-41.0	--	3F40401-09	6/4/2014 10:10	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C, F, result changed from 0.0078	3F40401
5CSV_DG-570	SVL-570-SA5C-SV-5.0-6.0	--	3F40401-03	6/4/2014 8:32	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40401
5CSV_DG-570	SVL-570-SA5C-SV-5.0-6.0	--	3F40401-03	6/4/2014 8:32	Soil Vapor	Primary Sample	Primary Result	8260B	Chloroform	67663	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40401
5CSV_DG-570	SVL-570-SA5C-SV-5.0-6.0	--	3F40401-03	6/4/2014 8:32	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3F40401
5CSV_DG-570	SVL-870-SA5C-SV-5.0-6.0	SVL-570-SA5C-SV-5.0-6.0	3F40401-04	6/4/2014 8:32	Soil Vapor	Field Duplicate	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40401
5CSV_DG-570	SVL-870-SA5C-SV-5.0-6.0	SVL-570-SA5C-SV-5.0-6.0	3F40401-04	6/4/2014 8:32	Soil Vapor	Field Duplicate	Primary Result	8260B	Chloroform	67663	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3F40401
5CSV_DG-570	SVL-870-SA5C-SV-5.0-6.0	SVL-570-SA5C-SV-5.0-6.0	3F40401-04	6/4/2014 8:32	Soil Vapor	Field Duplicate	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3F40401
5CSV_DG-570	SVL-970-SA5C-SV-40.0-41.0	SVL-570-SA5C-SV-40.0-41.0	14060556-5	6/4/2014 10:16	Soil Vapor	Split Sample	Primary Result	TO-15	Methylene chloride	75092	0.021	U	Non-Detect	Calscience	V	B, result changed from 0.0032	14-06-0556
5CSV_DG-570	SVL-970-SA5C-SV-40.0-41.0	SVL-570-SA5C-SV-40.0-41.0	14060556-5	6/4/2014 10:16	Soil Vapor	Split Sample	Primary Result	TO-15	Toluene	108883	0.011	U	Non-Detect	Calscience	V	F, RL changed from 0.0023	14-06-0556
5CSV_DG-572	SVL-572-SA5C-SV-6.8-7.8	--	3E42901-11	5/29/2014 13:39	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5CSV_DG-572	SVL-572-SA5C-SV-6.8-7.8	--	3E42901-11	5/29/2014 13:39	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5CSV_DG-572	SVL-572-SA5C-SV-6.8-7.8	--	3E42901-11	5/29/2014 13:39	Soil Vapor	Primary Sample	Primary Result	8260B	1,1-Dichloroethene	75354	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5CSV_DG-572	SVL-572-SA5C-SV-6.8-7.8	--	3E42901-11	5/29/2014 13:39	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	B, C, result changed from 0.011	3E42901
5DSV_DG-502	SVL-502-SA5D-SV-13.0-14.0	--	3E42701-04	5/27/2014 9:09	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E42701
5DSV_DG-502	SVL-502-SA5D-SV-13.0-14.0	--	3E42701-04	5/27/2014 9:09	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42701
5DSV_DG-502	SVL-502-SA5D-SV-13.0-14.0	--	3E42701-04	5/27/2014 9:09	Soil Vapor	Primary Sample	Primary Result	8260B	m-Xylene & p-Xylene	179601231	0.02	U	Non-Detect	Lancaster	V	B, result changed from 0.011	3E42701
5DSV_DG-502	SVL-502-SA5D-SV-13.0-14.0	--	3E42701-04	5/27/2014 9:09	Soil Vapor	Primary Sample	Primary Result	8260B	Tetrachloroethene	127184	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42701
5DSV_DG-502	SVL-502-SA5D-SV-13.0-14.0	--	3E42701-04	5/27/2014 9:09	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.011	J	Estimated Value	Lancaster	V	C	3E42701
5DSV_DG-502	SVL-502-SA5D-SV-18.0-19.0	--	3E42701-05	5/27/2014 9:42	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E42701
5DSV_DG-502	SVL-502-SA5D-SV-18.0-19.0	--	3E42701-05	5/27/2014 9:42	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42701
5DSV_DG-502	SVL-502-SA5D-SV-18.0-19.0	--	3E42701-05	5/27/2014 9:42	Soil Vapor	Primary Sample	Primary Result	8260B	m-Xylene & p-Xylene	179601231	0.02	U	Non-Detect	Lancaster	V	B, result changed from 0.012	3E42701
5DSV_DG-502	SVL-502-SA5D-SV-18.0-19.0	--	3E42701-05	5/27/2014 9:42	Soil Vapor	Primary Sample	Primary Result	8260B	Tetrachloroethene	127184	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42701
5DSV_DG-502	SVL-502-SA5D-SV-18.0-19.0	--	3E42701-05	5/27/2014 9:42	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.007	J	Estimated Value	Lancaster	V	C	3E42701
5DSV_DG-502	SVL-502-SA5D-SV-5.0-6.0	--	3E42701-02	5/27/2014 8:32	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E42701
5DSV_DG-502	SVL-502-SA5D-SV-5.0-6.0	--	3E42701-02	5/27/2014 8:32	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42701
5DSV_DG-502	SVL-502-SA5D-SV-5.0-6.0	--	3E42701-02	5/27/2014 8:32	Soil Vapor	Primary Sample	Primary Result	8260B	Tetrachloroethene	127184	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42701
5DSV_DG-502	SVL-502-SA5D-SV-5.0-6.0	--	3E42701-02	5/27/2014 8:32	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.12	J	Estimated Value	Lancaster	V	C	3E42701
5DSV_DG-502	SVL-802-SA5D-SV-5.0-6.0	SVL-502-SA5D-SV-5.0-6.0	3E42701-03	5/27/2014 8:32	Soil Vapor	Field Duplicate	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E42701
5DSV_DG-502	SVL-802-SA5D-SV-5.0-6.0	SVL-502-SA5D-SV-5.0-6.0	3E42701-03	5/27/2014 8:32	Soil Vapor	Field Duplicate	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42701
5DSV_DG-502	SVL-802-SA5D-SV-5.0-6.0	SVL-502-SA5D-SV-5.0-6.0	3E42701-03	5/27/2014 8:32	Soil Vapor	Field Duplicate	Primary Result	8260B	Tetrachloroethene	127184	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42701
5DSV_DG-502	SVL-802-SA5D-SV-5.0-6.0	SVL-502-SA5D-SV-5.0-6.0	3E42701-03	5/27/2014 8:32	Soil Vapor	Field Duplicate	Primary Result	8260B	Toluene	108883	0.1	J	Estimated Value	Lancaster	V	C	3E42701
5DSV_DG-502	SVL-946-SA5D-SV-10.0-11.0	SVL-546-SA5D-SV-10.0-11.0	14060002-3	5/30/2014 8:25	Soil Vapor	Split Sample	Primary Result	TO-15	Methylene chloride	75092	0.017	U	Non-Detect	Calscience	V	B, result changed from 0.0048	14-06-0002
5DSV_DG-510	SVL-510-SA5D-SV-7.5-8.5	--	3E42801-09	5/28/2014 12:50	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42801
5DSV_DG-510	SVL-510-SA5D-SV-7.5-8.5	--	3E42801-09	5/28/2014 12:50	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2-Trichloro-1,2,2-trifluoroethane	76131	0.024	U	Non-Detect	Lancaster	V	F, RL changed from 0.02	3E42801
5DSV_DG-510	SVL-510-SA5D-SV-7.5-8.5	--	3E42801-09	5/28/2014 12:50	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	B, C, result changed from 0.0088	3E42801
5DSV_DG-511	SVL-511-SA5D-SV-4.5-5.5	--	3E42801-05	5/28/2014 9:46	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42801
5DSV_DG-511	SVL-511-SA5D-SV-4.5-5.5	--	3E42801-05	5/28/2014 9:46	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E42801
5DSV_DG-511	SVL-511-SA5D-SV-9.5-10.5	--	3E42801-06	5/28/2014 10:19	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42801
5DSV_DG-511	SVL-511-SA5D-SV-9.5-10.5	--	3E42801-06	5/28/2014 10:19	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E42801
5DSV_DG-512	SVL-512-SA5D-SV-11.0-12.0	--	3E42701-10	5/27/2014 13:03	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E42701
5DSV_DG-512	SVL-512-SA5D-SV-11.0-12.0	--	3E42701-10	5/27/2014 13:03	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42701
5DSV_DG-512	SVL-512-SA5D-SV-11.0-12.0	--	3E42701-10	5/27/2014 13:03	Soil Vapor	Primary Sample	Primary Result	8260B	Tetrachloroethene	127184	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42701
5DSV_DG-512	SVL-512-SA5D-SV-11.0-12.0	--	3E42701-10	5/27/2014 13:03	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.16	J	Estimated Value	Lancaster	V	C	3E42701
5DSV_DG-512	SVL-512-SA5D-SV-16.75-17.75	--	3E42701-11	5/27/2014 13:34	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E42701
5DSV_DG-512	SVL-512-SA5D-SV-16.75-17.75	--	3E42701-11	5/27/2014 13:34	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42701
5DSV_DG-512	SVL-512-SA5D-SV-16.75-17.75	--	3E42701-11	5/27/2014 13:34	Soil Vapor	Primary Sample	Primary Result	8260B	Tetrachloroethene	127184	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42701
5DSV_DG-512	SVL-512-SA5D-SV-16.75-17.75	--	3E42701-11	5/27/2014 13:34	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.015	J	Estimated Value	Lancaster	V	C	3E42701
5DSV_DG-512	SVL-512-SA5D-SV-5.0-6.0	--	3E42701-09	5/27/2014 12:32	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E42701
5DSV_DG-512	SVL-512-SA5D-SV-5.0-6.0	--	3E42701-09	5/27/2014 12:32	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42701
5DSV_DG-512	SVL-512-SA5D-SV-5.0-6.0	--	3E42701-09	5/27/2014 12:32	Soil Vapor	Primary Sample	Primary Result	8260B	Tetrachloroethene	127184	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42701
5DSV_DG-512	SVL-512-SA5D-SV-5.0-6.0	--	3E42701-09	5/27/2014 12:32	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.035	J	Estimated Value	Lancaster	V	C	3E42701
5DSV_DG-513	SVL-513-SA5D-SV-10.0-11.0	--	3E42701-07	5/27/2014 10:45	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.4	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E42701
5DSV_DG-513	SVL-513-SA5D-SV-10.0-11.0	--	3E42701-07	5/27/2014 10:45	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.4	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42701
5DSV_DG-513	SVL-513-SA5D-SV-10.0-11.0	--	3E42701-07	5/27/2014 10:45	Soil Vapor	Primary Sample	Primary Result	8260B	Tetrachloroethene	127184	0.12	J	Estimated Value	Lancaster	V	*III	3E42701
5DSV_DG-513	SVL-513-SA5D-SV-10.0-11.0	--	3E42701-07	5/27/2014 10:45	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.088	J	Estimated Value	Lancaster	V	C	3E42701
5DSV_DG-513	SVL-513-SA5D-SV-15.5-16.5	--	3E42701-08	5/27/2014 11:22	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E42701
5DSV_DG-513	SVL-513-SA5D-SV-15.5-16.5	--	3E42701-08	5/27/2014 11:22	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42701

TABLE 4-1
PHASE 3 SOIL VAPOR
SUMMARY OF QUALIFIED DATA
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Object Name	Sample Name	Parent Sample Name	Lab Sample Name	Collection Date	Matrix Type	Sample Type	Result Type	Analysis Method	Analyte	CAS Number	Result Value (µg/L)	Validator Qualifier Code	Validator Qualifier Description	Lab Name	Validation Level	Validation Notes	Validation Report Identifier
5DSV_DG-513	SVL-513-SA5D-SV-15.5-16.5	--	3E42701-08	5/27/2014 11:22	Soil Vapor	Primary Sample	Primary Result	8260B	m-Xylene & p-Xylene	179601231	0.02	U	Non-Detect	Lancaster	V	B, RL=result	3E42701
5DSV_DG-513	SVL-513-SA5D-SV-15.5-16.5	--	3E42701-08	5/27/2014 11:22	Soil Vapor	Primary Sample	Primary Result	8260B	Tetrachloroethene	127184	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42701
5DSV_DG-513	SVL-513-SA5D-SV-15.5-16.5	--	3E42701-08	5/27/2014 11:22	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.024	J	Estimated Value	Lancaster	V	C	3E42701
5DSV_DG-513	SVL-513-SA5D-SV-5.0-6.0	--	3E42701-06	5/27/2014 10:15	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E42701
5DSV_DG-513	SVL-513-SA5D-SV-5.0-6.0	--	3E42701-06	5/27/2014 10:15	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42701
5DSV_DG-513	SVL-513-SA5D-SV-5.0-6.0	--	3E42701-06	5/27/2014 10:15	Soil Vapor	Primary Sample	Primary Result	8260B	m-Xylene & p-Xylene	179601231	0.023	U	Non-Detect	Lancaster	V	B, RL changed from 0.02	3E42701
5DSV_DG-513	SVL-513-SA5D-SV-5.0-6.0	--	3E42701-06	5/27/2014 10:15	Soil Vapor	Primary Sample	Primary Result	8260B	Tetrachloroethene	127184	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42701
5DSV_DG-513	SVL-513-SA5D-SV-5.0-6.0	--	3E42701-06	5/27/2014 10:15	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.016	J	Estimated Value	Lancaster	V	C	3E42701
5DSV_DG-515	SVL-515-SA5D-SV-12.5-13.8	--	3E42801-04	5/28/2014 8:57	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42801
5DSV_DG-515	SVL-515-SA5D-SV-12.5-13.8	--	3E42801-04	5/28/2014 8:57	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.055	UJ	Non-Detect Estimated Value	Lancaster	V	B, C, RL changed from 0.02	3E42801
5DSV_DG-515	SVL-515-SA5D-SV-5.0-6.0	--	3E42801-02	5/28/2014 8:16	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42801
5DSV_DG-515	SVL-515-SA5D-SV-5.0-6.0	--	3E42801-02	5/28/2014 8:16	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	B, C, result changed from 0.0052	3E42801
5DSV_DG-515	SVL-815-SA5D-SV-5.0-6.0	SVL-515-SA5D-SV-5.0-6.0	3E42801-03	5/28/2014 8:16	Soil Vapor	Field Duplicate	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42801
5DSV_DG-515	SVL-815-SA5D-SV-5.0-6.0	SVL-515-SA5D-SV-5.0-6.0	3E42801-03	5/28/2014 8:16	Soil Vapor	Field Duplicate	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	B, C, result changed from 0.0074	3E42801
5DSV_DG-515	SVL-915-SA5D-SV-12.5-13.8	SVL-515-SA5D-SV-12.5-13.8	14060002-1	5/28/2014 9:05	Soil Vapor	Split Sample	Primary Result	TO-15	1,1,2-Trichloro-1,2,2-trifluoroethane	76131	0.011	U	Non-Detect	Calscience	V	F, result changed from 0.0044	14-06-0002
5DSV_DG-515	SVL-915-SA5D-SV-12.5-13.8	SVL-515-SA5D-SV-12.5-13.8	14060002-1	5/28/2014 9:05	Soil Vapor	Split Sample	Primary Result	TO-15	Methylene chloride	75092	0.017	U	Non-Detect	Calscience	V	B, result changed from 0.0013	14-06-0002
5DSV_DG-516	SVL-516-SA5D-SV-14.0-15.0	--	3E42801-08	5/28/2014 11:26	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42801
5DSV_DG-516	SVL-516-SA5D-SV-14.0-15.0	--	3E42801-08	5/28/2014 11:26	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2-Trichloro-1,2,2-trifluoroethane	76131	0.024	U	Non-Detect	Lancaster	V	F, RL changed from 0.02	3E42801
5DSV_DG-516	SVL-516-SA5D-SV-14.0-15.0	--	3E42801-08	5/28/2014 11:26	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	B, C, result changed from 0.0046	3E42801
5DSV_DG-516	SVL-516-SA5D-SV-6.0-7.0	--	3E42801-07	5/28/2014 10:55	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42801
5DSV_DG-516	SVL-516-SA5D-SV-6.0-7.0	--	3E42801-07	5/28/2014 10:55	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E42801
5DSV_DG-519	SVL-519-SA5D-SV-8.5-9.5	--	3E42901-05	5/29/2014 9:30	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5DSV_DG-519	SVL-519-SA5D-SV-8.5-9.5	--	3E42901-05	5/29/2014 9:30	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5DSV_DG-519	SVL-519-SA5D-SV-8.5-9.5	--	3E42901-05	5/29/2014 9:30	Soil Vapor	Primary Sample	Primary Result	8260B	1,1-Dichloroethene	75354	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5DSV_DG-519	SVL-519-SA5D-SV-8.5-9.5	--	3E42901-05	5/29/2014 9:30	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.03	UJ	Non-Detect Estimated Value	Lancaster	V	B, C, RL changed from 0.02	3E42901
5DSV_DG-526	SVL-526-SA5D-SV-7.5-8.5	--	3E42901-06	5/29/2014 10:12	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5DSV_DG-526	SVL-526-SA5D-SV-7.5-8.5	--	3E42901-06	5/29/2014 10:12	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5DSV_DG-526	SVL-526-SA5D-SV-7.5-8.5	--	3E42901-06	5/29/2014 10:12	Soil Vapor	Primary Sample	Primary Result	8260B	1,1-Dichloroethene	75354	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5DSV_DG-526	SVL-526-SA5D-SV-7.5-8.5	--	3E42901-06	5/29/2014 10:12	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.044	UJ	Non-Detect Estimated Value	Lancaster	V	B, C, RL changed from 0.02	3E42901
5DSV_DG-530	SVL-530-SA5D-SV-5.0-6.0	--	3E42901-07	5/29/2014 10:46	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5DSV_DG-530	SVL-530-SA5D-SV-5.0-6.0	--	3E42901-07	5/29/2014 10:46	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5DSV_DG-530	SVL-530-SA5D-SV-5.0-6.0	--	3E42901-07	5/29/2014 10:46	Soil Vapor	Primary Sample	Primary Result	8260B	1,1-Dichloroethene	75354	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5DSV_DG-530	SVL-530-SA5D-SV-5.0-6.0	--	3E42901-07	5/29/2014 10:46	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E42901
5DSV_DG-531	SVL-531-SA5D-SV-5.0-6.0	--	3E42901-08	5/29/2014 11:20	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5DSV_DG-531	SVL-531-SA5D-SV-5.0-6.0	--	3E42901-08	5/29/2014 11:20	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5DSV_DG-531	SVL-531-SA5D-SV-5.0-6.0	--	3E42901-08	5/29/2014 11:20	Soil Vapor	Primary Sample	Primary Result	8260B	1,1-Dichloroethene	75354	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5DSV_DG-531	SVL-531-SA5D-SV-5.0-6.0	--	3E42901-08	5/29/2014 11:20	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E42901
5DSV_DG-539	SVL-539-SA5D-SV-4.5-5.5	--	3E42901-09	5/29/2014 12:29	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5DSV_DG-539	SVL-539-SA5D-SV-4.5-5.5	--	3E42901-09	5/29/2014 12:29	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5DSV_DG-539	SVL-539-SA5D-SV-4.5-5.5	--	3E42901-09	5/29/2014 12:29	Soil Vapor	Primary Sample	Primary Result	8260B	1,1-Dichloroethene	75354	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5DSV_DG-539	SVL-539-SA5D-SV-4.5-5.5	--	3E42901-09	5/29/2014 12:29	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	B, C, result changed from 0.0048	3E42901
5DSV_DG-539	SVL-539-SA5D-SV-8.5-9.5	--	3E42901-10	5/29/2014 13:00	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5DSV_DG-539	SVL-539-SA5D-SV-8.5-9.5	--	3E42901-10	5/29/2014 13:00	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5DSV_DG-539	SVL-539-SA5D-SV-8.5-9.5	--	3E42901-10	5/29/2014 13:00	Soil Vapor	Primary Sample	Primary Result	8260B	1,1-Dichloroethene	75354	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5DSV_DG-539	SVL-539-SA5D-SV-8.5-9.5	--	3E42901-10	5/29/2014 13:00	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	B, C, result changed from 0.0072	3E42901
5DSV_DG-544	SVL-544-SA5D-SV-10.0-11.0	--	3E42901-02	5/29/2014 7:50	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5DSV_DG-544	SVL-544-SA5D-SV-10.0-11.0	--	3E42901-02	5/29/2014 7:50	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5DSV_DG-544	SVL-544-SA5D-SV-10.0-11.0	--	3E42901-02	5/29/2014 7:50	Soil Vapor	Primary Sample	Primary Result	8260B	1,1-Dichloroethene	75354	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5DSV_DG-544	SVL-544-SA5D-SV-10.0-11.0	--	3E42901-02	5/29/2014 7:50	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.039	UJ	Non-Detect Estimated Value	Lancaster	V	B, C, RL changed from 0.02	3E42901
5DSV_DG-544	SVL-544-SA5D-SV-4.5-5.5	--	3E42801-10	5/28/2014 13:25	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42801
5DSV_DG-544	SVL-544-SA5D-SV-4.5-5.5	--	3E42801-10	5/28/2014 13:25	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.07	J	Estimated Value	Lancaster	V	C	3E42801
5DSV_DG-544	SVL-844-SA5D-SV-10.0-11.0	SVL-544-SA5D-SV-10.0-11.0	3E42901-03	5/29/2014 7:50	Soil Vapor	Field Duplicate	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5DSV_DG-544	SVL-844-SA5D-SV-10.0-11.0	SVL-544-SA5D-SV-10.0-11.0	3E42901-03	5/29/2014 7:50	Soil Vapor	Field Duplicate	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5DSV_DG-544	SVL-844-SA5D-SV-10.0-11.0	SVL-544-SA5D-SV-10.0-11.0	3E42901-03	5/29/2014 7:50	Soil Vapor	Field Duplicate	Primary Result	8260B	1,1-Dichloroethene	75354	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E42901
5DSV_DG-544	SVL-844-SA5D-SV-10.0-11.0	SVL-544-SA5D-SV-10.0-11.0	3E42901-03	5/29/2014 7:50	Soil Vapor	Field Duplicate	Primary Result	8260B	Toluene	108883	0.034	UJ	Non-Detect Estimated Value	Lancaster	V	B, C, RL changed from 0.02	3E42901
5DSV_DG-546	SVL-546-SA5D-SV-10.0-11.0	--	3E43001-04	5/30/2014 8:19	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E43001
5DSV_DG-546	SVL-546-SA5D-SV-5.0-6.0	--	3E43001-02	5/30/2014 7:46	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E43001
5DSV_DG-546	SVL-546-SA5D-SV-5.0-6.0	--	3E43001-02	5/30/2014 7:46	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E43001

TABLE 4-1
PHASE 3 SOIL VAPOR
SUMMARY OF QUALIFIED DATA
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA
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Object Name	Sample Name	Parent Sample Name	Lab Sample Name	Collection Date	Matrix Type	Sample Type	Result Type	Analysis Method	Analyte	CAS Number	Result Value (µg/L)	Validator Qualifier Code	Validator Qualifier Description	Lab Name	Validation Level	Validation Notes	Validation Report Identifier
5DSV_DG-546	SVL-546-SA5D-SV-5.0-6.0	--	3E43001-02	5/30/2014 7:46	Soil Vapor	Primary Sample	Primary Result	8260B	1,1-Dichloroethane	75343	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E43001
5DSV_DG-546	SVL-546-SA5D-SV-5.0-6.0	--	3E43001-02	5/30/2014 7:46	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	B, C, result changed from 0.013	3E43001
5DSV_DG-546	SVL-846-SA5D-SV-5.0-6.0	SVL-546-SA5D-SV-5.0-6.0	3E43001-03	5/30/2014 7:46	Soil Vapor	Field Duplicate	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E43001
5DSV_DG-546	SVL-846-SA5D-SV-5.0-6.0	SVL-546-SA5D-SV-5.0-6.0	3E43001-03	5/30/2014 7:46	Soil Vapor	Field Duplicate	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E43001
5DSV_DG-546	SVL-846-SA5D-SV-5.0-6.0	SVL-546-SA5D-SV-5.0-6.0	3E43001-03	5/30/2014 7:46	Soil Vapor	Field Duplicate	Primary Result	8260B	1,1-Dichloroethane	75343	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E43001
5DSV_DG-546	SVL-846-SA5D-SV-5.0-6.0	SVL-546-SA5D-SV-5.0-6.0	3E43001-03	5/30/2014 7:46	Soil Vapor	Field Duplicate	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	B, C, result changed from 0.013	3E43001
5DSV_DG-546	SVL-546-SA5D-SV-10.0-11.0	--	3E43001-04	5/30/2014 8:19	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E43001
5DSV_DG-546	SVL-546-SA5D-SV-10.0-11.0	--	3E43001-04	5/30/2014 8:19	Soil Vapor	Primary Sample	Primary Result	8260B	1,1-Dichloroethane	75343	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E43001
5DSV_DG-546	SVL-546-SA5D-SV-10.0-11.0	--	3E43001-04	5/30/2014 8:19	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	B, C, result changed from 0.01	3E43001
5DSV_DG-546	SVL-546-SA5D-SV-16.0-17.0	--	3E43001-05	5/30/2014 11:21	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E43001
5DSV_DG-546	SVL-546-SA5D-SV-16.0-17.0	--	3E43001-05	5/30/2014 11:21	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E43001
5DSV_DG-546	SVL-546-SA5D-SV-16.0-17.0	--	3E43001-05	5/30/2014 11:21	Soil Vapor	Primary Sample	Primary Result	8260B	1,1-Dichloroethane	75343	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E43001
5DSV_DG-546	SVL-546-SA5D-SV-16.0-17.0	--	3E43001-05	5/30/2014 11:21	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	B, C, result changed from 0.0044	3E43001
5DSV_DG-550	SVL-550-SA5D-SV-11.0-12.0	--	3E43001-07	5/30/2014 10:07	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E43001
5DSV_DG-550	SVL-550-SA5D-SV-11.0-12.0	--	3E43001-07	5/30/2014 10:07	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E43001
5DSV_DG-550	SVL-550-SA5D-SV-11.0-12.0	--	3E43001-07	5/30/2014 10:07	Soil Vapor	Primary Sample	Primary Result	8260B	1,1-Dichloroethane	75343	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E43001
5DSV_DG-550	SVL-550-SA5D-SV-11.0-12.0	--	3E43001-07	5/30/2014 10:07	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.028	J	Estimated Value	Lancaster	V	C	3E43001
5DSV_DG-550	SVL-550-SA5D-SV-17.0-18.0	--	3E43001-08	5/30/2014 10:42	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E43001
5DSV_DG-550	SVL-550-SA5D-SV-17.0-18.0	--	3E43001-08	5/30/2014 10:42	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E43001
5DSV_DG-550	SVL-550-SA5D-SV-17.0-18.0	--	3E43001-08	5/30/2014 10:42	Soil Vapor	Primary Sample	Primary Result	8260B	1,1-Dichloroethane	75343	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E43001
5DSV_DG-550	SVL-550-SA5D-SV-17.0-18.0	--	3E43001-08	5/30/2014 10:42	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	B, C, result changed from 0.011	3E43001
5DSV_DG-550	SVL-550-SA5D-SV-5.0-6.0	--	3E43001-06	5/30/2014 9:39	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E43001
5DSV_DG-550	SVL-550-SA5D-SV-5.0-6.0	--	3E43001-06	5/30/2014 9:39	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	*III	3E43001
5DSV_DG-550	SVL-550-SA5D-SV-5.0-6.0	--	3E43001-06	5/30/2014 9:39	Soil Vapor	Primary Sample	Primary Result	8260B	1,1-Dichloroethane	75343	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E43001
5DSV_DG-550	SVL-550-SA5D-SV-5.0-6.0	--	3E43001-06	5/30/2014 9:39	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3E43001
5DSV_DG-553	SVL-553-SA5D-SV-4.5-5.5	--	3F40901-02	6/9/2014 8:28	Soil Vapor	Primary Sample	Primary Result	8260B	Chloroform	67663	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40901
5DSV_DG-553	SVL-553-SA5D-SV-4.5-5.5	--	3F40901-02	6/9/2014 8:28	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40901
5DSV_DG-553	SVL-553-SA5D-SV-4.5-5.5	--	3F40901-02	6/9/2014 8:28	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40901
5DSV_DG-553	SVL-853-SA5D-SV-4.5-5.5	SVL-553-SA5D-SV-4.5-5.5	3F40901-03	6/9/2014 8:28	Soil Vapor	Field Duplicate	Primary Result	8260B	Chloroform	67663	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40901
5DSV_DG-553	SVL-853-SA5D-SV-4.5-5.5	SVL-553-SA5D-SV-4.5-5.5	3F40901-03	6/9/2014 8:28	Soil Vapor	Field Duplicate	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40901
5DSV_DG-553	SVL-853-SA5D-SV-4.5-5.5	SVL-553-SA5D-SV-4.5-5.5	3F40901-03	6/9/2014 8:28	Soil Vapor	Field Duplicate	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40901
5DSV_DG-553	SVL-553-SA5D-SV-9.0-10.0	--	3F40901-04	6/9/2014 9:08	Soil Vapor	Primary Sample	Primary Result	8260B	Chloroform	67663	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40901
5DSV_DG-553	SVL-553-SA5D-SV-9.0-10.0	--	3F40901-04	6/9/2014 9:08	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40901
5DSV_DG-553	SVL-553-SA5D-SV-9.0-10.0	--	3F40901-04	6/9/2014 9:08	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.011	J	Estimated Value	EST	V	C	3F40901
5DSV_DG-553	SVL-953-SA5D-SV-9.0-10.0	SVL-553-SA5D-SV-9.0-10.0	14061132-3	6/9/2014 9:14	Soil Vapor	Split Sample	Primary Result	TO-15	Methylene chloride	75092	0.018	U	Non-Detect	Calscience	V	B, result changed from 0.0022	14-06-1132
5DSV_DG-553	SVL-553-SA5D-SV-14.0-15.0	--	3F40901-05	6/9/2014 9:50	Soil Vapor	Primary Sample	Primary Result	8260B	Chloroform	67663	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40901
5DSV_DG-553	SVL-553-SA5D-SV-14.0-15.0	--	3F40901-05	6/9/2014 9:50	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40901
5DSV_DG-553	SVL-553-SA5D-SV-14.0-15.0	--	3F40901-05	6/9/2014 9:50	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40901
5DSV_DG-553	SVL-553-SA5D-SV-19.0-20.0	--	3F40901-06	6/9/2014 10:27	Soil Vapor	Primary Sample	Primary Result	8260B	Chloroform	67663	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40901
5DSV_DG-553	SVL-553-SA5D-SV-19.0-20.0	--	3F40901-06	6/9/2014 10:27	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40901
5DSV_DG-553	SVL-553-SA5D-SV-19.0-20.0	--	3F40901-06	6/9/2014 10:27	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40901
5DSV_DG-556	SVL-556-SA5D-SV-4.5-5.5	--	3F40901-11	6/9/2014 13:40	Soil Vapor	Primary Sample	Primary Result	8260B	Chloroform	67663	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40901
5DSV_DG-556	SVL-556-SA5D-SV-4.5-5.5	--	3F40901-11	6/9/2014 13:40	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40901
5DSV_DG-556	SVL-556-SA5D-SV-4.5-5.5	--	3F40901-11	6/9/2014 13:40	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.0076	J	Estimated Value	EST	V	C	3F40901
6SV_DG-509	SVL-509-SA6-SV-5.0-6.0	--	3F41201-06	6/12/2014 10:04	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41201
6SV_DG-509	SVL-509-SA6-SV-5.0-6.0	--	3F41201-06	6/12/2014 10:04	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41201
6SV_DG-509	SVL-509-SA6-SV-5.0-6.0	--	3F41201-06	6/12/2014 10:04	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41201
6SV_DG-509	SVL-509-SA6-SV-5.0-6.0	--	3F41201-06	6/12/2014 10:04	Soil Vapor	Primary Sample	Primary Result	8260B	Trichlorofluoromethane	75694	1.1	UJ	Non-Detect Estimated Value	EST	V	C, RL changed from 0.02	3F41201
6SV_DG-509	SVL-509-SA6-SV-10.0-11.0	--	3F41201-07	6/12/2014 10:36	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41201
6SV_DG-509	SVL-509-SA6-SV-10.0-11.0	--	3F41201-07	6/12/2014 10:36	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41201
6SV_DG-509	SVL-509-SA6-SV-10.0-11.0	--	3F41201-07	6/12/2014 10:36	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.0066	J	Estimated Value	EST	V	C	3F41201
6SV_DG-509	SVL-509-SA6-SV-10.0-11.0	--	3F41201-07	6/12/2014 10:36	Soil Vapor	Primary Sample	Primary Result	8260B	Trichlorofluoromethane	75694	2.9	UJ	Non-Detect Estimated Value	EST	V	C, RL changed from 0.02	3F41201
6SV_DG-509	SVL-509-SA6-SV-15.0-16.0	--	3F41201-08	6/12/2014 11:07	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.1	UJ	Non-Detect Estimated Value	EST	V	*III	3F41201
6SV_DG-509	SVL-509-SA6-SV-15.0-16.0	--	3F41201-08	6/12/2014 11:07	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.1	UJ	Non-Detect Estimated Value	EST	V	C	3F41201
6SV_DG-509	SVL-509-SA6-SV-15.0-16.0	--	3F41201-08	6/12/2014 11:07	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.1	UJ	Non-Detect Estimated Value	EST	V	C	3F41201
6SV_DG-509	SVL-509-SA6-SV-15.0-16.0	--	3F41201-08	6/12/2014 11:07	Soil Vapor	Primary Sample	Primary Result	8260B	Trichlorofluoromethane	75694	4.5	UJ	Non-Detect Estimated Value	EST	V	C, RL changed from 0.1	3F41201
6SV_DG-515	SVL-515-SA6-SV-7.9-8.9	--	3F41201-05	6/12/2014 9:28	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41201
6SV_DG-515	SVL-515-SA6-SV-7.9-8.9	--	3F41201-05	6/12/2014 9:28	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41201
6SV_DG-515	SVL-515-SA6-SV-7.9-8.9	--	3F41201-05	6/12/2014 9:28	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41201
6SV_DG-528	SVL-528-SA6-SV-5.5-6.5	--	3F41201-04	6/12/2014 8:38	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41201
6SV_DG-528	SVL-528-SA6-SV-5.5-6.5	--	3F41201-04	6/12/2014 8:38	Soil Vapor	Primary Sample	Primary Result	8260B	Dichlorodifluoromethane	75718	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41201
6SV_DG-528	SVL-528-SA6-SV-5.5-6.5	--	3F41201-04	6/12/2014 8:38	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41201
6SV_DG-528	SVL-928-SA6-SV-5.5-6.5	SVL-528-SA6-SV-5.5-6.5	280-56666-1	6/12/2014 8:48	Soil Vapor	Split Sample	Primary Result	TO-15	1,1-Dichloroethene	75354	0.0159	UJ	Non-Detect Estimated Value	TestAmerica - Denver	V	C	280-56666-1
6SV_DG-543	SVL-543-SA6-SV-7.5-8.5	--	3F41901-07	6/19/2014 11:35	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41901
6SV_DG-543	SVL-543-SA6-SV-7.5-8.5	--	3F41901-07	6/19/2014 11:35	Soil Vapor	Primary Sample	Primary Result	8260B	m-Xylene & p-Xylene	179601231	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41901
6SV_DG-543	SVL-543-SA6-SV-7.5-8.5	--	3F41901-07	6/19/2014 11:35	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41901
6SV_DG-544	SVL-544-SA6-SV-5.0-6.0	--	280-56667-4	6/13/2014 10:56	Soil Vapor	Primary Sample	Primary Result	TO-15	1,1-Dichloroethene	75354	0.0159	UJ	Non-Detect Estimated Value	TestAmerica - Denver	V	C	280-56667-1
6SV_DG-544	SVL-544-SA6-SV-10.0-11.0	--	280-56667-3	6/13/2014 11:22	Soil Vapor	Primary Sample	Primary Result	TO-15	1,1-Dichloroethene	75354	0.0159	UJ	Non-Detect Estimated Value	TestAmerica - Denver	V	C	280-56667-1
6SV_DG-544	SVL-844-SA6-SV-10.0-11.0	SVL-544-SA6-SV-10.0-11.0	280-56667-6	6/13/2014 11:22	Soil Vapor	Field Duplicate	Primary Result	TO-15	1,1-Dichloroethene	75354	0.0159	UJ	Non-Detect Estimated Value	TestAmerica - Denver	V	C	280-56667-1
6SV_DG-551	SVL-551-SA6-SV-4.5-5.5	--	280-56667-5	6/13/2014 10:16	Soil Vapor	Primary Sample	Primary Result	TO-15	1,1-Dichloroethene	75354	0.0159	UJ	Non-Detect Estimated Value	TestAmerica - Denver	V	C	280-56667-1
7SV_DG-503	SVL-503-SA7-SV-7.0-8.0	--	280-56667-2	6/13/2014 8:53	Soil Vapor	Primary Sample	Primary Result	TO-15	1,1-Dichloroethene	75354	0.0159	UJ	Non-Detect Estimated Value	TestAmerica - Denver	V	C	280-56667-1
7SV_DG-503	SVL-503-SA7-SV-12.0-13.0	--	280-56667-1	6/13/2014 9:24	Soil Vapor	Primary Sample	Primary Result	TO-15	1,1-Dichloroethene	75354	0.0159	UJ	Non-Detect Estimated Value	TestAmerica - Denver	V	C	280-56667-1
8SV_DG-502	SVL-502-SA8-SV-4.45-5.45	--	3F41901-06	6/19/2014 11:09	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41901
8SV_DG-502	SVL-502-SA8-SV-4.45-5.45	--	3F41901-06	6/19/2014 11:09	Soil Vapor	Primary Sample	Primary Result	8260B	m-Xylene & p-Xylene	179601231	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41901
8SV_DG-502	SVL-502-SA8-SV-4.45-5.45	--	3F41901-06	6/19/2014 11:09	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41901
8SV_DG-503	SVL-503-SA8-SV-4.5-5.5	--	3F40301-02	6/3/2014 7:55	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.11	J	Estimated Value	EST	V	*III	3F40301
8SV_DG-503	SVL-503-SA8-SV-4.5-5.5	--	3F40301-02	6/3/2014 7:55	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
8SV_DG-503	SVL-503-SA8-SV-4.5-5.5	--	3F40301-02	6/3/2014 7:55	Soil Vapor	Primary Sample	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
8SV_DG-503	SVL-503-SA8-SV-4.5-5.5	--	3F40301-02	6/3/2014 7:55	Soil Vapor	Primary Sample	Primary Result	8260B	cis-1,2-Dichloroethene	156592	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40301
8SV_DG-503	SVL-503-SA8-SV-4.5-5.5	--	3F40301-02	6/3/2014 7:55	Soil Vapor	Primary Sample	Primary Result	8260B	Methylene chloride	75092	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301

