# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cat

**Sample ID** SL-512-SA50-SB-0.0-0.5 **Date/Time** 9-26-13 / 0735

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

**Start Depth** 0.0

**End Depth** 0.5

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

## Analysis

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

| Groups | Parameters | Method | Analyze? |
|---|---|---|---|
| Energetics | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Organotin | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2 SS Sleeves, 1 4oz jar

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 (%) ~~1YR~~ <5%

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 brn (7.5YR 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 [signature] PG Registration # 7735

Additional Comments NA

NA – Not Applicable

| Location ID: DG-512 | Subarea: 5D | Date Started: 9-26-13 | Date Completed: 10/02/2013 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1st NA= 6' (no refusal) |
| Company Name: CDM SMITH | Drill Contractor/Driller: NA | | |
| GPS collected? Yes or No | Drill Method: Hand auger | | Depth Drilled into Bedrock: NA |
| Radiological Background: γ- 13 αβ- 89 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 ppm | Depth to GW: NA | | Sampling Method: Slide hammer |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mike Hoffman #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/0.5 | 0.0<br>0.0 | 13/81<br>13/84 | SL-512 SA5D-SB 0.0-0.5 | 0735 | SM | SILTY SAND, brown (7.5YR 4/3) mottled w/ (7.5YR 5/4) f grn, mod well sorted, quartz, dry, compacted & consolidated, hard, sli friable, sli clayey 70% SD, 20% SILT, 10% clay, tr amt igneous gravel (road material) — 0.5 |
| 1 | HA | 0.0 | 13/84 | | | CL | |
| 2 | | 0.0 | 13/78 | | | CL | Sandy CLAY ~~w/ SAND~~ SM101513, dk brn (7.5YR 3/2) mottled w/ brown (7.5YR 4/3), mod low to low plasticity, Firm to hard sli moist, some rootlet molds & burrows filled w/ calcium carbonate 60% ~~SD~~ CLAY, 30% SD, 10% SILT SD is f grn quartz — 2 |
| 3 | | 0.0 | 13/60 | | | | CLAY, reddish brown (5YR 4/3) mottled w/ (5YR 4/4) and yel red (5YR 5/6) mod low plasticity to low plasticity, Firm to hard, sli moist, few rootlet molds & burrows filled w/ $CaCO_3$ 70% CLAY 10% SD, 20% SILT |
| 4 | 1.0/1.0 | 0.0 | 13/60 | SL-512 SA5D-SB 4.0-5.0 | 0800 | CL | SANDY CLAY, same colors A.A, mod low plasticity, Firm to sli soft dry to sli moist, tr rootlets & burrows filled w/ $CaCO_3$, 60% CLAY 30% SD, ~~20~~ 10 % SILT, SM101513 — 4.0 |
| 5 | | 0.0 | 13/54 | | | | |
| 6 | HA | 0.0 | 13/72 | | | CL | SANDY CLAY, yel brn (10YR 5/6) mottled w/ (10YR 5/4) and brn yel (10YR 6/6), mod low plasticity, mod soft to sli firm, dry to sli moist, 60% CLAY 30% SD, ~~20~~ 10 % SILT SM101513 — 5.4 |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



**ABBREVIATIONS:**

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

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BORING LOG AND SAMPLING RECORD

| Location ID: DG-512 | Subarea: 5D | Date Started: 9-26-13 | Date Completed: 10-2-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1st DPT = 19.8 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: NA |
| Radiological Background: γ=13 αβ=89 | Borehole diameter: 2.25 | | |
| PID Background: 0.0 | Depth to GW: NA | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0-6' see Pg 1 when 0-6' bls was collected by Handauger on 9-26-13 | | | | | | CONTINED W/ DPT ON 10-2-13 |
| 6 | 4'-8' 4.0/4.0 | | | | | CL | SANDY CLAY, A.A. |
| 7 | | 0.0 | 13/66 | | | | |
| 8 | | 0.0 | 13/42 | | | | |
| 9 | | 0.0 | 13/48 | | | CL | CLAY W/SAND strong brown (7.5YR 4/6) mottled w/ brown (7.5YR 4/3), mod low plasticity, mod firm to hard, sli crumbly, dry, SD is dispersed in CLAY, F.grn, mod poorly graded subrounded to subangular quartz 70% CLAY 15% SD 15% SILT Few to some root molds & burrows infilled w/ $CaCO_3$ deposits, tr amt mottling w/ red (2.5YR 4/6) w/ depth ~~80% CLAY 15%~~ 8.2 |
| 10 | | 0.0 | 13/66 | | | | |
| 11 | | 0.0 | 13/54 | | | | |
| 12 | | 0.0 | 13/42 | | | | |
| 13 | | 0.0 | 13/78 | | | | |
| 14 | | 0.0 | 13/90 | | | CL | CLAY brown (7.5YR 4/4) mottled w/ strong brown (7.5YR 4/6) & speckled w/ yel brn (10YR 5/6) and reddish yel (7.5YR 6/8), mod low to low plasticity, hard, well compacted; dry to sli moist; 85% CLAY 10% SILT 5% SD 13.6 |
| 15 | | 0.0 | 13/96 | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr: no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | φ: diameter | bgs: below ground surface |

| Location ID: DG-512 | Subarea: 5D | Date Started: ~~10-2-13~~ 9-26-13 | Date Completed: 10-2-13 |
|---|---|---|---|
| Project: SSFL | | Geologist: David Rojas | Total Depth: 19.8' |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | See pg 2 | | | | | | CLAY A.A See Pg 2 |
| 16 | | 0.0 | 13/108 | | | | |
| 17 | 3.8/3.8 | 0.0 | 13/66 | | | | |
| 18 | | 0.0 | 13/60 | | | | GRADUAL CONTACT |
| | | | | | | CL | SANDY CLAY, yel brn (10YR 5/6) mottled w/ (10YR 5/4) and brn (10YR 4/3), mod low plasticity, f-m to hard, mod crumbly, dry to sli moist 60% CLAY 30% SD 10% SILT SD is f-m grn, mod poorly sorted subroundal quartz 18.0 |
| 19 | | 0.0 | 13/72 | | | | Abrupt Contact |
| | | 0.0 | 13/78 | | | SC | CLAYEY SAND, yel brn (10YR 5/6) mottled w/ dk yel brn (10YR 4/4) & lt yel brn (10YR 6/4), f-m grn w/ tr to few amt coarse grn becoming coarser w/ depth, mod poorly sorted, sr to sa, quartz & sd stn, graded SM101413 19.2 |
| | | | | | | | Refusal @ 19.8 |
| | | | | | | | dry to sli moist; 70% SD 25% CLAY 5% SILT becoming w/ depth → 80% SD 15% CLAY 5% SILT |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cole

**Sample ID** SL-512-SA5D-SB-4.0-5.0 **Date/Time** 9-26-13 / 0800

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

**Analysis**

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encore | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 SS Sleeves, 2 Encores, 1 4oz jar

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 (%): NONE
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** reddish brn (5YR 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** Nicole Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cruz

**Sample ID** SL-513-SA5D-SB-0.0-0.5 **Date/Time** 9-18-13 / 0730

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

**Start Depth** 0.0

**End Depth** 0.5

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Metals | | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | X SM 9/18/13 |
| | Perchlorate Confirmation | EPA 6850/6860 | X |
| | pH | EPA 9045 (Soil) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | |
| | Herbicides | EPA 8151 | X |
| | Pesticides | EPA 8081 | |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2 SS Sleeves & 1 4oz jar

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 (%) 50
3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

~~Igneous/Metamorphic~~ Limerock CRR (Gravel) N/A

Other _____

**Is Staining Present** Yes (No)

**Color** brown (7.5YR 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** Mila Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

| Location ID: DG-513 | Subarea: 5D | Date Started: 9-18-13 | Date Completed: 9-18-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 1st DPT = 17.0, 2nd DPT = 17.2 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: NA |
| Radiological Background: γ = 12 αβ = 69 | Borehole diameter: 2.25 | | |
| PID Background: | Depth to GW: NA | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: [signature] #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/0.5 | 0.0 | 12/66 | SL-513 SA5D-SB 0.0-0.5 | 0730 | GP-GW GM | GRAVEL w/ SILT (subangular to angular) brown (7.5YR 5/3), fine-sized gravel linerock, SD is F grn mod poorly ~~sorted~~ graded, SD = 40% GRAVEL = 50% SILT = 10%, dry |
| | | 0.0 | 12/84 | | | | |
| 1 | 2.5/3.5 | 0.0 | 12/96 | | | CL | CLAY w/SAND, dk brn (7.5YR 3/2), firm to hard, compacted low plasticity, crumbly, SD is F-m grn w/tr amt coarse grn, poorly ~~sorted~~ graded subrounded to subangular quartz & tr amt calcareous, some org (roots) CLAY = 80% SD = 20%, dry |
| 2 | | 0.0 | 12/90 | | | | |
| 3 | | 0.0 | 12/84 | | | | |
| 4 | | 0.0 | 12/96 | SL-513 SA5D-SB 4.0-5.0 | 0740 | CL | CLAY ~~w/SAND~~ reddish brn (5YR 4/4) mottled w/ yel red (5YR 5/6), mod firm, compacted, mod low plasticity, mod crumbly, 90% CLAY 10% SD tr amt silt, SD is F grn well sorted, quartz, tr amt calcareous laminations whispy <1m few amt org (roots), dry |
| 5 | 3.5/4 | 0.0 | 12/72 | | | | |
| 6 | | 0.0 | 12/84 | | | | |
| 7 | | 0.0 | 12/66 | | | | |
| 8 | | 0.0 | 12/72 | | | CL | SANDY CLAY, yel brn (10YR 5/8) mottled w/ dk yel brown (10YR 4/4), mod soft to sli firm, mod low plasticity, crumbly, SD is F grn well sorted quartz CLAY = 60% SD = 30% SILT = 10%, dry |
| 9 | 3/4 | 0.0 | 12/78 | SL-513 SA5D-SB 9.0-10.0 | 0750 | | |
| 10 | | 0.0 | 12/72 | | | | |

4.0

7.5

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | φ: diameter |

| Location ID: DG-513 | Subarea: 5D | Date Started: 9-18-13 | Date Completed: 9-18-13 |
|---|---|---|---|
| Project: SSFL | | Geologist: David Rojas | Total Depth: 17.2 |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | SEE PG 1 FOR DESCRIPTION |
| 11 | | | 12/66 | | | CL | 10.8 CLAY WITH SAND, H yel brn (10YR 6/4) mottled w/ brn (10YR 5/3) and ~~V~~ pale brn (10YR 6/3) tr amt brn yel (10YR 6/8), firm to sli soft, mod low plasticity, ~~tr amount fine~~ SAND calcareous and clay blebs & laminations. 70% CLAY 15% SD, 15% SILT, dry, becoming sandier w/ depth |
| 12 | | 0.0 | 12/72 | | | | |
| 13 | 4/4 | 0.0 | 12/66 | | | | |
| 14 | | 0.0 | 12/60 | | | | |
| 15 | | 0.0 | 12/84 | | | | Abrupt contact 15 |
| 16 | | 0.0 | 12/72 | SL-513 SASD-SB 16.0-17.0 | 0800 | SP SM | SAND w/ SILT, brn yel (10YR 6/6) mottled w/ yel brn (10YR 5/4) F-med gnd, mod well sorted, subrounded, quart, tr amt blebs of clayey sand decreasing w/ depth, clayey sand lense from 15.8-16.4' bls, 90% SD, 10% SILT |
| 17 | 1.2/1.2 | 0.0 | 12/84 | | | | 17.2 |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. G t.