TABLE 4-1
PHASE 3 SOIL VAPOR
SUMMARY OF QUALIFIED DATA
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Object Name	Sample Name	Parent Sample Name	Lab Sample Name	Collection Date	Matrix Type	Sample Type	Result Type	Analysis Method	Analyte	CAS Number	Result Value (µg/L)	Validator Qualifier Code	Validator Qualifier Description	Lab Name	Validation Level	Validation Notes	Validation Report Identifier
8SV_DG-503	SVL-503-SA8-SV-4.5-5.5	--	3F40301-02	6/3/2014 7:55	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40301
8SV_DG-503	SVL-503-SA8-SV-4.5-5.5	--	3F40301-02	6/3/2014 7:55	Soil Vapor	Primary Sample	Primary Result	8260B	trans-1,2-Dichloroethene	156605	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40301
8SV_DG-503	SVL-503-SA8-SV-4.5-5.5	--	3F40301-02	6/3/2014 7:55	Soil Vapor	Primary Sample	Primary Result	8260B	Trichlorofluoromethane	75694	0.079	J	Estimated Value	EST	V	*III	3F40301
8SV_DG-506	SVL-506-SA8-SV-7.0-8.0	--	7476672	5/22/2014 10:05	Soil Vapor	Primary Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0049	U	Non-Detect	Lancaster	V	F, result changed from 0.0019	1476965
8SV_DG-506	SVL-506-SA8-SV-7.0-8.0	--	7476672	5/22/2014 10:05	Soil Vapor	Primary Sample	Primary Result	TO-15	Toluene	108883	0.0045	U	Non-Detect	Lancaster	V	F, RL changed from 0.0038	1476965
8SV_DG-506	SVL-506-SA8-SV-7.0-8.0	--	7476672	5/22/2014 10:05	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0015	1476965
8SV_DG-512	SVL-512-SA8-SV-8.0-9.0	--	7476678	5/23/2014 9:34	Soil Vapor	Primary Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0049	U	Non-Detect	Lancaster	V	F, result changed from 0.0022	1476966
8SV_DG-512	SVL-512-SA8-SV-8.0-9.0	--	7476678	5/23/2014 9:34	Soil Vapor	Primary Sample	Primary Result	TO-15	Methylene chloride	75092	0.0035	U	Non-Detect	Lancaster	V	F, result changed from 0.00085	1476966
8SV_DG-512	SVL-512-SA8-SV-8.0-9.0	--	7476678	5/23/2014 9:34	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0016	1476966
8SV_DG-512	SVL-812-SA8-SV-8.0-9.0	SVL-512-SA8-SV-8.0-9.0	7476684	5/23/2014 8:44	Soil Vapor	Field Duplicate	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0049	U	Non-Detect	Lancaster	V	F, result changed from 0.0022	1476966
8SV_DG-512	SVL-812-SA8-SV-8.0-9.0	SVL-512-SA8-SV-8.0-9.0	7476684	5/23/2014 8:44	Soil Vapor	Field Duplicate	Primary Result	TO-15	Methylene chloride	75092	0.0035	U	Non-Detect	Lancaster	V	F, result changed from 0.0012	1476966
8SV_DG-512	SVL-812-SA8-SV-8.0-9.0	SVL-512-SA8-SV-8.0-9.0	7476684	5/23/2014 8:44	Soil Vapor	Field Duplicate	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0013	1476966
8SV_DG-515	SVL-515-SA8-SV-6.0-7.0	--	7476673	5/22/2014 10:50	Soil Vapor	Primary Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0049	U	Non-Detect	Lancaster	V	F, result changed from 0.0021	1476965
8SV_DG-517	SVL-517-SA8-SV-5.0-6.0	--	7476681	5/23/2014 8:23	Soil Vapor	Primary Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0049	U	Non-Detect	Lancaster	V	F, result changed from 0.0022	1476966
8SV_DG-517	SVL-517-SA8-SV-5.0-6.0	--	7476681	5/23/2014 8:23	Soil Vapor	Primary Sample	Primary Result	TO-15	Methylene chloride	75092	0.0035	U	Non-Detect	Lancaster	V	F, result changed from 0.0014	1476966
8SV_DG-517	SVL-517-SA8-SV-5.0-6.0	--	7476681	5/23/2014 8:23	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0013	1476966
8SV_DG-517	SVL-517-SA8-SV-10.0-11.0	--	7476679	5/23/2014 8:44	Soil Vapor	Primary Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0049	U	Non-Detect	Lancaster	V	F, result changed from 0.0021	1476966
8SV_DG-517	SVL-517-SA8-SV-10.0-11.0	--	7476679	5/23/2014 8:44	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0013	1476966
8SV_DG-517	SVL-517-SA8-SV-15.5-16.5	--	7476680	5/23/2014 9:02	Soil Vapor	Primary Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0049	U	Non-Detect	Lancaster	V	F, result changed from 0.0021	1476966
8SV_DG-517	SVL-517-SA8-SV-15.5-16.5	--	7476680	5/23/2014 9:02	Soil Vapor	Primary Sample	Primary Result	TO-15	Toluene	108883	0.0068	U	Non-Detect	Lancaster	V	F, RL changed from 0.0038	1476966
8SV_DG-517	SVL-517-SA8-SV-15.5-16.5	--	7476680	5/23/2014 9:02	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0012	1476966
8SV_DG-519	SVL-519-SA8-SV-7.0-8.0	--	7476674	5/22/2014 8:49	Soil Vapor	Primary Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0049	U	Non-Detect	Lancaster	V	F, result changed from 0.002	1476965
8SV_DG-519	SVL-519-SA8-SV-7.0-8.0	--	7476674	5/22/2014 8:49	Soil Vapor	Primary Sample	Primary Result	TO-15	Ethylbenzene	100414	0.0059	U	Non-Detect	Lancaster	V	F, RL changed from 0.0043	1476965
8SV_DG-519	SVL-519-SA8-SV-7.0-8.0	--	7476674	5/22/2014 8:49	Soil Vapor	Primary Sample	Primary Result	TO-15	m-Xylene & p-Xylene	179601231	0.025	U	Non-Detect	Lancaster	V	F, RL changed from 0.0043	1476965
8SV_DG-519	SVL-519-SA8-SV-7.0-8.0	--	7476674	5/22/2014 8:49	Soil Vapor	Primary Sample	Primary Result	TO-15	o-Xylene	95476	0.013	U	Non-Detect	Lancaster	V	F, RL changed from 0.0043	1476965
8SV_DG-519	SVL-519-SA8-SV-7.0-8.0	--	7476674	5/22/2014 8:49	Soil Vapor	Primary Sample	Primary Result	TO-15	Toluene	108883	0.015	U	Non-Detect	Lancaster	V	F, RL changed from 0.0038	1476965
8SV_DG-524	SVL-524-SA8-SV-4.5-5.5	--	7476683	5/23/2014 10:36	Soil Vapor	Primary Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0049	U	Non-Detect	Lancaster	V	F, result changed from 0.0025	1476966
8SV_DG-524	SVL-524-SA8-SV-4.5-5.5	--	7476683	5/23/2014 10:36	Soil Vapor	Primary Sample	Primary Result	TO-15	Methylene chloride	75092	0.0035	U	Non-Detect	Lancaster	V	F, result changed from 0.0013	1476966
8SV_DG-524	SVL-524-SA8-SV-4.5-5.5	--	7476683	5/23/2014 10:36	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0015	1476966
8SV_DG-524	SVL-524-SA8-SV-10.5-11.5	--	7476682	5/23/2014 10:59	Soil Vapor	Primary Sample	Primary Result	TO-15	Dichlorodifluoromethane	75718	0.0049	U	Non-Detect	Lancaster	V	F, result changed from 0.002	1476966
8SV_DG-524	SVL-524-SA8-SV-10.5-11.5	--	7476682	5/23/2014 10:59	Soil Vapor	Primary Sample	Primary Result	TO-15	m-Xylene & p-Xylene	179601231	0.0043	U	Non-Detect	Lancaster	V	F, result changed from 0.001	1476966
8SV_DG-524	SVL-524-SA8-SV-10.5-11.5	--	7476682	5/23/2014 10:59	Soil Vapor	Primary Sample	Primary Result	TO-15	Toluene	108883	0.005	U	Non-Detect	Lancaster	V	F, RL changed from 0.0038	1476966
8SV_DG-524	SVL-524-SA8-SV-10.5-11.5	--	7476682	5/23/2014 10:59	Soil Vapor	Primary Sample	Primary Result	TO-15	Trichlorofluoromethane	75694	0.0056	U	Non-Detect	Lancaster	V	F, result changed from 0.0012	1476966
8SV_DG-528	SVL-528-SA8-SV-5.0-6.0	--	3F40201-02	6/2/2014 9:08	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2-Trichloro-1,2,2-trifluoroethane	76131	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	L	3F40201
8SV_DG-528	SVL-528-SA8-SV-5.0-6.0	--	3F40201-02	6/2/2014 9:08	Soil Vapor	Primary Sample	Primary Result	8260B	1,1-Dichloroethane	75343	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	L	3F40201
8SV_DG-528	SVL-528-SA8-SV-5.0-6.0	--	3F40201-02	6/2/2014 9:08	Soil Vapor	Primary Sample	Primary Result	8260B	cis-1,2-Dichloroethene	156592	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3F40201
8SV_DG-528	SVL-528-SA8-SV-5.0-6.0	--	3F40201-02	6/2/2014 9:08	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3F40201
8SV_DG-528	SVL-528-SA8-SV-11.0-12.0	--	3F40201-03	6/2/2014 9:35	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2-Trichloro-1,2,2-trifluoroethane	76131	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	L	3F40201
8SV_DG-528	SVL-528-SA8-SV-11.0-12.0	--	3F40201-03	6/2/2014 9:35	Soil Vapor	Primary Sample	Primary Result	8260B	1,1-Dichloroethane	75343	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	L	3F40201
8SV_DG-528	SVL-528-SA8-SV-11.0-12.0	--	3F40201-03	6/2/2014 9:35	Soil Vapor	Primary Sample	Primary Result	8260B	cis-1,2-Dichloroethene	156592	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3F40201
8SV_DG-528	SVL-528-SA8-SV-11.0-12.0	--	3F40201-03	6/2/2014 9:35	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3F40201
8SV_DG-528	SVL-528-SA8-SV-18.5-19.5	--	3F40201-04	6/2/2014 9:58	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2-Trichloro-1,2,2-trifluoroethane	76131	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	L	3F40201
8SV_DG-528	SVL-528-SA8-SV-18.5-19.5	--	3F40201-04	6/2/2014 9:58	Soil Vapor	Primary Sample	Primary Result	8260B	1,1-Dichloroethane	75343	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	L	3F40201
8SV_DG-528	SVL-528-SA8-SV-18.5-19.5	--	3F40201-04	6/2/2014 9:58	Soil Vapor	Primary Sample	Primary Result	8260B	cis-1,2-Dichloroethene	156592	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3F40201
8SV_DG-528	SVL-528-SA8-SV-18.5-19.5	--	3F40201-04	6/2/2014 9:58	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	Lancaster	V	C	3F40201
8SV_DG-529	SVL-529-SA8-SV-4.5-5.5	--	3F41801-08	6/18/2014 12:57	Soil Vapor	Primary Sample	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	L	3F41801
8SV_DG-529	SVL-529-SA8-SV-4.5-5.5	--	3F41801-08	6/18/2014 12:57	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41801
8SV_DG-529	SVL-529-SA8-SV-8.5-9.5	--	3F41801-09	6/18/2014 13:34	Soil Vapor	Primary Sample	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	L	3F41801
8SV_DG-529	SVL-529-SA8-SV-8.5-9.5	--	3F41801-09	6/18/2014 13:34	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41801
8SV_DG-531	SVL-531-SA8-SV-4.5-5.5	--	3F41901-04	6/19/2014 9:28	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41901
8SV_DG-531	SVL-531-SA8-SV-4.5-5.5	--	3F41901-04	6/19/2014 9:28	Soil Vapor	Primary Sample	Primary Result	8260B	m-Xylene & p-Xylene	179601231	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41901
8SV_DG-531	SVL-531-SA8-SV-4.5-5.5	--	3F41901-04	6/19/2014 9:28	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41901
8SV_DG-534	SVL-834-SA8-SV-6.0-7.0	--	3F40301-03	6/3/2014 8:34	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,1-Trichloroethane	71556	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
8SV_DG-534	SVL-834-SA8-SV-6.0-7.0	--	3F40301-03	6/3/2014 8:34	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
8SV_DG-534	SVL-834-SA8-SV-6.0-7.0	--	3F40301-03	6/3/2014 8:34	Soil Vapor	Primary Sample	Primary Result	8260B	Carbon Tetrachloride	56235	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
8SV_DG-534	SVL-834-SA8-SV-6.0-7.0	--	3F40301-03	6/3/2014 8:34	Soil Vapor	Primary Sample	Primary Result	8260B	cis-1,2-Dichloroethene	156592	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40301
8SV_DG-534	SVL-834-SA8-SV-6.0-7.0	--	3F40301-03	6/3/2014 8:34	Soil Vapor	Primary Sample	Primary Result	8260B	Methylene chloride	75092	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
8SV_DG-534	SVL-834-SA8-SV-6.0-7.0	--	3F40301-03	6/3/2014 8:34	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40301
8SV_DG-534	SVL-834-SA8-SV-6.0-7.0	--	3F40301-03	6/3/2014 8:34	Soil Vapor	Primary Sample	Primary Result	8260B	trans-1,2-Dichloroethene	156605	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F40301
8SV_DG-534	SVL-834-SA8-SV-6.0-7.0	--	3F40301-03	6/3/2014 8:34	Soil Vapor	Primary Sample	Primary Result	8260B	Trichlorofluoromethane	75694	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F40301
8SV_DG-543	SVL-543-SA8-SV-6.25-7.25	--	3F41901-02	6/19/2014 8:34	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41901
8SV_DG-543	SVL-543-SA8-SV-6.25-7.25	--	3F41901-02	6/19/2014 8:34	Soil Vapor	Primary Sample	Primary Result	8260B	m-Xylene & p-Xylene	179601231	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41901
8SV_DG-543	SVL-543-SA8-SV-6.25-7.25	--	3F41901-02	6/19/2014 8:34	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41901
8SV_DG-543	SVL-843-SA8-SV-6.25-7.25	SVL-543-SA8-SV-6.25-7.25	3F41901-03	6/19/2014 8:34	Soil Vapor	Field Duplicate	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41901
8SV_DG-543	SVL-843-SA8-SV-6.25-7.25	SVL-543-SA8-SV-6.25-7.25	3F41901-03	6/19/2014 8:34	Soil Vapor	Field Duplicate	Primary Result	8260B	m-Xylene & p-Xylene	179601231	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41901
8SV_DG-543	SVL-843-SA8-SV-6.25-7.25	SVL-543-SA8-SV-6.25-7.25	3F41901-03	6/19/2014 8:34	Soil Vapor	Field Duplicate	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41901
8SV_DG-545	SVL-545-SA8-SV-6.75-7.25	--	3F41901-05	6/19/2014 10:37	Soil Vapor	Primary Sample	Primary Result	8260B	1,1,2,2-Tetrachloroethane	79345	0.02	UJ	Non-Detect Estimated Value	EST	V	*III	3F41901
8SV_DG-545	SVL-545-SA8-SV-6.75-7.25	--	3F41901-05	6/19/2014 10:37	Soil Vapor	Primary Sample	Primary Result	8260B	m-Xylene & p-Xylene	179601231	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41901
8SV_DG-545	SVL-545-SA8-SV-6.75-7.25	--	3F41901-05	6/19/2014 10:37	Soil Vapor	Primary Sample	Primary Result	8260B	Toluene	108883	0.02	UJ	Non-Detect Estimated Value	EST	V	C	3F41901

TABLE 4-1
PHASE 3 SOIL VAPOR
SUMMARY OF QUALIFIED DATA
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA
(Page 10 of 10)

Object Name	Sample Name	Parent Sample Name	Lab Sample Name	Collection Date	Matrix Type	Sample Type	Result Type	Analysis Method	Analyte	CAS Number	Result Value (µg/L)	Validator Qualifier Code	Validator Qualifier Description	Lab Name	Validation Level	Validation Notes	Validation Report Identifier

Acronyms
µg/L - micrograms per liter
CAS - chemical abstract service
EST - Environmental Support Technologies
RL - reporting limit

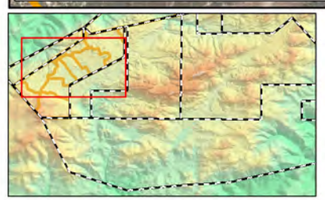
Validation Notes:
B - Presumed contamination as indicated by the preparation (method) blank results.
C - Calibration percent standard deviation or percent difference was non-compliant.
F - Presumed contamination as indicated by the field blank or equipment rinse blank results.
*III - Laboratory control spike/laboratory control spike duplicate relative percent difference exceeded the control limit.
L - Laboratory blank spike/blank spike duplicate percent recovery was not within control limits.

Validation Qualifiers:
J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
UJ - The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

FIGURES



Please Note: The original version of this figure includes colorize features and shading. A black and white copy of the figure should not be used because it may not accurately represent the information



Basemap Legend

- Administrative Boundaries
- Area IV Subareas
- Existing Structure
- Removed Structure

- Active Soil Vapor Sample Location
- Deferred Active Soil Vapor Sample Location
- Soil Sample Location (Soil vapor probe not installed due to less than 5.5 feet of soil)
- Location Drilled but no Samples Collected due to Thin Soils

Phase 3 Soil Vapor Sample Locations

SANTA SUSANA FIELD LABORATORY

Document: C:\Rocketdyne_MXDs\GoBacks_SV.mxd Date: 09/18/2014

0 230 460 Feet

N

FIGURE 1-1

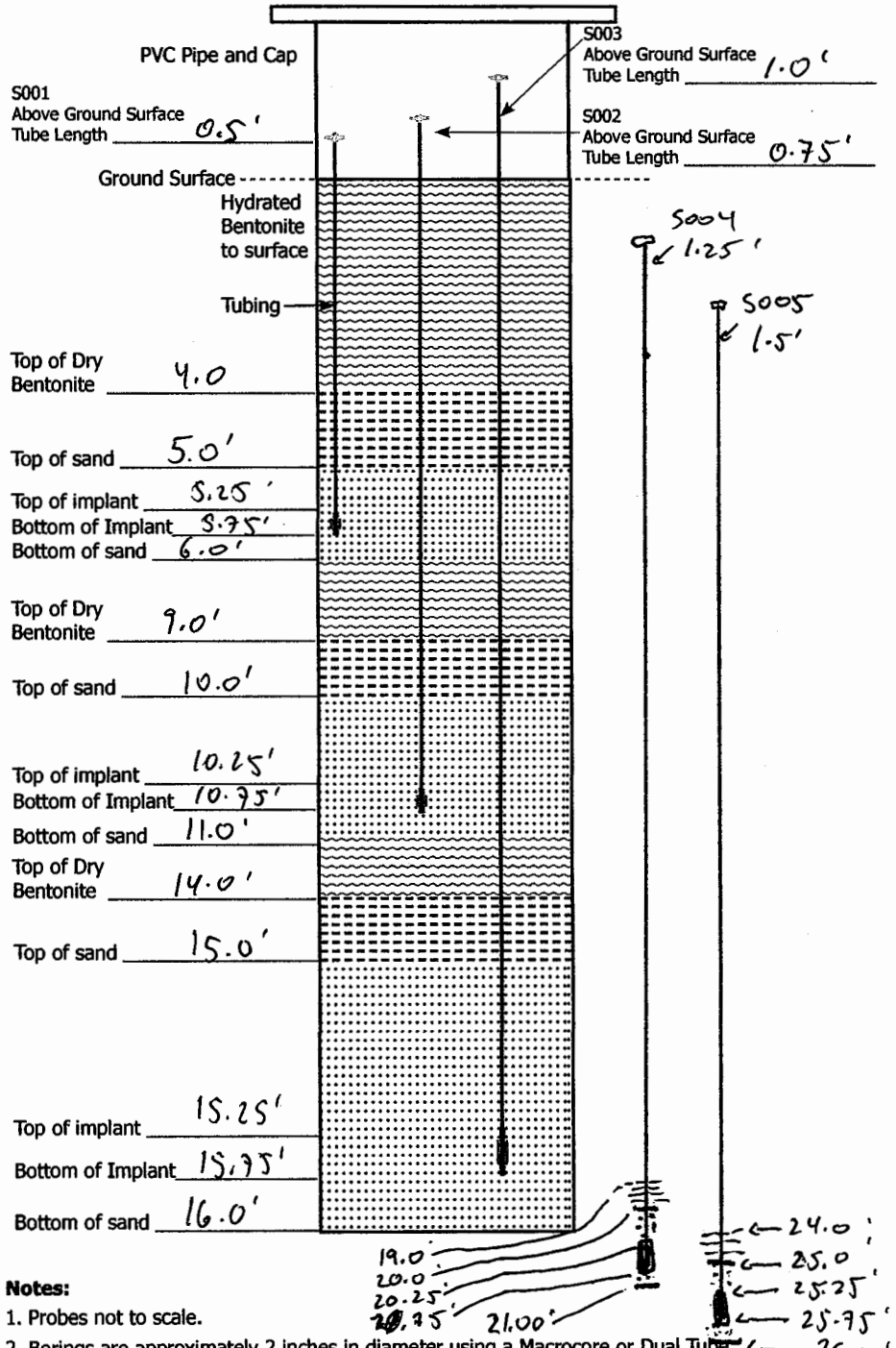
APPENDIX A

SOIL BORING LOGS AND
SOIL VAPOR PROBE CONSTRUCTION DETAILS

MWH

Multiple Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SASV DG-504
Project: Phase 3 DOE Data Gap Sampling 2014
Job #: 10503982.3050105/10503982.3060105
Site: SA
Logged by: RUB ELLIS
Reviewed by:
Drilling Contractor: EST
Driller: MATT MCMULLEN
Rig Type/Method: Geoprobe 5400
Borehole TD: 30.0' bgs
Borehole Diameter: 2.25"
Probe Completion Date/Time: 05 JUN 14 11:30



Vapor Implant Specs
Material: stainless steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: teflon
Diameter: 1/4"
Color: clear

Sand Pack Specs
Grain Size: #3 sand
Manufacturer: Cemex

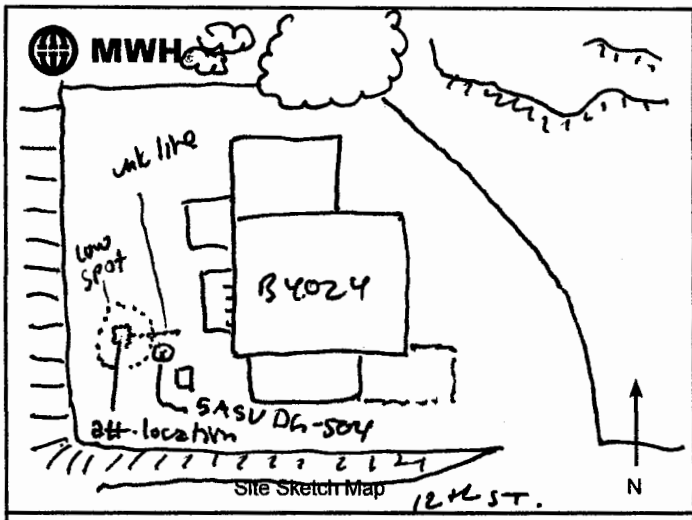
Dry Bentonite
Type: #8 crumbles
Manufacturer: Cetco

Hydrated Bentonite
Type: #8 crumbles
Manufacturer: Cetco

Notes:
1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

MWH



Site Sketch Map

Boring ID: SASV DG-504 Sheet 1 of 2

Project: Phase 3 DOE SVDG 2014

Job #: 105038892.3050166 Site: SA B4024 (W)

Logged By: RWBEELS Reviewed By:

Drilling Contractor: EST Drillers Name: MARK MCMULLEN

Drill Rig Type/Method: Geoprobe 5400

Sampler Type: Macrocore

Borehole Diam (inch): 2.25" Total Depth (ft.bgs): 30.0

Drill Bit Type: Macro core

Drill Start Time/Date: 08:43 05 JUN 14 Drill Finish Time/Date: 09:50 05 JUN 14

Soil Vapor ID: SASV DG-504

Soil Boring Backfill Time/Date: N/A Backfill Material: N/A

Soil Vapor Well Completion Time/Date: 11:06 - 05 JUN 14

Observations: ☐ Debris ☐ Staining ☐ Odors ☒ ~~Groundwater~~ perched water ☐ None

Soil Vapor Probe Depths (ft.bgs): 5.0-6.0, 10.0-11.0, 15.0-16.0, 20.0-21.0

Surface Completion: SV probe

Soil Vapor Well Detail Completed (yes/no) attached 250-260

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
								1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations					
0.0 ppm		45"				0		4" asphalt 0.0-0.35'					
						1		0.35-17.3					
								poorly sorted sand with silt (SP-SM). dark yellowish brown (10YR 4/6), moist, loose, Predom. fine sand (55), little silt (20), little med sand (15), few coarse (10) w/ trace gravels. Coarse fraction consists mostly of sand stone grains w/ oxidation rinds. Several sand stone clasts up to 2" throughout, angular to sub angular and weathered. Occasional small (~1") lens of SM (silty sand). No stain or odor. Fill material.	TR	10	15	55	20
						2							
						3	SP SM						
0.0 ppm		46"				4							
						5							
						6							
						7							
0.0 ppm		46"				8							
						9							

Boring ID: SASV DG-504 Project: Phase 3 DOE SUDG 2014 Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						10		17.3 - ~~30~~ 24.5					
						11		Silty sand (SM), Brown (10YR 4/3)	–	–	TR	65	35
								Mostly fine sand (65), some					
						12		silt (35), moist, loose,					
0.0 ppm		42"					SP-SM	mottled throughout but sporadic					
						13		oxidation around small coarse					
								sand-gravel sized sandstone					
						14		fragments. One stray larger					
								dast up to 1.5" of sandstone.					
						15		No stain, no odor. PID meter					
						16		24.5 - 30.0				15	
0.0 ppm		48"						Poorly sorted sand w/ silt (SP-SM) -		TR	TR	60	25
						17		Dark yellow brown (10YR 4/6).					
								Mostly fine sand (60), little					
						18		silt (25), and little med. um (15)					
								trace coarse grains, No fill material					
						19		stain, no odor. ~~Possible bedrock~~					
								~~contact. Wood fragments @ 28.8'~~					
						20		bgs, water logged. 27.8'					
0.0 ppm		42"						Interval is moist until					
						21		28.0' where it becomes					
								saturated/wet. Possible					
						22	SM	perched water from former					
								basement feature of B4024.					
						23							
								TD = 30.0' bgs with refusal on					
						24		sandstone; dark bluish gray					
0.0 ppm		27"						(GLEY2 4/5B).					
						25							
								* Boring caved in to 27.1' bgs.					
						26		+ 6" of water. First probe set					
							SP-SM	to 25.5' center after #8 chips					
						27		to 26.0' bgs.					
						28		* Borehole moved to alternate, N/A'					
0.0 ppm		24"						west of primary location to target					
						29		low spot and geophysical anomaly					
								in pedestrian, cut/patched asphalt					

TD = 30

QA/QC

Surficial media boring log rev 2-25-2014

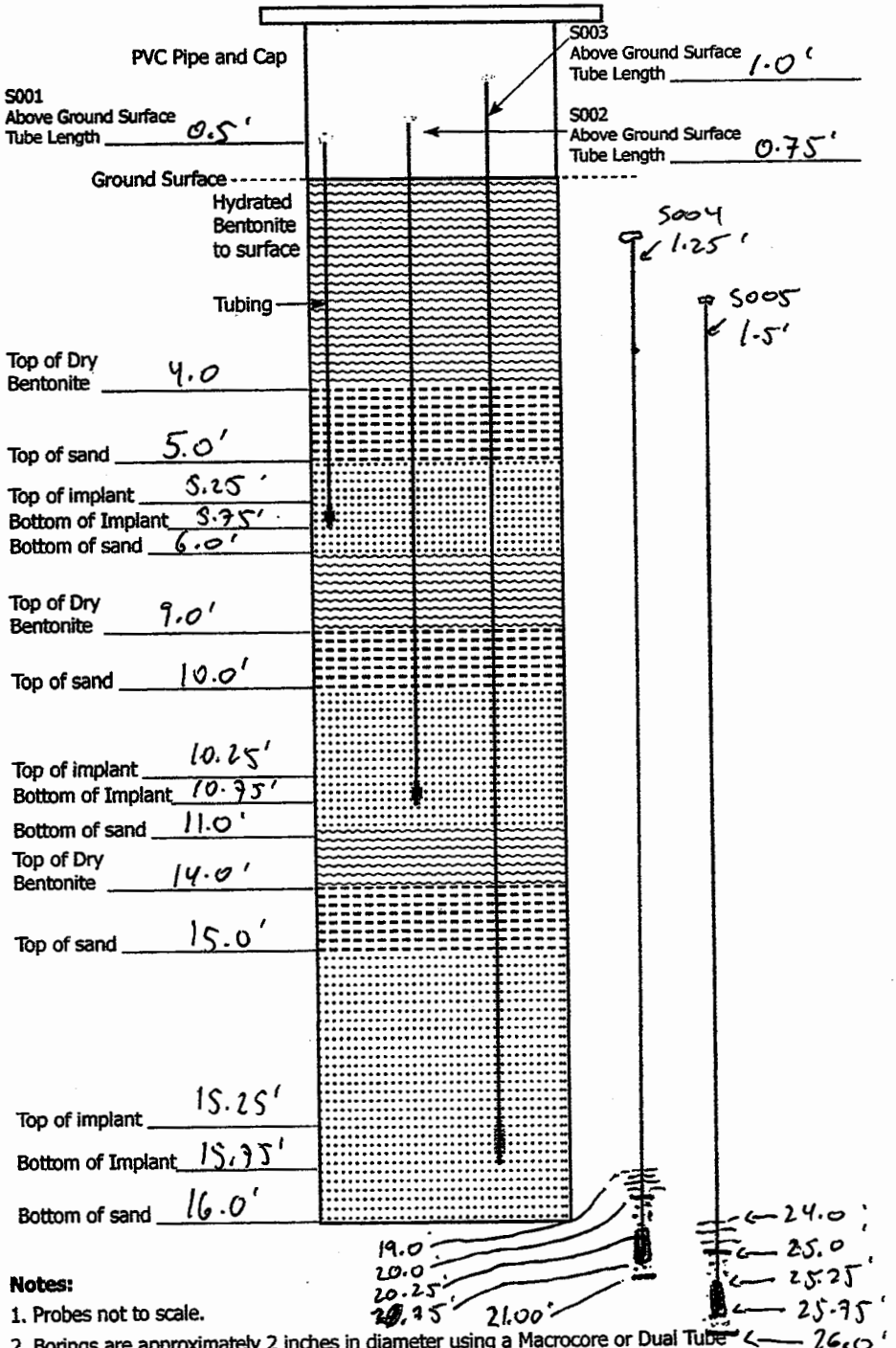
MWH

Multiple Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SASV DG-S09
Site: SA
Drilling Contractor: EST
Borehole TD: 32.0' bgs

Project: Phase 3 DOE Data Gap Sampling 2014
Logged by: RBELLIS
Driller: MARTY KILHULLEN
Borehole Diameter: 2.25"

Job #: 10503982.3050105/10503982.3060105
Reviewed by:
Rig Type/Method: Geoprobe 540
Probe Completion Date/Time: 05 JUN 15:00



Vapor Implant Specs
Material: stainless steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: teflon
Diameter: 1/4"
Color: clear

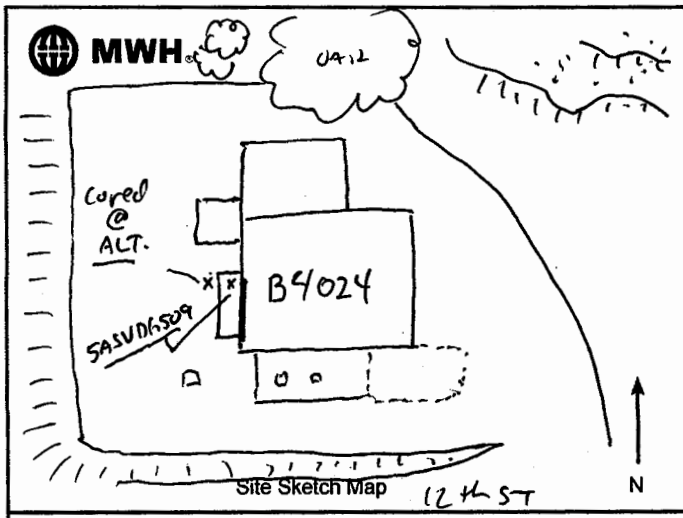
Sand Pack Specs
Grain Size: #3 sand
Manufacturer: Cemex

Dry Bentonite
Type: #8 crumbles
Manufacturer: Cetco

Hydrated Bentonite
Type: #8 crumbles
Manufacturer: Cetco

Notes:
1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2



Site Sketch Map 12th ST

Boring ID: 5ASV DG-509	Sheet 1 of 2
Project: Phase 3 DOE SVDG 2014	
Job #: 10503892.3050106	Site: 5A B4024(W)
Logged By: RMB Ellis	Reviewed By:
Drilling Contractor: EST	Drillers Name: Marty McHullen
Drill Rig Type/Method: Geoprobe 5400	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 32.0'
Drill Bit Type: Macrocore	
Drill Start Time/Date: 11:50 05JUN14	Drill Finish Time/Date: 12:50 05JUN14
Soil Vapor ID: 5ASV DG-509	Soil Boring Backfill Time/Date: N/A
	Backfill Material: N/A
Soil Vapor Well Completion Time/Date: 05 JUN14 ; 13:50	Observations: ☐ Debris ☒ Staining (oxide) ☐ Odors ☐ ~~Groundwater~~ (perched water) ☐ None
Soil Vapor Probe Depths (ft.bgs): 5-6, 10-11, 15-16, 20-21, 25-26	Surface Completion: SV probe on asphalt
Soil Vapor Well Detail Completed (yes/no) attached	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

Surface Description: concrete/asphalt interface @ base of ramp

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
0.3 ppm		40"				0		4" asphalt 0.0-0.35'					
								0.35' - 26.8					
						1		Poorly sorted sand with silt	—	5	10	60	25
								(SP-SM), dark yellowish brown					
						2		(10YR 4/6), moist, loose. Mostly					
								fine sand (60), little silt (25),					
						3		few medium (10) and coarse (5)					
								sand. Some asphalt gravels at					
0.0 ppm		29"				4		the top few inches, and a small					
								1.5" layer of pea gravel @ 2.5' bgs					
						5	SP-SM	Rest of coarse fraction is sandstone					
								clasts ½" to 1", sporadic,					
						6		semi uniform through section,					
								oxide rinds and proximal to					
						7		clasts. No stain, no odor					
								fill material.					
0.0 ppm		30"				8							
								Rusted nail @ 23.0' bgs w/ staining					
						9		(rust) around it. Base gravel					
								up to 1.0" at fill / native contact					

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Boring ID: SASV DH-509 Project: Phase 3 DOE SVDH 2014 Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						10		26.8 - 32.0 h					
						11		Poorly sorted sand (sp) ~~with silt (ml)~~	-	-	10	75	15
						12		Dark yellowish brown (10YR 4/6), mostly fine sand (75), little silt (15)					
0.5 ppm		41"				13		and few coarse sand (10). No stain, no odor. Possible native soil.					
						14		Interval is moist, loose, but becomes more wet at 27.5' bgs., Possible perched water from former basement footing of BLDG 4.					
00 ppm		38"				15							
						16							
						17	SP	TD = 32.0' with refusal on hard sandstone. Sandstone is dark bluish gray (5BG 4/1)					
						18	SM						
						19		• Boring cored to 31.0', water in hole to 27' bgs. First probe set to 25.5' center after #8 chips backfilled to 26.0' bgs. Dry after 20 minutes.					
00 ppm		29"				20							
						21							
						22		• Bore hole moved ~6.0' to the (W) to avoid concrete ramp. Borehole is in asphalt at interface of concrete and asphalt.					
						23							
0.3 ppm		27"				24							
						25							
						26							
						26.8							
						27							
						28							
0.1 ppm		39"				29	SP						
						30							
						31.0							
						32.0 = TD							

1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

MWH

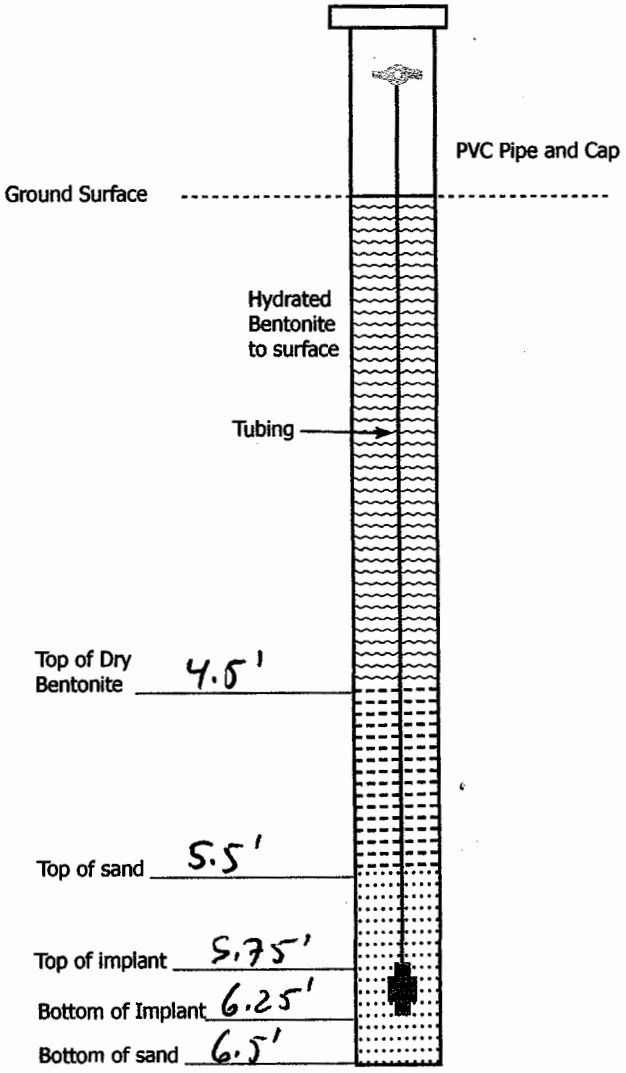
Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SASV DG-512 Job #: 10503982.3050106/10503982.3060106 Project: Phase 3 DOE Data Gap Sampling 2014

Site: SA Reviewed by: Logged by: ROSS ELLIS

Drilling Contractor: EST Rig Type/Method: Geoprobe 5400 Driller: MARK ILLINGWORTH

Borehole TD: 6.5' bgs Probe Completion Date/Time: 05JUN14 08:00 Borehole Diameter: 2.25"



Vapor Implant Specs

Material: stainless steel

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: teflon

Diameter: 1/4"

Color: clear

Sand Pack Specs

Grain Size: #3 sand

Manufacturer: Comex

Dry Bentonite

Type: #8 crumbles

Manufacturer: Cetco

Hydrated Bentonite

Type: #8 crumbles

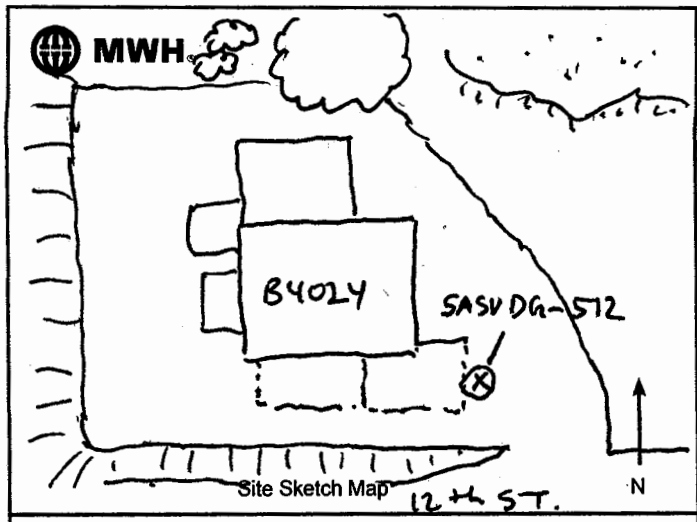
Manufacturer: Cetco

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH



Site Sketch Map

Boring ID: SASV DG-512	Sheet 1 of 1
Project: Phase 3 DOE SVDG 2014	
Job #: 10503982.3050106	Site: 5A B4024 (E)
Logged By: RMBelles	Reviewed By:
Drilling Contractor: EST	Drillers Name: MARTY KILHULLEN
Drill Rig Type/Method: Geoprobe 5400	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft bgs): 6.5'
Drill Bit Type: Macrocore	
Drill Start Time/Date: 07:41 05 JUN 14	Drill Finish Time/Date: 07:48 05 JUN 14
Soil Vapor ID: SASV DG-512	Soil Boring Backfill Time/Date: N/A
	Backfill Material: N/A
Soil Vapor Well Completion Time/Date: 05 JUN 14; 08:00	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): 5.5'-6.5'	Surface Completion: SV probe
Soil Vapor Well Detail Completed (yes/no) attached	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description asphalt

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

Surface Description: flat

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
0.0 ppm		39"				0		4" asphalt 0.0-0.35					
						1	CL	~~0.0-0.5~~ 0.35-0.9				15	
								Clay (CL), dark yellowish	TR	5	-	~~15~~	80
						2		Brown (10YR 3/4). Slightly moist,					
							SP	hard, no dilatency, high dry					
						3		strength, med. toughness, Mostly					
								clay (80), little fine sand (15),					
						4		few coarse sand (5), TR gravels					
0.0 ppm		30"						throughout (asphalt). No stain					
						5		no odor, Fill material.					
								0.9 - 6.5					
						6		Poorly graded sand (SP), dark	TR	10	10	70	10
						TD: 6.5		yellowish brown (10YR 4/4).					
						7		moist, loose. Mostly fine					
TD = 6.5' bgs								sand (70), few silt, med,					
w/ refusal						8		coarse sand (10% each), TR	1/2"				
on sandstone								gravels throughout up to ~~1/2~~					
bedrock.						9		Several clasts of sandstone all					
								throughout up to 2". No stain					
								no odor. Fill material.					

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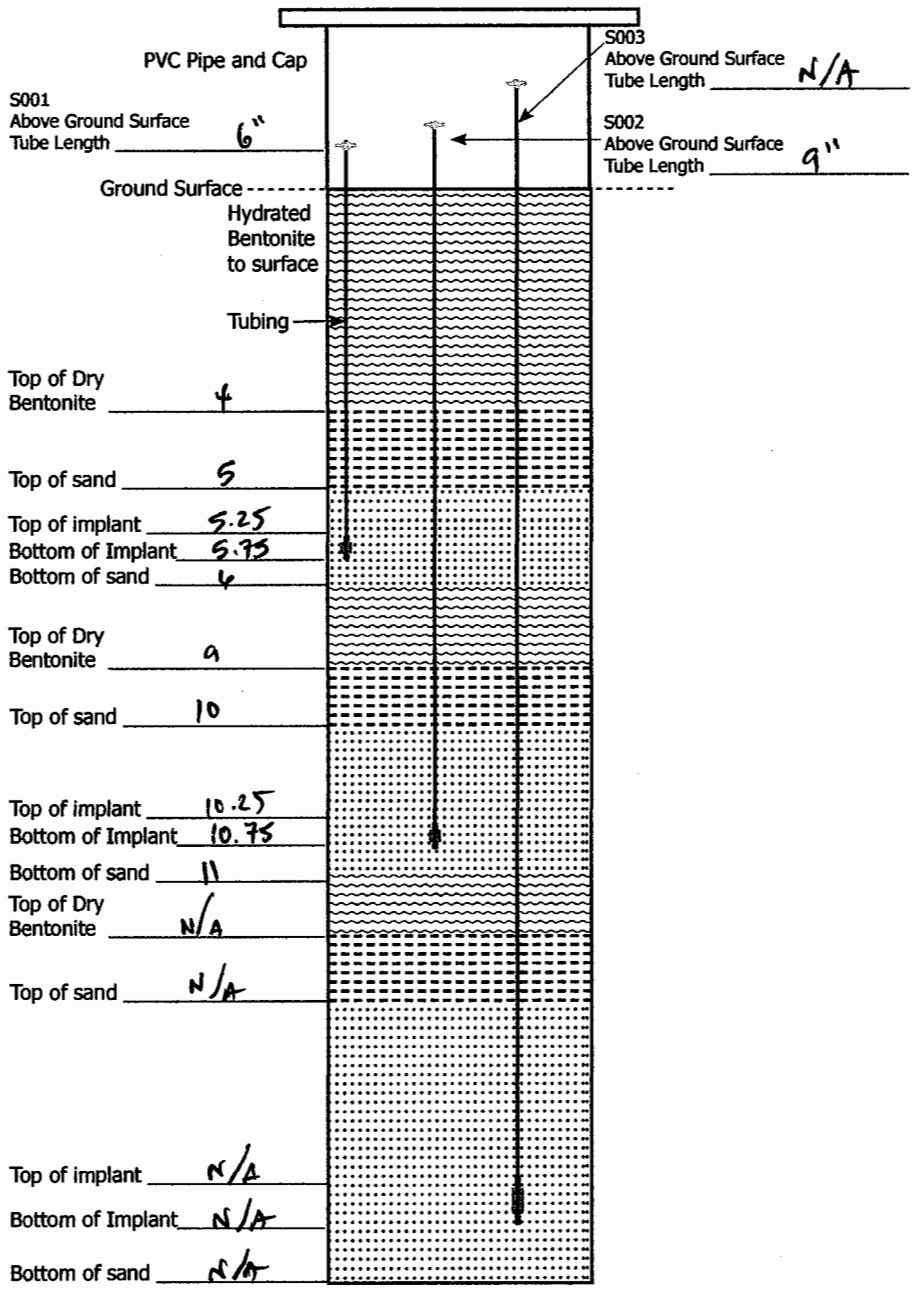
MWH

Multiple Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SSV-DG-S21
Site: SA
Drilling Contractor: EST
Borehole TD: 11'

Project: Phase 3 DOE Data Gap Sampling 2014
Logged by: ANDREW PAYNE
Driller: MARTIN KILHAMEN
Borehole Diameter: 2.25"

Job #: 10503982.3050105/10503982.3060105
Reviewed by:
Rig Type/Method: GEOPROBE 5400 / DP
Probe Completion Date/Time: 6/6/14 1000



Vapor Implant Specs

Material: STAINLESS STEEL
Length: 6"
Diameter: 3/8"

Tubing Specs

Material: TEFLON
Diameter: 1/4"
Color: CLEAR

Sand Pack Specs

Grain Size: #3
Manufacturer: CEMEX

Dry Bentonite

Type: #8
Manufacturer: CETCO

Hydrated Bentonite

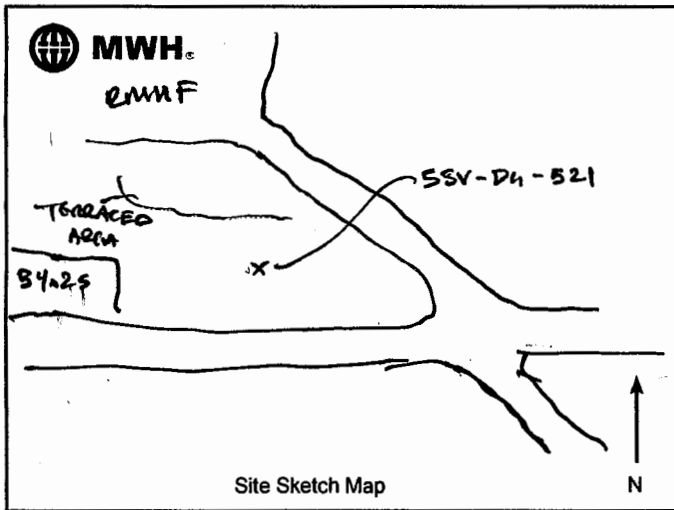
Type: #8
Manufacturer: CETCO

Notes:

1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

MWH



Site Sketch Map

Boring ID: SSV-DG-521	Sheet 1 of 2
Project: Phase 3 DOE Data Gap Sampling 2014	
Job #: 10503982.3050106 / 10503982.3060106	Site: SA
Logged By: ANDREW RAYNO	Reviewed By:
Drilling Contractor: EST	Drillers Name: MARTIN KLUHULLEN
Drill Rig Type/Method: GEOPROBE 5400/DP	
Sampler Type: MACROCORE	
Borehole Diam (inch): 2.25"	Total Depth (ft bgs): 11'
Drill Bit Type: MACROCORE	
Drill Start Time/Date: 0925 6/6/14	Drill Finish Time/Date: 1000 6/6/14
Soil Vapor ID: SSV-DG-521	Soil Boring Backfill Time/Date: N/A — Backfill Material: N/A
Soil Vapor Well Completion Time/Date: 6/6/14 1000	Observations: ☐ Debris ☑ Staining (OXIDATION) ☐ Odors ☐ Groundwater ☐ None
Soil Vapor Probe Depths (ft.bgs): 5-6, 10-11	Surface Completion: SOIL VAPOR PROBE
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: WEATHERED SS ☒ Bedrock ☐ Debris ☐ Gravel ☒ Unknown (AP) ☐ None

Soil Description

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

Surface Description: GRASSES, MUSTARD, SHRUBS (SPARSE)

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
						0		SILTY SAND (SM) DRY, (BROWN - 10YR 4/3), LOOSE	—	—	5	75	20
						1		TO MEDIUM DENSE, FINE SAND, TRACE MED. SAND,					
								ROOTS, FILL MATERIAL					
0.0		48"	—	N/A NONE	—	2							
						3	SP (AP)	SAND W/ GRAVEL @ 3.5-4.0, DRY, LOOSE,	15	10	30	30	5
							SP-SM	GRAYISH BROWN (10YR 5/2), FINE TO CS					
						4		SAND, ~15% GRAVEL, SAND AND GRAVEL IS					
								AND TO SR; FILL; TRACE FINES.	—	—	15	55	30
						5	SM	SILTY SAND (SM), MOIST, BROWN (10YR 4/3) TO					
								~~YELLOWISH~~ (AP) BROWN (10YR 6/6) -ISH YELLOW; MEDIUM DENSE,					
0.0		48"	—	N/A NONE	—	6		FINE TO MEDIUM SAND, SA TO SR, ~25-30% FINES					
								STRONG BRN (7.5YR 4/6) MOTTLING/OXIDATION, MICA,					
						7		CHARCOAL? (BLACK PIECES 10Y 2/1); NO ODOR					
								NATIVE/ALLUVIUM.					
						8	SP-SM	SAND W/ SILT (SP-SM), DRY TO MOIST, VERY PALE	—	—	15	70	15
								BROWN (10YR 7/4) W/ STRONG BROWN (7.5YR 5/8)					
						9		OXIDATION (@ 8-8.25), FINE TO MEDIUM SAND, ~15%					
0.0		36" ~~48~~ (AP)	—	N/A NONE	—			FINES; NATIVE ALLUVIUM; SA TO SR SAND.					
						10							

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Boring ID: SSV-DA-S2 | Project: SV INSTALLATION | Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
0.0	X	36"	—	N/A (NONE)	—	10	SP	SAND (SP), DRY, LOOSE, VERY PALE BROWN (10YR 7/3), FINE TO MED SAND, TRACE FINES; SEARCH TO SUBSURFACE, NATIVE ALLUVIUM. INGATHERED SS PIECES ~ 1/4–1/8" DIA.					5
						11							
						2							
						3							
						4		TD = 11'					
						5		UNCONSOLIDATED / BEDROCK					
								DUAL NEST SV PROBE S-6', 10-11'					
						6							
						7							
						8							
						9							
						0							
						1							
						2							
						3							
						4							
						5							
						6							
						7							
						8							
						9							

MWH

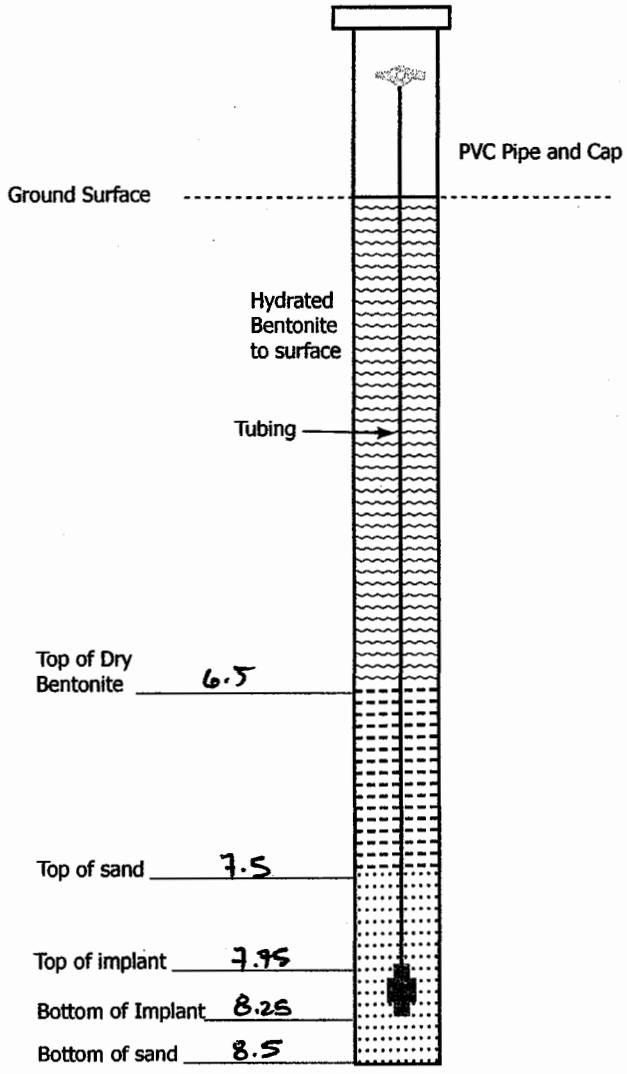
Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SSV-DG-522 | Job #: 10503982.3050106/10503982.3060106 | Project: Phase 3 DOE Data Gap Sampling 2014

Site: SA 5 | Reviewed by: | Logged by: Robert Evans

Drilling Contractor: EST | Rig Type/Method: ~~MARTIN~~ GEOPROBE 5400 / DP | Driller: MARTIN KILMULLEN

Borehole TD: 8.5' | Probe Completion Date/Time: 6/6/14 0845 | Borehole Diameter: 2.25"



Vapor Implant Specs

Material: STAINLESS STEEL

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: TEFLON

Diameter: 1/4"

Color: CLEAR

Sand Pack Specs

Grain Size: #3

Manufacturer: CEMEX

Dry Bentonite

Type: #8

Manufacturer: CETCO

Hydrated Bentonite

Type: #8

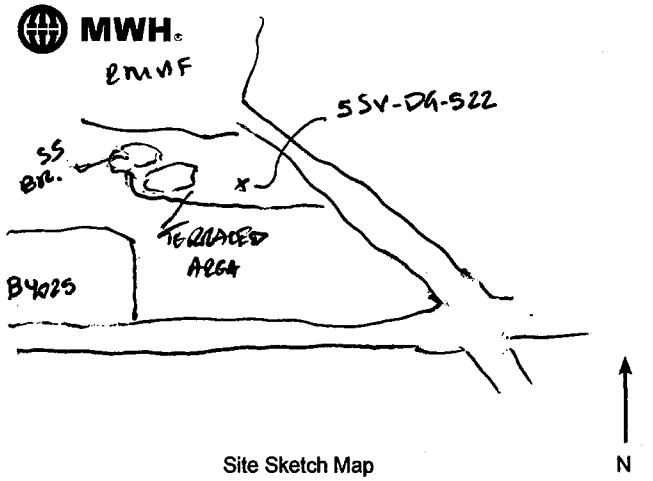
Manufacturer: CETCO

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH.



Site Sketch Map

Boring ID: SSV-DG-522	Sheet 1 of 1
Project: Phase 3 DOE Data Gap Sampling 2014	
Job #: 10503982.3050106 / 10503982.3060106	Site: SA 5
Logged By: Andrew Rayne	Reviewed By:
Drilling Contractor: EST	Drillers Name: Martin Kilhullen
Drill Rig Type/Method: GEOPROBE 5400/DP	
Sampler Type: MACROCORE	
Borehole Diam (inch) 2.25"	Total Depth (ft.bgs) 8.5'
Drill Bit Type: MACROCORE	
Drill Start Time/Date: 0815 6/6/14	Drill Finish Time/Date: 0830 6/6/14
Soil Vapor ID: SSV-DG-522	Soil Boring Backfill Time/Date: N/A — Backfill Material: N/A
Soil Vapor Well Completion Time/Date: 6/6/14 0845	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): 7.5 - 8.5'	Surface Completion: SOIL VAPOR PROBE
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ON SS / WEATHERED ☒ Bedrock ☐ Debris ☐ Gravel ☒ Unknown ☐ None

Soil Description

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

Surface Description: GRASS AND BRUSH

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
						0	SM	SILTY SAND (SM), DRY, BROWN (10YR 4/3), FINE SAND, ~65% FINE, ~15% MEDIUM SAND, ~20% FINES, LOOSE; ROOTS; FILL MATERIAL; SAND IS SA TO SR.	—	—	15	65	20
0.0		40"	—	NONE	—	1		@ 1.5-2.0 INTERVAL OF LIGHT YELLOWISH BROWN (10YR 6/4) W/ PIECES OF SS (FROM A SMALL ROCK)					
						2							
						3							
						4							
						5	SM	SILTY SAND (SM) DRY, LOOSE, DARK YELLOWISH BROWN (10YR 4/4), ~65% FINE SAND, 10% MEDIUM, 25% FINES, FILL MATERIAL; SAND IS SA TO SR	—	—	10	65	25
0.0		48"	—	NONE	—	6		@ 7.5 - 8.0 - MEDIUM DENSE					
						7							
0.0		6"	—	NONE	—	8	SP	SAND (SP) YELLOWISH BROWN, DRY, FINE TO MEDIUM LOOSE SAND, SAND IS ANG TO SUB	—	—	80	15	5
						9		ROUNDED, TD=8.5'; ~~UNKNOWN~~ REFUSAL, SV PROBE @ 7.5-8.5'					

LIGHTWORD SS BEDROCK

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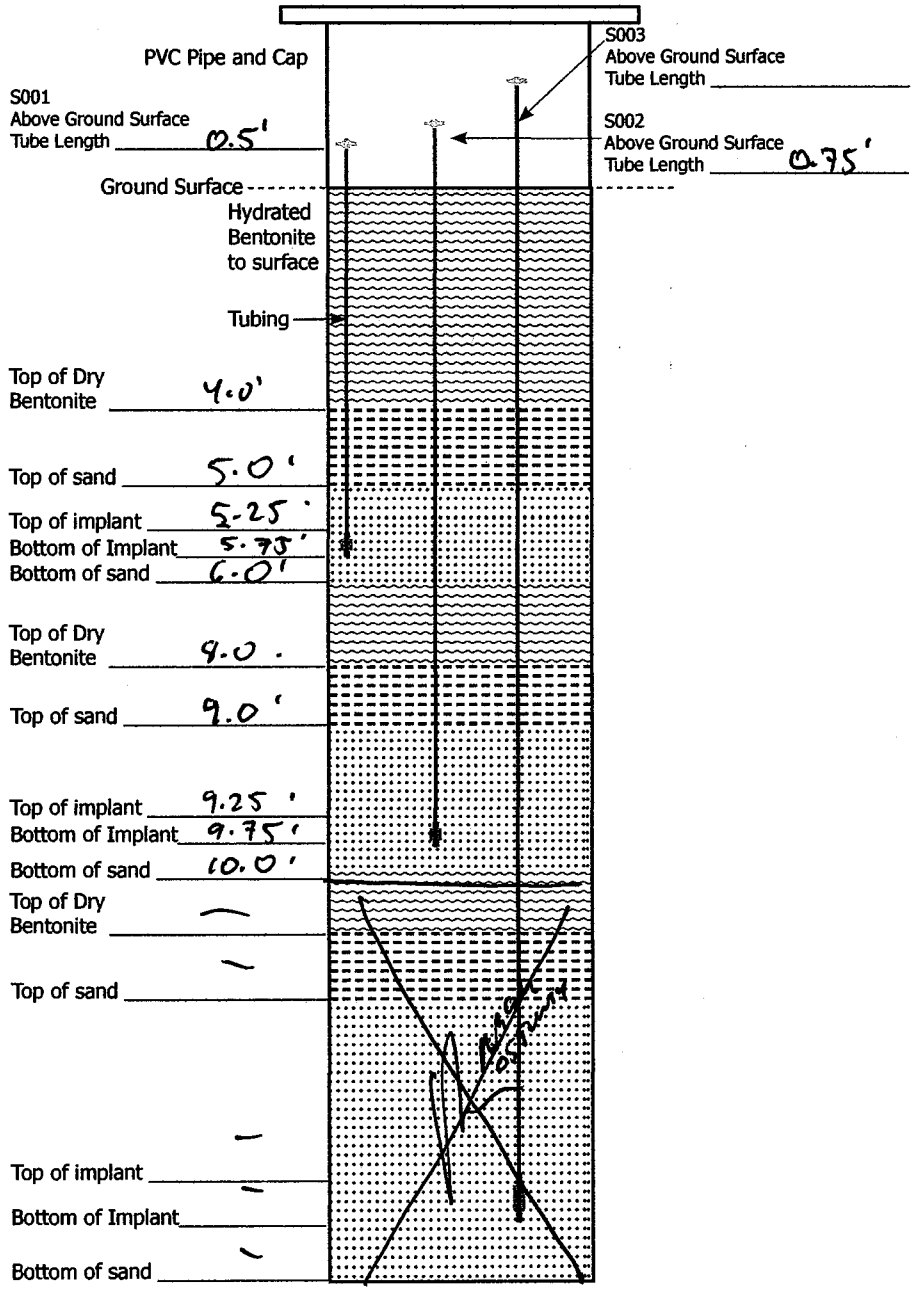
MWH

Multiple Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SASV DG-528
Project: Phase 3 DOE Data Gap Sampling 2014
Job #: 10503982.3050105/10503982.3060105
Site: SA
Logged by: RUSSELL S
Reviewed by:
Drilling Contractor: EST
Driller: MARTY KLEINLEIN
Rig Type/Method: Geoprobe 5400
Borehole TD: 10.0' bgs
Borehole Diameter: 2.25"
Probe Completion Date/Time: 05 JUN 14. 15:00



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: teflon
Diameter: 1/4"
Color: clear

Sand Pack Specs
Grain Size: #3 Sand
Manufacturer: Cemex

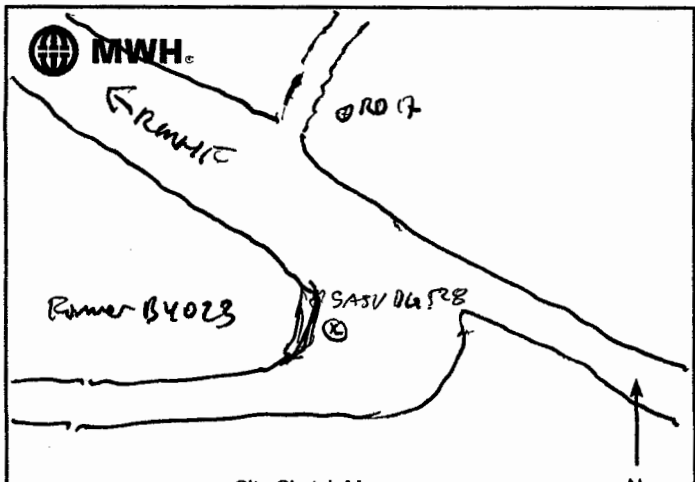
Dry Bentonite
Type: #8 crumbles
Manufacturer: Cetco

Hydrated Bentonite
Type: #8 crumbles
Manufacturer: Cetco

Notes:

1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2



Site Sketch Map

Boring ID: 5ASV DG-528	Sheet 1 of 1
Project: Phase 3 DOE SVDG 2014	
Job #: 10503892.3050108	Site: 5A
Logged By: RUBENIS	Reviewed By:
Drilling Contractor: EST	Drillers Name: MARTY KILHULLEN
Drill Rig Type/Method: Geoprobe 5400	
Sampler Type: Macrocore.	
Borehole Diam (inch) 2.25"	Total Depth (ft.bgs) 10.0'
Drill Bit Type: macrocore	
Drill Start Time/Date: 14:25 05 JUN 14	Drill Finish Time/Date: 14:40 05 JUN 14
Soil Vapor ID: 5ASV DG-528	Soil Boring Backfill Time/Date: N/A — Backfill Material: N/A
Soil Vapor Well Completion Time/Date: 05 JUN 14; 15:00	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): 5.0-6.0'; 9.0-10.0'	Surface Completion: SV probe on asphalt
Soil Vapor Well Detail Completed (yes/no) attached.	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

Surface Description: asphalt, slight grade SE

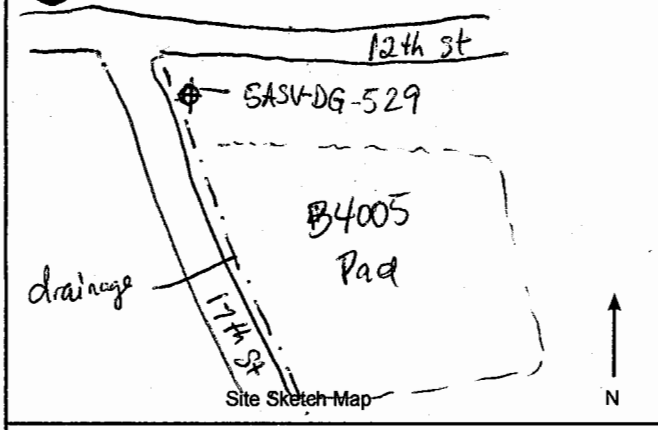
PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
0.0 BM		44"				0		0.0 - 0.35 4" asphalt					
						1	SP GP	0.35 - 1.7 graded poorly ~~sorted~~ sand w/ gravel, (SP-GP), gray (10YR 6/1),	20	10	15	45	10
						2		Mostly fine sand (45), little gravel (20),					
						3	SP	little medium (15), few silt (10)					
								coarse sand (10), med dense-dense,					
						4		dry. No stain, no odor. Fill					
		48"						Some base gravel at 1.7' bgs.					
						5		1.7 - 4.0					
			TD = 10.0' w/ refusal on sandstone bedrock				SP SM	Poorly graded sand (SP), yellowish brown (10YR 5/4) loose, dry.	-	-	5	85	10
						6		Mostly fine sand (85), few silt					
						7		(10) and few med sand (5). No					
								Stain, no odor. Fill.					
						8		4.0 - 8.5					
		24"						Poorly sorted sand with silt (SP-SM)	-	-	TR	75	25
						9		dark brown (10YR 3/2) grades to dk yellow					
							SM	brown (10YR 3/6). dry loose. Mostly					
						10.0		fine sand (75), little silt (25), trace med sand.	-	-		65	35

No stain, no odor. Fill.