Sample ID SL-513-SA5D-SB-4.0-5.0 Date/Time 9-18-13 / 0740

**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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

**Analysis**

| Parameter | Method | Analyze? |
|---|---|---|
| Metals | EPA 6010 | X |
| | EPA 6020 | X |
| | EPA 7471 (Soil) | X |
| | EPA 7470 (Water) | |
| Fluoride | EPA 300.0/9056 | X |
| SVOCs | EPA 8270 | |
| TIC | EPA 8270 | |
| PAHs | EPA 8270 SIM | X |
| 1,4 Dioxane | EPA 8270 SIM | |
| Dioxins | EPA 1613 | |
| PCBs/PCTs | EPA 8082 | X |
| Perchlorate | EPA 314.0/331 | X SM9/613 |
| Perchlorate Confirmation | EPA 6850/6860 | X |
| pH | EPA 9045 (Soil) | X |
| | EPA 9040 (Water) | |
| Hexavalent Chromium | EPA 7196/7199 | |
| Herbicides | EPA 8151 | X |
| Pesticides | EPA 8081 | |

| Parameter | Method | Analyze? |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | X |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

2 16 oz jars & 2 Encores

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 (%)** NA
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** reddish brown (5YR 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** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.G.E

Sample ID SL-513-SA5D-SB-9.0-10.0 Date/Time 9-18-13/0750

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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

| Parameters | Method | Analyze? |
|---|---|---|
| Metals | EPA 6010 | X |
| | EPA 6020 | X |
| | EPA 7471 (Soil) | X |
| | EPA 7470 (Water) | |
| Fluoride | EPA 300.0/9056 | X |
| SVOCs | EPA 8270 | |
| TIC | EPA 8270 | |
| PAHs | EPA 8270 SIM | X |
| 1,4 Dioxane | EPA 8270 SIM | |
| Dioxins | EPA 1613 | |
| PCBs/PCTs | EPA 8082 | X |
| Perchlorate | EPA 314.0/331 | X SM 9/18/13 |
| Perchlorate Confirmation | EPA 6850/6860 | X |
| pH | EPA 9045 (Soil) | X |
| | EPA 9040 (Water) | |
| Hexavalent Chromium | EPA 7196/7199 | |
| Herbicides | EPA 8151 | X |
| Pesticides | EPA 8081 | |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| VOCs | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| TPH | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| Other | 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 | |
| Tissue | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2 16 oz jars & 2 Encores

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 (%)** NA
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** yel 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** [signature] **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By VGT

Sample ID SL-513-SA5A-SB-160-170 Date/Time 9-18-13/0800

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

Start Depth 16.0

End Depth 17.0

**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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Soil | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | X sm 10/3 |
| | Perchlorate Confirmation | EPA 6850/6860 | X |
| | pH | EPA 9045 (Soil) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | |
| | Herbicides | EPA 8151 | X |
| | Pesticides | EPA 8081 | |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Soil | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | X |
| | TPH-GRO | EPA 8015 | X |
| | 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 | |
| Tissue | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2 16oz jars & 2 Encores

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 (%)** None
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** brn. yel. 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 Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. GK

**Sample ID** SL-514-SA5D-SB-0.0-0.5 **Date/Time** 9-18-13/0850

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

**Start Depth** 0.0

**End Depth** 0.5

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Organics | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Organotin | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

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 (%)** 45%

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 (7.5YR 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** [signature] **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

| Location ID: DG-514 | Subarea: 5D | Date Started: 9-18-13 | Date Completed: 9-18-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1st DPT = 13.0; 2nd DPT = 13.6 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: NA |
| Radiological Background: γ = 12 αβ = 87 | Borehole diameter: 2.25 | | |
| PID Background: 0.0ppm | Depth to GW: NA | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: [signature] #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/0.5 | 0.0 | 12/100 | SL-514 SA5D-SB 0.0-0.5 | 0850 | GP-GM | GRAVEL w/SILT & SAND, brown (7.5YR 5/3) Fine sized gravel limestone, subangular to angular SD is f gm, mod well sorted subrounded to subangular quartz & carbonate, 45% Gravel, SD = 35% SILT = 20% |
| | | 0.0 | 12/66 | | | | 0.5 |
| 1 | 1.5/3.5 | 0.0 | 12/72 | | | CL | CLAY ~~w/SAND~~ brn (7.5YR 5/4) mottled w/ lt brn (7.5YR 6/4), Firm to hard, compacted low plasticity dry, 80% CLAY, 10% SAND, 10% SILT, SD is f gm, well sorted, quartz Tr ant org (roots), |
| 2 | | 0.0 | 12/84 | | | | |
| 3 | | 0.0 | 12/72 | | | | 3.2 |
| 4 | | 0.0 | 12/90 | SL-514 SA5D-SB 4.0-5.0 | 0900 | CL | CLAY w/SAND strong brown (7.5YR 5/6) mottled w/ brn (7.5YR 4/4) Firm, mod well compacted mod low plasticity, dry 70% CLAY, 20% SD 10% SILT, SD is f gm, well sorted, quartz |
| 5 | | 0.0 | 12/60 | | | | 5.2 |
| 6 | 3.5/4 | 0.0 | 12/60 | | | CL | SANDY CLAY brn yel (10YR 6/6) mottled w/ yel brn (10YR 5/4), mod soft to sli Firm, ~~mod~~ low plasticity, dry, SD is f gm, well sorted quartz 55% CLAY, 35% SD, 10% SILT |
| 7 | | 0.0 | 12/54 | | | | 7.0 |
| 8 | | 0.0 | 12/78 | | | CL | CLAY w/SAND brown (7.5YR 4/4) mottled w/ strong brown (7.5YR 5/6) and lt brn (7.5YR 6/3), mod soft to sli Firm, mod low plasticity, dry, 70% CLAY, 20% SD, 10% SILT |
| 9 | 3.5/4 | 0.0 | 12/54 | | | | |
| 10 | | 0.0 | 12/60 | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | φ: diameter | bgs:below ground surface |

| Location ID: DG-514 | Subarea: SD | Date Started: 9-18-13 | Date Completed: 9-18-13 |
|---|---|---|---|
| Project: SSFL | | Geologist: David Rojas | Total Depth: 13.8 |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | SEE LITHOLOGY ON PG 1 |
| 11 | SEE PG 1 | 0.0 | 12/72 | | | CL | CLAY w/SAND, strong brown (7.5YR 5/6) mottled w/ brown (7.5YR 5/4) and yel red (5YR 5/6) firm to hard, mod low plasticity, SD is f-gm well sorted, subrounded, quartz, tr amt calcareous concretions, whispy, thin (<1mm), dry to sl moist 70% CLAY, 20% SD, 10% SILT — 11.0 |
| 12 | | 0.0 | 12/72 | | | | |
| 13 | 1.8/1.8 | 0.0 | 12/90 | | | | |
| ~~CRM~~ | X | 0.0 | 12/90 | | | SP-SM | SAND w/SILT, brn yel (10YR 4/6) mottled w/ yel brn (10YR 5/4), F-gm w/tr amt of m-gm mod well sorted, subrounded to subangular quartz, dry 90% SD 10% SILT — 13.0 — 13.8 |
| | | | | | | | Refusal @ 13.8 |

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Gt

Sample ID SL-514-SA5D-SB-4.0-5.0 Date/Time 9-18-13/0900

**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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Organics | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Organotin | Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | Methyl Mercury | EPA 1630 | |

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 (%)** None

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** Strong brown (7.5 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** Mike Hoffman **PG Registration #** 7235

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SL-515-SA5D-SB-0.0-0.5 HS **Date/Time** 9/9/13 @ 9:30

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

**Start Depth** 0.0

**End Depth** 0.5

**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** BKASPOYK

**Sampler** V. Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

6 – SS Sleeves
1 – ~~16 oz~~ 9 oz @ 9/9/13

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** DK 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** N/A