8.5 - 10.0
silty sand (SM). Dark yellow brown (10YR 4/6). Transitions to dry loose, yellow brown (10YR 5/8

QA/QC
Surficial media boring log rev 2-25-2014

MWH



Site Sketch Map

Boring ID: SASV-DG-529 Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: SA

Logged By: V. Vathanasin Reviewed By:

Drilling Contractor: EST Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5400/DP

Sampler Type: Macrocore

Borehole Diam (inch): 2.25" Total Depth (ft.bgs): 4.5

Drill Bit Type: Macrocore

Drill Start Time/Date: 1430/6-5-2014 Drill Finish Time/Date: 1445/6-5-2014

Soil Vapor ID: N/A

Soil Boring Backfill Time/Date: 1507/6-5-14 Backfill Material: Soil cuttings.

Soil Vapor Well Completion Time/Date: N/A

Observations: ☐ Debris ☒ Staining ☐ Odors ☐ Groundwater ☐ None

Soil Vapor Probe Depths (ft.bgs): N/A

Surface Completion: None

Soil Vapor Well Detail Completed (yes no)

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations) Surface Description: E. side of asphalt swale	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SW-GW	Asphalt 2" (v.v)	15	10	25	50	NR
						1		Well Graded Sand w/ Gravel & brownish yellow (10YR 6/6) with black (10YR 2/1)	-	-	25	50	25
		48"					SM	~~asphalt~~ (v.v) asphalt/tar staining, fill					
						2		0.75' - 1.0', Asphalt - black (10YR 2/1)					
								fine to coarse sand, fine gravel					
						3		Silty Sand (SM), brownish yellow (10YR 6/8), loose, dry, fine to					
						4		medium sand, non-plastic silt,					
		6"			15:04		SP		-	-	15	85	-
								no odors, slight asphalt stains (very					
SVL-529-SASA-SB-4.0-4.5						5		dark grayish brown (10YR 3/2)), fill					
						6		Poorly Graded Sand (SP), brownish					
								yellow (10YR 6/8), loose, dry, fine					
						7		sand and medium sand, weak					
							Br	oxidation (reddish yellow (5YR 6/8)),					
						8		native soil					
								Sandstone, weathered					
						9		TD=4.5, refusal on bedrock,					
								Collected encores for VOC analyses					

Single Soil Vapor Probe Construction Diagram

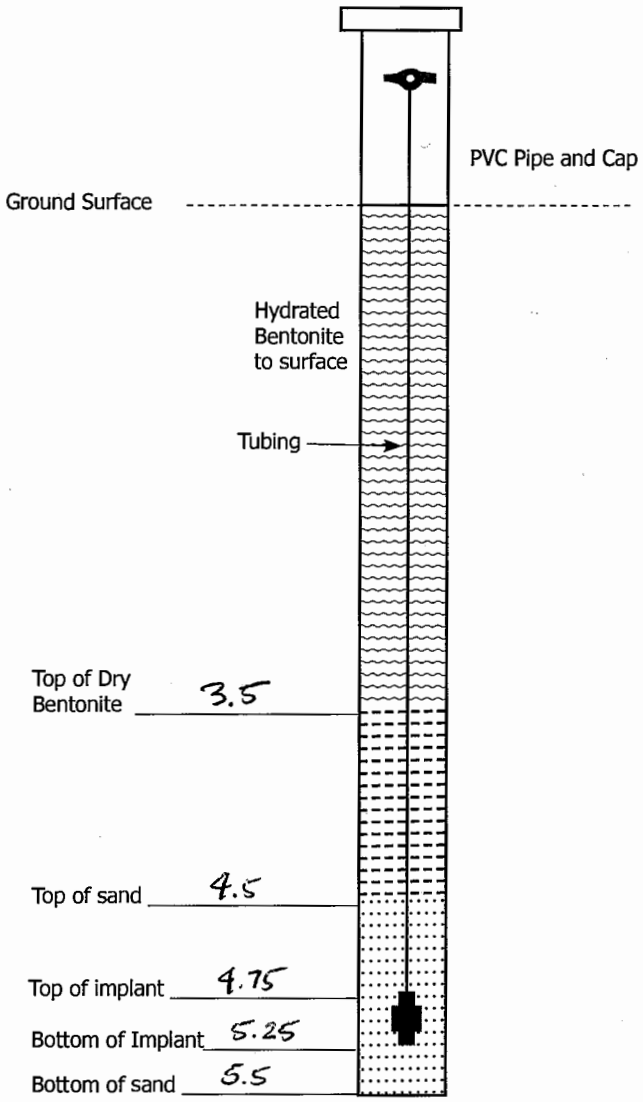
MWH

Probe ID/Soil ID: SASV-DG-537 | Job #: 10503982.3050105/10503982.3060105 | Project: Phase 3 DOE Data Gap Sampling 20

Site: SA 6A | Reviewed by: | Logged by: V. Vathanasin

Drilling Contractor: EST | Rig Type/Method: Geoprobe 5400 / DP | Driller: Morgan Hughes

Borehole TD: 5.5 | Probe Completion Date/Time: 1420 / 6-5-14 | Borehole Diameter: 2.25"



Vapor Implant Specs

Material: Stainless Steel

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: Teflon

Diameter: 1/4"

Color: Clear

Sand Pack Specs

Grain Size: # 3

Manufacturer: Cemex

Dry Bentonite

Type: # 8

Manufacturer: Cetco

Hydrated Bentonite

Type: # 8

Manufacturer: Cetco

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH



Site Sketch Map

Boring ID: 5ASV-DG-537	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5A
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 5.5
Drill Bit Type: Macrocore	
Drill Start Time/Date: 1345 / 6-5-2014	Drill Finish Time/Date: 1407 / 6-5-2014
Soil Vapor ID: 5ASV-DG-537	Soil Boring Backfill Time/Date: N/A Backfill Material: N/A
Soil Vapor Well Completion Time/Date: 1420 / 6-5-14	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): 4.5 - 5.5	Surface Completion: Soil vapor probe
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Estimated % of Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Surface Description: Just off asphalt, Road base Silty Sand w/ Gravel (SM), dark yellowish brown (10YR 4/4), loose, dry, fine sand to coarse sand, some angular gravel (road base), fill	15	10	30	25	20
						1							
						2		@ 2' grades w/o gravel, color changes to yellowish brown (10YR 5/8), fine to med. sand, fill	-	-	10	70	20
						3							
						4	SP	Poorly Graded Sand (SP), yellowish brown (10YR 5/6), loose, dry, fine sand and silt trace silt,	-	-	-	100	TR
						5							
						6	Br	no stains or odors (P.I.D.), native soil @ 5.5' Sandstone, weathered.					
						7		TD = 5.5, refusal on bedrock, install vapor probe at 4.5-5.5					
						8							
						9							

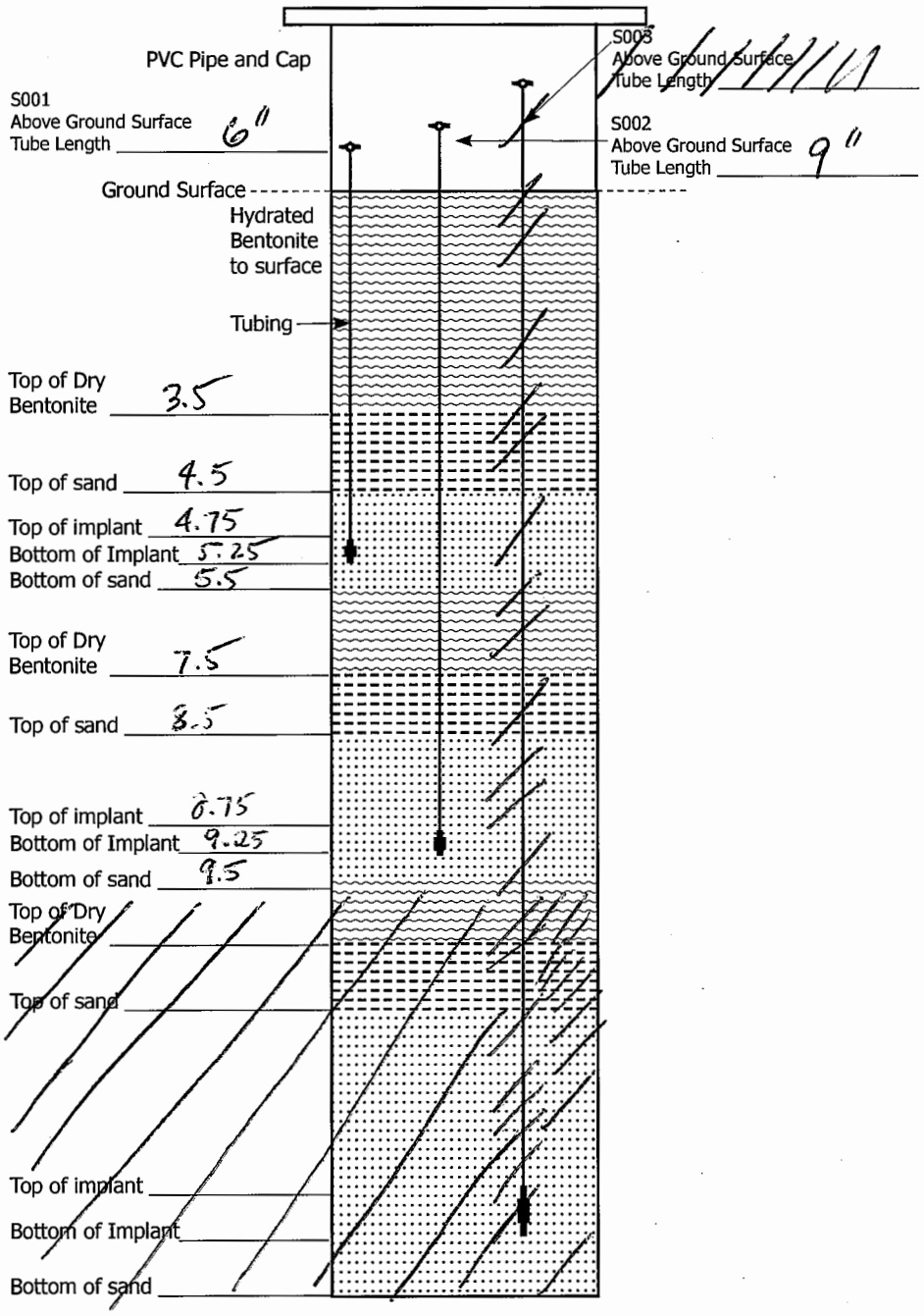
Multiple Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SASV-DG-540 | Project: Phase 3 DOE SV DG | Job #: 1050982

Site: SA 54 | Logged by: V. Vathavasri | Reviewed by:

Drilling Contractor: EST | Driller: Morgan Hughes | Rig Type/Method: Geoprobe 5400 / DP

Borehole TD: 9.5' | Borehole Diameter: 2.25" | Probe Completion Date/Time: 0945 / 6-5-10



Vapor Implant Specs

Material: Stainless Steel

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: Teflon

Diameter: 1/4"

Color: Clear

Sand Pack Specs

Grain Size: #3

Manufacturer: Cemex

Dry Bentonite

Type: #8

Manufacturer: Cetco

Hydrated Bentonite

Type: #8

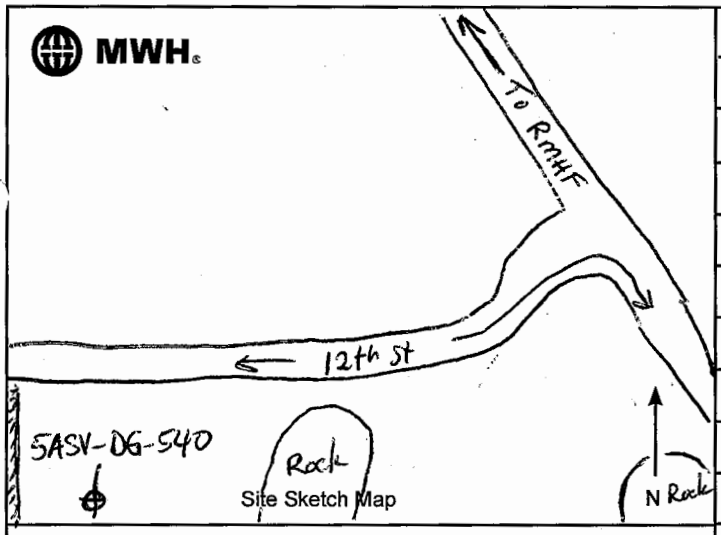
Manufacturer: Cetco

Notes:

1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

MWH



Site Sketch Map

Boring ID: 5ASV-DG-540	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5A
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 9.5
Drill Bit Type: Macrocore	
Drill Start Time/Date: 0905/6-5-14	Drill Finish Time/Date: 0930/6-5-14
Soil Boring Backfill Time/Date: N/A	Backfill Material: N/A
Soil Vapor ID: 5ASV-DG-540	Observations: ☐ Debris ☒ Staining ☐ Odors ☐ Groundwater ☐ None
Soil Vapor Well Completion Time/Date: 0945/6-5-14	Surface Completion: Soil Vapor probes.
Soil Vapor Probe Depths (ft.bgs): 4.5-5.5, 8.5-9.5	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None
Soil Vapor Well Detail Completed (yes/no)	

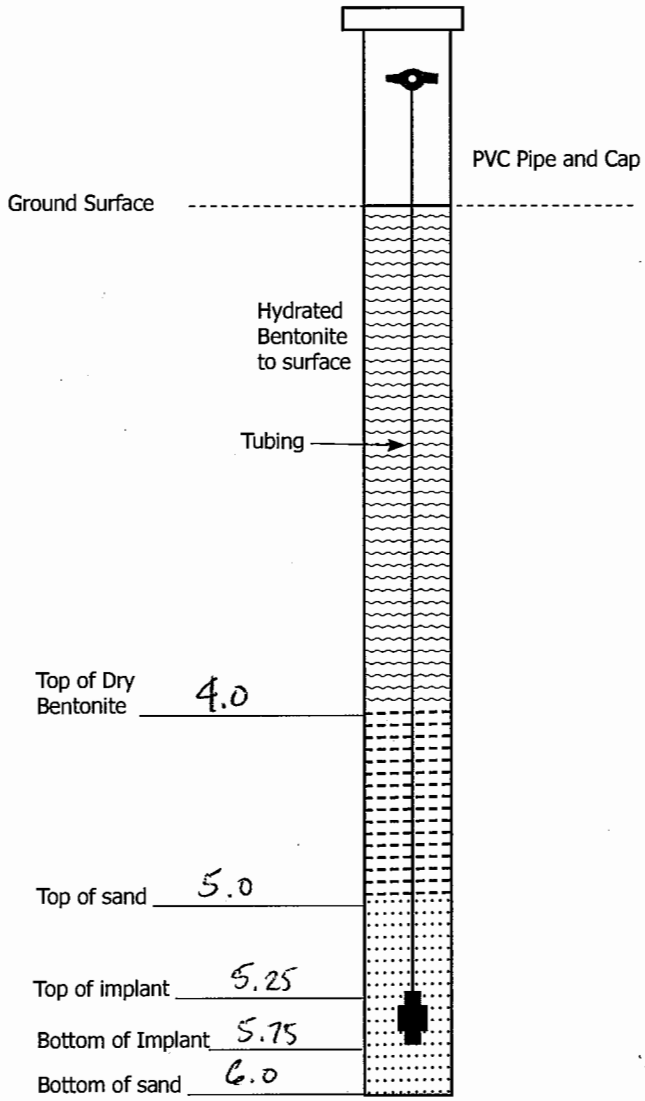
PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations) / Surface Description:	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SP-SM	Poorly Graded Sand with Silt (SP-SM), very pale brown (10YR 7/4), loose, dry, predominantly fine sand, medium sand, non-plastic silt, no odors or stains, fill	-	-	20	70	10/
		48"	NONE			1							
						2							
						3		@2' Color changes to brownish yellow (10YR 6/6), mica grains					
						4							
						5	SM	Silty Sand (SM), dark yellowish brown (10YR 4/4), loose, dry, fine sand, non-plastic silt, no stains or odors, fill	-	-	-	60	40/
		48"	NONE			6							
						7							
						8	ML	Silt (ML), dark yellowish brown (10YR 4/6), stiff, well compacted, dry, poss. native	-	-	-	-	100/
		18"	NONE			9	SM	Silty Sand (SM), brownish yellow (10YR 6/8), slight oxidation, med. dense, dry, fine	-	-	-	70	30/
							Br	Sand and silt, native soil					

@9.5 Sandstone - weathered TD= 9.5', ref. on bedrock; install probe

Single Soil Vapor Probe Construction Diagram

MWH

Probe ID/Soil ID: SASV-DG-543
Job #: 10503982.3050105/10503982.3060105
Project: Phase 3 DOE Data Gap Sampling 20
Site: SA 5A
Reviewed by:
Logged by: Van Vathanasin
Drilling Contractor: EST
Rig Type/Method: Geoprobe 5400 / DP
Driller: Morgan Hughes
Borehole TD: 6.0
Probe Completion Date/Time: 1036 / 6-5-2014
Borehole Diameter: 2.25"



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: Clear

Sand Pack Specs
Grain Size: #3
Manufacturer: ~~Cemex~~ Cemex (V.V.)

Dry Bentonite
Type: #8
Manufacturer: Cetco

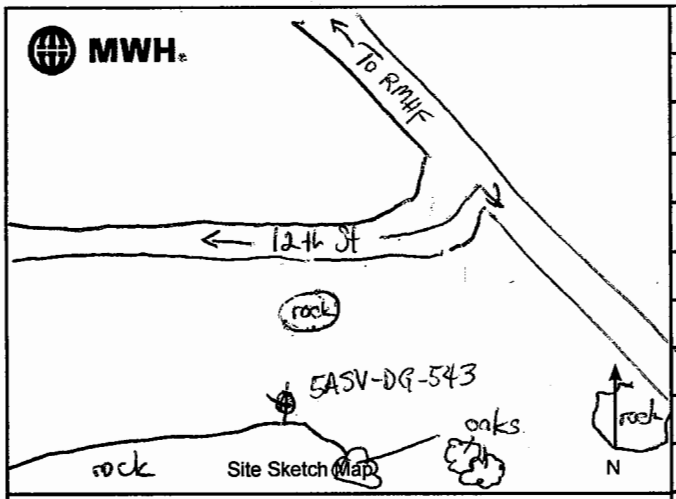
Hydrated Bentonite
Type: #8
Manufacturer: Cetco

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH



Site Sketch Map

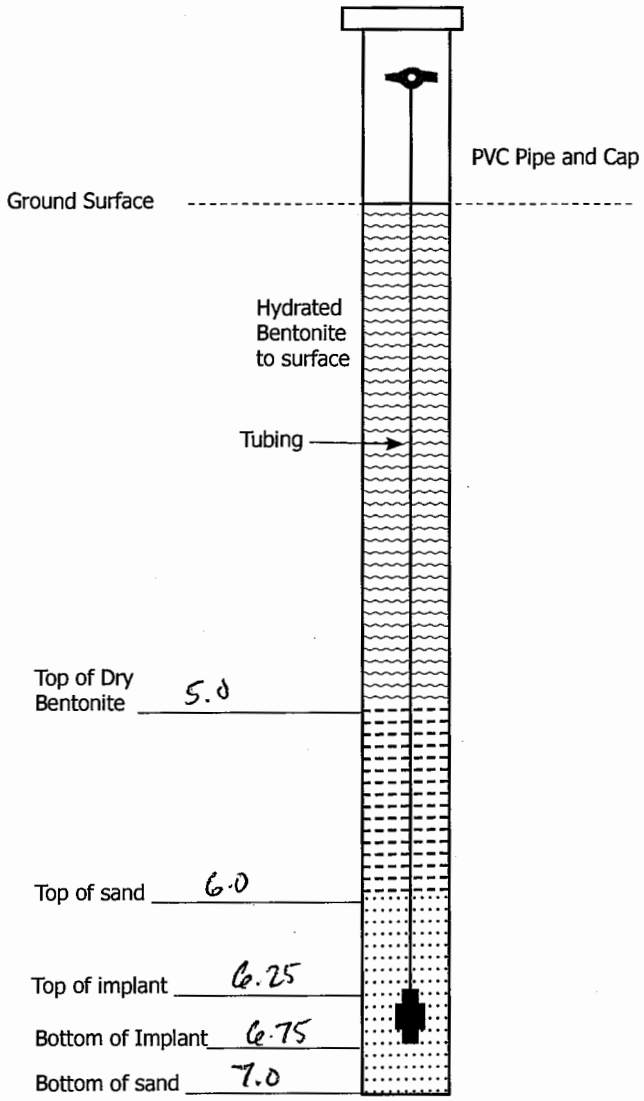
Boring ID: 5ASV-DG-543	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5A
Logged By: V. Vathanavin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 6.0
Drill Bit Type: Macrocore	
Drill Start Time/Date: 1000 / 6-5-2014	Drill Finish Time/Date: 1014 / 6-5-2014
Soil Vapor ID: 5ASV-DG-543	Soil Boring Backfill Time/Date: N/A; Backfill Material: N/A
Soil Vapor Well Completion Time/Date: 1036 / 6-5-2014	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☑ None
Soil Vapor Probe Depths (ft.bgs): 5.0 - 6.0	Surface Completion: Install vapor probes
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Surface Description: Graded yellowish (V.) Silty Sand (SM), brown (10YR 5/4), loose, dry, fine sand, silt, non-cemented, few roots to 2" bgs, no odors or stains, fill.	-	-	-	60	40
			NONE			1							
		40"				2		@2. darkens to 10YR 5/6, slightly ~~silttier~~ (V.) more plastic fines, platy structures, fill	-	-	-	60	40
0.0						3							
						4							30
		24"						@4' brownish yellow (10 YR 6/6), native soil, low plasticity clay	-	-	-	60	40/10
			NONE			5							
0.0						6	Br	Sandstone, weathered.					
						7		TD = 6.0, refusal on bedrock. Install vapor probes at 5.0-6.0'					
						8							
						9							

Single Soil Vapor Probe Construction Diagram

MWH

Probe ID/Soil ID: 5ASV-DG-546
Job #: 10503982.3050105/10503982.3060105
Project: Phase 3 DOE Data Gap Sampling 20
Site: 5A
Reviewed by:
Logged by: V. Vathanasin
Drilling Contractor: EST
Rig Type/Method: Geoprobe 5400 / DP
Driller: Morgan Hughes
Borehole TD: 7.0
Probe Completion Date/Time: 0814 / 6-5-14
Borehole Diameter: 2.25"



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: Clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Cemex

Dry Bentonite
Type: #8
Manufacturer: Cetco

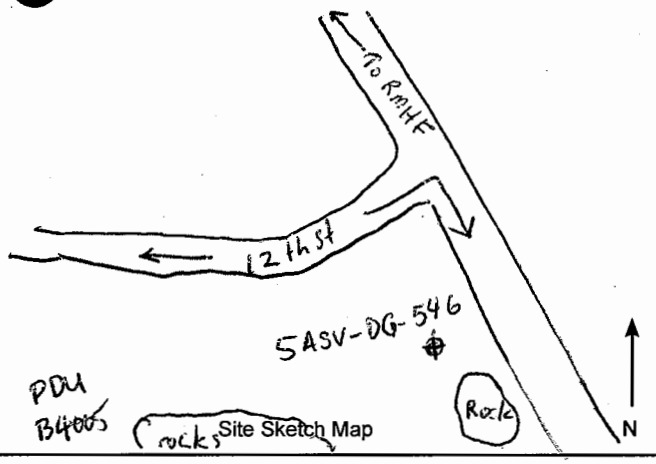
Hydrated Bentonite
Type: #8
Manufacturer: Cetco

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH



Site Sketch Map

Boring ID: 5ASV-DG-546	Sheet 1	of 1	
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014			
Job #: 10503982.3050105/ 10503982.3060105	Site: 5A		
Logged By: V. Vathanasin	Reviewed By:		
Drilling Contractor: EST	Drillers Name: Morgan Hughes		
Drill Rig Type/Method: Geoprobe 5400 / DP			
Sampler Type: Macrocore			
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs):	7.0	
Drill Bit Type: Macrocore			
Drill Start Time/Date: 0734 / 6-5-14	Drill Finish Time/Date: 0745 / 6-5-14		
Soil Vapor ID: 5ASV-DG-546	Soil Boring Backfill Time/Date: N/A	Backfill Material: N/A	
Soil Vapor Well Completion Time/Date: 814 / 6-5-14	Observations: ☐ Debris ☒ Staining ☐ Odors ☐ Groundwater ☐ None		
Soil Vapor Probe Depths (ft.bgs): 6.0-7.0	Surface Completion: Soil vapor probe		
Soil Vapor Well Detail Completed (yes)/no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None		

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Silty Sand (SM), brownish yellow (10YR 6/6), loose, dry, fine sand, non-plastic silt, no odors or stains, fill	--	-	-	65	35
		45"	NONE			1							
						2							
						3							
						4		@4' grades with light gray mottling (10YR 7/2), fill, matrix lightens to light yellowish brown (10YR 6/4), fill					
		46"	NONE			5							
						6							
0.0						7	Br	Weathered bedrock, Sandstone. TD=7.0, refusal on bedrock, install probe at 6.0-7.0 ft					
						8							
						9							

Single Soil Vapor Probe Construction Diagram

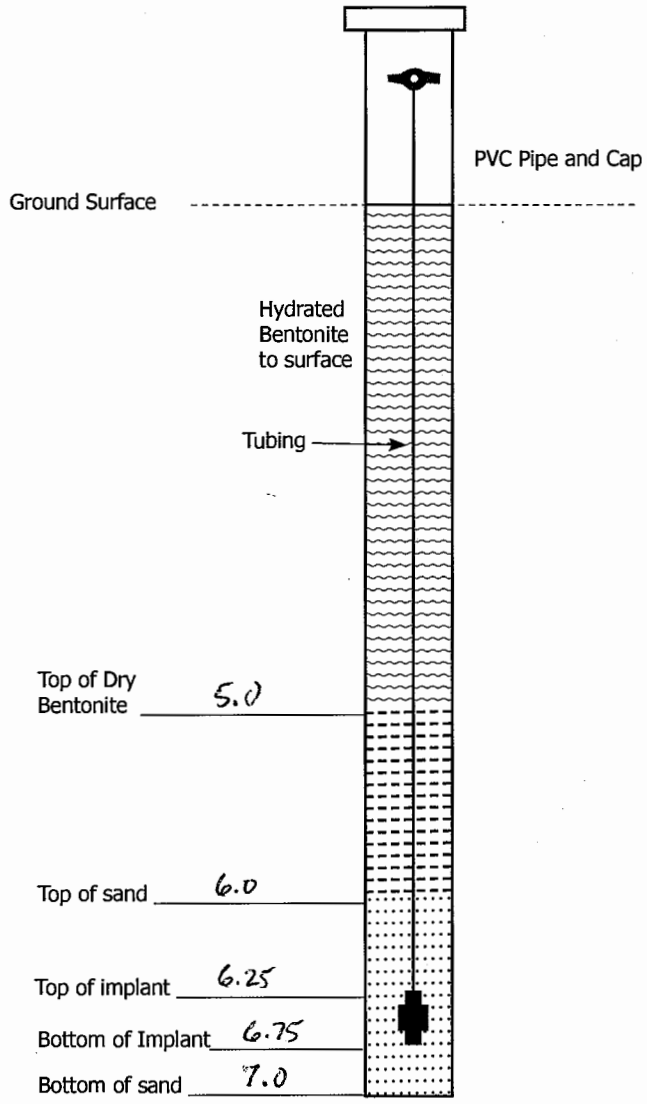
MWH

Probe ID/Soil ID: SASV-DG-547 | Job #: 10503982.3050105/10503982.3060105 | Project: Phase 3 DOE Data Gap Sampling 20

Site: SA | Reviewed by: | Logged by: V. Vathanasri

Drilling Contractor: EST | Rig Type/Method: Geoprobe 5400/DP | Driller: Morgan Hughes

Borehole TD: 7.0 | Probe Completion Date/Time: 0857/6-5-14 | Borehole Diameter: 2.25"



Vapor Implant Specs

Material: Stainless Steel

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: Teflon

Diameter: 1/4"

Color: Clear

Sand Pack Specs

Grain Size: #3

Manufacturer: Cemex

Dry Bentonite

Type: #8

Manufacturer: Cetco

Hydrated Bentonite

Type: #8

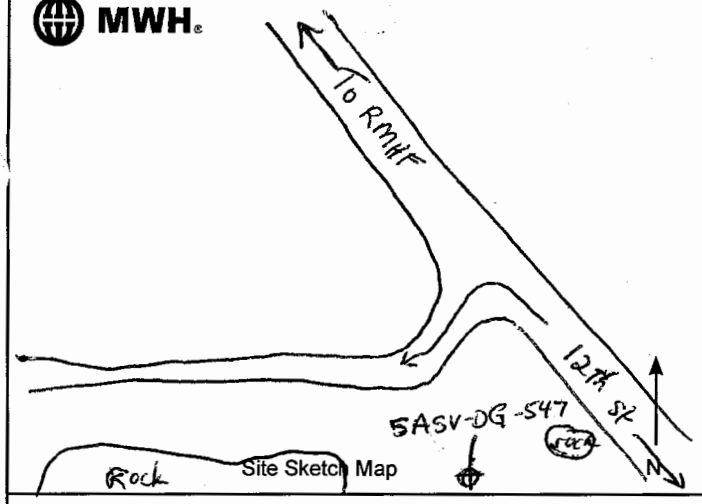
Manufacturer: Cetco

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH

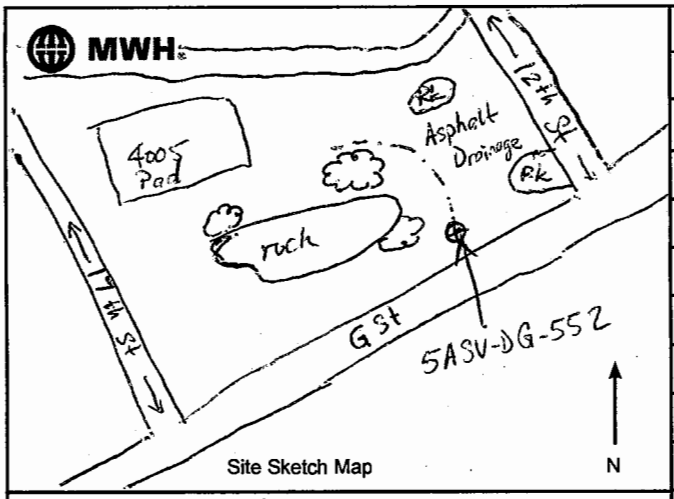


Site Sketch Map

Boring ID: 5ASV-DG-547	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5A
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 7.0
Drill Bit Type: Macrocore	
Drill Start Time/Date: 0824 / 6-5-14	Drill Finish Time/Date: 0850 / 6-5-14
Soil Boring Backfill Time/Date: N/A	Backfill Material: N/A
Soil Vapor ID: 5ASV-DG-547	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Well Completion Time/Date: 0857 / 6-5-14	Surface Completion: Soil vapor ~~proge~~ probe (V.V.)
Soil Vapor Probe Depths (ft.bgs): 6.0-7.0	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None
Soil Vapor Well Detail Completed (yes/no)	

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description: Surface Description: Graded fill area; mustard	Estimated % of Sand: Gravel	Coarse	Medium	Fine	Silt/clay
						0	SM	Silty Sand (SM), brown (10YR 4/3), med. dense, dry, fine sand, silt, non plastic, well compacted but not cemented, no odors or stains, fill	–	–	–	75	25
		48"	NONE			1							
						2		@ 2' grades to loose and color changes to dark yellowish brown (10YR 4/4), friable, fill					
						3							
						4							
		36"	NONE			5		@ 5' Color changes to yellowish brown (10YR 5/4); increasing silt	–	–	–	65	35
0.2						6							
						7	Br	Sandstone, weathered. TD = 7.0, refusal on bedrock. Install vapor probe at 6.0-7.0					
						8							
						9							

MWH



Site Sketch Map

Boring ID: 5ASV-DG-552 Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: 5A

Logged By: V. Vathanasin Reviewed By:

Drilling Contractor: EST Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5400 / DP

Sampler Type: Macrocore

Borehole Diam (inch): 2.25" Total Depth (ft.bgs): 8.75

Drill Bit Type: Macrocore

Drill Start Time/Date: 1109 / 6-5-2014 Drill Finish Time/Date: 1130 / 6-5-2014

Soil Vapor ID: N/A

Soil Boring Backfill Time/Date: 1145 / 6-5-14 Backfill Material: Soil Cuttings

Soil Vapor Well Completion Time/Date: N/A

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Soil Vapor Probe Depths (ft.bgs): N/A

Surface Completion: None

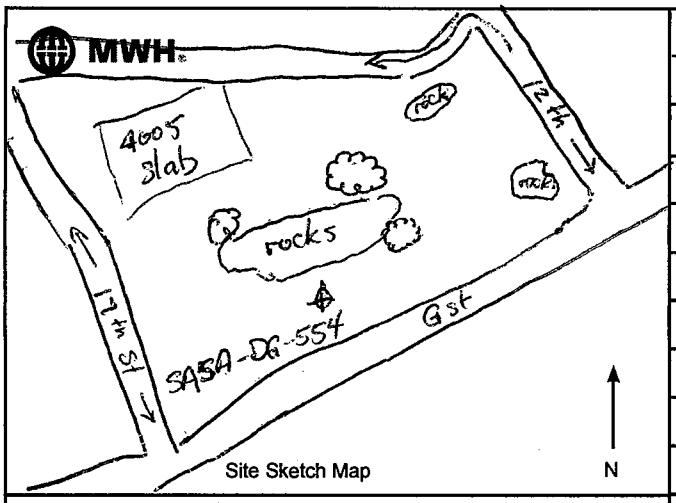
Soil Vapor Well Detail Completed (yes/no)

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Silty Sand (SM), yellowish brown (10YR 5/6), loose, dry, fine sand, silt, non-cohesive, fill, no stains, no odors.	-	-	-	60	40/
		48"	X		11:38	1							
						2							
		SVL-552-SA5A-SB-1.5-2.0					CL	Silty Clay (CL), yellowish brown (10YR 5/6), soft, dry, low to med. plasticity clay, possible weathered bedrock.	-	-	-	-	90/10
						3							
						4							
		24"				5	WB	color changes to brownish yellow (10YR 6/6) (V.C.) weathered shale.	-	-	-	-	10/90
						6							
		24"				7							
						8							
		18"											
						9	Br	TD = 8.75, drilled into weathered bedrock. Collect soil samples above weathered bedrock @ 1.5-2.0.					