NA – Not Applicable

| Location ID: DG-515 | Subarea: 5D | Date Started: 9-9-13 | Date Completed: 9/9/13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: (FT) 23, 23 |
| Company Name: CDM SMITH | Drill Contractor/Driller: STRONG ARM / PANIAGUA | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: ~~23~~ 9/9/13 ~~0~~ |
| Radiological Background: γ=13 / γ=84 | Borehole diameter: 2.25 INCH | | |
| PID Background: 0.0 | Depth to GW: ~~0~~ | | Sampling Method: MACRO CORE |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: [signature] #7735 | | Geologist: B/KASPZYK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 13/76 | SL-515-SA5D-SB-0.0-0.5 MS | 9:30 | ML | SILT W/ SAND; DK BROWN (10YR 3/3) 80% SILT, SOFT, NON-PLASTIC, DRY; 20% SAND, F, PG, LOOSE; NO ODOR |
| | | 0.0 | 13/78 | | | | |
| 1 | | 0.0 | 13/66 | | | | |
| | 3.0/4.0 | | | SL-815-SA5D-SB-0.0-0.5 | 9:40 | | |
| 2 | | 0.0 | 13/90 | | | | |
| 3 | | 0.0 | 13/78 | | | | GRADATIONAL CONTACT |
| | | | | | | CL | CLAY — STRONG BROWN (7.5YR 4/6) 100% Hard, low plastic, semimoist, No odor trace of root stringers. |
| 4 | | 0.0 | 13/66 | SL-515-SA5D-SB-4.0-5.0 | 9:50 | | |
| 5 | 4.0/4.0 | 0.0 | 13/96 | | | | |
| 6 | | 0.0 | 13/90 | | | | |
| 7 | | 0.0 | 13/84 | | | | |
| 8 | | 0.0 | 13/88 | | | CL | AS ABOVE W/ GRADUAL COLOR CHANGE TO REDISH BROWN (5YR 5/4) |
| 9 | 4.0/4.0 | 0.0 | 13/78 | SL-515-SA5D-SB-9.0-10.0 | 10:00 | | |
| 10 | | 0.0 | 13/96 | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | φ: diameter | bgs:below ground surface |

| Location ID: DG-515 | Subarea: 5D | Date Started: 9/9/13 | Date Completed: 9/9/13 |
|---|---|---|---|
| Project: SSFL | | Geologist: BRASPOYK | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 4.0/40 | | | | | CL | CLAY, REDDISH BROWN (5YR 5/4) 100% CLAY, HARD, LOW PLASTIC, SEMI MOIST, NO ODOR |
| 11 | | 0.0 | 13/90 | | | | |
| 12 | | 0.0 | 13/90 | | | CL | AS ABOVE |
| 13 | | 0.0 | 13/72 | | | | |
| | 40/40 | | | | | | |
| 14 | | 0.0 | 13/108 | | | | |
| 15 | | 0.0 | 13/90 | | | | |
| 16 | | 0.0 | 13/90 | | | CL | |
| 17 | | 0.0 | 13/108 | | | | |
| 18 | 4.0/40 | 0.0 | 13/96 | | | | |
| 19 | | 0.0 | 13/78 | | | | |
| 20 | | 0.0 | 13/96 | | | CL | CLAY W/ SAND - MOTTLED YELLOWISH BROWN (10YR 5/6) & STRONG BROWN 7.5YR 5/6; 80% CLAY, FIRM, LOW PLASTIC, SEMI MOIST; 20% SAND, F, PG; TRACE WEATHERED LIMESTONE, NO ODORS |
| 21 | | | 84 | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

| Location ID: DG515 | Subarea: SD | Date Started: 9/9/13 | Date Completed: 9/9/13 |
|---|---|---|---|
| Project: SSFL | | Geologist: B. KASPRZAK | Total Depth: 23 FT |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 3.0 | | | | | CL | CLAY W/ SAND - MOTTLED YELLOWISH BROWN (10YR 5/6) & STRONG BROWN (7.5YR 5/6) 80% CLAY, FIRM, LOW PLASTIC, SEMI MOIST, NO ODOR 20% SAND, F, PG; TRACE WEATHERED LIMESTONE |
| 22 | 3.0 | 00 | 13/90 | SU-515-SA5D-SB22.0-23.0 | 10:30 | | |
| 23 | | | 13/84 | | | | REFUSAL AT 23 FT |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| | | | |

| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | Total Depth: |
|---|---|---|
| Company Name: CDM SMITH | Drill Contractor/Driller: | 23FT |
| GPS collected? Yes or No | Drill Method: | Depth Drilled into Bedrock: |
| Radiological Background: | Borehole diameter: | |
| PID Background: | Depth to GW: | Sampling Method: |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: | Geologist: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 22 | | 0.0 | 13/90 | | | | |
| 23 | | 0.0 | 13/84 | | | | |

**CDM Smith**

## BORING LOG AND SAMPLING RECORD



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SL-B15-SA5D-SB-0.0-05 **Date/Time** 7/9/13 9:40

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

**Start Depth** 0.0

**End Depth** 0.5

**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** SL-B15-SA5D-SB-0.0-0.5MS

**Field Geologist** B KASPRZAK

**Sampler** V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Biosolids | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 – SS Sleeves
1 – 4 oz VAR

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** DK Brown 10 YR 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL-SI5-SASD-SB-4.0-5.0 Date/Time 9/9/13 @ 9:50

**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 B KASPZYK

Sampler J. Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Explosives | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 - ~~EXPLOSIVES~~

2 - 16 OLVARS

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) (NW) 9/9/13

**Color** ~~Strong brown 10YR 3/3~~ (7.5 YR 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** Mike Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.G.K

Sample ID SL-515-SA5D-SB-9.0-10.0 Date/Time 9/9/13 10:00

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 B KASPRZYK

Sampler V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Biology | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Tissue | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2 16-oz Jars

2 Encores

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** Reddish Brown 5YR 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** _____ **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. GT

**Sample ID** SC-515-SA5D-SB-22.0-23.0 **Date/Time** 9/9/13 @ 10:30

**Matrix (circle one)**: ~~Soil~~ Sediment Water

**Start Depth** 22.0

**End Depth** 23.0

**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** BKASPRZYK

**Sampler** V. Cortez

## Analysis

| Parameters | Method | Analyze? |
|---|---|---|
| Metals | EPA 6010 | X |
| | EPA 6020 | X |
| | EPA 7471 (Soil) | X |
| | EPA 7470 (Water) | |
| Fluoride | EPA 300.0/9056 | X |
| SVOCs | EPA 8270 | |
| TIC | EPA 8270 | |
| PAHs | EPA 8270 SIM | X |
| 1,4 Dioxane | EPA 8270 SIM | |
| Dioxins | EPA 1613 | X (MA 9/9/13) |
| PCBs/PCTs | EPA 8082 | X |
| Perchlorate | EPA 314.0/331 | |
| Perchlorate Confirmation | EPA 6850/6860 | |
| pH | EPA 9045 (Soil) | X |
| | EPA 9040 (Water) | |
| Hexavalent Chromium | EPA 7196/7199 | |
| Herbicides | EPA 8151 | |
| Pesticides | EPA 8081 | X |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 16-oz Jars
2 Encores

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

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By A.VIVIAN

Sample ID SL-516-~~SA5A~~ SA5D -SB-0.0-0.5 CC 11/15/13 Date/Time 11/15/2013 0835

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 NA

Field Geologist C.Cox

Sampler A.VIVIAN

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

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) SS Formation | | |

**Is Staining Present** Yes (No)

**Color** Brown (7.5 YR 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** Mike Hoffman **PG Registration #** 7735

**Additional Comments** None

11/15/13

NA – Not Applicable

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG-516 | SD | 11/15/2013 0810 | 11/15/2013 |

| | | |
|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | Total Depth: 14.0, 14.0 |
| Company Name: CDM SMITH | Drill Contractor/Driller: SAES | |
| GPS collected? Yes or No | Drill Method: DPT | Depth Drilled into Bedrock: NA |
| Radiological Background: 14/92 | Borehole diameter: 2.25" | |
| PID Background: 0.0 | Depth to GW: NA | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Willie Hoffman #7735 | Geologist: C. Cox |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 14/96 | SL-516-SASD-SB-0.0-0.5 | 0835 | | SILT WITH SAND: Brown (7.5 YR 4/3), 85% silt, low plasticity, 15% sand, pg, f-m, mostly m, t gravel, sa-sr, max $\phi$ = 0.35", dry, no odor (FILL) t SS Formation |
| | | 0.0 | 10/78 | | | | |
| 1 | | 0.0 | 10/78 | | | | |
| 2 | | 0.0 | 10/108 | | | | |
| | 3.0/4.0 | | | | | | |
| 3 | | 0.0 | 10/102 | | | ML | Same as above: (Dark brown (7.5YR 3/3), 85% silt, low plasticity, 15% sand, pg, f-m, mostly fine, t SS formation clasts, t micaceous material, dry, no odor (FILL) |
| 4 | | 0.0 | 10/90 | SL-516-SASD-SB-4.0-5.0-MS | 0840 | | |
| | | | | SL-816-SASD-SB 4.5-5.0 | 0845 | | Same as above: Reddish brown (2.5YR 4/4), 85% silt, ~~non~~ low plasticity, 15% sand, pg, f-m, mostly f, t micaceous material, t SS formation, chert max $\phi$ = 0.25" at 7.2', weathered, mottled coloring, dry, no odor (FILL) |
| 5 | | 0.0 | 10/120 | | | | |
| | 3.7/4.0 | | | | | | |
| 6 | | 0.0 | 10/96 | | | | |
| 7 | | 0.0 | 10/108 | | | | |
| 8 | | 0.0 | 10/60 | | | | |
| | 3.6/4.0 | | | | | | |
| 9 | | 0.0 | 11/54 | SL-516-SASD-SB-9.0-10.0 | 0856 | SM | SILTY SAND: Reddish brown (2.5YR 4/4), 75% sand, pg, f-m, mostly f, silt 25% non plastic, dry, no odor. |



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | $\phi$: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG-516 | 5D | 11/15/2013 | 11/15/2013 |
| **Project:** SSFL | | **Geologist:** C. Cox | **Total Depth:** 14.0', 14.0' |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 10 | | 0.0 | 11/60 | | | SM | Same as above: reddish yellow (5YR 6/6), 80% sand, f-m, mostly m, 20% silt, non plastic, micaceous material, weathered coloring, moist @ 10', no odor. |
| 11 | | 0.0 | 11/54 | | | | |
| 12 | | 0.0 | 11/84 | | | ML | SILT WITH SAND: light olive brown (2.5Y 5/4), 80% silt, nonplastic, 20% sand, pg, f-m, mostly f, mottled coloring, moist, no odor |
| 13 | 3.2/4.0 | 0.0 | 11/60 | SL-516-SA5D-SB-13.0-14.0 | 0908 | | |
| 14 | | 0.0 | 11/90 | | | SP-SM | POORLY GRADED SAND WITH SILT: Light olive brown (2.5Y 5/6), 90% sand (weathered formation), pg, f-m, mostly medium, 10% silt, non-plastic, moist, no odor |
| | | | | | | | Refusal at 14.0', 14.0' |

CDM Smith

**BORING LOG AND SAMPLING RECORD**

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By A. VIVIAN

Sample ID SL-516-~~SA5A~~ SA5D ~~5.0-6.0~~ 4.0 - 5.0 -MS CL 11/15/13 AW 11/15/13

Date/Time 11/15/2013 0840

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

Start Depth ~~5.0~~ 4.0 AW 11/15/13 AW 11/15/13

End Depth ~~6.0~~ 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 NA

Field Geologist C. Cox

Sampler A. VIVIAN

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Entories | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

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 ~~Cc 11/15/13~~
2. Percentage Fill (%) 100
3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel N/A

Other SS formation

Is Staining Present Yes No

Color Reddish brown (2.5YR 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 # [signature] #7735

Additional Comments None

CC 11/15/13

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By A. VIVIAN

Sample ID SL-816-~~SA5A~~ SA5D ~~5.0-6.0~~ 4.0-5.0 CW 11/15/13 AW 11/15/13 Date/Time 11/15/2013 0845

AW 11/15/13

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

Start Depth ~~5.0~~ 4.0 AW 11/15/13

End Depth ~~6.0~~ 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 SL-516-SA5A-5.0-6.0 - MS

Field Geologist C. Cox

Sampler A. VIVIAN

## Analysis

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

| Parameter | Method | Analyze |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | X |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

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) SS Formation | | |

**Is Staining Present** Yes (No)

**Color** Reddish brown (2.5 YR 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** Nicole Hoffman **PG Registration #** CA 7735

**Additional Comments** None

11/15/11

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

AW 11/15/13 FSDS Checked By A. VIVIAN

Sample ID SL-516-SA5D-~~10-11~~ 9.0-10.0 (Ceil 11/15/13) Date/Time 11/15/2013 0856

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

Start Depth ~~10.0~~ 9.0 (AW 11/15/13)

End Depth ~~11.0~~ 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 NA

Field Geologist C. Cox

Sampler A. VIVIAN

**Analysis**

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

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 (%)** NA

**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** reddish brown (2.5YR 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** None

CE 4/19/11

NA ~ Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By A. VIVIAN

Sample ID SL-516-SA5D-13.0-14.0 Date/Time 11/15/2013 0908

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

Start Depth 13.0

End Depth 14.0

**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 NA

Field Geologist C. Cox

Sampler A. VIVIAN

## Analysis

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

| Group | Parameters | Method | Analyze? |
|---|---|---|---|
| | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

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 (%)** NA
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 olive brown (2.5Y 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** None

11/5/15

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SL-518-SA5D-SB20-05 **Date/Time** 9/10/13 @ 13:20

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

**Start Depth** 0.0

**End Depth** 0.5

**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** R Kasprzyk

**Sampler** V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Enfos | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 - 5> Sleeves
1 - 4oz JAR

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** D. Brown 7.5 3/4

**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** N/A

NA – Not Applicable

| Location ID: DG-518 | Subarea: SD | Date Started: 9/10/13 | Date Completed: 9/10/13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 16.0, 15.9, 16.1 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm/Frodriguez | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: N/A |
| Radiological Background: $\alpha$=13/$\beta\gamma$=70 | Borehole diameter: 2.25 INCH | | |
| PID Background: 0.0 | Depth to GW: N/A | | Sampling Method: MACRO CORE |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Julia Hoffman #7735 | | Geologist: KASPZYK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 13/90 | SL-518-SA-SD-SB-0.0-0.5 | 13:20 | CL | CLAY – DK BROWN (7.5YR 3/4) 80% CLAY, HARD, NON PLASTIC, DRY; 20% SILT TRACE $CaCO_3$ STRINGERS NO ODOR. |
| | | 0.0 | 13/60 | | | | |
| 1 | | 0.0 | 13/72 | | | | |
| | 3.0/4.0 | | | | | | |
| 2 | | 0.0 | 13/84 | | | | |
| 3 | | 0.0 | 13/90 | | | | |
| 4 | | 0.0 | 13/96 | | | | |
| | | | | SL-518-SA-SD-SB-4.0-5.0 | 13:30 | CL | CLAY – STRONG BROWN (7.5YR 5/8) 90% CLAY, FIRM, NON PLASTIC, SEMI MOIST, 10% SAND F, PG TRACE $CaCO_3$ STRINGERS NO ODOR |
| 5 | | 0.0 | 13/72 | | | | |
| 6 | 4.0/4.0 | 0.0 | 13/60 | | | | |
| 7 | | 0.0 | 13/54 | | | | |
| 8 | | 0.0 | 13/78 | | | CL | CLAY W/ SAND – STRONG BROWN (7.5YR 5/8) 75% CLAY, SOFT, NON-PLASTIC, SEMI MOIST; 25% SAND F, PG; TRACE LIGNITE, NO ODOR |
| 9 | 4.0/4.0 | 0.0 | 13/78 | SL-518-SA-SD-SB-9.0-10.0 | 13:40 | | |
| 10 | | 0.0 | 96 | | | | |

**CDM Smith** **BORING LOG AND SAMPLING RECORD** Page 1 of 2

ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: DG 518 | Subarea: ED | Date Started: 9/10/13 | Date Completed: 9/10/13 |
|---|---|---|---|
| Project: SSFL | | Geologist: KASPRZYK | Total Depth: 16.0 FT |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 11 | 4.0/4.0 | 0.0 | 13/84 | | | CL | CLAY w/ SAND – Mottled Strong Brown (7.5 YR 5/8) & Lt Brown (7.5 YR 6/3); 75% CLAY, SOFT NON PLASTIC, SEMI MOIST, TRACE LIGNITE. |
| 12 | | 0.0 | 13/66 | | | | |
| 13 | | 0.0 | 13/60 | | | | |
| 14 | | 00 | 13/48 | | | | |
| 15 | | 00 | 13/66 | 4-518-SASD-13:50 SB-15.0-16.0 | | SP | ABRUPT CONTACT<br>SAND – REDISH YELLOW (7.5 YR 6/8) LOOSE SAND, F-M, PG, SEMI MOIST, LOOSE, NO ODOR |
| 16 | | 00 | 13/60 | | | | REFUSAL AT 16.0 FT |

CDM Smith

**BORING LOG AND SAMPLING RECORD**

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. St

Sample ID SC-518-SA5D-SB-4.0-5.0 Date/Time 9/10/13 @ 13:30

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 BKASZYK

Sampler V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Jar/Other | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2-16 oz JARS
2-Encores

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** STRONG BROWN 7.5YR5/8

**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** Nicholas Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL-518-SA5D-SB-9.0-10.0 Date/Time 9/10/13 @ 13:40

**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)**: (OPT) Slide Hammer Hand Auger/Slide Hammer Trenching Sediment

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

Parent Sample ID N/A

Field Geologist P. Kasprzyk

Sampler V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encore | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16 oz Jars
2-Encore

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** Strong Brown 7.5YR5/8

**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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Gt

**Sample ID** SL-518-SA5D-SB-00 (15.0-16.0) (KW 9/10/13) **Date/Time** 9/10/13 @ 13:50

**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** B KASPZYK

**Sampler** V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16 oz JARS
2-Encores

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** REDDISH YELLOW 7.5YR 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** Mike Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SL-SS19-SA50-SR-0.0-0.5 **Date/Time** 9-11-13 @ 7:40

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

**Start Depth** 0.0

**End Depth** 0.5

**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** NA

**Field Geologist** BKRASZYK

**Sampler** V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Soil | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 - SS Sleeves
1 - 40z JAR

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 MW 9/11/13

2. **Percentage Fill (%)** TRACE (1%) SM 9/11/13

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** DK 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** _____ **PG Registration #** 7735

**Additional Comments** Framing NAIL Recovered from 12 FT BGS

NA – Not Applicable

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG-519 | SD | 9/11/13 | 9/11/13 |

| | | |
|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | Total Depth: 13.5, 13.5, 13.4 |
| Company Name: CDM SMITH | Drill Contractor/Driller: STRONGARM / R. PANIAGUA | |
| GPS collected? (Yes) or No | Drill Method: DPT | Depth Drilled into Bedrock: 0.5 FT |
| Radiological Background: γ = 13 / αβ = 94 | Borehole diameter: 2.25 INCH | |
| PID Background: 0.0 | Depth to GW: NA | Sampling Method: MACROCORE |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mike Hoffman #7735 | Geologist: KLASPZYK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 13/87 | SL-519-SA5D-SB-0.0-0.5 | 7:40 | CL | CLAY – DK BROWN (10YR 3/3); 80% CLAY, HARD, NON-PLASTIC, DRY, 20% SILT; TRACE IGNEOUS GRAVEL IN FIRST FOOT, F, WG, MAX SIZE 3/4 INCH, ROUND TO SUBANGULAR NO ODORS. |
| | | 0.0 | 13/60 | | | | |
| 1 | 2.5 / 4.0 | 0.0 | 13/60 | | | | |
| 2 | | 0.0 | 13/72 | | | | |
| 3 | | 0.0 | 13/84 | | | | |
| 4 | | 0.0 | 13/90 | SL-519-SA5D-SB-4.0-5.0 9/11/13 | 8:00 | CL | CLAY – STRONG BROWN (7.5YR 5/8) 90% CLAY, SOFT, NON-PLASTIC, SEMI-MOIST 10% SAND, F, PG; NO ODOR |
| 5 | | 0.0 | 13/66 | | | | |
| | 4.0 | | | | | | |
| 6 | 4.0 | 0.0 | 13/44 | | | | |
| 7 | | 0.0 | 13/66 | | | | |
| 8 | | 0.0 | 13/78 | | | CL | CLAY W/ SAND – BROWNISH YELLOW (10YR 6/8) 80% CLAY, SOFT, NON-PLASTIC, SEMI-MOIST, 20% SAND, F, PG; TRACE LIMESTONE FRAGMENTS, NO ODOR |
| 9 | | 0.0 | B/84 | | | | |
| 10 | | 0.0 | 13/84 | | | | AS ABOVE MOTTLED W/ BROWN (10YR 4/4) |

**CDM Smith** **BORING LOG AND SAMPLING RECORD** Page 1 of 2

| ABBREVIATIONS: | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: DG 519 | Subarea: SD | Date Started: 9/11/13 | Date Completed: 9/12/13 |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: 13.5' |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 11 | | 0.0 | 14/96 | | | CL | CLAY W/ SAND - MOTTLED BROWN/LIGHT YELLOW 10YR 6/8, BROWN 10YR 4/4, 80% CLAY, SOFT NON PLASTIC, SEMI MOIST; 20% SAND, F, PG; TRACE LIMESTONE FRAGMENTS (WEATHERED); NO ODORS |
| 12 | | 0.0 | 13/98 | | | | NOTE: FRAMING NAIL RECOVERED FROM 12 FT |
| 13 | | 0.0 | 13/84 | | | | 9/11/13 (NB) YELLOWISH |
| | | 0.0 | 13/106 | | | SW | SAND STONE - ~~STRONG~~ BROWN 10YR 5/8, 100% SAND, F, MG, DRY, HIGHLY WEATHERED. NO ODORS. |
| | | | | | | | REFUSAL AT 13.5 ON WEATHERED SAND STONE |