Soil Description
1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: @ End on drainage, graded



Site Sketch Map

MWH

Boring ID: SASV-DG-554 Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: SA

Logged By: V. Vatharasin Reviewed By:

Drilling Contractor: EST Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5400 / DP

Sampler Type: Macrocore

Borehole Diam (inch): 2.25" Total Depth (ft.bgs): 2.0

Drill Bit Type: Macrocore

Drill Start Time/Date: 1210 / 6-5-2014 Drill Finish Time/Date: 1225 / 6-5-2014

Soil Vapor ID: N/A

Soil Boring Backfill Time/Date: 1245 / 6-5-14 Backfill Material: Native soil

Soil Vapor Well Completion Time/Date: N/A

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Soil Vapor Probe Depths (ft.bgs): N/A

Surface Completion: None

Soil Vapor Well Detail Completed (yes/no)

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

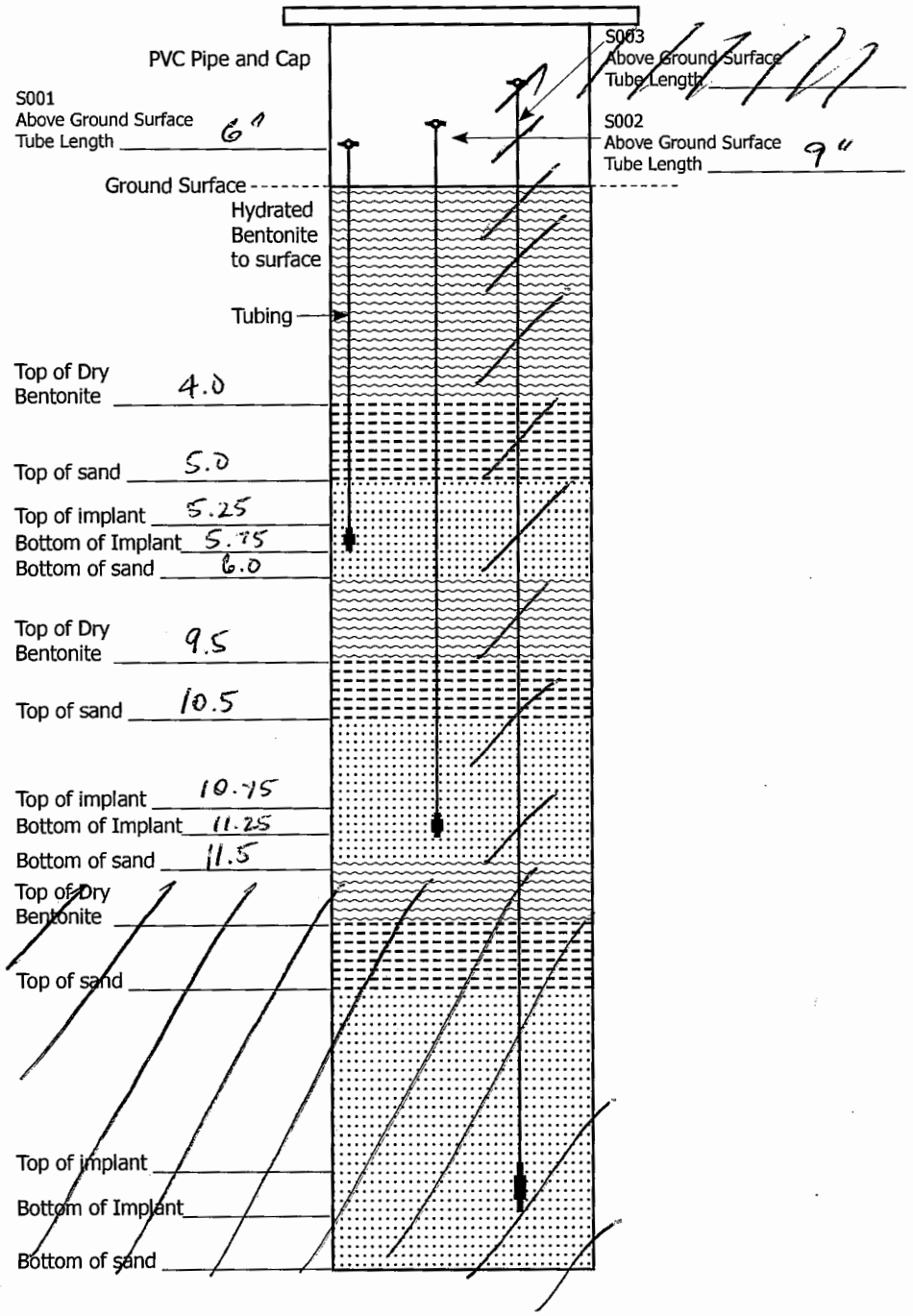
PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description: 1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
	X	24"				0	SM	Surface Description: Mustard and grass. Silty Sand (SM), yellowish brown (10YR 5/4), loose, dry, fine sand, silt, non-plastic, roots, fill	-	-	-	60	40
0.0	X		X		12:46	1		@ 0.5' color changes to brownish yellow (10YR 6/6) fill.					
SVL-554-SASA-SB-1.5-2.0						2	Br	@ 2.0 Weathered Sandstone, fine grained matrix.					
						3							
						4		TD = 2.0. Refusal on bedrock. Drilled 2 add'l borings to confirm shallow refusal w/ similar results. Collect soil sample @ 1.5-2.0 for VOCs analyses. No vapor probes installed.					
						5							
						6							
						7							
						8							
						9							

Multiple Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: 5ASV-DG-560
Site: SA SA
Drilling Contractor: EST
Borehole TD: 11.5

Project: Phase 3 DOE SV DG
Logged by: V. Vathanasin
Driller: Morgan Hughes
Borehole Diameter: 2.25

Job #: 10503982
Reviewed by:
Rig Type/Method: Geoprobe 5400 / DP
Probe Completion Date/Time: 1515 / 10-4-14



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Cemex

Dry Bentonite
Type: #8
Manufacturer: Cetco

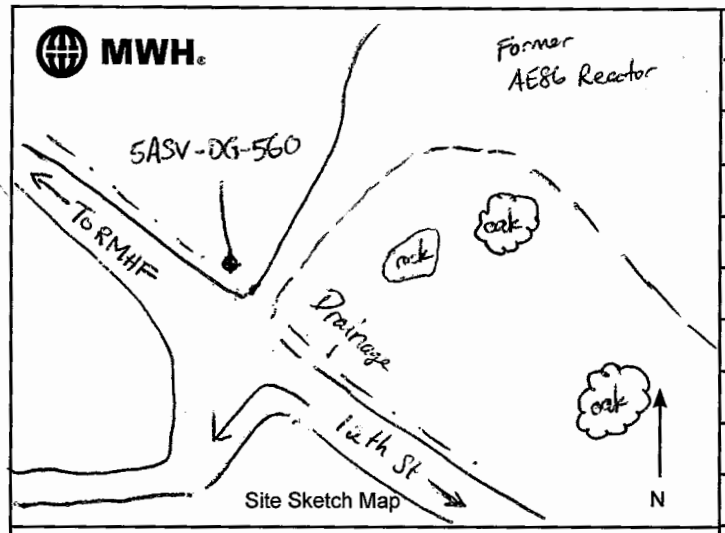
Hydrated Bentonite
Type: #8
Manufacturer: CETCO

Notes:

1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

MWH



Site Sketch Map

Boring ID: 5ASV-DG-560	Sheet 1 of 2
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5A
Logged By: V. Vatharasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 11.5
Drill Bit Type: Macrocore	
Drill Start Time/Date: 1420 / 6-4-14	Drill Finish Time/Date: 1500 / 6-4-14
Soil Boring Backfill Time/Date: N/A	Backfill Material: N/A
Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☐ None	
Surface Completion: Install vapor probes	
Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None	

Soil Vapor ID:	5ASV-DG-560
Soil Vapor Well Completion Time/Date:	1515 / 6-4-2014
Soil Vapor Probe Depths (ft.bgs):	5.0 - 6.0, 10.5 - 11.5
Soil Vapor Well Detail Completed (yes/no)	yes

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description: Surface Description: In non-paved drainage 11 to 12th St	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Silty Sand (SM), brown (10YR 4/3), loose, dry, fine sand, silt, no odors, no stains, fill	-	-	-	60	40/
		45"				1		@1.6 color changes to yellowish brown (10YR 5/6)					
						2							
						3		grades to →	-	-	10	65	25/
0.0						4		w/ platy texture. fill					
						5							
		48"				6							
0.0						7		grades to med. dense.					
						8							
						9	SP-SM	Poorly Graded Sand w/ Silt (SP-SM), light yellowish brown (10YR 6/4) with yellow (10YR 7/8) mottling. loose, dry	-	-	-	90	10/

con't next page

Boring ID: SASV-DG-560 Project: Phase 3 DOE SVDG Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0		1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations					
	X						SP-SM	fine sand, non-plastic silt, moderate dilatency, non-cohesive, native soil					
0.0						1							
						2	Br	Sandstone, weathered					
						3							
						4		TD = 11.5. Refusal on bedrock, Install probes at 5.0-6.0, and 10.5-11.5					
						5							
						6							
						7							
						8							
						9							
						0							
						1							
						2							
						3							
						4							
						5							
						6							
						7							
						8							
						9							

MWH

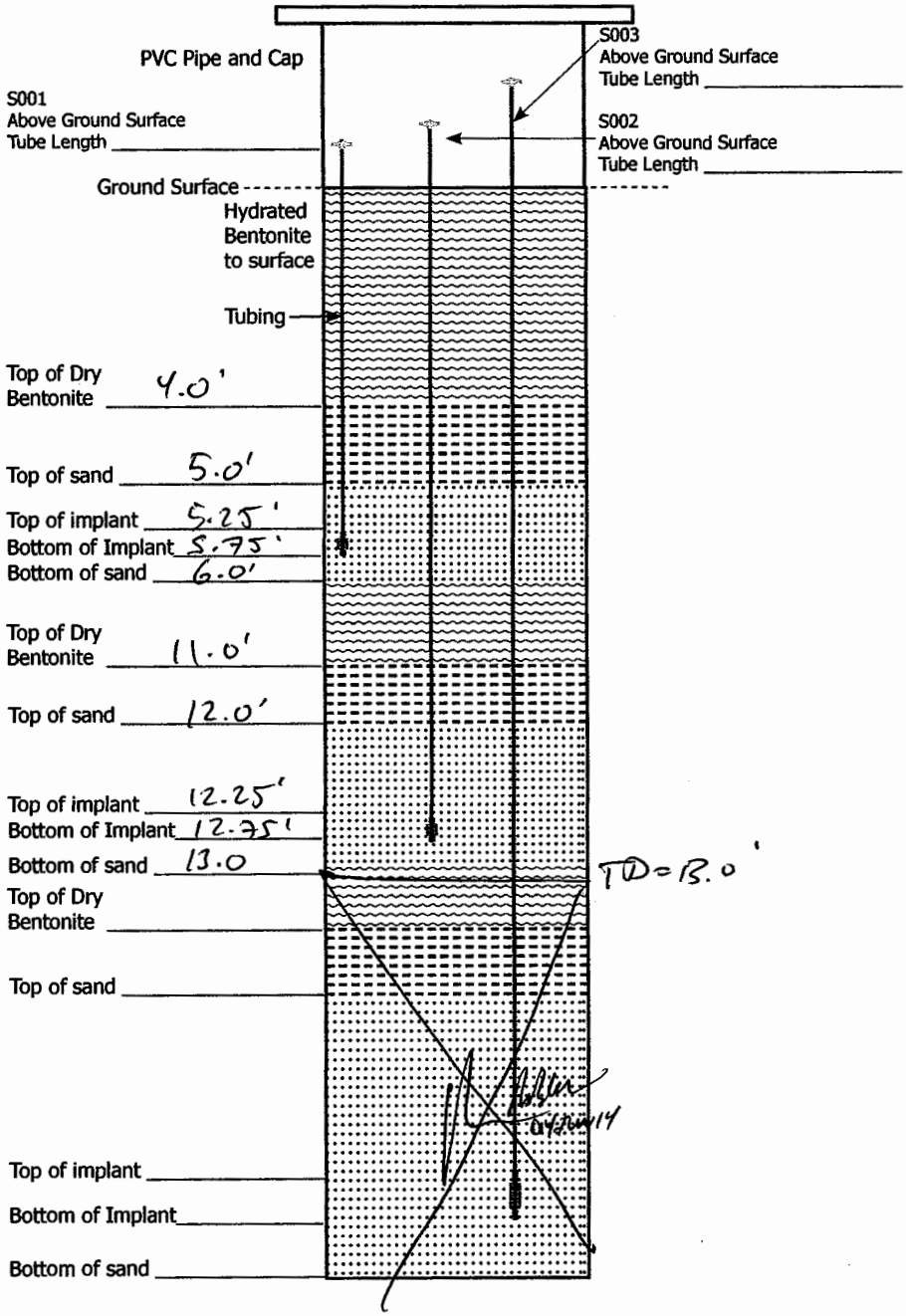
Multiple Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SASV DG-565
Site: SA
Drilling Contractor: EST
Borehole TD: 13.0' bgs

Project: Phase 3 DOE Data Gap Sampling 2014
Logged by: RWB ELLIS
Driller: MARTY KILHULLEN
Borehole Diameter: 2.25"

Job #: 10503982.3050105/10503982.3060105
Reviewed by:
Rig Type/Method: Geoprobe 5400
Probe Completion Date/Time: 04JUN14

5.0-6.0 @ 14:50
12.0-13.0 @ 14:48



Vapor Implant Specs
Material: stainless steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: teflon
Diameter: 1/4"
Color: clear

Sand Pack Specs
Grain Size: #3 sand
Manufacturer: Cemex

Dry Bentonite
Type: #8 crumbles
Manufacturer: Cetco

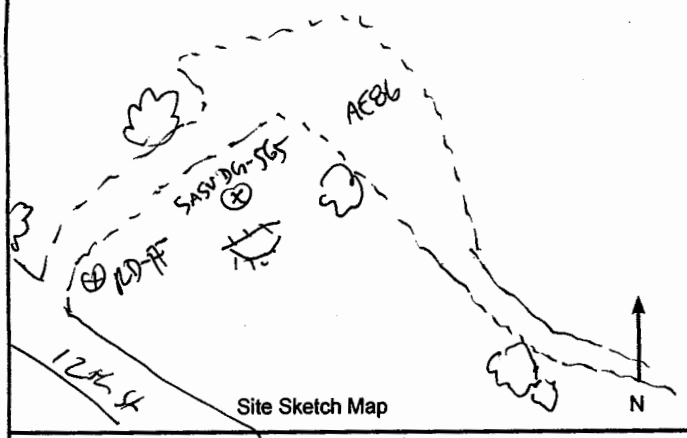
Hydrated Bentonite
Type: #8 crumbles
Manufacturer: Cetco

Notes:

1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

MWH



Site Sketch Map

Boring ID: SASV DG-565	Sheet 1 of 2
Project: Phase 3 DOE SVDG 2014	
Job #: 105039B2.3060106	Site: SA
Logged By: Rob Ellis	Reviewed By:
Drilling Contractor: EST	Drillers Name: MATT KLEVEN
Drill Rig Type/Method: Geoprobe 5400	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 13.0'
Drill Bit Type: Macrocore	
Drill Start Time/Date: 14:00 04 JUN 14	Drill Finish Time/Date: 14:35 04 JUN 14
Soil Vapor ID: SASV DG-565	Soil Boring Backfill Time/Date: N/A
Soil Vapor Well Completion Time/Date: 04 JUN 14 14:50, 14:48 (shallow, deep)	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): 5.0'-6.0', 12.0'-13.0'	Surface Completion: SV. Probe
Soil Vapor Well Detail Completed (yes/no) Abandoned	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

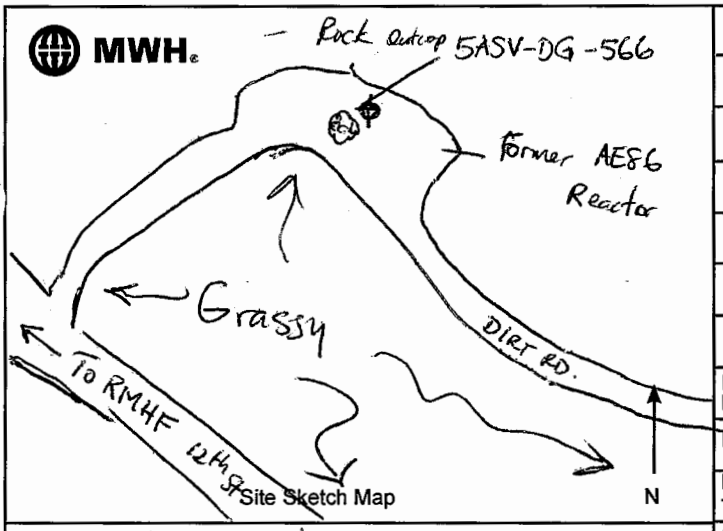
PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations) / Surface Description:	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
0.0 ppm		48"				0		0.0-5.0					
						1		Silty sand (SM), brown (10YR 4/3) very loose to loose, dry. Mostly fine sand (55), some silt (30), little medium sand (15), trace coarse sand.	–	TR	15	55	30
						2	SM						
						3		Sand lense (1") @ ~1.0' bgs. No stain, no odor. Fill material 5.0-9.0'					
						4							
0.0 ppm		36"	48"			4		~~SM~~ poorly graded sand w/ silt (SP-SM). yellowish brown (10YR 5/6) loose, dry. Mostly fine sand (70), little silt (20), ~~trace~~ few med sand (10). mottled throughout; oxide stain, yellowish brown (10YR 5/8). No stain no odor. Fill. 9.0-13.0	–	–	10	70	20
						5							
						6							
						7	SP-SM						
0.0 ppm		48"				8		Same as above, gradational lightening to (10YR 7/4) very pale brown. No stain, no odor. Most likely native	–	–	–	80	20
						9	SP-SM						

Boring ID: SASV DH-565 Project: Phase 3 DOE SVDH 2014 Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						10	SP SM	TD = 13.0' bgs refusal on sandstone bedrock					
						11							
0.0 ppm		12"				12		: 2 probes set					
						13							
						4							
						5							
						6							
						7							
						8							
						9							
						0							
						1							
						2							
						3							
						4							
						5							
						6							
						7							
						8							
						9							

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

MWH



Site Sketch Map

Boring ID: SASV-DG-566	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: SA
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macro core	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 3.5
Drill Bit Type: Macrocore	
Drill Start Time/Date: 1245 / 6-4-14	Drill Finish Time/Date: 1300 / 6-4-14
Soil Boring Backfill Time/Date: 1325 / 6-4-14	Backfill Material: Soil cuttings
Soil Vapor ID: N/A	Observations: ☐ Debris ☒ Staining ☐ Odors ☐ Groundwater ☐ None
Soil Vapor Well Completion Time/Date: N/A	Surface Completion: None
Soil Vapor Probe Depths (ft.bgs): N/A	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None
Soil Vapor Well Detail Completed (yes/no)	

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description: Surface Description: Removed	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Silty Sand (SM), yellowish brown (10YR5/4), loose, dry, fine sand, med. sand, non-plastic silt, fill, no stains or odors.	–	–	20	45	35
		42"				1	SW-GW	Well Graded Sand with Gravel (SW-GW), mottled brown (10YR 4/3) and gray (10YR 6/1), loose, dry, fine to coarse sand, angular fine rock fragment gravel,	20	10	30	40	TR
						2							
0.0			X		13:15	3	SP		–	–	–	100	–
SVL-566-SASA-SB-3.0-3.5						4	Bk	fill, dark brown (10YR 3/3) stains. Poorly Graded Sand (SP), brownish yellow (10YR 6/8), loose, dry, fine sand, very dark grayish brown (10YR 3/2) streaks, native soil, no odors.					
						5							
						6							
						7		TD = 3.5, refusal on bedrock, no probes installed. Collect one (1) at 3.0-3.5.					
						8							
						9							

MWH

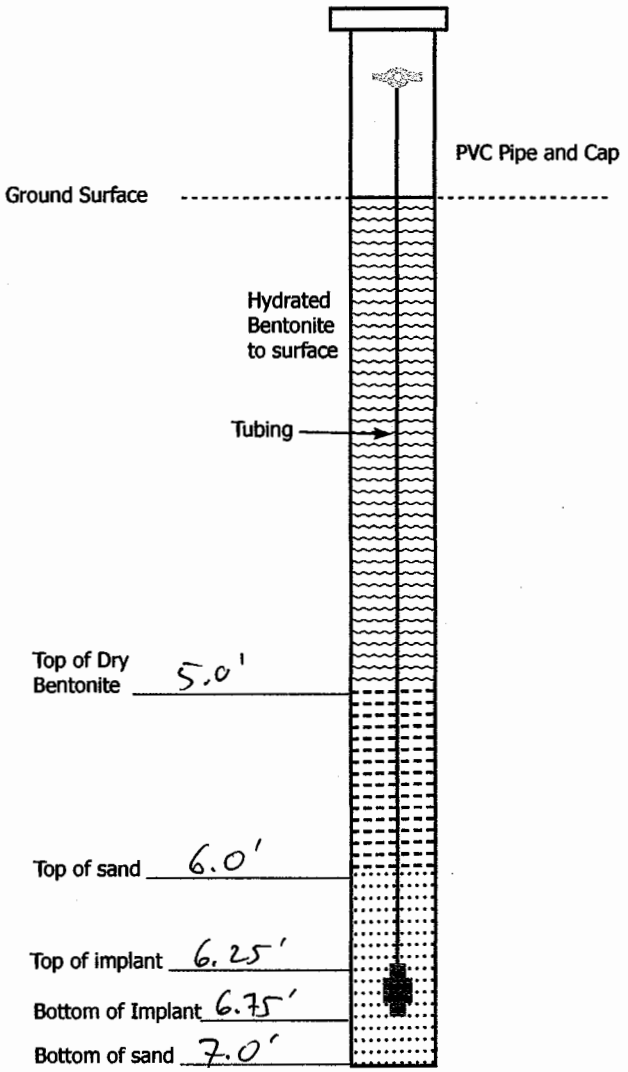
Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SASVP6-568 Job #: 10503982.3050106/10503982.3060106 Project: Phase 3 DOE Data Gap Sampling 2014

Site: SA Reviewed by: _____ Logged by: [illegible] ELLIS

Drilling Contractor: EST Rig Type/Method: Geoprobe 5400 Driller: [illegible] KILPATRICK

Borehole TD: 7.0' bgs Probe Completion Date/Time: 04 JUN 14, 13:15 Borehole Diameter: 2.25"



Vapor Implant Specs

Material: stainless steel

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: teflon

Diameter: 1/4"

Color: clear

Sand Pack Specs

Grain Size: #3 sand

Manufacturer: Cemex

Dry Bentonite

Type: #8 crumbles

Manufacturer: Cetco

Hydrated Bentonite

Type: #8 crumbles

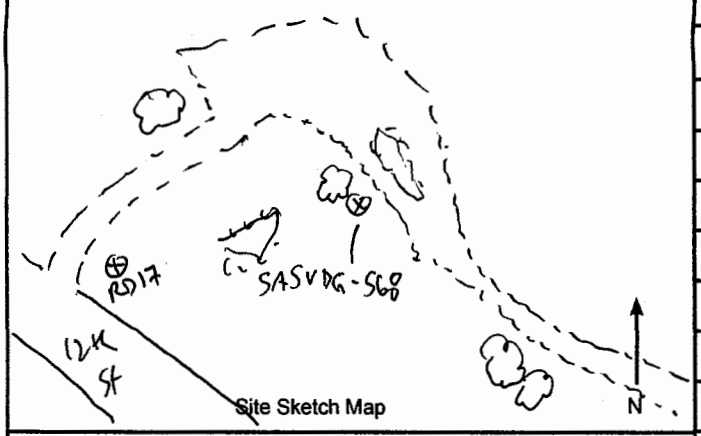
Manufacturer: Cetco

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH.



Site Sketch Map

Boring ID: SASV DG-568	Sheet 1 of
Project: Phase 3 DOE SVDG 2014	
Job #: 10503892.3060106	Site: SA
Logged By: Rob Ellis	Reviewed By:
Drilling Contractor: EST	Drillers Name: Marty Kilhulleo
Drill Rig Type/Method: Geoprobe 5400	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 7.0'
Drill Bit Type: Macrocore	
Drill Start Time/Date: 12:44 04 JUN 14	Drill Finish Time/Date: 13:01 04 JUN 14
Soil Vapor ID: SASV DG-568	Soil Boring Backfill Time/Date: N/A; Backfill Material: N/A
Soil Vapor Well Completion Time/Date: 04 JUN 14; 13:15	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): 6.0' – 7.0'	Surface Completion: SV. probe
Soil Vapor Well Detail Completed (yes/no) attached	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

Surface Description: Horehound/mustard, flat

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
0.0 ppm		48"				0		0.0 – 1.7					
						1	SM	Silty sand (SM). Brown (10YR 4/3)	–	–	15	55	30
								very loose, dry. Mostly fine sand (55)					
						2		some silt (30) little med sand (15).					
								No stain, no odor, fill.					
						3	SM	1.7 – 4.4					
								Silty sand (SM) light yellow	–	TR	10	55	35
						4		brown (10YR 6/4), loose,					
0.0 ppm		36"						dry. Mostly fine sand (55),					
						5	SP	some silt (35), few coarse (10).					
								No stain, no odor, fill.					
						6		4.4 – 6.5					
								Poorly graded sand (SP). Yellow	–	–	15	75	10
						TD 7		brown (10YR 5/4). Mostly fine sand					
set probe on 3rd step-out (W) of location.								(75) little medium sand (15), few					
						8		silt (10), * upper section 4.4 – 5.0					
TD = 7.0' w/ refusal on sandstone bedrock								has 25% coarse sand/small gravel.					
						9		6.5 – 7.0					10
								Poorly graded sand (SP). Yellowish	–	–	15	75	10
								brown (10YR 5/6) / very dark brown	(*)	–	–	40	60

4 (10YR 2/2). Sample is split core. No stain, no odor fill

QA/QC
Surficial media boring log rev 2-25-2014

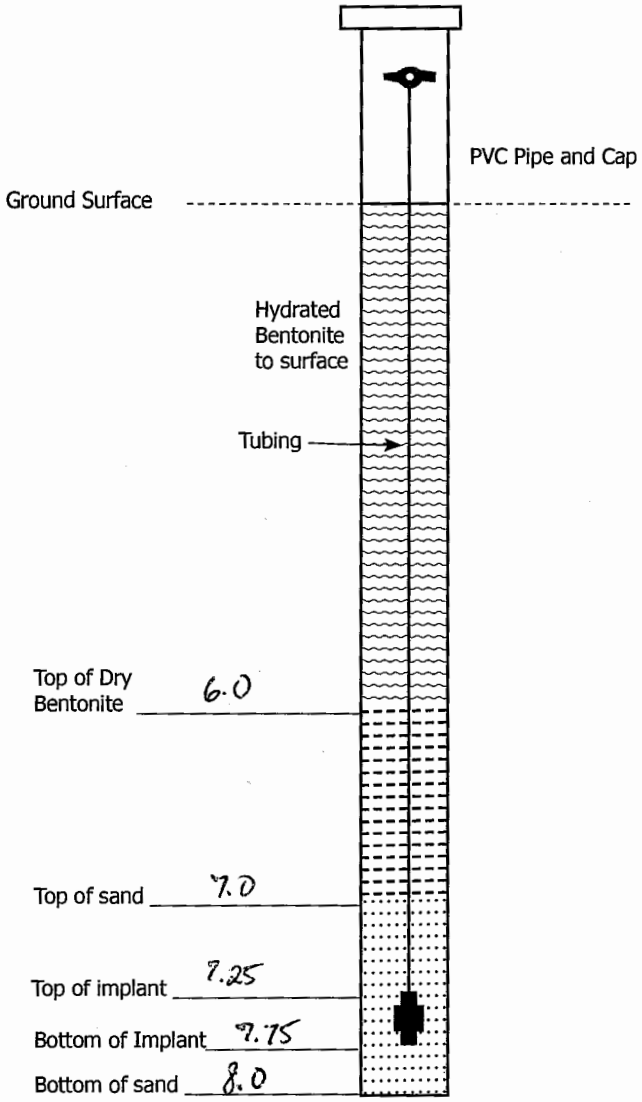
Single Soil Vapor Probe Construction Diagram

MWH

Probe ID/Soil ID: SASV-DG-570
Site: SA 5A
Drilling Contractor: EST
Borehole TD: ~~2.25~~ (V.V.) 8.0

Job #: 10503982.3050105/10503982.3060105
Reviewed by:
Rig Type/Method: Geoprobe 5400/DP
Probe Completion Date/Time: ~~1430~~ (V.V.) 1410 / 6-4-14

Project: Phase 3 DOE Data Gap Sampling 20
Logged by: V. Vathanasin
Driller: Morgan Hughes
Borehole Diameter: 2.25"



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: Clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Cemex

Dry Bentonite
Type: #8
Manufacturer: Cetco

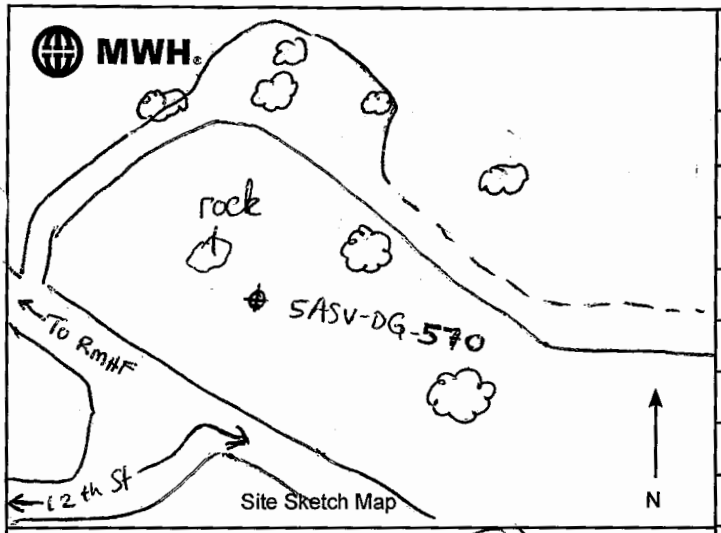
Hydrated Bentonite
Type: #8
Manufacturer: Cetco

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH

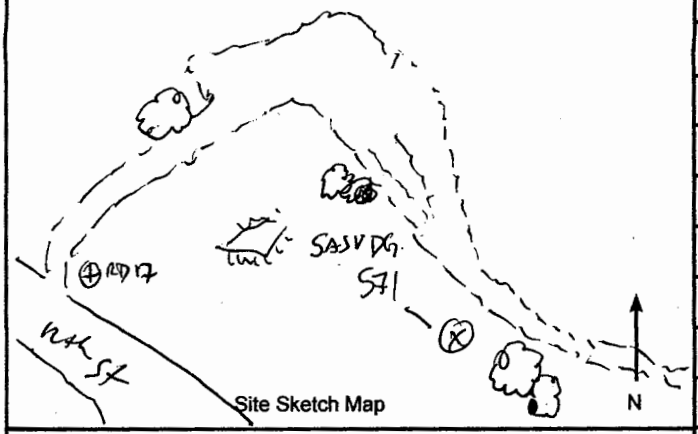


Site Sketch Map

Boring ID: SASV-DG-570	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: SA
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 8.0
Drill Bit Type: Macrocore	
Drill Start Time/Date: 1345/6-4-14	Drill Finish Time/Date: 1405/6-4-14
Soil Vapor ID: SA SV-DG-570 (V.V.)	Soil Boring Backfill Time/Date: N/A
Soil Vapor Well Completion Time/Date: ~~1430~~ 1410 / 6-4-14	Backfill Material: N/A
Soil Vapor Probe Depths (ft.bgs): 7.0-8.0	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Well Detail Completed (yes/no)	Surface Completion: Soil vapor probe
	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munseli Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Surface Description: * Backfill Slope					
								* Moved location 3' NE. Geoprobe could not be set up on "hummock"	--	—	—	55	45
						1		Silty Sand (SM), dark yellowish brown (10YR 3/4), loose, dry, fine sand, non plastic silt, roots upper 6", no odors, fill					
		36"	NONE			2							
						3		@1.5, color lightens to dark (10YR 4/4) yellowish brown					
						4							
		24"	NONE			5							
						6		@6' becomes very slightly cemented, fill					
		24"	NONE			7							
						8	SP	Poorly Graded Sand (SP), yellowish brown (10YR 5/6), loose, dry, fine sand, friable, no odors or stains, native soil. @8.0 Sandstone, weathered	--	—	—	100	—
						9	BR						

MWH.