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SL-519-SASD-SB-4.0-5.0 **Date/Time** 9-11-13 @ 08:00

**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** NA

**Field Geologist** B Kacprzyk

**Sampler** V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encore | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16 oz Jars
2-Encores

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** strong brown 7.5 YR 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** [signature] **PG Registration #** 7735

**Additional Comments** _____

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By VGt

Sample ID SC-520-SASD-SB-00-05 Date/Time 9/11/13 @ 8:50

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 BKASPRZYK

Sampler VCENTES

Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encore | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 - SS SLEEVES
1 - 4oz JAR

# 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 (%)** Trace

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** DK 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** _____ **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

| Location ID: DS-520 | Subarea: SD | Date Started: 9/11/13 | Date Completed: 9/11/13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 8.9, 8.9, 9.0 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm | | |
| GPS collected? (Yes) or No | Drill Method: DPT | | Depth Drilled into Bedrock: 0.25 FT |
| Radiological Background: γ=13 / β=73 | Borehole diameter: 2.25 INCH | | |
| PID Background: 0.0 | Depth to GW: N/A | | Sampling Method: MACRO CORE |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & Init.: Walter Hoffman #775 | | Geologist: KASPZYK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 0 | | 0.0 | 13/88 | SL-520-SA-SD-SB-0.0-0.5 | 8:50 | CL | CLAY – DK Brown (10YR 3/3) – 80% CLAY, HARD, NON PLASTIC, DRY; 20% SILT, NO ODOR. TRACE IGNEOUS GRAVEL AT 1 FT, 1/2-INCH SUBANGULAR. |
| | | 0.0 | 13/72 | | | | |
| 1 | 3.0 | 0.0 | 13/78 | | | | |
| | 4.0 | | | | | | |
| 2 | | 0.0 | 13/72 | | | | |
| 3 | | 0.0 | 13/84 | | | | |
| 4 | | 0.0 | 13/84 | SL-520-SA-SD-SB-4.0-5.0 | 9:00 | CL | CLAY W/ SAND – STRONG BROWN (7.5YR 5/8); 80% Clay, SOFT, NON PLASTIC, SEMI MOIST, 20% SAND, F, PG; NO ODOR |
| 5 | | 0.0 | 13/60 | | | | |
| | 4.0 | | | | | | |
| 6 | | 0.0 | 13/66 | | | | AS ABOVE – W/ CaCO3 STRINGERS AND TRACE OF LIMESTONE FRAGMENTS (WEATHERED). |
| 7 | | 0.0 | 13/78 | | | | |
| 8 | | 0.0 | 13/90 | SL-520-SA-SD-SB-8.0-9.0 | 9:10 | SP | SAND – U Pale Brown – (10YR 7/4); 100% Sand, F, PG, SEMI MOIST; NO Odor |
| | | 0.0 | 13/78 | | | | |
| 9 | | | | | | | REFUSAL AT 8.9 FT ON WEATHERED SANDSTONE. |
| 10 | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. GT

Sample ID SL-520-SASD-4.0-5.0 **Date/Time** 9/11/13 @ 9:00

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 B KASPZYK

Sampler V CONTOS

Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

~~2 – 5g Sleeves~~ I.C. 9/11/13

2 – 16 oz Jar

2 Encores

# 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** Strong brown 7.5YR 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SL-520-SA5D-SB-8.0-8.0 **Date/Time** 9/11/13 9:10

**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** NA

Field Geologist BKASPZYK

Sampler V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Archive | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

~~4 GC Sleeves~~ VC 9/11/13

2-16oz JAR

2 ENCORES

# 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~~ | RW Lean inorganic CLAY with low plasticity |
| | | | | OL | 9/11/13 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** V. Pale Brown 10 YR 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** [signature] **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL-521-SA5D-SB-0.0-0.5 Date/Time 9/11/13 @ 9:45

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 B Kaspzyk

Sampler V Cortes

Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | VOCs | EPA 8270 | |
| | SVOC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | Cyanide | EPA 9045 (Soil) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | |
| | Asbestos | EPA 8151 | |
| | Nitrate | EPA 8081 | |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Energetics | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Tributyltin | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2-55-Sleeves
1-4oz Jar

# 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** DK 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** Trista D. Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG-521 | SD | 9/11/13 | 9/11/13 |

| | | |
|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | Total Depth: 6.5, 6.4 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm | |
| GPS collected? (Yes) or No | Drill Method: DPT | Depth Drilled into Bedrock: 0 0 |
| Radiological Background: γ=13 / αβ=73 | Borehole diameter: 2.25 INCH | |
| PID Background: 0.0 | Depth to GW: N/A | Sampling Method: Macro Core |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mike Hoffman #7735 | Geologist: KASPORK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 0 | | 0.0 | 13/87 | SL-521-SA5D-SB-0.0-0.5 | 9:45 | CL | CLAY – DK BROWN (10YR 3/3) – 80% CLAY, HARD, NON PLASTIC, DRY, 20% SILT, NO ODORS |
| | | 0.0 | 13/54 | | | | |
| 1 | 3.0 / 4.0 | 0.0 | 13/96 | | | | |
| 2 | | 0.0 | 13/90 | | | | |
| 3 | | 0.0 | 13/78 | | | | |
| 4 | | 0.0 | 13/102 | | | | |
| 5 | 2.5 / 2.5 | 0.0 | 13/96 | SL-521-SA5D-SB-5.5-6.5 | 9:55 | CL | CLAY W/ SAND – BROWN (7.4YR 4/4); 80% CLAY SOFT, NON PLASTIC, DAMP MOIST; 20% SAND, F, PG. |
| | | | | | | | ~~AS ABOVE~~ W/ CaCO3 STRINGERS & LIMESTONE FRAGMENTS |
| 6 | | 0.0 | 13/108 | | | SP | SAND – V PALE BROWN (10YR 7/3); 100% SAND, F, PG, DRY, LOOSE |
| | | 0.0 | 13/102 | | | | REFUSAL AT 6.5 FT |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

Sample ID SL-521-SASD-SB-5.5-6.5 **Date/Time** 9/11/13 @ 9:55

Matrix (circle one): (Soil) Sediment Water

**Start Depth** 5.5

**End Depth** 6.5

**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 B KASPZYK

Sampler V. Cortes

Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Chloride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | PAHs | EPA 8270 | |
| | PCBs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | | EPA 9045 (Soil) | X |
| | | 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 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-Encore
2-16 oz Jars

# 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** Pale Brown 10YR 7/3

**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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. G

Sample ID SU522-SASD-SB-00-05 Date/Time 8/11/13 10:15

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 B KASPZYK

Sampler V Cortes

Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Metals | | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Perchlorate | EPA 300.0/9056 | |
| | SVOC | EPA 8270 | |
| | | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCBs | EPA 8082 | X |
| | Asbestos | EPA 314.0/331 | |
| | Hexavalent Chromium | EPA 6850/6860 | |
| | | EPA 9045 (Soil) | X |
| | | EPA 9040 (Water) | |
| | Perchlorate | EPA 7196/7199 | |
| | Herbicides | EPA 8151 | |
| | Pesticides | EPA 8081 | X |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-SS Sleeves

1-4oz Jar

# 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 (%)** ~~30%~~ 10% (NA) 9/12/13

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** DK 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** Mike Hoffman **PG Registration #** 7735

**Additional Comments** W/A

NA – Not Applicable

| Location ID: DG522 | Subarea: 5D | Date Started: 9/11/13 | Date Completed: 9/11/13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 7.1, 7.0 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: 0.5 FT |
| Radiological Background: α=13/γB=84 | Borehole diameter: 2.25 - INCH | | |
| PID Background: 0.0 | Depth to GW: N/A | | Sampling Method: MACRO CORE |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: [signature] #7735 | | Geologist: KASPCYK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | SANDY (RK) 9/12/13 |
| | | 00 | 13/100 | SL-522 | 10:15 | CL | CLAY ~~w/GRAVEL~~ - DK Brown (10YR 3/3) 60% Clay SOFT, NON PLASTIC DRY, 30% SAND, F, PG LOOSE; 10% Igneous Gravel, Fn, WG, MAX 3/4 inch NO odor |
| | | 00 | 13/78 | SA 5D SB-0.0-0.5 | | | |
| 1 | | 0.0 | 13/60 | | | | |
| | 4.0 / 4.0 | | | | | CL | (RK) 9/12/13 CLAY - DK Brown (10YR 3/3) 80% CLAY Hard, non plastic, dry, 20% silt NO odor. w/ $CaCO_3$ stringers. |
| 2 | | 0.0 | 13/56 | | | | |
| 3 | | 0.0 | 13/54 | | | | |
| | | 0.0 | 13/60 | | | | |
| 4 | | | | | | MN | SILTSTONE - V PALE BROWN (10YR 8/3) HIGHLY WEATHERED, DRY, NO ODORS. |
| 5 | | 00 | 13/72 | | | SP | SAND - V PALE BROWN (10YR 8/3) - 100% SAND, F-M, PG, loose, dry |
| 6 | | 00 | 13/66 | SL-522-SA 5D-SB-6.0-7.0 | 1025 | CL | CLAY - MOTTLED LT GRAY 10YR 7/1 & WHITE (10YR 8/1); 80% CLAY, SOFT, NON PLASTIC, SEMI-MOIST; 20% SAND, F, PG; w/ WEATHERED LIMESTONE FRAGMENTS. |
| 7 | | 00 | 13/80 | | | MN | SILTSTONE - V. PALE BROWN (10YR 8/3) HIGHLY WEATHERED, DRY, NO ODOR |
| | | | | | | | REFUSAL AT 7.0 ON WEATHERED BEDROCK |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V.G.

**Sample ID** SG522-SA5D-SB-6.0-7.0 **Date/Time** 9/11/13 @ 10:25

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

**Start Depth** 6.0

**End Depth** 7.0

**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) FF FB RB

**Parent Sample ID** N/A

**Field Geologist** BKASPZYK

**Sampler** ✓ Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16oz Jars
2-Encore

# SSFL Phase 3 – Field Data Sample Sheet (Sample Description)

**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** Lt gray (10YR 7/1)

**Odor**

1. **Odor Strength (circle one)**
   (None) Slight [illegible]ong

2. **Odor Description (circle one)**
   Organic Petroleum [illegible]
   (N/A) Other

**Moisture Condition (circle one)**
Dry (Moist) [illegible]et

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

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Gt

**Sample ID** SC-523-~~BASD~~-SB-00-0.5 **Date/Time** 9/11/13 @ 12:20

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

**Start Depth** 0.0

**End Depth** 0.5

**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** BKASPRZAK

**Sampler** V Cortez

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Enders | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 - SS Sleeves
1 - for JAR

# 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 content |

**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** U 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** Nila Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

| Location ID: DG-523 | Subarea: SD | Date Started: 9/11/13 | Date Completed: 9/11/13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 1.6, 1.7, 1.7 |
| Company Name: CDM SMITH | | Drill Contractor/Driller: STRONGARM | |
| GPS collected? Yes or No (4/4/13) | | Drill Method: DPT | Depth Drilled into Bedrock: 1.0 FT |
| Radiological Background: 13/10 72 | | Borehole diameter: 2.25 inch | |
| PID Background: 0.0 | | Depth to GW: N/A | Sampling Method: MACRO CORE |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | | PG Review & No.: Mike Hoffman # 7735 | Geologist: KASPRZYK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 0 | | 0.0 | 13/88 | SL523-SA5D-SB-0.0-0.5 | 1220 | CL | CLAY - DK BRN (10YR 3/3); 100% CLAY, HARD, N.P, DRY |
| | | 0.0 | 13/100 | | | SP | SANDSTONE - V. PALE BROWN (10YR 7/4); 100% SAND, F, PG, POOR CEMENTATION (WEATHERED) DRY, NO ODOR. |
| 1 | | | | | | | |
| 2 | | | | | | | REFUSAL AT 1.7 FT ON BEDROCK. |
| 3 | | | | | | | |
| 4 | | | | | | | |
| 5 | | | | | | | |
| 6 | | | | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

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# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SC-524-SA5D-SB-0.0-0.5 Date/Time 9/4/13 / 8:20

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

Start Depth 0.0

End Depth 0.5

**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 NA

Field Geologist B. KASPZYK

Sampler U CORTES

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Soil/Sed | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 - 4 oz sleeves
1 - 4 oz Jar

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~~ ~~NA~~
2. **Percentage Fill (%)** Trace ~~20~~ ~~NA~~ 9/4/15

**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** DK. 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** Nicole Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG-524 | 5D | 9-4-13 | 9-4-13 |

| | | |
|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/84489 | Total Depth: 4.4, 6.2, 6.3, 6.0, 6.3 |
| Company Name: CDM SMITH | Drill Contractor/Driller: STRONGARM/F. RODRIGUEZ | |
| GPS collected? Yes or No | Drill Method: DPT | Depth Drilled into Bedrock: 0 |
| Radiological Background: $\alpha$ = 13/XBG 80 | Borehole diameter: 2¼ INCH | |
| PID Background: 0.0 | Depth to GW: NA | Sampling Method: MACRO CORE |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: #7735 | Geologist: BKASPOVIC |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 0 | | 0.0 | 13/81 | SC-524-SA5D-SB-0.0-0.5 | 8:20 | CL | CLAY – DK Yellowish Brown (10YR 4/4) 70% CLAY, U Hard, Non Plastic, dry 30% SILT, NO ODOR |
| | 3.6/4.0 | 0.0 | 13/72 | | | | |
| 1 | | 0.0 | 13/72 | | | | Trace of QTZ/BIOTITE GRANITE @ 1 FT |
| 2 | | 0.0 | 13/54 | | | | |
| 3 | | 0.0 | 13/54 | | | | |
| 4 | | 0.0 | 13/78 | SC-524-SA5D-SB-5.5-6.5-MS | 8:35 | | ABRUPT CONTACT |
| 5 | 2.4/2.4 | 0.0 | 13/66 | | | SP | SAND – Brownish Yellow (10YR 6/8); 95% SAND, F, PG, LOOSE, DRY; 5% SILT, NO ODOR |
| 6 | | 0.0 | 13/72 | SC-524-SA5D-SB-5.5-6.5 | 8:45 | | REFUSAL @ 6.4 FT |
| | | 0.0 | 13/72 | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. C. E

Sample ID SL-524-SA5D-SB-5.5-6.5-MS Date/Time 9-4-13/ 8:35

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

Start Depth 5.5

End Depth 6.5

**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 B KASPZYC

Sampler V CRUZ

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X VLK 9/4/13 |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | |
| | Herbicides | EPA 8151 | X |
| | Pesticides | EPA 8081 | X |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Enscapes | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

6 - 16 oz JARS

6 - ENCORE

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 NW 9/4/13

**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** Nikki Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SL-824-SA5D-SB-5565 **Date/Time** 9-4-13 / 8:45

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

**Start Depth** 5.5

**End Depth** 6.5

**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** SL-524-SA5D-SB-5.5-6.5 MS

**Field Geologist** B KASPZYK

**Sampler** V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16 oz JARS
2- Encores

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 6/8

**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 #** 7035

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Catz

**Sample ID** SL-525-SASD-SB-0.0-05 **Date/Time** 9/3/13 @ 9:15

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

**Start Depth** 0.0

**End Depth** 0.5

**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** NA

**Field Geologist** KRASPOVIC

**Sampler** V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 SS SLEEVES

1 4-oz JAR

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** ~~Pale~~ Brown 10 yr 3/3 DARK [illegible] 9/3/13

### 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** N/A

NA – Not Applicable

| Location ID: DG-525 | Subarea: SD | Date Started: 9/3/13 | Date Completed: 9/3/13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 3.5/3.6/3.5 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm/F. Rodriguez | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: -0- |
| Radiological Background: 9:13 13.89 | Borehole diameter: 2.25 INCH | | |
| PID Background: 0.0 | Depth to GW: | | Sampling Method: Macro Core |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mike Hoffman #7735 | | Geologist: Kaplan |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 0 | | 0.0 | 13/60 | SL525-SA5D-SB-0.0-0.5 | 9:15 | ML | SILT - DK BROWN (10 YR 3/3); 90% SILT SOFT, LOOSE, NON-PLASTIC, DRY; 10% CLAY TRACE CONCRETE AT 1 FT. |
| 1 | 3.6/4.0 | 0.0 | 13/72 | | | ML | SILT - DK Brown (10 YR 3/3); 90% SILT Hard, Non PLASTIC, DRY; 10% SAND, Fine-coarse, WG, Trace Silt, No Odor. |
| 2 | | 0.0 | 13/78 | SL-525-SA-5D-SB 3.5-3.5 | 9:25 | SP | SAND - V. PALE BROWN (10 YR 7/3); 90% |
| 3 | | 0.0 | 13/64 | | | SM | SAND, F-M, PG, DRY, 10% SILT, NO ODOR |
| 4 | | | | | | | SILTSTONE - WEATHERED |
| 5 | | | | | | | REFUSAL @ 3.6 |
| 6 | | | | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

(w) 9/3/13 FSDS Checked By _____

Sample ID SL-525-SASD-SB~~2.5~~ 3.5 Date/Time 9/3/13 09:25

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

Start Depth 2.5

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 R. KASPZYK

Sampler V. CARTER

## 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 | ✓ V.C. 9/3/13 |
| | 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 | |

2 16-oz Jars

2 Encores

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** V Pale Brown 10YR 7/3

**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** W/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By [signature]

Sample ID SL-526-SA5D-SB-0.0.05 Date/Time 08/29/13 / 14:00

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

Start Depth 0.0

End Depth 0.5

**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 NA

Field Geologist B KASPZYK

Sampler V. CORTES

**Analysis**

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | 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 | |

2 - SS SLEEVES
1 - 4OZ VAR

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** 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** Nicole Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

| Location ID: DG-526 | Subarea: SD | Date Started: 08-29-13 | Date Completed: 8-29-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 4.5/4.0/4.0 |
| Company Name: CDM SMITH | Drill Contractor/Driller: | | |
| GPS collected? (Yes) or No | Drill Method: DPT | | Depth Drilled into Bedrock: 0.5 |
| Radiological Background: γ4/αβ 86 | Borehole diameter: 2.5 | | |
| PID Background: 0.0 | Depth to GW: NA | | Sampling Method: Macrocore |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Julie Hoffman #7735 | | Geologist: B KASPRZYK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 0 | | 0.0 | 12/42 | SL526-SA50-SB-0.0-0.5 | 14:00 | SM | SAND, U. Pale Brown (10YR 7/4) 100% SAND, FINE, POR, LOOSE, DRY T. SILT, NO ODOR. |
| 1 | | 0.0 | 12/72 | | | | |
| | 3.3/4N | | | | | | |
| 2 | | 0.0 | 12/66 | | | | |
| 3 | | 0.0 | 12/66 | SL526-SA50-SB-3.0-4.0 | 14:10 | | |
| 4 | 0.5/0.5 | 0.0 | 12/66 | | 9/24/13 | | WEATHERED SILTSTONE |
| | | 0.0 | 12/72 | | | | |
| 5 | | | | | | | |

**CDM Smith** **BORING LOG AND SAMPLING RECORD** Page 1 of 1

| ABBREVIATIONS: | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By √, GT

Sample ID SL-526-SA5D-SB-3.0-4.0 Date/Time 08-29-13 / 14:10

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

Start Depth 3.0 ~~3.0~~ KW 8/29/13

End Depth 4.0

**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 B KASPRZYK

Sampler √ CORTES

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Liquids | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-SS SLEEVES (KW) 8/29/13
1-4 OZ JAR
2-16 OZ JAR
2-ENCORES

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** V. Pale Brown 10YR7/4

**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** Nicholas E. Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Gil

**Sample ID** SL-527-SA505B-0.0-0.5 **Date/Time** 09/03/13 @ 0820

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

**Start Depth** 0.0

**End Depth** 0.5

**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** B KASPZYIC

**Sampler** V CORTES

**Analysis**

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

| Parameters | Method | Analyze? |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