Site Sketch Map

Boring ID: SASV DG-571	Sheet 1 of 1
Project: Phase 3 DOE SVDG 2014	
Job #: 10503892.3060106	Site: SA
Logged By: RB Ewis	Reviewed By:
Drilling Contractor: EST	Drillers Name: MARTY KILHULLEN
Drill Rig Type/Method: Geoprobe 5400	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft bgs): 3.0'
Drill Bit Type: Macrocore	
Drill Start Time/Date: 11:14 04 JUN 2014	Drill Finish Time/Date: 11:20 04 JUN 2014
Soil Vapor ID: N/A	Soil Boring Backfill Time/Date: 12:35 04 JUN 2014
Soil Vapor Well Completion Time/Date: N/A	Backfill Material: soil cuttings, hydrated bent.
Soil Vapor Probe Depths (ft.bgs): N/A	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Well Detail Completed (yes/no): N/A	Surface Completion: Backfilled hole / bent
	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description

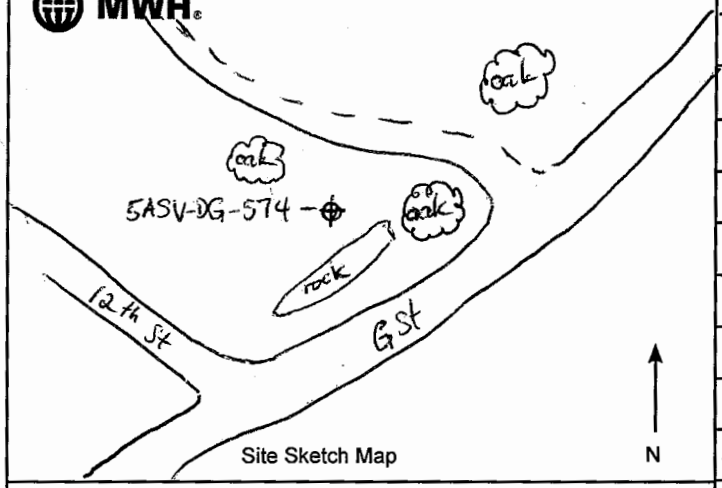
1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

Surface Description: mulch / mustard, flat

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
0.0 ppm		36"				0		0 - 2.2					
						1	SM	Silty sand (sm), Brown (10YR 4/3)	-	-	5	60	35
								very loose for first foot, then					
						2		loose, dry. mostly fine sand					
			X				SM	(60), some silt (35), few medium					
						3		sand (5). No stain, no odor					
	SVL-571-SASA-SB-2.5-3.0 @ 11:26							Fill material, some fine					
						4		roots in first 18".					
0.0 ppm	13 µRem, 42 cpm							2.2 - 3.0					
						5		Silty sand (sm), light yellow	-	-	10	60	30
								brown (10YR 6/4). loose, dry					
						6		mostly fine sand (60), some					
								silt (30), few medium sand (10).					
						7		No stain, no odor, Native.					
						8		. TD = 3.0' bgs w/ refusal					
								on sandstone bedrock.					
						9		• Backfilled w/ soil cuttings					
								@ 12:35					

QA/QC
Surficial media boring log rev 2-25-2014

MWH



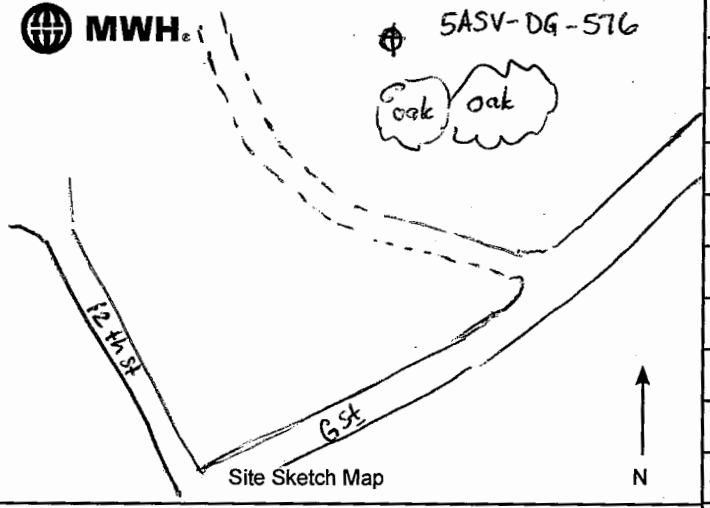
Site Sketch Map

Boring ID: 5ASV-DG-574	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5A
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 2.0
Drill Bit Type: Macrocore	
Drill Start Time/Date: 1055/6-4-14	Drill Finish Time/Date: 1105/6-4-14
Soil Boring Backfill Time/Date: 1118/6-4-14	Backfill Material: Soil cuttings.
Soil Vapor ID: N/A	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Well Completion Time/Date: N/A	Surface Completion: None
Soil Vapor Probe Depths (ft.bgs): N/A	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None
Soil Vapor Well Detail Completed (yes/no)	

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description: Surface Description: Filled in between rock outcrops	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
	X					0	SM	Silty Sand (sm), dark yellowish brown (10YR 4/4), loose, dry, fine sand, non-plastic silt, roots, no odors and no stains, fill.	–	–	–	75	25
0.0	X	18"	X		1110	1							
SVL-574-SA5A-SB-1.5-2.0						2	Br	Sandstone, weathered.					
						3							
						4		TD = 2.0 ft, refusal on bedrock, no probes installed; collect soil samples for VOC analyses at 1.5-2.0					
						5							
						6							
						7							
						8							
						9							

Soil Description: 1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

MWH



Site Sketch Map

Boring ID: SASV-DG-576	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: SA
Logged By: V. Vathanaxin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 3.0
Drill Bit Type: Macrocore	
Drill Start Time/Date: 1005 / 6-4-2014	Drill Finish Time/Date: 1020 / 6-4-2014
Soil Vapor ID: N/A	Soil Boring Backfill Time/Date: 1035/6-4-14 Backfill Material: Soil cuttings
Soil Vapor Well Completion Time/Date: N/A	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): N/A	Surface Completion: None
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations) / Surface Description:	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
	X	36"				0	SM	Silty Sand (SM), brownish yellow (10YR 6/6), loose, dry, fine sand, non-plastic silt, no odors or stains, fill.	-	-	-	40	30/
						1							
						2							
0.0			X		10:15	3							
SVL-576-SA5A-SB-2.5-3.0							Br	Sandstone, weathered.					
						4		TD = 3.0 ft, refusal on bedrock; collect encores at 2.5-3.0, No vapor probes installed.					
						5							
						6		Drilled 2 extra borings to confirm shallow refusal w/ similar results					
						7							
						8							
						9							

MWH

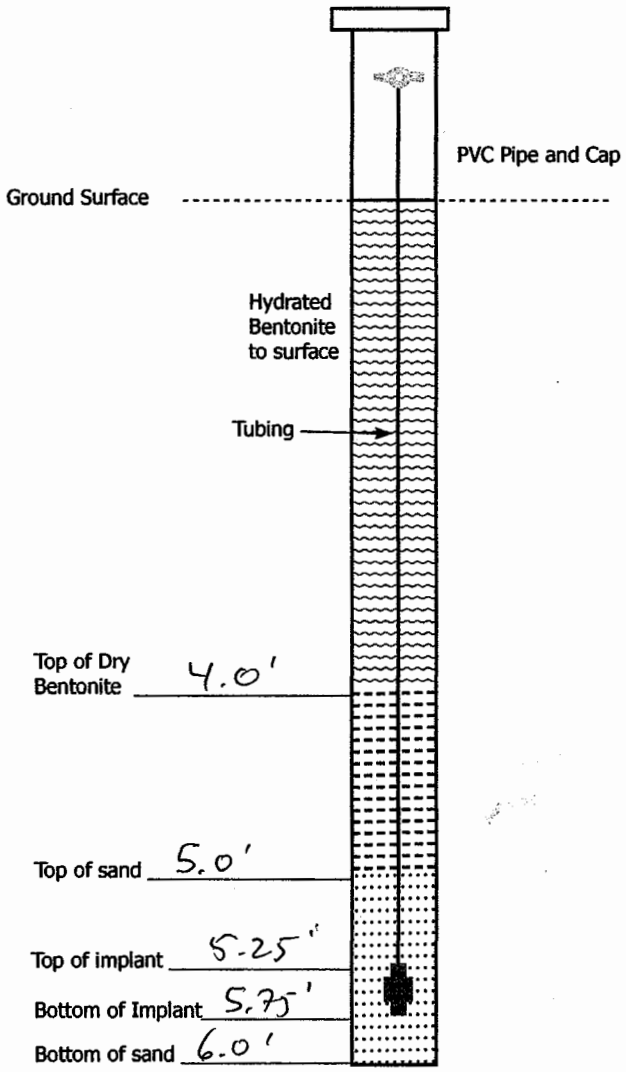
Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SASV DG-582 Job #: 10503982.3050106/10503982.3060106 Project: Phase 3 DOE Data Gap Sampling 2014

Site: SA Reviewed by: _____ Logged by: RGR SCCS

Drilling Contractor: EST Rig Type/Method: Geoprobe 7400 Driller: MARTY KILMARTIN

Borehole TD: 6.0' bgs Probe Completion Date/Time: 04JUN14, 1030 Borehole Diameter: 2.25"



Vapor Implant Specs

Material: stainless steel

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: teflon

Diameter: 1/4"

Color: clear

Sand Pack Specs

Grain Size: #3 sand

Manufacturer: Cemex

Dry Bentonite

Type: #8 crumbles

Manufacturer: Cetco

Hydrated Bentonite

Type: #8 crumbles

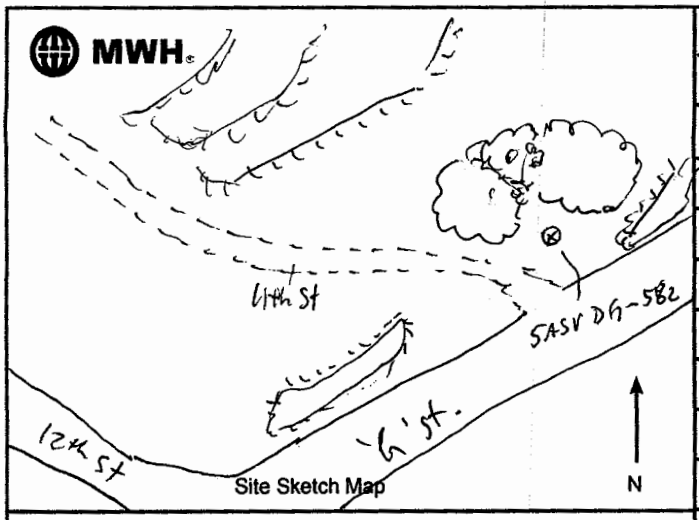
Manufacturer: Cetco

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH



Site Sketch Map

Boring ID: SASV DG-582	Sheet 1 of 1
Project: Phase 3 DOE SVDG 2014	
Job #: 10503982.3060106	Site: SA
Logged By: Rob Sells	Reviewed By:
Drilling Contractor: EST	Drillers Name: Marty Kilhullen
Drill Rig Type/Method: Geoprobe 5400	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft bgs): 6.0'
Drill Bit Type: Macrocore	
Drill Start Time/Date: 10:13 04 JUN 14	Drill Finish Time/Date: 10:16 04 JUN 14
Soil Vapor ID: SASV DG-582	Soil Boring Backfill Time/Date: N/A — Backfill Material: N/A
Soil Vapor Well Completion Time/Date: 04 JUN 14, 10:30	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): 5.0 - 6.0'	Surface Completion: SV Probe
Soil Vapor Well Detail Completed (yes/no) attached	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

Surface Description:

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
0.0 ppm		48"				0		0 - 4.5					
						1	Sm	Silty sand (sm), brown (10YR 4/3) very loose and dry from 0-1.5' with color change 1.5 - 4.5 dark yellowish brown (10YR 4/4) and loose, still dry. Mostly fine sand (60), some silt (35), few medium sand (5). No stain, no odor. Fill material. Roots 4.5 - 6.0	-	-	5	60	35
						2							
						3							
						4							
0.0 ppm		24"											
						5	Sm	Silty sand (sm), dark yellowish brown (10YR 4/4). Loose, dry. Mostly fine sand (60), some silt (30), few medium sand (10). No stain, no odor. Fill material. Roots throughout; minor oxidation mottles.			10	60	30
					TD =	6							
						7							
						8							
						9		TD = 6.0' on sandstone bedrock. Hard; little left in shoe.					

• Confirm bedrock refusal 3' (SW)

QA/QC
Surficial media boring log rev 2-25-2014

MWH

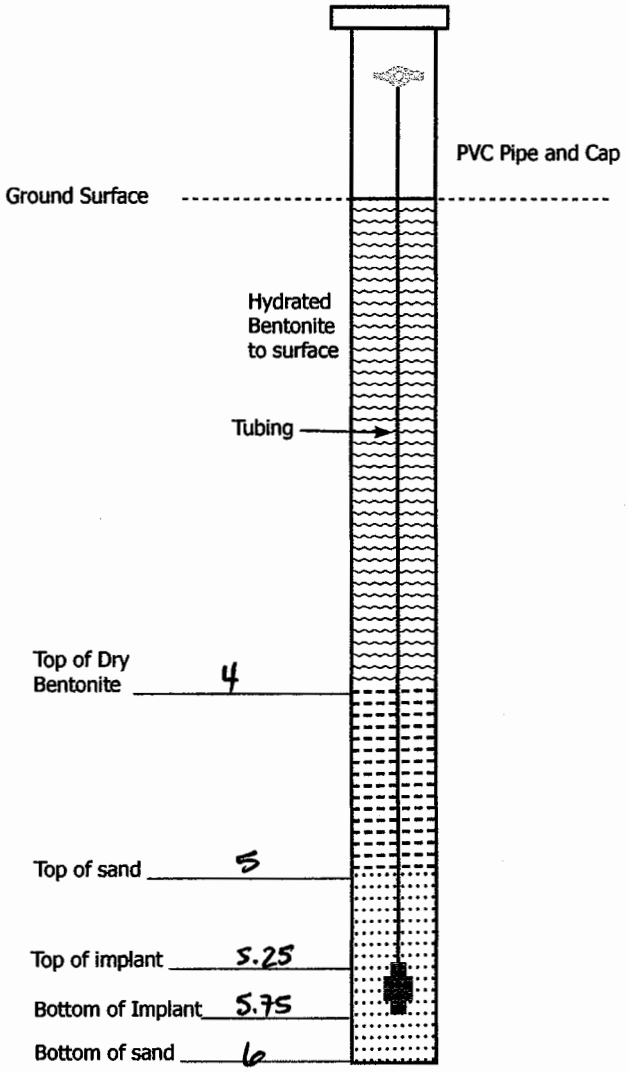
Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SSV - DG - 592
Job #: 10503982.3050106/10503982.3060106
Project: Phase 3 DOE Data Gap Sampling 2014

Site: 5A
Reviewed by:
Logged by: Andrew Payne

Drilling Contractor: EST
Rig Type/Method: GEOPROBE 5400/DP
Driller: MARTIN ~~[illegible]~~ KILHULLEN

Borehole TD: 6'
Probe Completion Date/Time: 6/6/14 1145
Borehole Diameter: 2.25"



Vapor Implant Specs

Material: STAINLESS STEEL
Length: 6"
Diameter: 3/8"

Tubing Specs

Material: TEFLON
Diameter: 1/4"
Color: CLEAR

Sand Pack Specs

Grain Size: #3
Manufacturer: CEMEX

Dry Bentonite

Type: #8
Manufacturer: CETCO

Hydrated Bentonite

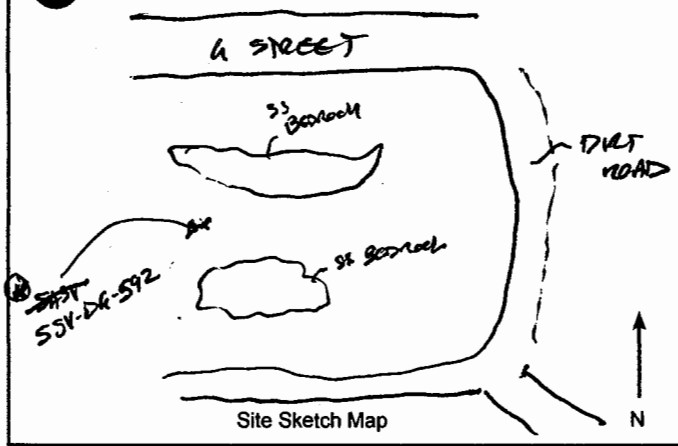
Type: #8
Manufacturer: CETCO

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH



Site Sketch Map

Boring ID: SSV-DG-592 Sheet 1 of 1

Project: Phase 3 DOE Data Gap Sampling 2014

Job #: 10503982.3050106 / 10503982.3060106 Site: SA

Logged By: ANDREW BRYANT Reviewed By:

Drilling Contractor: Drillers Name: MARTIN KILLINGER

Drill Rig Type/Method: GEOPROBE 5400 / DP

Sampler Type: MACROCORE

Borehole Diam (inch): 2.25 Total Depth (ft.bgs):

Drill Bit Type: MACROCORE

Drill Start Time/Date: 6/6/14 1130 Drill Finish Time/Date: 6/6/14 1140

Soil Vapor ID: SSV-DG-592

Soil Boring Backfill Time/Date: N/A Backfill Material: N/A

Soil Vapor Well Completion Time/Date: 6/4/14 1145

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Soil Vapor Probe Depths (ft.bgs): 5-6

Surface Completion: SOIL VAPOR PROBE

Soil Vapor Well Detail Completed (yes/no)

Type of Refusal: WEATHERED SS.

☑ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Surface Description: GRASSES, CAN SCARS & TREES NEAR LOC.; BEDROCK @ 4'. SILTY SAND (SM), DRY, LOOSE, BROWN (10YR 4/3)	—	—	10	65	25
						1		FINE TO MEDIUM SAND, MEDIUM DENSE FROM 1'-4' BGS; BECOMES OF YELLOWISH BROWN					
0.0		40"	—	N/A	—	2		(10YR 4/6) BETWEEN 2-4' BGS; ROOTS @ 1';	—	—	15	65	20
				NONE				FILL MATERIAL					
						3							
						4	SP-SM	SAND W/ SILT (SP-SM), DRY, LIGHT YELLOWISH (10YR 6/4), LOOSE, POOR. FINE SAND W/ MEDIUM SAND, ~15% FINES, NATIVE/ALLUVIUM			25	60	15
						5	SP	SAND (SP), DRY, LIGHTY YELLOWISH BROWN (10YR 6/4), LOOSE, FINE TO MEDIUM SAND, TRACE			15	80	5
0.0		36"	—	N/A	—	6		PIECES OF WEATHERED SS; NATIVE ALLUVIUM					
				NONE									
						7		TD = 6'; REFUSAL ON WEATHERED SS BEDROCK; SV PROBE @ 5-6'					
						8							
						9							

MWH

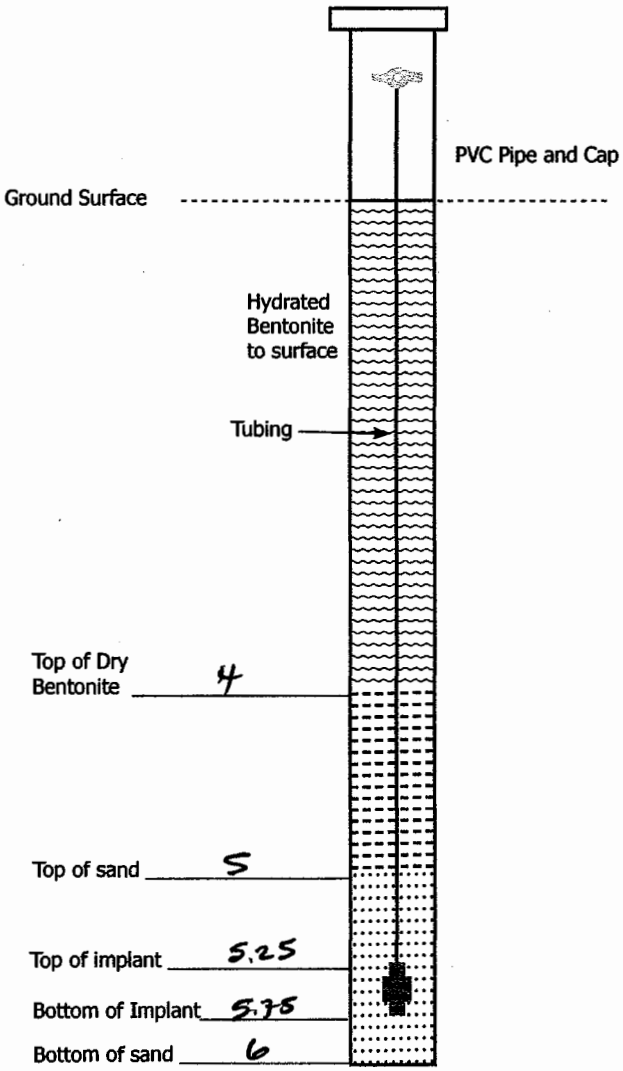
Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SSV - DG - 515 Job #: 10503982.3050106/10503982.3060106 Project: Phase 3 DOE Data Gap Sampling 2014

Site: SA Reviewed by: _____ Logged by: ANDREW RHYNE

Drilling Contractor: EST Rig Type/Method: HANDAUGER Driller: MARTIN KILLMEN

Borehole TD: 6' Probe Completion Date/Time: 6/6/14 1315 Borehole Diameter: 3.25"



Vapor Implant Specs

Material: STAINLESS STEEL

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: TEFLON

Diameter: 1/4"

Color: CLEAR

Sand Pack Specs

Grain Size: #3

Manufacturer: CEMEX

Dry Bentonite

Type: #8

Manufacturer: CETCO

Hydrated Bentonite

Type: #8

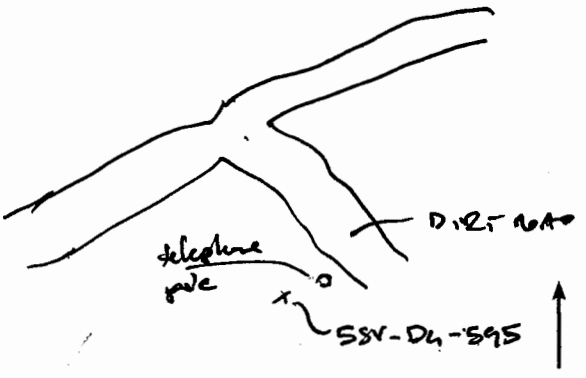
Manufacturer: CETCO

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH



Site Sketch Map

Boring ID: SSV-DG-595 Sheet 1 of 1

Project: Phase 3 DOE Data Gap Sampling 2014

Job #: 10503982.3050106 / 10503982.3060106 Site: 5A

Logged By: AARON PAYNE Reviewed By:

Drilling Contractor: EST Drillers Name: MARTIN KILHAMEN

Drill Rig Type/Method: HAND AUGER

Sampler Type: HAND AUGER

Borehole Diam (inch): 3.25" Total Depth (ft.bgs): 6'

Drill Bit Type: HAND AUGER

Drill Start Time/Date: 6/6/14 1255 Drill Finish Time/Date: 6/6/14 1310

Soil Vapor ID: SSV-DG-595

Soil Boring Backfill Time/Date: Backfill Material: N/A

Soil Vapor Well Completion Time/Date: 6/6/14 1315

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Soil Vapor Probe Depths (ft.bgs): 5-6

Surface Completion: SOIL VAPOR PROBE

Soil Vapor Well Detail Completed (yes/no)

Type of Refusal: WEATHERED SS BR.
☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations) Surface Description:	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	SILTY SAND (SM), DRY, LOOSE, BROWN (10YR 4/3) TO YELLOWISH BROWN (10YR 5/4), FINE TO MEDIUM SAND, TRACE LF SAND, SUBANG TO SUBROUNDED, TRACE GRAVEL W. 1/2" DIA. (SHALE); FILL MATERIAL	TRACE	5	15	55	25
0.0						1							
						2							
						3							
						4		TD = 6' REFUSAL ON SS BEDROCK/WEATHERED SV PROBE INSTALLED 5-6'					
0.0						5		0.0 PPM ON PID					
						6							
						7							
						8							
						9							

MWH

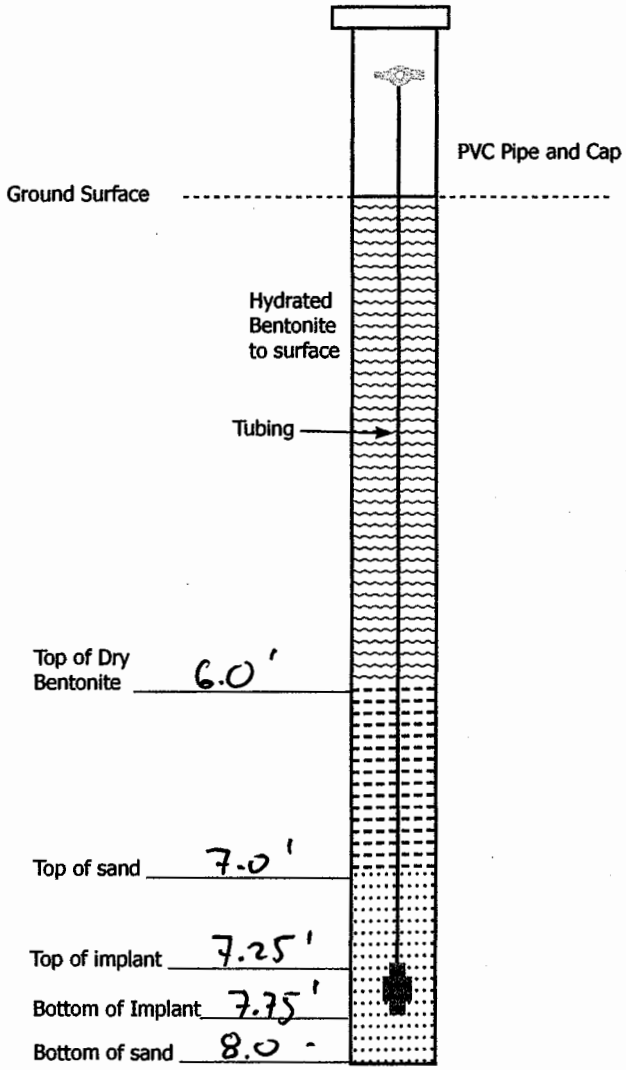
Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SASV DG-609 Job #: 10503982.3050106/10503982.3060106 Project: Phase 3 DOE Data Gap Sampling 2014

Site: SASV Reviewed by: _____ Logged by: Nussens

Drilling Contractor: EST Rig Type/Method: Geoprobe 5400 Driller: Morgan Hughes

Borehole TD: 8.0' bgs Probe Completion Date/Time: 09-JUN-14, 08:50 Borehole Diameter: 2.25"



Vapor Implant Specs

Material: Stainless Steel

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: Teflon

Diameter: 1/4"

Color: clear

Sand Pack Specs

Grain Size: #2 Sand

Manufacturer: Comox

Dry Bentonite

Type: #8 crumbles

Manufacturer: Cetco

Hydrated Bentonite

Type: #8 crumbles

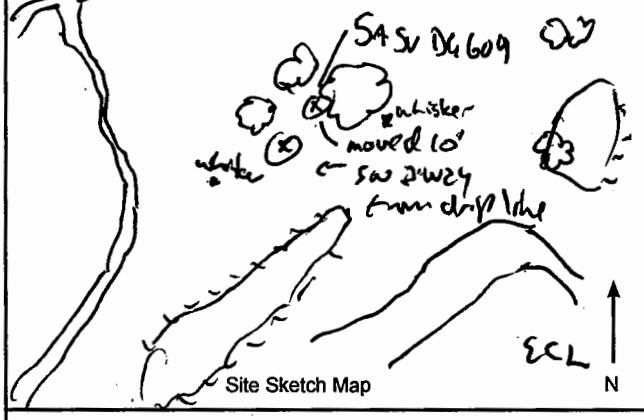
Manufacturer: Cetco

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH



Site Sketch Map

Boring ID: SASV DG-609 Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: SA

Logged By: MMSELLS Reviewed By:

Drilling Contractor: EST Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5400

Sampler Type: Macrocore

Borehole Diam (inch): 2.25" Total Depth (ft.bgs): 8.0'

Drill Bit Type: Macrocore

Drill Start Time/Date: 08:20 09 JUN 14 Drill Finish Time/Date: 08:34 09 JUN 14

Soil Vapor ID: SASV_DG-609

Soil Boring Backfill Time/Date: NA Backfill Material: NA

Soil Vapor Well Completion Time/Date: 09 JUN 14; 08:50

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Soil Vapor Probe Depths (ft.bgs): 7.0-8.0'

Surface Completion: SV Probe

Soil Vapor Well Detail Completed (Yes/No) Hached

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations) / Surface Description:	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
0.0 ppm		46"				0	SM	0.0 - 1.5' Silty sand (sm), brown (10YR 4/3), loose, dry. Mostly fine sand (55), some silt (35), few med sand (~10). No stain, no odor. Fill material - Fine roots throughout. up to occasional root ~1cm.			10	55	35
						1							
						2							
						3	SP	1.5 - 4.1					
						4							
0.0 ppm		48"				4		Poorly sorted sand (SP). Dark yellow brown (10YR 4/4). loose, dry. Mostly fine sand (80%), few silt, med sand (10% each), trace coarse sand. No stain, no odor. Fill material	-	TR	10	80	10
						5							
						6							
						7		4.1 - 8.0					
						8		Silty Sand (SM) yellow brown (10YR 5/4). loose, dry. Mostly fine sand (60), some silt (30), med sand (10). No stain, no odor. Native, Color change to light yellow brown (10YR 6/4).	-	-	10	60	30
TD = 8.0' bgs w/ refusal on sandstone bedrock						9							

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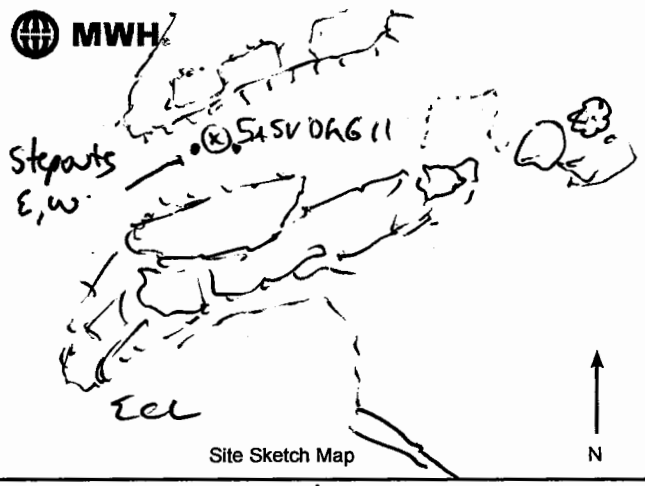

Site Sketch Map

Boring ID: 5ASV DG-611	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5A
Logged By: Rob Ellis	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs):
Drill Bit Type: Macrocore	
Drill Start Time/Date: 09 JUN 14 10:36	Drill Finish Time/Date: 09 JUN 14 10:38
Soil Vapor ID: N/A	Soil Boring Backfill Time/Date: 09 JUN 14 11:02
Soil Vapor Well Completion Time/Date: N/A	Backfill Material:
Soil Vapor Probe Depths (ft.bgs): N/A	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Well Detail Completed (yes/no): N/A	Surface Completion: None
	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description foxtail, coyote bush, oat.

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

Surface Description: Flat, on road side

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
		22"				0	SM	0.0-0.5					
						1	SP-SM	Silty sand (SM) Brown (10YR 4/3)	-	-	10	60	30
					TD = 1.85'	2		Loose, dry. Mostly fine sand (60), fine silt (30), and few medium					
								sand (10). No stain, no odor					
						3		Fill material -					
								0.5-1.85'					
						4		Poorly graded sand w/ silt (SP-SM). Yellowish brown (10YR 5/6).	-	TR	10	70	20
						5		Loose, dry. Mostly fine					
						6		sand (70), little silt (20),					
								few medium sand (10), trace					
						7		coarse sand. No stain, no					
								odor - Native.					
						8		TD = 1.85' bgs					
								Backfilled w/ soil cuttings					
						9		09 JUN 14, ~~10:02~~ 11:02					
								Stepped out to east and west					

Sample 1.35-1.85'
SVL-611-5A5A-5B-1.35-1.85
@ 10:39
0.0 ppm, 13 µR, 44 cpm

TD = 1.85' bgs w/ refusal on sandstone bedrock

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Single Soil Vapor Probe Construction Diagram

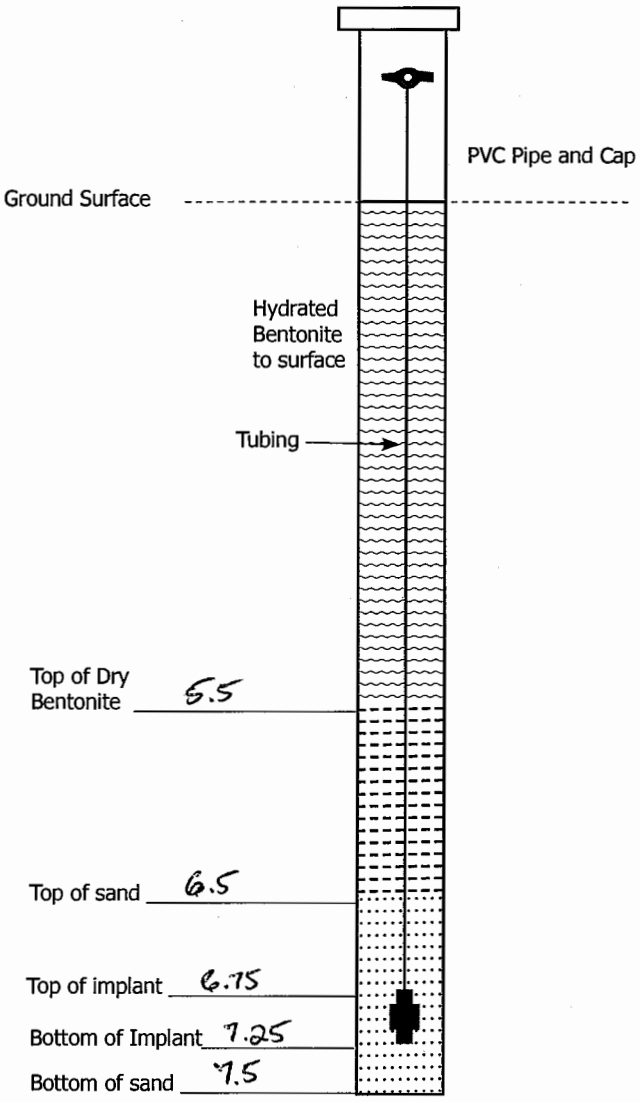
MWH

Probe ID/Soil ID: SASV-DG-616 | Job #: 10503982.3050105/10503982.3060105 | Project: Phase 3 DOE Data Gap Sampling 201

Site: SASA | Reviewed by: | Logged by: V. Vathanasin

Drilling Contractor: EST | Rig Type/Method: Geoprobe 5400/DP | Driller: Morgan Hughes

Borehole TD: 7.5 | Probe Completion Date/Time: 1255/6-6-14 | Borehole Diameter: 2.25"



Vapor Implant Specs

Material: Stainless Steel

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: Teflon

Diameter: 1/4"

Color: Clear

Sand Pack Specs

Grain Size: #3

Manufacturer: Cemex

Dry Bentonite

Type: #8

Manufacturer: Cetco

Hydrated Bentonite

Type: #8

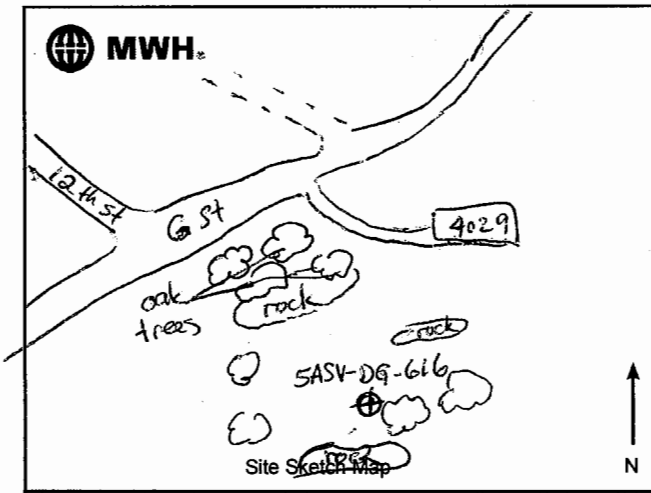
Manufacturer: Cetco

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH



Boring ID: 5ASV-DG-616 Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: SA

Logged By: V. Vatharasri Reviewed By:

Drilling Contractor: EST Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5400 / DP

Sampler Type: Macrocore

Borehole Diam (inch): 2.25" Total Depth (ft.bgs): 7.5

Drill Bit Type: Macrocore

Drill Start Time/Date: 1229 / 6-6-14 Drill Finish Time/Date: 1236 / 6-6-14

Soil Vapor ID: 5ASV-DG-616

Soil Boring Backfill Time/Date: N/A Backfill Material: N/A (I.V.)