2 SS Sleeves
1 - 40z VAR

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** DK 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** Mike Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG-527 | SD | 09-03-13 | 09-03-13 |

| | | |
|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | Total Depth: 5.2, 5.3, 5.5 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strogan/F. Rodriguez | Depth Drilled into Bedrock: |
| GPS collected? (Yes) or No | Drill Method: DPT | 0 |
| Radiological Background: γ= 13 γ= 82 | Borehole diameter: 2 1/4 inch | Sampling Method: |
| PID Background: 0.0 | Depth to GW: N/A | MACRO CORE |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mike Hoffman #7735 | Geologist: R KASPRZYK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 0 | | 0.0 | 13/77 | SL-527-SA5D- | 8:20 | ML | SILT - DARK BROWN (10YR 3/3), 90% SILT SOFT, NON PLASTIC, LOOSE, DRY; 10% CLAY NO ODOR |
| | | 0.0 | 13/60 | SB 0.0 0.5 | | | |
| 1 | | 0.0 | 13/60 | | | | |
| 2 | 4.0 / 4.0 | 0.0 | 13/72 | | | | |
| 3 | | 0.0 | 13/90 | | | ML | SILT, PALE BROWN (10YR 6/3) - 90% SILT, HARD NON PLASTIC, DRY; 10% Clay, |
| 4 | 1.3 | 0.0 | 13/64 | SL527-SA5D-SB4.0-5.0 | 8:35 | | AS ABOVE W/ SILTSTONE LENSE @ 3.6-4.0 |
| 5 | 1.3 | 0.0 | 13/54 | | | ML | SILT - Yellowish Brown (10YR 5/6) 100% SILT, Hard, non plastic, DRY |
| | | | | | | SP | Trace Clays SAND, yellowish brown, (10YR 6/6), 95% SAND, FINE, PG, loose, dry, 5% SILT, NO odor. |
| 6 | | | | | | | REFUSAL AT 5.3 FT |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

KR
9/3/13

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** VGT

**Sample ID** SL-527-SASD-SB-4.0-5.0 **Date/Time** 09/03/13 / 08:35

**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** B KASPERIK

**Sampler** V. Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Soil | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16 oz VAR
2 ENCORES

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** 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** Nikki Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SC-528-SA5D-SB-0.0-0.5 **Date/Time** 9-3-13 @ 9:55

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

**Start Depth** 0.0

**End Depth** 0.5

**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** KRASOWSKI

**Sampler** V Cortes

## Analysis

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

| Parameters | Method | Analyze? |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

2-4oz Sleeves
1-4oz Jar

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) 9/3/13

**Color** DK Brown 7.5YR 10YR 3/4

**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** N/A

NA – Not Applicable

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG 528 | 5D | 9/3/13 | 9/3/13 |

| | | |
|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | Total Depth: 3.3, 3.3, 3.3 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm/F Rodriguez | |
| GPS collected? Yes or No | Drill Method: DPT | Depth Drilled into Bedrock: ~~3.3, 3.3, 3.3~~ 0 |
| Radiological Background: B=13/AB=82 | Borehole diameter: 2.25 inch | |
| PID Background: 0.0 | Depth to GW: NA | Sampling Method: Macrocore |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PC Review & No.: Mike Hoffman #7735 | Geologist: BRAGPLYIC |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 13/80 | SL528-SA5D-SB-0.0-0.5 | 9:55 | ML | SILT - DK BROWN (10YR 3/3) 90% SILT, ~~SOFT~~ LOOSE NON-PLASTIC, DRY, 10% CLAY, NO ODOR |
| 1 | | 0.0 | 13/66 | | | SP | SAND W/ SILT - V PALE BROWN (10YR 7/3) COLOR GRADED FROM DK BROWN TO V. PALE BRN GRADUAL, IRON OXIDE STAIN AT 1.3 FT. 95% SAND, FINE, PG, LOOSE, DRY; 5% SILT NO ODOR |
| 2 | 3.3/3.3 | 0.0 | 13/72 | SL-528-SA5D-SB-2.5-3.5 | 10:05 | | |
| 3 | | 0.0 | 13/94 | | | ML | SILTSTONE - WEATHERED, GRAY 7.5YR (5/1) HIGHLY BROKEN |
| | | | | | | | REFUSAL @ 3.3 FT |
| 4 | | | | | | | |
| 5 | | | | | | | |
| 6 | | | | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |

CDM Smith

## BORING LOG AND SAMPLING RECORD



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

FC 9/13/13

CDM Smith

BORING LOG AND SAMPLING RECORD

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# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Gotz

**Sample ID** SL-528-SASD-SB-2.5-3.5 **Date/Time** 9/3/13 @ 10:05

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

**Start Depth** 2.5

**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** B KASPRZYK

**Sampler** V Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16 oz JARS
2-Encores

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** V. Pale Brown 10 YR 7/3

**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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.G

Sample ID SL-529-SASD-SB-0.0-.05 Date/Time 9/11/13 13:10

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 NA

Field Geologist B. Kasprzyk

Sampler ~~M~~. Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Energetics | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X (X) 9/6/13 |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Tissue | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2-4 Sleeves
1-4oz

# 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) DK Brown 10YR 3/3

**Color** ~~Pale Brown 10YR 7/4~~ (KW) 9/11/13

**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** N/A

NA – Not Applicable

| Location ID: DS-529 | Subarea: SD | Date Started: 9/11/13 | Date Completed: 9/11/13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 4.0, 4.0, 3.8 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm | | |
| GPS collected? (Yes) or No | Drill Method: DPT | | Depth Drilled into Bedrock: 0.25 ET |
| Radiological Background: B/ B = 75 | Borehole diameter: 2.25 | | |
| PID Background: 0.0 | Depth to GW: N/A | | Sampling Method: Macro Core |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Julie Hoffman #7735 | | Geologist: KASPRZYK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 0 | | 0.0 | 13/90 | SL-529 | 1310 | CL | CLAY - DK BROWN (10YR 3/3); 80% CLAY, HARD NON-PLASTIC, DRY; 20% SILT; NO ODOR |
| | | 0.0 | 13/72 | SA-50 - SB-0.0 | | | |
| 1 | | 0.0 | 13/66 | 0.5 | | | GRADATIONAL CONTACT |
| | 3.0 | | | | | SM | SAND - U. Pale brown (10YR 7/4); 100% SAND, F, PG, LOOSE, DRY; NO ODOR. |
| 2 | 4.0 | 0.0 | 13/84 | | | | |
| 3 | | 0.0 | 13/72 | SL529 SAND SB 3.0 - 4.0 | 1315 | | |
| 4 | | 0.0 | 13/66 | | | | WEATHERED SANDSTONE |
| | | | | | | | REFUSAL AT 4 FT ON WEATHERED ROCK |
| 5 | | | | | | | |
| 6 | | | | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

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# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL-529-SA50-SB30-04.0 Date/Time 9/11/13 @ 13:15

Matrix (circle one): (Soil) Sediment Water

Start Depth 3.0

End Depth 4.0

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 BKASPZYK

Sampler VCortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-Encores
2-16oz JAR

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** U Pale Brown 10 YR 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** [signature] **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. G K

Sample ID SL-530-SASD-SB-00-05 Date/Time 8/30/13 / 13:15

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

Start Depth 0.0

End Depth 0.5

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 B Kasprzyk

Sampler V Cortez

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-SS Sleeves
1-4 oz JAR

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

**Additional Comments** N/A

NA – Not Applicable

| Location ID: DG-530 | Subarea: 5D | Date Started: 8/30/13 | Date Completed: 8/30/13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 2.0, 3.8, 3.5 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strangam | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: -0- |
| Radiological Background: γ=14 / αβ=77 | Borehole diameter: 2.5 inches | | |
| PID Background: 00 | Depth to GW: NA | | Sampling Method: Macro Core |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | ~~PG Review & No.~~ [signature] #7735 | | Geologist: B Kasprzyk |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 4/102 | SL-530-SA 5D-SB-0.0 0.5 | 1315 | ML | SILT - Brown (10YR 4/3), 90% silt, soft, non-plastic, dry, 10% clay no odor |
| | | 0.0 | 12/60 | | | | |
| 1 | | 0.0 | 12/60 | | | SP | SAND - Yellowish Brown (10YR 6/6) 100% Sand, F-M, PG, Loose, Dry No odor |
| 2 | 3.8/3.8 | 0.0 | 12/54 | SL-530-SA 5D-SB-2.5 3.5 | 1330 | | |
| 3 | | 0.0 | 12/72 | | | | |
| | | 0.0 | 12/74 | | | | |
| 4 | | | | | | | Refusal at 3.8 FT |
| 5 | | | | | | | |
| 6 | | | | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By √ GE

Sample ID SL-530-SA50-SB-2.5-3.5 Date/Time 8/30/13 / 13:30

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

Start Depth 2.5

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 B KASPRZYK

Sampler V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encore | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| Chemistry | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-160z Jars
2-Encore

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

**Additional Comments** _____

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Stef Mypel

Sample ID SC-531-SA5D-SB-0.0-05 Date/Time 08-30-13 / 12:50

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

Start Depth 0.0

End Depth 0.5

**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 B Kasprzyk

Sampler V Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Solids | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | 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 | X |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Liquids | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-SS Sleeves
1-402 JAR

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** Brown 10 YR 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** [signature] **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

| Location ID: DG 531 | Subarea: SD | Date Started: 08/30/13 | Date Completed: 08/30/13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 2.5, 2.0, 2.0 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm | | |
| GPS collected? (Yes) or No | Drill Method: DPT | | Depth Drilled into Bedrock: -0- |
| Radiological Background: 14/28 75 | Borehole diameter: 2.5 inch | | |
| PID Background: 00 | Depth to GW: NA | | Sampling Method: Macro Core |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mike Hoffman #7735 | | Geologist: B. KASPRZYK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 14/98 | SL-531-SA SD-SB-0.0 | 12:50 | ML | SILT - Brown (10YR 4/3); 90% SILT; Soft NON-PLASTIC, DRY, 10% Clay NO ODOR |
| | 2.5 | 0.0 | 12/54 | | | | |
| 1 | 2.5 | 0.0 | 12/54 | 05 | | | |
| | | | | | | SP | SAND - Yellowish brown (10YR 5/6) 100% SAND, F-M, PG, LOOSE, DRY NO ODOR |
| 2 | | 0.0 | 12/60 | | | | |
| | | 0.0 | 12/56 | | | | |
| 3 | | | | | | | REFUSAL @ 2.5 FT |
| 4 | | | | | | | |
| 5 | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SC-532-SA5D-SB-00-05 **Date/Time** 08-30-13 / 12:20