Soil Vapor Well Completion Time/Date: 1255 / 6-6-14

Observations: ☐ Debris ☒ Staining ☐ Odors ☐ Groundwater ☒ None

Soil Vapor Probe Depths (ft.bgs): 6.5 - 7.5

Surface Completion: Soil vapor probe

Soil Vapor Well Detail Completed (yes/no)

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

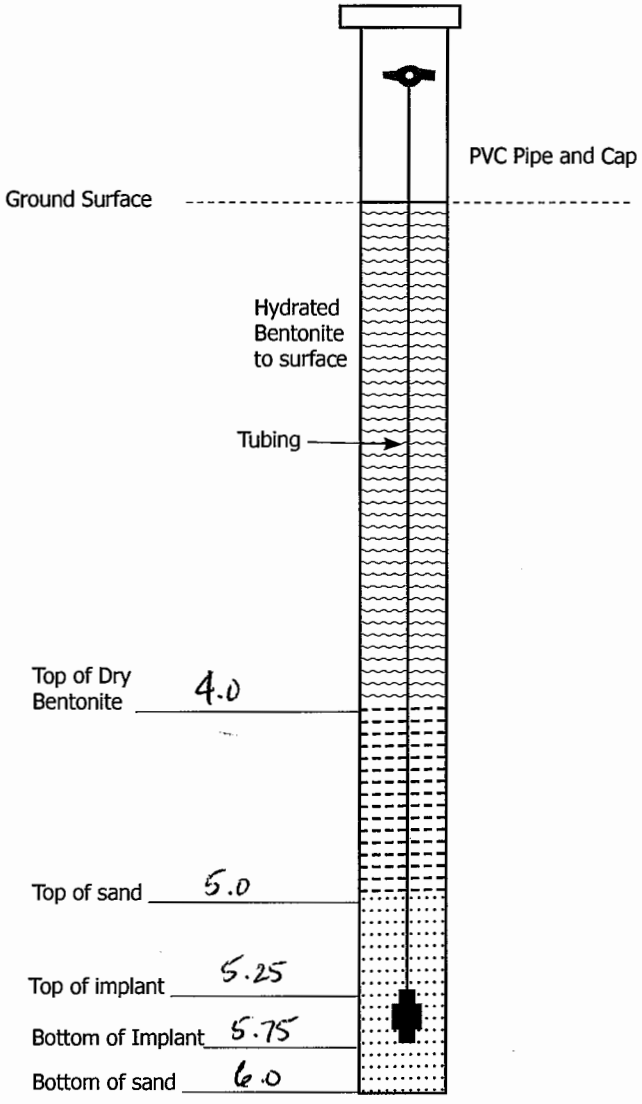
PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Silty Sand (sm), yellowish brown (10YR 5/4), loose, dry, fine sand, non-plastic silt, slightly compacted, fill	-	-	-	65	35
		45"	NONE			1							
						2							
						3		@2.5 grades to med. stiff.	-	-	15	55	30
						4							
		42"				5	SP-SM	Poorly Graded Sand w/ Silt (SP-SM) yellowish brown (10YR 5/6), loose, dry, fine sand, silt, native soil	-	-	-	70	30
						6		@6' color changes to brownish yellow, minor reddish yellow (7.5YR 7/6) (I.V.) iron stains					
						7							
						8	Br	Sandstone, weathered.					
						9							

QA/QC

Surficial media boring log rev 2-25-2014

Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SASV-DG-618
Job #: 10503982.3050105/10503982.3060105
Project: Phase 3 DOE Data Gap Sampling 201
Site: SASA
Reviewed by:
Logged by: V. Vathanasin
Drilling Contractor: EST
Rig Type/Method: Geoprobe 5400 / DP
Driller: Morgan Hughes
Borehole TD: 7.0
Probe Completion Date/Time: 1031 / 6-6-14
Borehole Diameter: 2.25



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Cemex

Dry Bentonite
Type: #8
Manufacturer: Cetco

Hydrated Bentonite
Type: #8
Manufacturer: Cetco

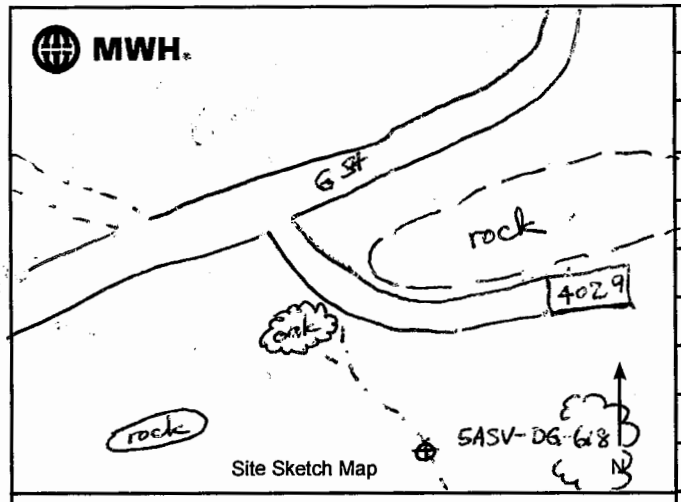
* Drilled into weathered bedrock. Backfill w/ hydrated bentonite chips to 6.0 ft (i.e, 6.0-7.0)

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH



Site Sketch Map

Boring ID: 5ASV-DG-618	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5A
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Macrocore / DP	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 7.0
Drill Bit Type: Macrocore	
Drill Start Time/Date: 0945 / 6-6-14	Drill Finish Time/Date: 1010 / 6-6-14
Soil Vapor ID: 5ASV-DG-618	Soil Boring Backfill Time/Date: N/A
Soil Vapor Well Completion Time/Date: 1031 / 6-6-14	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☐ None
Soil Vapor Probe Depths (ft.bgs): 5.0-6.0	Surface Completion: Soil vapor probe
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
								Surface Description: In drainage, grassy					
						0	SM	Silty Sand (SM), yellowish brown (10YR 5/4), loose, dry, fine sand, non-plastic silt, no stains or odors, alluvium (native soil) recently deposited.	-	-	-	60	40/
	Gas utility nearby Hand Auger to 5.0ft					1							
						2		@ 1' backfill - possibly from gas-pipe installation.					
						3							
						4							
		30"				5	SP	Poorly Graded Sand (SP), brownish yellow (10YR 6/6), loose, dry, fine sand, trace silt, weak, roots, fill.	-	-	-	100	TR/
			None			6	W B						
						7		5.5-6.0 - Clump of silty sand w/ roots					
						8		Weathered bedrock - Shale & med. to high plasticity clay, fissile. TD=7.0, refusal on shale bedrock, backfill w hydrated chips to 6.0ft and install vapor probe 5.0-6.0 ft					
						9							

Single Soil Vapor Probe Construction Diagram

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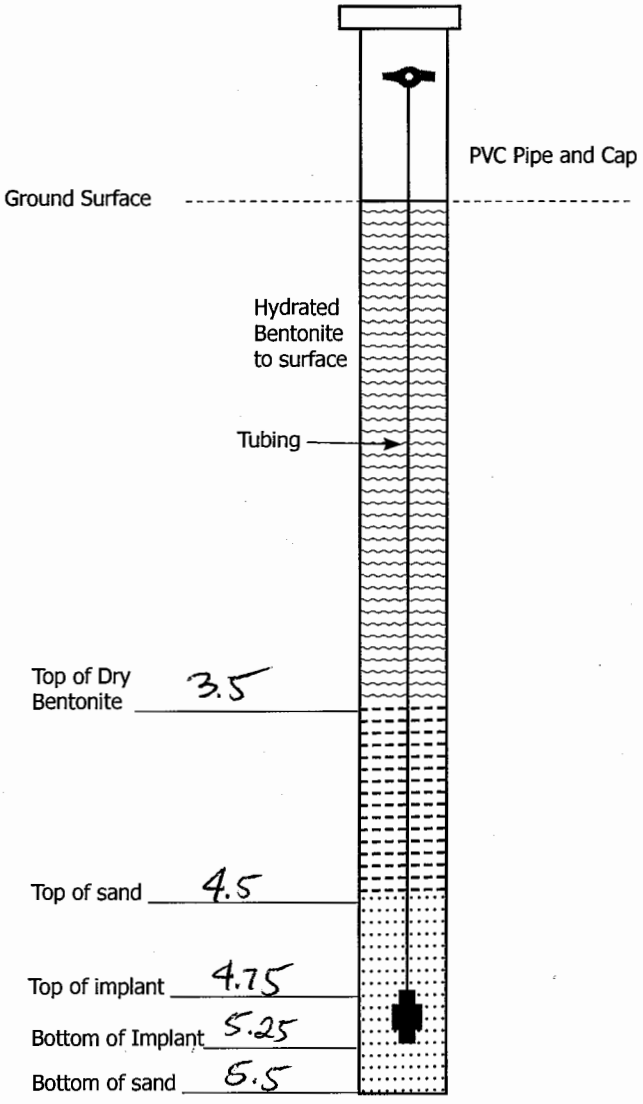
Probe ID/Soil ID: SASV-DG-619
Job #: 10503982.3050105/10503982.3060105
Project: Phase 3 DOE Data Gap Sampling 201
Site: SA
Reviewed by:
Logged by: V. Vathanasin
Drilling Contractor: EST
Rig Type/Method: Geoprobe 5400/DP
Driller: Morgan Hughes
Borehole TD: 6.0
Probe Completion Date/Time: 1216/6-6-2014
Borehole Diameter: 2.25"



* Backfill 5.5-6.0 w/ med. bentonite chips to avoid clay/weathered shale.

Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: Clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Cemex

Dry Bentonite
Type: #8
Manufacturer: Cetco

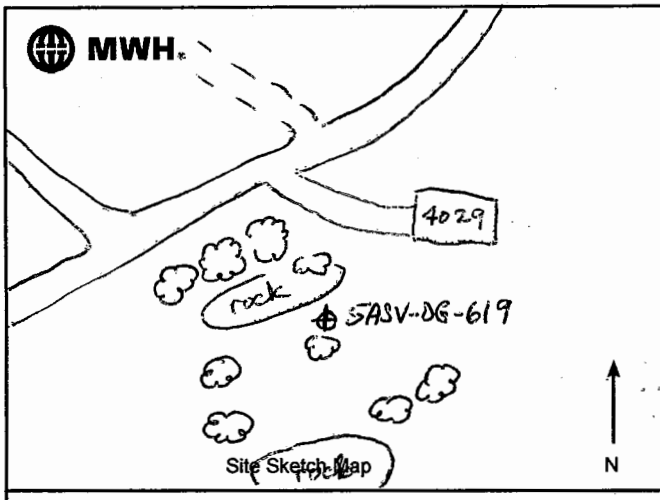
Hydrated Bentonite
Type: #8 Cetco
Manufacturer: Cetco

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH



Site Sketch Map

Boring ID: SASV-DG-619	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: SA
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method:	
Sampler Type: Macro core	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 6.0
Drill Bit Type: Macro Core	
Drill Start Time/Date: 1155 / 6-6-14	Drill Finish Time/Date: 1203 / 6-6-14
Soil Vapor ID: SASV-DG-619	Soil Boring Backfill Time/Date: N/A
Backfill Material: N/A	
Soil Vapor Well Completion Time/Date: 1216 / 6-6-2014	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): 4.5 – 5.5	Surface Completion: Soil vapor probe
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description: Surface Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Silty Sand (SM), brown (10YR 4/3), loose, dry, fine sand, non-plastic silt, non-cemented, few roots and leaves down to 3", native soil	-	-	-	60	40
		45"				1							
			NONE			2							
0.0						3	SP-SM	Poorly Graded Sand with silt (SP-SM), brownish yellow (10YR 6/6), loose, dry. fine sand and silt, native soil	-	-	-	85	15
						4							
		30"				5	CL	Sandy Clay (CL), very pale brown (10YR 7/4), med stiff matrix with stiff dry blocks of clay, low liquid limit / high dry strength, fine sand, possibly weathered shale.	-	-	-	20	80
			NONE										
0.0						6	Br	Shale, weathered.					
						7		TD = 6.0, refusal on bedrock - install probe at 4.5 - 5.5 ft. Backfill w/ med. bent chips to 5.5 ft to avoid shale/clay					
						8							
						9							

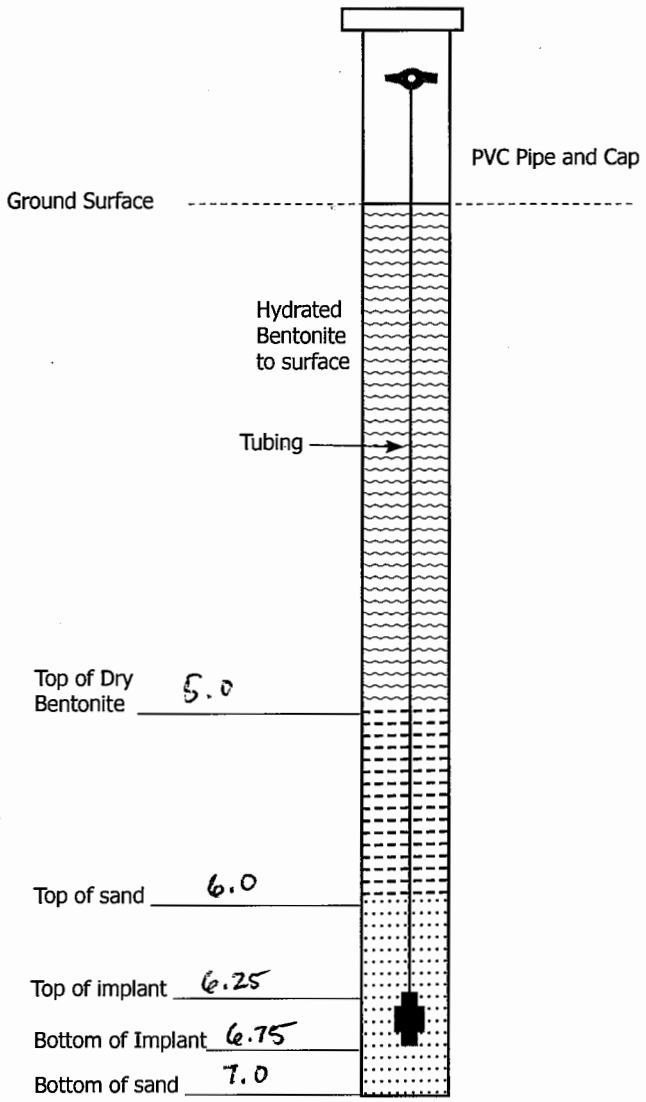
Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SASV-DG-622 | Job #: 10503982.3050105/10503982.3060105 | Project: Phase 3 DOE Data Gap Sampling 201

Site: SA 5A | Reviewed by: | Logged by: V. Vathanasin

Drilling Contractor: EST | Rig Type/Method: Geoprobe 5400 / DP | Driller: Morgan Hughes

Borehole TD: 7.0 | Probe Completion Date/Time: 1110 / 6-6-14 | Borehole Diameter: 2.25"



Vapor Implant Specs

Material: Stainless Steel

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: Teflon

Diameter: 1/4"

Color: Clear

Sand Pack Specs

Grain Size: #3

Manufacturer: Cemex

Dry Bentonite

Type: #8

Manufacturer: Cetco

Hydrated Bentonite

Type: #8

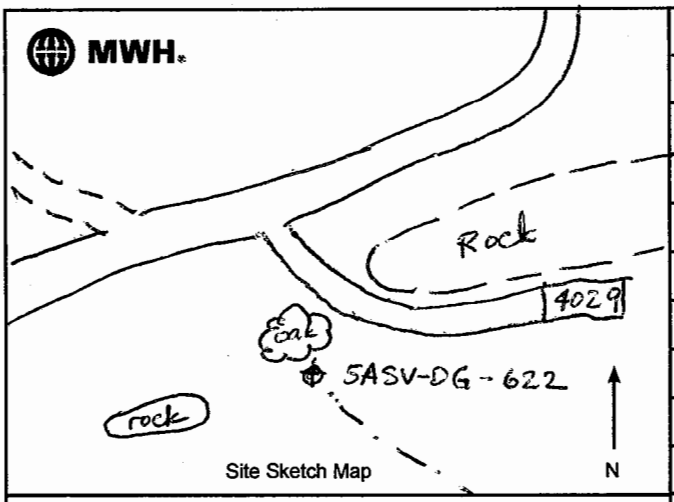
Manufacturer: Cetco

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH

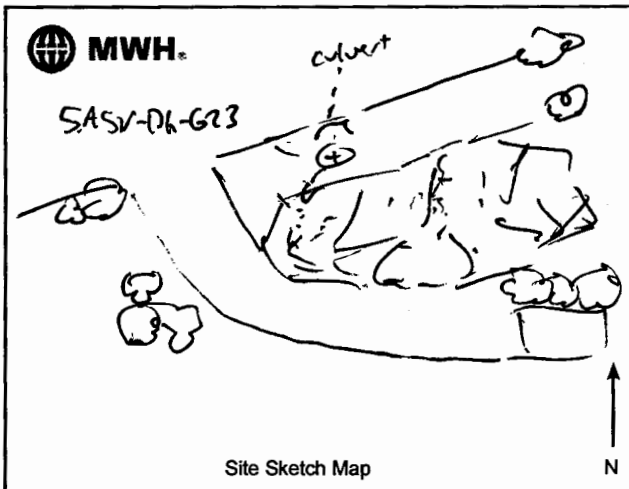


Site Sketch Map

Boring ID: 5ASV-DG-622	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5A
Logged By: V. Vatharasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 7.0
Drill Bit Type: Macrocore	
Drill Start Time/Date: 1042 / 6-6-14	Drill Finish Time/Date: 1053 / 6-6-14
Soil Vapor ID: 5ASV-DG-622	Soil Boring Backfill Time/Date: N/A
Soil Vapor Well Completion Time/Date: 1110 / 6-6-14	Backfill Material: N/A
Soil Vapor Probe Depths (ft.bgs): 6.0 - 7.0	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☐ None
Soil Vapor Well Detail Completed (yes/no)	Surface Completion:
	Type of Refusal: ☐ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Surface Description: ~10' from culvert, asphalt chunks					
								Silty Sand (SM), dark yellowish brown (10YR 4/4), loose, dry, fine sand and silt, roots, leaves down to 1-inch depth, fill	–	–	–	60	40/
		42"	NONE			2		@ 2' color changes to yellowish brown (10YR 5/4), grades w/ med. sand, fill	–	–	15	50	35/
0.0						3							
						4		@ 4 grades w/ ≤1% < 1mm very pale brown (10YR 8/3) nodules.					
		36"	NONE			5							
0.0						6	SP	Poorly Sorted Sand (SP), brownish yellow (10YR 6/6), loose, dry, fine sand,					
						7	Sr	slight yellowish brown (10YR 5/3) oxidation					
						8		Sandstone, weathered. TD = 7.0, refusal on bedrock,					
						9		install probe (MW) at 6.0 - 7.0.					

MWH.



Site Sketch Map

Boring ID: 5A SV DG-623	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5A
Logged By: KMS ELLIS	Reviewed By:
Drilling Contractor: EJT	Drillers Name: MORGAN HUGHES
Drill Rig Type/Method: Geoprobe 5400	
Sampler Type: Bucket Auger / grab	
Borehole Diam (inch): 3.5"	Total Depth (ft.bgs): 4.5'
Drill Bit Type: Bucket auger	
Drill Start Time/Date: 09 JUN 14 13:05	Drill Finish Time/Date: 09 JUN 14 13:25
Soil Vapor ID: N/A	Soil Boring Backfill Time/Date: 09 JUN 14 13:26 Backfill Material: Soil cuttings
Soil Vapor Well Completion Time/Date: N/A	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): N/A	Surface Completion: none
Soil Vapor Well Detail Completed (yes/no): N/A	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

Surface Description: drainage; elf of culvert

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
0.0		16"				0		0.0-1.5' (16")					
ppm						1	SP	Poorly graded sand (SP). Dark yellowish		TR	TR	85	15
					TD	1.5		brown (10YR 4/6). Loose - med					
						2		dense; dry. Mostly fine sand					
								(85), little silt (15) trace medium					
						3		and coarse sand - No stain,					
								no odor. Possible native.					
						4		TD = 1.5' bgs w/ refusal					
								on sandstone bedrock					
						5							
						6		Backfilled at 13:26 w/					
								Soil cuttings.					
						7		Stepped out to (S) and					
						8		(E) to confirm, refusal					
								at 12"					
						9							

MWH

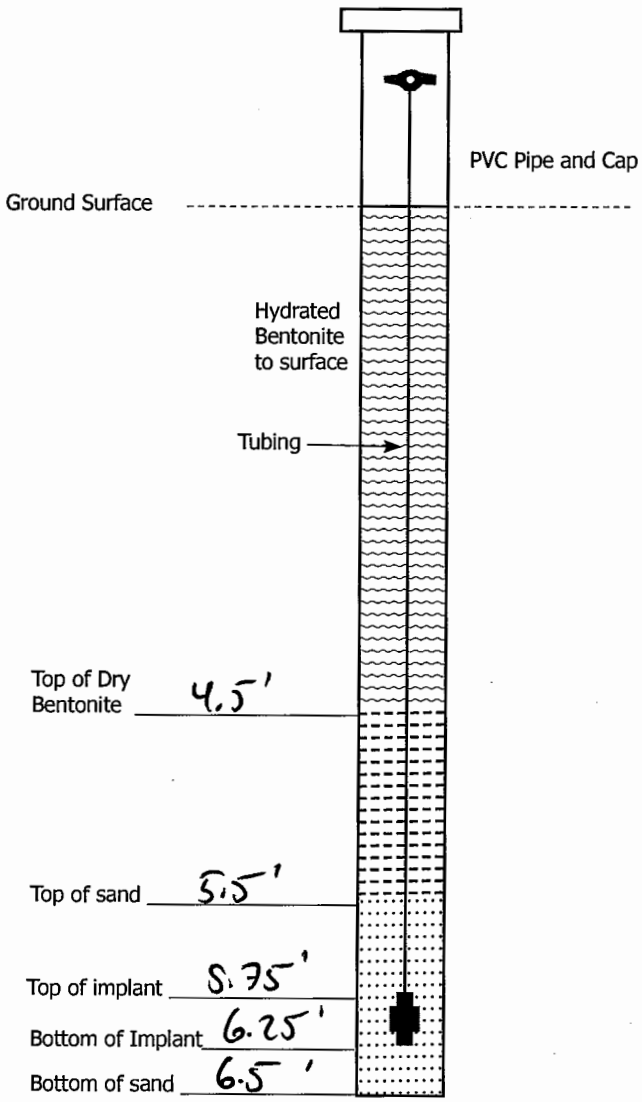
Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SASV DG-636 | Job #: 10503982.3050105/10503982.3060105 | Project: Phase 3 DOE Data Gap Sampling 20

Site: SA | Reviewed by: | Logged by: CHRIS ELLIS

Drilling Contractor: EST | Rig Type/Method: Geoprobe 5400 | Driller: MORGAN HUGHES

Borehole TD: 6.5' bgs | Probe Completion Date/Time: 09JUN14; 11:55 | Borehole Diameter: 2.25"



Vapor Implant Specs

Material: Stainless steel

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: teflon

Diameter: 1/4"

Color: clear

Sand Pack Specs

Grain Size: #3 sand

Manufacturer: Cemex

Dry Bentonite

Type: #8 bent crumbles

Manufacturer: Cetco

Hydrated Bentonite

Type: #8 bent crumbles

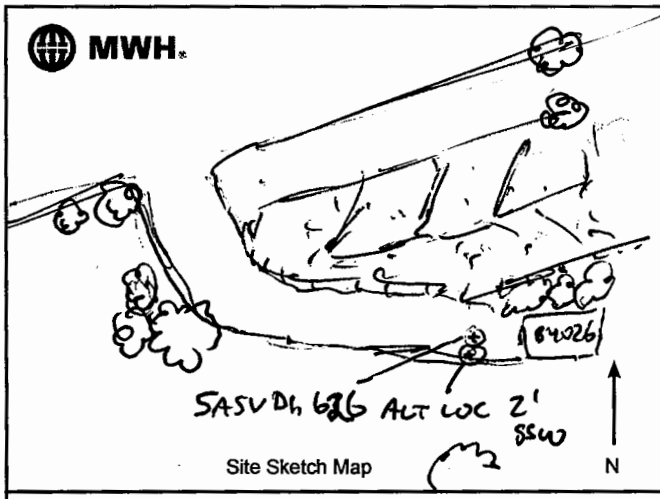
Manufacturer: Cetco

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH



Site Sketch Map

Boring ID: SASV DH-626 Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: SA

Logged By: [illegible] Reviewed By:

Drilling Contractor: EST Drillers Name: [illegible]

Drill Rig Type/Method: Geoprobe 5400

Sampler Type: Macrocore

Borehole Diam (inch): 2.25" Total Depth (ft.bgs): 6.5'

Drill Bit Type: Macrocore

Drill Start Time/Date: 09JUN14 11:35 Drill Finish Time/Date: 09JUN14 11:41

Soil Vapor ID: SASV DH-626

Soil Boring Backfill Time/Date: N/A Backfill Material: N/A

Soil Vapor Well Completion Time/Date: 09JUN14, 11:55

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Soil Vapor Probe Depths (ft.bgs): 5.5-6.5

Surface Completion: SV probe

Soil Vapor Well Detail Completed (yes/no) yes

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description used alt loc w cracks.

1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

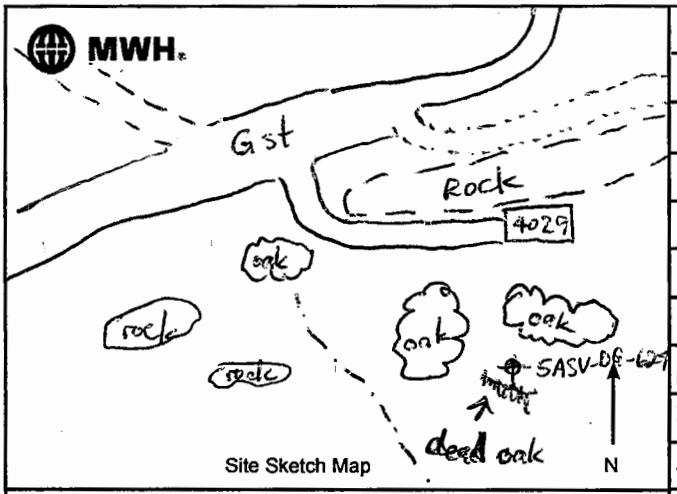
Surface Description: Asphalt

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
		40"				0	SM-GW	0.0 - 0.35 4" asphalt					
								0.35 - 0.9					
						1	SM	Silty sand with gravel (SM-GP) Brown (10YR 5/3), loose, dry. Mostly fine sand (40), some silt (30), gravel (20), pea gravel as base., few coarse sand (10). No stain, no odor. Fill.	20	10	-	40	30
						2							
						3							
						4	SM	0.9 - 2.3					
		28"						Silty sand (SM), Dark yellowish brown (10YR 4/4). Loose, dry Mostly fine sand (65), some silt (35), trace medium sand. No stain, no odor. Fill.	-	-	TR	65	35
						5							
						6							
						TD = 6.5'							
TD = 6.5' bgs w/ refusal on sandstone bedrock								2.3 - 6.5					
						8		Silty sand (SM). light yellowish brown (10YR 6/4). Loose dry. Mostly fine sand (60), some silt (40). No stain, no odor; fill	-	-	-	60	40
						9		1" shale interbed @ 6.0' bgs.					

QA/QC

Surficial media boring log rev 2-25-2014

MWH



Site Sketch Map

Boring ID: 5ASV-DG-627 Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: 5A

Logged By: V. Vathanasin Reviewed By:

Drilling Contractor: EST Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5400 / DP

Sampler Type: Macrocore

Borehole Diam (inch): 2.25 Total Depth (ft.bgs): 3.5

Drill Bit Type: Macrocore

Drill Start Time/Date: 0859 / 6-6-14 Drill Finish Time/Date: 0910 / 6-6-14

Soil Vapor ID: N/A

Soil Boring Backfill Time/Date: 0930 / 6-6-14 Backfill Material: Soil cutting

Soil Vapor Well Completion Time/Date: N/A

Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None

Soil Vapor Probe Depths (ft.bgs): N/A

Surface Completion: None

Soil Vapor Well Detail Completed (yes/no)

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description: Surface Description: Next to dead oak, grassy	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0	SM	Silty Sand (SM), dark yellowish brown (10YR 5/4), loose, dry, fine sand and non-plastic silt, no odors or stains, native soil (alluvium),	-	-	-	65	35
		40"				1							
						2		no odors or stains, roots down to 12", non-cohesive					
0.0			X		0913	3		@ 3' color change to yellowish brown (10YR 5/6)	-	-	25	55	20
							Br	Sandstone, weathered.					
						4							
						5		TD = 3.5, refusal on bedrock, no vapor probes installed. Collect soil					
						6		3.0 - 3.5 and submit for VOC analyses.					
						7							
						8							
						9							

1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Single Soil Vapor Probe Construction Diagram

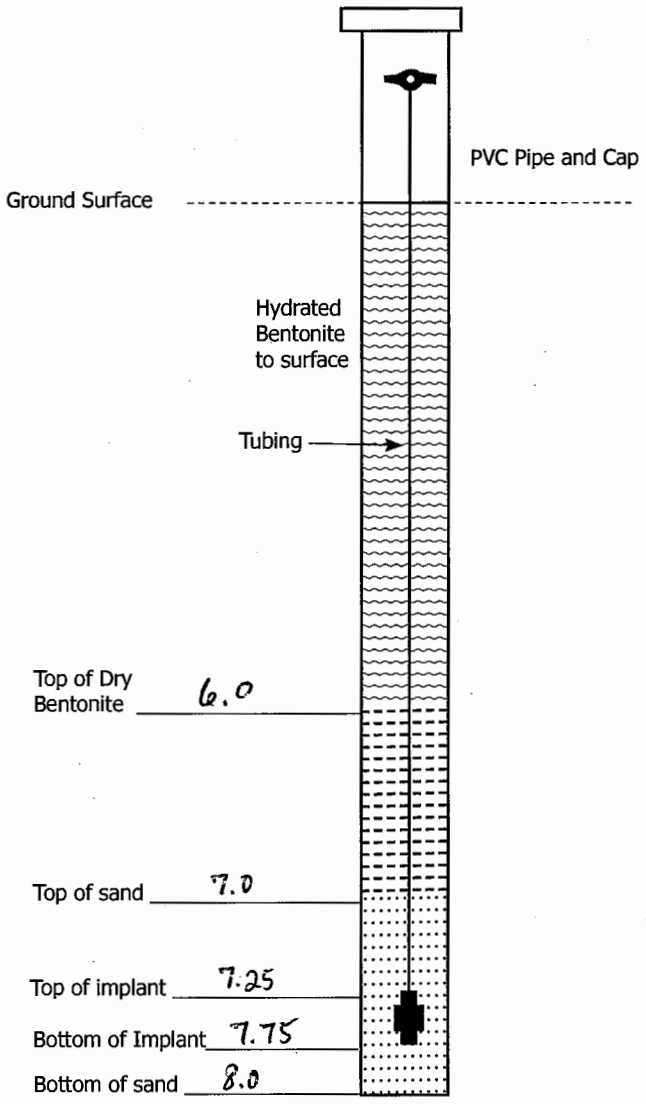
MWH

Probe ID/Soil ID: SASV-DG-629 | Job #: 10503982.3050105/10503982.3060105 | Project: Phase 3 DOE Data Gap Sampling 201

Site: SA | Reviewed by: | Logged by: V.Vathanasin

Drilling Contractor: EST | Rig Type/Method: Geoprobe 5400 / DP | Driller: Morgan Hughes

Borehole TD: 8.0 | Probe Completion Date/Time: 0830 / 6-6-2014 | Borehole Diameter: 2.25"



Vapor Implant Specs

Material: Stainless Steel

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: Teflon

Diameter: 1/4"

Color: clear

Sand Pack Specs

Grain Size: #3

Manufacturer: Cemex

Dry Bentonite

Type: #8

Manufacturer: CETCO

Hydrated Bentonite

Type: #8

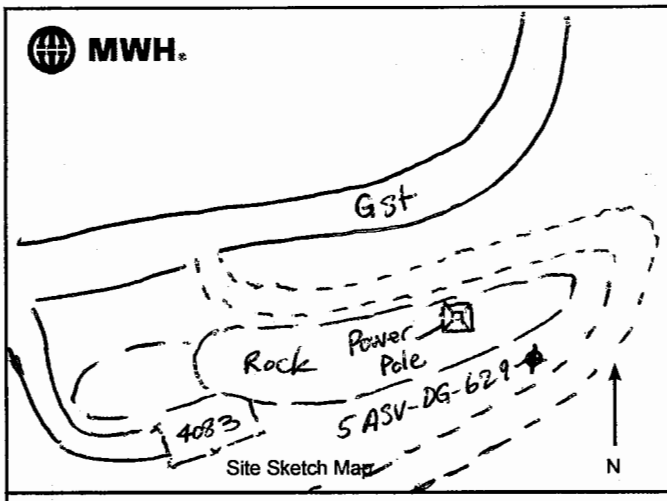
Manufacturer: CETCO

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH



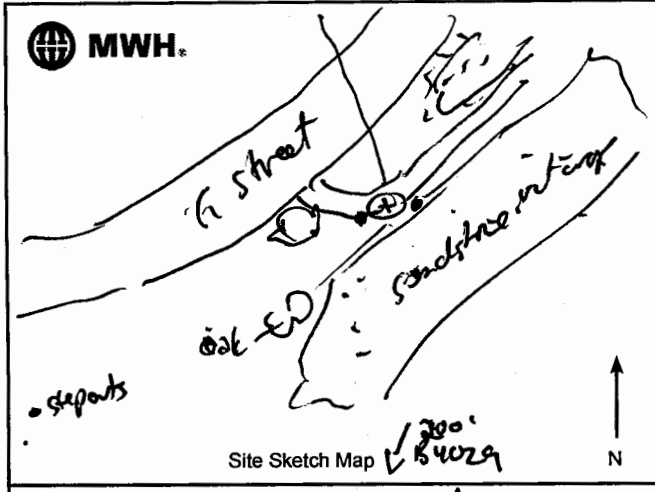
Site Sketch Map

Boring ID: 5ASV-DG-629	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5A
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 8.0
Drill Bit Type: Macrocore	
Drill Start Time/Date: 0808 / 6-6-14	Drill Finish Time/Date: 0817 / 6-6-14
Soil Vapor ID: 5ASV-DG-629	Soil Boring Backfill Time/Date: N/A
Soil Vapor Well Completion Time/Date: 0830 / 6-6-14	Backfill Material: N/A
Soil Vapor Probe Depths (ft.bgs): 7.0-8.0	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Well Detail Completed (yes/no)	Surface Completion: Soil vapor probe
	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
								Surface Description: Veg. cleared, @ base of rock outcrop					
						0	SM	Silty Sand (SM), yellowish brown (10YR 5/4), loose, dry, fine sand, non-plastic sand, no odors or stains, fill	-	-	-	65	35/
						1							
						2		@2 color changes to brownish yellow (10YR 6/6), slightly more silty, native soil.				60	40/
		48"				3							
			MOVE			4							
						5							
						6	SP-SM	Poorly Graded Sand w/ Silt (SP-SM), light yellowish brown (10YR 6/4), loose, dry, fine sand, non-plastic silt, friable. native soil.					
		48"				7							
			MOVE			8	Br	Bedrock, sandstone, weathered T.D = 8.0, refusal on bedrock, install probe 7.0-8.0					
						9							

SASV DH-630

MWH

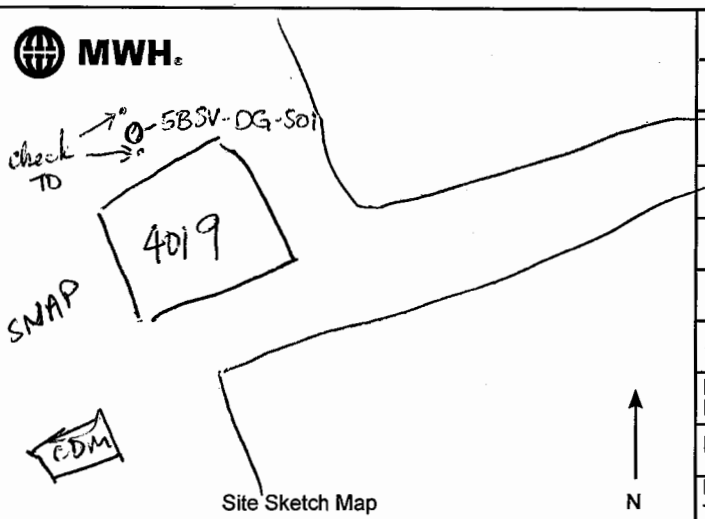


Boring ID: SASV_DH-630	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: SA
Logged By: RUSSELL	Reviewed By:
Drilling Contractor: EST	Drillers Name: MORGAN HUGHES
Drill Rig Type/Method: Geoprobe 5400	
Sampler Type: Macro Core	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 2.0'
Drill Bit Type: Macro core	
Drill Start Time/Date: 09JUN14 13:40	Drill Finish Time/Date: 09JUN14 13:49
Soil Vapor ID: N/A	Soil Boring Backfill Time/Date: 09JUN14 14:02 Backfill Material: Soil cuttings
Soil Vapor Well Completion Time/Date: N/A	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): N/A	Surface Completion: NONE
Soil Vapor Well Detail Completed (yes/no) N/A	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description: Surface Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
	X	24"				0	SM	0.0 – 0.5	-	-	10	60	30
	X		X		TD=2	1	SP	Silty sand (SM) dark yellow brown (10YR4/4) loose, dry Mostly fine sand (60) some					
SVE-630-SASA-33-1.5-2.0 @ 13:54						2		Silt (30), and few red sand (10) No stain, no odor, Fill.					
1 L/min, 26 cpm 0.0 ppm.						3		0.5 – 2.0					
						4		Poorly graded Sand (SP). ~~light~~ dark yellow brown (10YR4/4) transitions to light	-	—	15	70	15
						5		yellow brown @ 1.5' bgs to (10YR6/4). Mostly fine					
						6		Sand (30), little Silt (15), little medium sand (15).					
TD= 2.0' bgs at refusal on sandstone bedrock.						7		loose, dry. No stain, no odor, Native					
						8							
						9		Stepped out to (E) + (W) for refusal confirmation					

Backfilled w/ soil cuttings @ 14:02

MWH



Site Sketch Map

Boring ID: SBSV-DG-501	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: SB
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macro core	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 1.25
Drill Bit Type: Macrocore	
Drill Start Time/Date: 1445 / 5-12-14	Drill Finish Time/Date: 1505 / 5-12-14
Soil Boring Backfill Time/Date: 1510 (N/A)	Backfill Material: ~~Active~~ Soil cuttings (I.D.)
Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None	
Soil Vapor ID: N/A	Surface Completion: Cold asphalt patch
Soil Vapor Well Completion Time/Date: N/A	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None
Soil Vapor Probe Depths (ft.bgs): N/A	
Soil Vapor Well Detail Completed (yes/no)	

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0		Surface Description: Asphalt					
0.0	X	15"	X	0.75-1.25	1450	1	SM	4" asphalt/concrete Silty Sand (SM), yellowish brown (10YR 5/4), loose, dry, fine and medium sand, non plastic silt.			10	70	20
						2		@ 1.25' Bedrock - light yellowish brown (10YR 6/4)					
						3							
						4		TD = 1.25' Refusal on bedrock. No Vapor probes installed. Collected shallow encores due to intact slab at surface.					
						5							
						6							
						7							
						8							
						9							

Single Soil Vapor Probe Construction Diagram

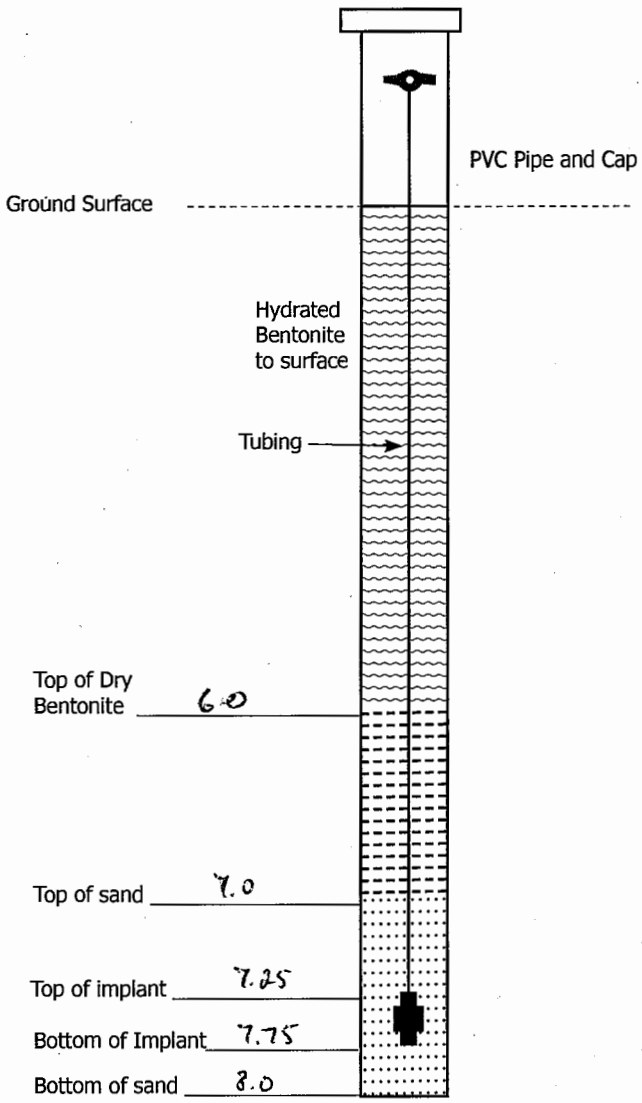
MWH

Probe ID/Soil ID: SBSV-DG-503 | Job #: 10503982.3050105/10503982.3060105 | Project: Phase 3 DOE Data Gap Sampling 201

Site: SB | Reviewed by: | Logged by: V. Vathanasin

Drilling Contractor: EST | Rig Type/Method: Geoprobe 5400/DP | Driller: Morgan Hughes

Borehole TD: 8' | Probe Completion Date/Time: 5-12-14 / 1425 | Borehole Diameter: 2.25"



Vapor Implant Specs

Material: Stainless Steel

Length: 6"

Diameter: 3/8"

Tubing Specs

Material: Teflon

Diameter: 1/4"

Color: Clear

Sand Pack Specs

Grain Size: #3

Manufacturer: Cemex Lapis Lustre

Dry Bentonite

Type: CETCO #8

Manufacturer: CETCO

Hydrated Bentonite

Type: #8

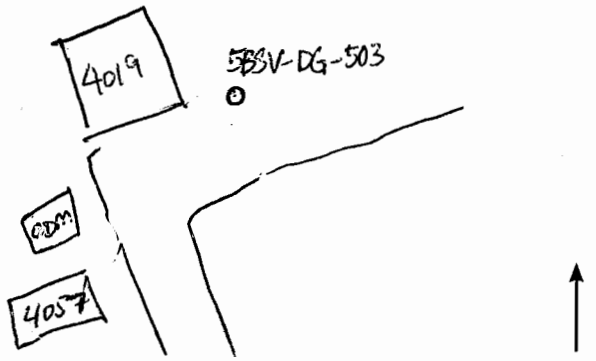
Manufacturer: CETCO

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH



Site Sketch Map

Boring ID: SBSV-DG-503	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: SB
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 / DP	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 8'
Drill Bit Type: Macrocore	
Drill Start Time/Date: 13:30 / 5-12-14	Drill Finish Time/Date: 13:55 / 5-12-14
Soil Vapor ID: SBSV-DG-503	Soil Boring Backfill Time/Date: Backfill Material:
Soil Vapor Well Completion Time/Date: 5-12-14 / 14:25	Observations: ☐ Debris ☒ Staining ☐ Odors ☐ Groundwater ☐ None
Soil Vapor Probe Depths (ft.bgs): 7.0-8.0'	Surface Completion:
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description

1) Soil type 2) USCS Symbol 3) Munsell Color 4) Consistency/Density 5) Moisture 6) Grain Size % 7) Cementation 8) Plasticity (fines) 9) Geologic Unit (fill, alluvium, bedrock) 10) Misc. Observations

Surface Description: Unpaved Road.

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
0.0						0	~~SP~~ SW	Well Graded Sand with Silt and Gravel, (SW) dark gray (10YR 4/1), loose, dry, fine to coarse sand, fine gravel, non-cemented, non-plastic fines, few dark stains (Dark brown (10YR 3/3), no odors, fill	10	15	35	30	10
		48"	NONE			1							
						2							
						3		@3' color changes to greenish gray (5BG 5/1). Silty sand (SM), color = ↑, loose, moist, fine to med sand, trace fine gravel, non-plastic silt, fill	TR	–	10	55	35
						4							
						5			–	–	–	60	40
						6	SM	@5.5' Silty Sand, grades w/o gravel and color changes to brown (10YR 5/3), moist fine sand and silt.					
						7							
						8	SW	@7.8' Color changes to very pale brown (10YR 7/4), dense w/ med and coarse sand [Well Graded Sand w/ Silt (SW)]	–	10	40	50	10
						9		@8' Bedrock					
								TD = 8' bgs; refusal on bedrock.					

Install probe 7.0' - 8.0'

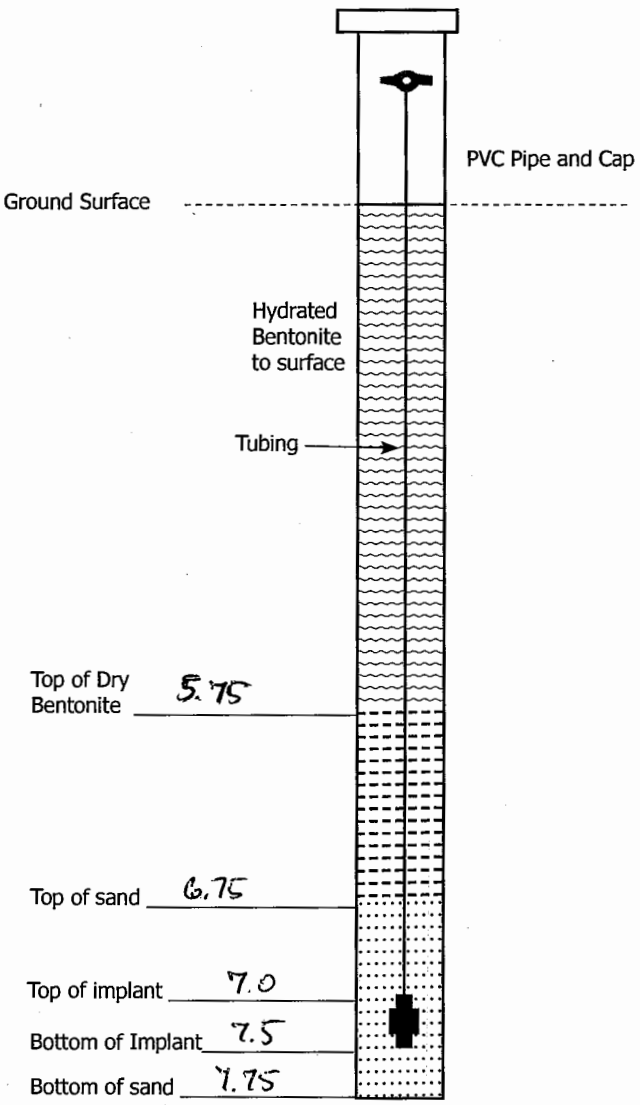
Single Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SBSV-DG-512 | Job #: 10503982.3050105/10503982.3060105 | Project: Phase 3 DOE Data Gap Sampling 201

Site: SB | Reviewed by: | Logged by: V. Vathanasin

Drilling Contractor: EST | Rig Type/Method: Geoprobe 5400 / DP | Driller: Morgan Hughes

Borehole TD: 8.0 | Probe Completion Date/Time: 5-13-14 / | Borehole Diameter: 2.25"



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: Clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Cemex

Dry Bentonite
Type: #8
Manufacturer: CETCO

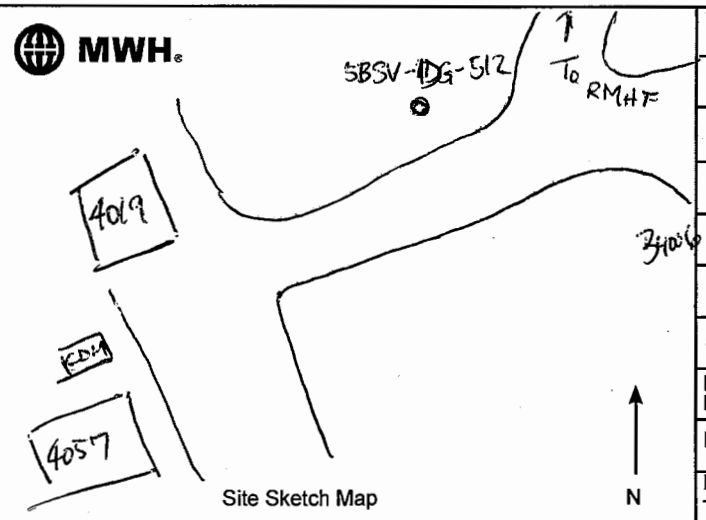
Hydrated Bentonite
Type: #8
Manufacturer: CETCO

Notes:

1. Probes not drawn to scale.

FIGURE 4-1

MWH.



Site Sketch Map

Boring ID: 5BSV-DG-512	Sheet 1 of 1
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5B
Logged By: V. Vathanasin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe DP	
Sampler Type: Macrocore	
Borehole Diam (inch) 2.25"	Total Depth (ft.bgs) 8.0'
Drill Bit Type: Macrocore	
Drill Start Time/Date: 0905 / 5-12-14	Drill Finish Time/Date: 0930 / 5-12-14
Soil Vapor ID: 5BSV-DG-512-6.75-7.75	Soil Boring Backfill Time/Date: N/A — Backfill Material: N/A
Soil Vapor Well Completion Time/Date: /5-13-14	Observations: ☐ Debris ☐ Staining ☐ Odors ☐ Groundwater ☒ None
Soil Vapor Probe Depths (ft.bgs): 6.75-7.75	Surface Completion: Soil vapor probe
Soil Vapor Well Detail Completed (yes/no)	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

Soil Description

1) Soil type
2) USCS Symbol
3) Munsell Color
4) Consistency/Density
5) Moisture
6) Grain Size %
7) Cementation
8) Plasticity (fines)
9) Geologic Unit (fill, alluvium, bedrock)
10) Misc. Observations

Surface Description: ~~Graded~~ VP Graded, mustard

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description	Gravel	Estimated % of Sand: Coarse	Medium	Fine	Silt/clay
0.0						0	SM	Silty Sand with Gravel (SM), very pale brown (10YR 7/4), soft, dry, fine	15	–	15	30	40
		42"	NONE			1	SM	to medium sand, fine angular gravel (fill), very weak silt cement (easily friable), non-plastic fines, fill, no odors or staining	–	–	10	50	40
						2							
						3		Grades to Silty Sand (SM), [No gravel @ 3.5' Minor iron staining					
0.0						4		@ 4.0' trace fine gravel	TR	10	15	40	35
						5		@ 4.5' Color changes to yellowish brown (10YR 5/4), coarse sand fragment, fill	–	10	15	40	35
		48"	NONE			6		@ 5.5' Color changes to very pale brown (10YR 7/4), dry, predominantly fine sand, soft, non-cemented, iron-staining - brownish yellow (10YR 6/8), native soil.					
						7							
						8	Br	@ 8' Shale TD = 8 ft, refusal on shale bedrock.					
						9		Hole collapsed to 7.75 ft bgs. set ~~probe~~ probe @ 6.75 - 7.75 ft bgs (V.V.)					

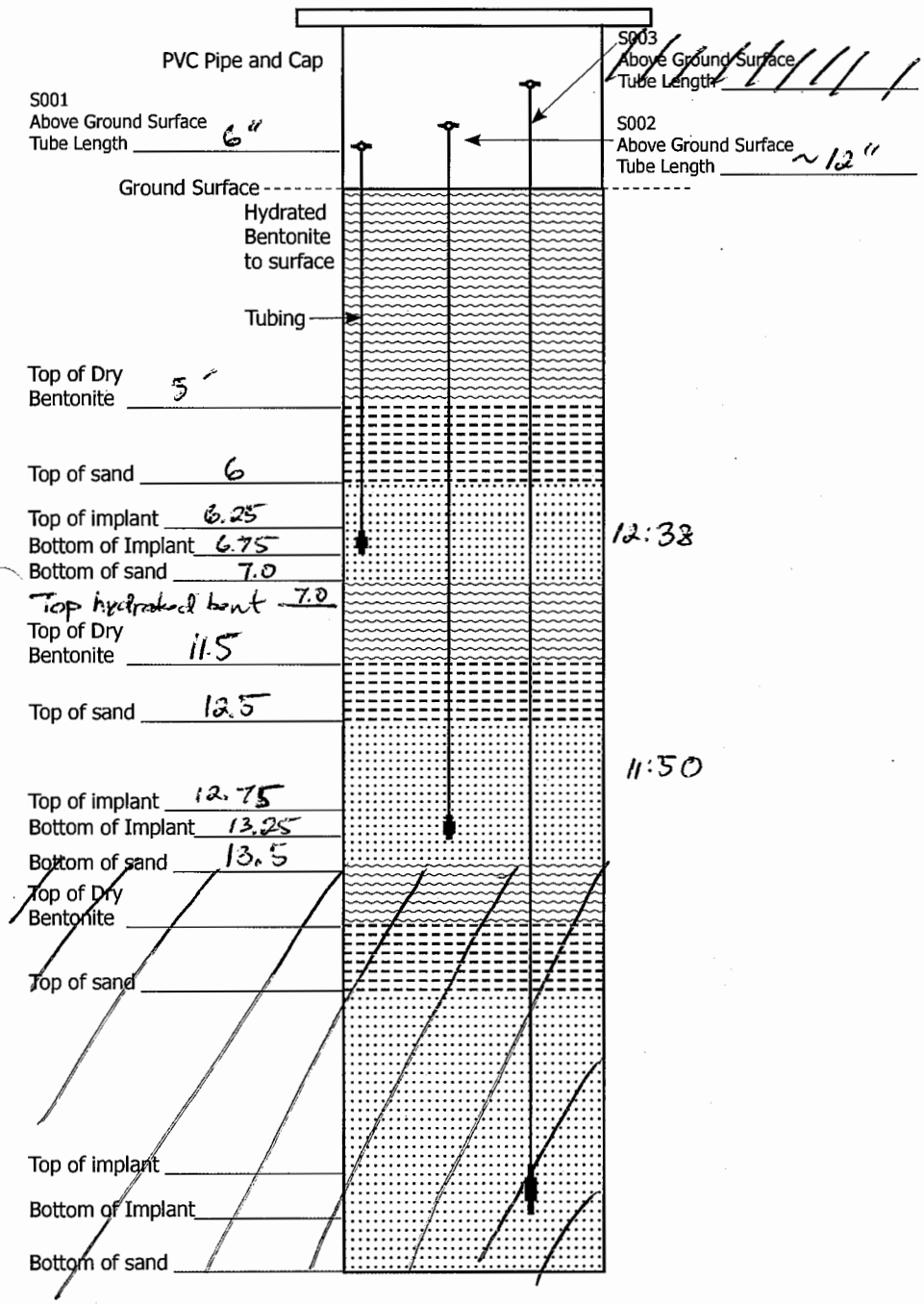
Multiple Soil Vapor Probe Construction Diagram

MWH

Probe ID/Soil ID: SBSV-DG-516
Site: SB
Drilling Contractor: EST
Borehole TD: 13.5'

Project: Phase 3 DoE Data Gap
Logged by: V. Vathanasin
Driller: Morgan Hughes
Borehole Diameter: 2.25"

Job #: 10503982
Reviewed by:
Rig Type/Method: Geoprobe 5400 / DP/Macro.
Probe Completion Date/Time: 1251 / 6-12-2014



Vapor Implant Specs
Material: Stainless Steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: Teflon
Diameter: 1/4"
Color: Clear

Sand Pack Specs
Grain Size: #3
Manufacturer: Cemex Lapis Lustre

Dry Bentonite
Type: #8 (Crumbles/Granular)
Manufacturer: CETCO

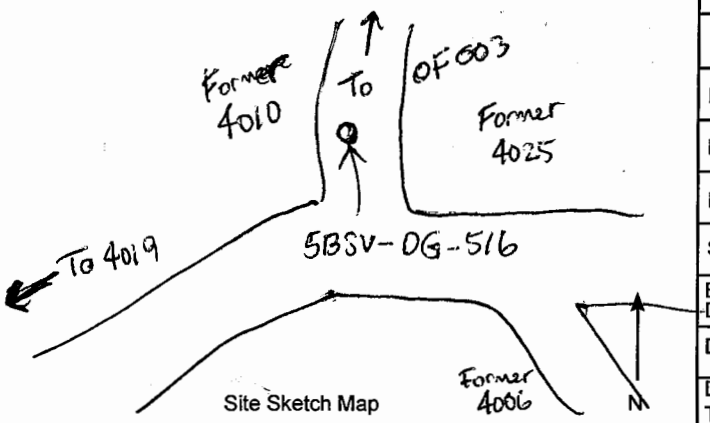
Hydrated Bentonite
Type: Quick Grout (Gel)
Manufacturer: Baroid

Notes:

1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2

MWH



Site Sketch Map

Boring ID: 5BSV-DG-516	Sheet 1 of 2
Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014	
Job #: 10503982.3050105/ 10503982.3060105	Site: 5B
Logged By: V. Vathanavin	Reviewed By:
Drilling Contractor: EST	Drillers Name: Morgan Hughes
Drill Rig Type/Method: Geoprobe 5400 DT	
Sampler Type: Macrocore	
Borehole Diam (inch): 2.25"	Total Depth (ft.bgs): 13.5'
Drill Bit Type: Macrocore	
Drill Start Time/Date: 1015 / 5-12-2014	Drill Finish Time/Date: 1045 / 5-12-2014
Soil Boring Backfill Time/Date: N/A	Backfill Material: N/A
Soil Vapor ID: 5BSV-DG-516	Observations: ☐ Debris ☒ Staining ☐ Odors ☐ Groundwater ☐ None
Soil Vapor Well Completion Time/Date: 1251 / 5-12-14	Surface Completion: Soil Vapor Probe
Soil Vapor Probe Depths (ft.bgs): 6.0-7.0, 12.5-13.5	Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None
Soil Vapor Well Detail Completed (yes/no)	

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations) Surface Description: Gravel road	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
0.0		*	Hand auger to 5' due to utilities			0	SM	Silty Sand w/ Gravel (SM), yellowish brown (10YR 5/4), med. dense, dry, mostly fine sand, fine sand, fine gravel, non-plastic silt, compacted road base, fill	10	–	10	50	30
						1							
						2		soil becomes loose, grades w/o gravel	–	30	70	–	–
						3	SP	@ 2' Poorly Graded Sand (SP), light yellowish brown (10YR 6/4), loose, dry, medium and coarse sand, friable, fill	–	20	50	30	–
0.0						4	SW	@ 3' Well Graded Sand (SW), light yellowish brown (10YR 6/4), loose, dry, fine to coarse sand, friable, fill, low recovery (U/S)	–	–	–	60	40
		36"				5	SM	@ 4.5' Color Changes to (1) very pale brown (10YR 7/4) ... Silty Sand (SM), dark brown (10YR 3/3), loose, dry, fine sand, non-plastic silt, non-cemented, fill, minor dark staining no odors	–	–	–	60	40
						6							
						7							
3.0						8			–	–	–	60	40
						9		@ 6' color change to pale brown (10YR 7/3) @ 9.25'	–	–	–	60	40

Continued page 2.

Boring ID: SBSV-DG-516 Project: Phase 3 DOE Data Gap Sampling Sheet 2 of 2

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
	X	48"				10		@ ~~10~~ 9.0'-9.25' = Thin Silty Sand w/ Clay layer, low plasticity clay (brittle)					
	X					11							
	X					12	GP	@11.5' Road Base (Gravel with Sand) (GP), ~~Clay~~ (v) light greenish gray (10GY 7/1) to very dark gray (N/3), dry, loose, fine angular gravel, coarse to fine sand, fill	55	30	10	5	—
						13	SP-SM						
						14		@12.5 Poorly Graded Sand w/ Silt (SP-SM), light yellowish brown (10YR 6/4), loose, dry, fine sand, non-plastic silt, native soil.					
						15							
						16		@13.5' Bedrock - Sandstone (Chatsworth)					
						17							
						18		TD = 13.5', Refusal on bedrock, Install vapor probes @ 12.5-13.5', and 6.0'-7.0'					
						19							
						20							
						21							
						22							
						23							
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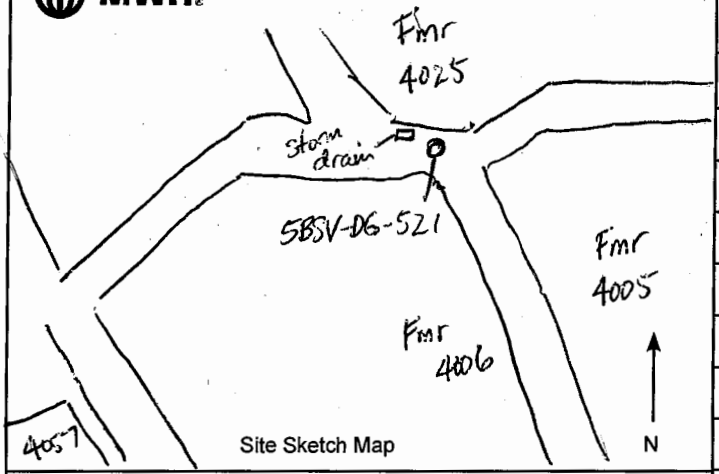
						29							

5BSV-DG-521

MWH



Site Sketch Map

Boring ID: 5BSV-DG Sheet 1 of 1

Project: Phase 3 DOE Soil Vapor Data Gap Sampling 2014

Job #: 10503982.3050105/ 10503982.3060105 Site: 5B

Logged By: V. Vatharasin Reviewed By:

Drilling Contractor: EST Drillers Name: Morgan Hughes

Drill Rig Type/Method: Geoprobe 5400 / DP

Sampler Type: Macrocore

Borehole Diam (inch): 2.25" Total Depth (ft.bgs): 3.8'

Drill Bit Type: Macrocore

Drill Start Time/Date: 0906 / 5-14-14 Drill Finish Time/Date: 0920 / 5-14-14

Soil Boring Backfill Time/Date: 0930 / 5-14-14 Backfill Material: Soil cuttings

Soil Vapor ID: NONE

Soil Vapor Well Completion Time/Date:

Soil Vapor Probe Depths (ft.bgs):

Soil Vapor Well Detail Completed (yes/no)

Observations: ☐ Debris ☒ Staining ☐ Odors ☐ Groundwater ☐ None

Surface Completion: 8" Asphalt patch

Type of Refusal: ☒ Bedrock ☐ Debris ☐ Gravel ☐ Unknown ☐ None

PID/OVA	Sample Interval	Recovered (in.)	Retained for Analysis	Sample Number	Sample Time	Depth (Feet)	USCS Soil Type	Soil Description (1) Soil type (2) USCS Symbol (3) Munsell Color (4) Consistency/Density (5) Moisture (6) Grain Size % (7) Cementation (8) Plasticity (fines) (9) Geologic Unit (fill, alluvium, bedrock) (10) Misc. Observations)	Gravel	Estimated % of Sand: Coarse	Sand: Medium	Sand: Fine	Silt/clay
						0		Surface Description: Asphalt					
								Asphalt 4"					
0.0						1	SM	Silty Sand with gravel (SM), brown (10YR 5/3), loose, dry, fine to medium sand, fine angular gravel, non-plastic silt, non-cemented, dark asphalt stains, no odors, road base/fill	10	–	20	40	30
		46"				2	SW		–	20	30	50	TR
			X		09:20	3		@1' Well Graded Sand (SW), pale brown (10 YR 7/3), loose, dry, fine to coarse sand, trace silt, fill	–	–	10	50	40
						3.0-3.5							
				SVL-521-3.5B-SB		4	SM						
						5		Silty Sand (SM), yellowish brown (10YR 6/6), loose, dry, predominantly fine sand, medium sand, silt, fill					
						6							
						7		@3.8' Sandstone, weathered.					
						8		TD = 3.8', refusal on bedrock, encores collected 3.0 - 3.5' bgs. No vapor probes installed.					
						9							

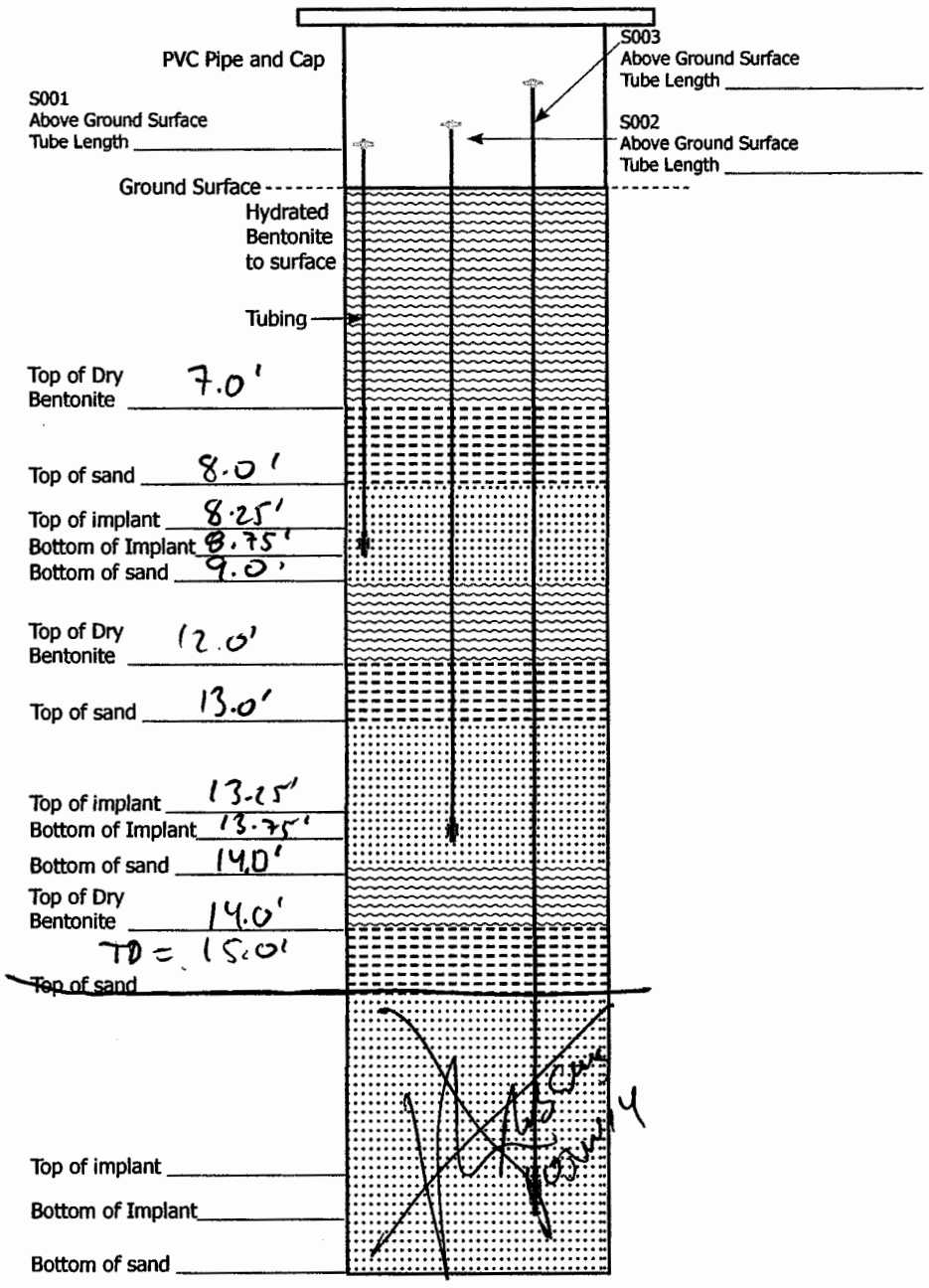
MWH

Multiple Soil Vapor Probe Construction Diagram

Probe ID/Soil ID: SBSV.DG-S25
Site: 5B
Drilling Contractor: EST
Borehole TD: 15.0' bgs

Project: Phase 3 DOE Data Gap Sampling 2014
Logged by: Robbins
Driller: Morgan Hughes
Borehole Diameter: 2.25"

Job #: 10503982.3050106/10503982.3060106
Reviewed by:
Rig Type/Method: Geoprobe 5400
Probe Completion Date/Time: 10 JUN 14 12:20



Vapor Implant Specs
Material: Stainless steel
Length: 6"
Diameter: 3/8"

Tubing Specs
Material: teflon
Diameter: 1/4"
Color: clear

Sand Pack Specs
Grain Size: #3 sand
Manufacturer: Lenex

Dry Bentonite
Type: #8 crumbles
Manufacturer: Cetco

Hydrated Bentonite
Type: #8 crumbles
Manufacturer: Cetco

Notes:
1. Probes not to scale.
2. Borings are approximately 2 inches in diameter using a Macrocore or Dual Tube sampler and can hold up to 5 soil vapor probes. If additional depths will require sampling at the same location, a second boring may need to be drilled.

FIGURE 4-2