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

**Start Depth** 0.0

**End Depth** 0.5

**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** BKASPOYIC

**Sampler** V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 - SS Sleeves
1 - 4 oz Jar

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** Brown 10 YR 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** [signature] **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

| Location ID: DG 532 | Subarea: 50 | Date Started: 08/30/13 | Date Completed: 08/30/13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 3.0 3.5 3.0 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm/ | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: -0- |
| Radiological Background: Y=14/αβ=98 | Borehole diameter: 2½ inch | | |
| PID Background: 0.0 | Depth to GW: NA | | Sampling Method: MACRO CORE |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: [signature] #7735 | | Geologist: BRASPYK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 14/89 | SL-532- | | ML | SILT - BROWN (10YR 4/3); 90% SILT; |
| | | 0.0 | 12/54 | SA5D- | 1220 | | SOFT, NON-PLASTIC, DRY; 10% CLAY, NO Odor |
| 1 | | 0.0 | 14/54 | SB-0.0 0.5 | | | |
| | 3.0 / 3.0 | | | | | | |
| 2 | | 0.0 | 12/60 | SL-532- | | SP | SAND — Yellowish Brown (10YR 6/6), |
| | | | | SA 5D- | 1230 | | 100% SAND, F-M, PG, LOOSE, DRY. |
| 3 | | 0.0 | 12/66 | SB-2.5- 3.5 | | | No Odors. |
| | | | | | | | Refusal at 3.0 FT AS ABOVE |
| | | | | | | | REFUSAL ON 2ND PUSH WAS 3.5 FT |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. C

**Sample ID** SL-532-SA5D-SB-3.5-3.5 **Date/Time** 8-30-13 / 12:30

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

**Start Depth** 2.5

**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** Blasczyk

**Sampler** V. Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| VOCs | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| TPH | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Tissue | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2-16 oz Jars
2-Encore

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** Yellowish Brown 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortez

Sample ID SL-~~553~~-533-SASD-SB-0.0-05 / SM83013 Date/Time 08-30-13 / 10:15

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

Start Depth 0.0

End Depth 0.5

**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 B KACZYK

Sampler V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Enpores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-5g. Sleeves
1-4oz JAR

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** 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** [signature] **PG Registration #** 7035

**Additional Comments** N/A

NA – Not Applicable

| Location ID: DG-533 | Subarea: 5D | Date Started: 08-30-13 | Date Completed: 08-30-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 3.5, 3.5, 3.5 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm/Vazquez | | |
| GPS collected? (Yes) or No | Drill Method: DPT | | Depth Drilled into Bedrock: 2.5 FT |
| Radiological Background: γ=14 / αβ=87 | Borehole diameter: 2.5 IN | | |
| PID Background: 0.0 | Depth to GW: N/A | | Sampling Method: MACRO Core |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mike Hoffman #7735 | | Geologist: B KASPEYK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 3.5 | 0.0 | 14/97 | SL-553-SA5D-SB-0.0-0.5 | 10:15 | ML | SILT – Brown (10YR 4/3); 80% SILT, SOFT, NON-PLASTIC, DRY, 20% CLAY; TRACE SAND, FINE, PG; NO ODOR. |
| 1 | 3.5 | 0.0 | 12/54 | | | | |
| 2 | | 0.0 | 12/66 | | | SP | SANDSTONE – PALE BROWN (10YR 6/3) FN, PG DRY; w/ INTER BEDDED CLAY, HARD, NON PLASTIC (MAX THICKNESS 2-INCH) NO ODOR. |
| 3 | | 0.0 | 12/78 | SL-533 SA5D-SB-2.5-3.5 | 10:30 | | |
| | | 0.0 | 12/84 | | | | |
| 4 | | | | | | | REFUSAL AT 3.5 FT |
| 5 | | | | | | | |
| 6 | | | | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | φ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

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# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortez

Sample ID SL-533-SASD-SB-25-35 SM83013 Date/Time 08-30-13 / 10:30

Matrix (circle one): (Soil) Sediment Water

Start Depth 2.5

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 B Kasprzyk

Sampler V Cortez

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Explosives | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 – Encore
2 – 4oz Jars

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** Pale brown 10 YR 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Carter

**Sample ID** SL-534-SA5D-SB-0.0-0.5' **Date/Time** 08-30-13/09:00

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

**Start Depth** 0.0

**End Depth** 0.5'

**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** BKASPZYIC

**Sampler** V Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | 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 | |

2-SS Sleeves

1-~~8 oz JAR~~ VS. 8/30/13

4 oz JAR

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

**Additional Comments** N/A

NA – Not Applicable

| Location ID: DG 534 | Subarea: 5D | Date Started: 08-30-13 | Date Completed: 08-30-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 5.5, 7.5, 6.0 |
| Company Name: CDM SMITH | Drill Contractor/Driller: STRONGARM/VPEQUEL | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: 0.5 FT |
| Radiological Background: α=14 γβ=102 | Borehole diameter: 2.5 INCH | | |
| PID Background: 0.0 | Depth to GW: N/A | | Sampling Method: MACRO CORE |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No: [signature] #7735 | | Geologist: B KASPZYK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 14/80 | SL-534-SA 5D-SB-0.0-0.5 | 09:00 | ML | SILT - Brown (10YR 5/3) - 80% SILT, SOFT NON-PLASTIC, DRY; 10% SAND, FN, PG DRY LOOSE, TRACE FN GRAVEL, NO ODOR. |
| | | 0.0 | 12/42 | | | | |
| 1 | | 0.0 | 12/54 | | | | |
| 2 | 4.0/4.0 | 0.0 | 12 60 | | | SP | SAND - PALE BROWN (10 YR 6/3) - 100% SAND, F-M, PG, LOOSE, DRY, W/ INTERBEDDED WEATHERED SANDSTONE, NO ODOR. |
| 3 | | 0.0 | 12/60 | | | | |
| 4 | | 0.0 | 12/78 | | | | |
| 5 | 1.5/1.5 | 0.0 | 12/54 | | | | |
| 6 | 2.0/2.0 | 0.0 | 12/84 | SL-534-SA 5D-SB-6.5-7.5 | 9:20 | | |
| 7 | | 0.0 | 12/78 | | | | WEATHERED SANDSTONE |
| | | 0.0 | 12/72 | | | | |
| | | | | | | | REFUSAL AT 7.5 FT |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



**ABBREVIATIONS:**

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. GE

**Sample ID** GL-G34-SA5D-SB-6.5-7.5 **Date/Time** 8-30-13 / 09:20

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

**Start Depth** 6.5

**End Depth** 7.5

**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** NA

**Field Geologist** B KASPZYK

**Sampler** V Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | X (and 9-3-13) |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Soil Jars | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2 16-oz Jars

2 Encores

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** Pale Brown 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SC-535-SA50-SB-0.0-0.5 MS **Date/Time** 8-30-13 8:10

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

**Start Depth** 0.0

**End Depth** 0.5

**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** Blaszyk

**Sampler** V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Explosives | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

KK 8-30-13

~~1 - 40z JAR~~ KK 8/30/13

1 - 40z JAR

6 - 5G Sleeves

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** Brown 10 YR 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** _____

NA – Not Applicable

| Location ID: DG 535 | Subarea: 5D | Date Started: 08-30-13 | Date Completed: 08-30-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 3.5, 3.0, 3.5 |
| Company Name: CDM SMITH | Drill Contractor/Driller: STRONGARM | | |
| GPS collected? Yes or No | Drill Method: DPT / VACUUM | | Depth Drilled into Bedrock: 2 FT |
| Radiological Background: γ=14 α=β=66 | Borehole diameter: 2.5 INCH | | |
| PID Background: 0.0 | Depth to GW: NA | | Sampling Method: MACRO CORE |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: [signature] #7735 | | Geologist: B KASPLYK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 14/80 | SL-535-SA 50-SB-0.0-0.5 MS | 08:10 | [illegible] | ML - SILT - Brown (10YR 5/3) - 100% SILT, soft, non plastic dry |
| | | 0.0 | 12/66 | | | | SANDSTONE - PALE BROWN (10YR 6/3); 50% WEATHERED SANDSTONE, FN, PG, HIGHLY BROKEN; 50% SAND, FN, PG, LOOSE, DRY. |
| 1 | 3.5 / 3.5 | 0.0 | 12/66 | SL-835-SA 50-SB-0.0-0.5 | 0820 | SP | |
| 2 | | 0.0 | 12/66 | | | | |
| | | | | SL-535-SA 50-SB-2.0-3.0 | 8:30 | | |
| 3 | | 0.0 | 12/72 | | | | |
| | | 0.0 | 12/66 | | | | |
| 4 | | | | | | | Refusal at 3.5 |
| 5 | | | | | | | |

[illegible] 8/30/13

NOTE: Boring offset 8FT ~~WEST~~ EAST OF MARK TO AVOID utilities.

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cyk

**Sample ID** SL-835-SASD-SB-0.0-0.5 **Date/Time** 8-30-13 / 9:20

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

**Start Depth** 0.0

**End Depth** 0.5

**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** SL-535-SASD-SB-0.0-0.5 MS

**Field Geologist** B. Kasprzyk

**Sampler** V Cortes

## Analysis

| Parameters | Method | Analyze? |
|---|---|---|
| Metals | EPA 6010 | X |
| | EPA 6020 | X |
| | EPA 7471 (Soil) | X |
| | EPA 7470 (Water) | |
| Fluoride | EPA 300.0/9056 | |
| SVOCs | EPA 8270 | |
| TIC | EPA 8270 | |
| PAHs - | EPA 8270 SIM | X |
| 1,4 Dioxane | EPA 8270 SIM | X (RL 9/20/13) |
| Dioxins | EPA 1613 | X |
| PCBs/PCTs | EPA 8082 | X |
| Perchlorate | EPA 314.0/331 | |
| Perchlorate Confirmation | EPA 6850/6860 | |
| pH | EPA 9045 (Soil) | X |
| | EPA 9040 (Water) | |
| Hexavalent Chromium | EPA 7196/7199 | |
| Herbicides | EPA 8151 | |
| Pesticides | EPA 8081 | X |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Energetics | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

1-4 oz JAR
2-SS Sleeves

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** 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Contes

**Sample ID** SC-535-SB5D-SB-2.0-3.0 **Date/Time** 8-30-13 / 08:30

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

**Start Depth** 2.0

**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** NA

**Field Geologist** BKAGPZYK

**Sampler** V Contes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Explosives | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Tissue | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2 - EnCores
2 - 16 oz Jars

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** ~~Brown 10YR 5/3~~ PALE BROWN (10YR 6/3) 8-30-13

**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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortez

Sample ID SL-536-SASD-SB-0.0-0.5 Date/Time 08-28-13/11:00

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 B Kasprzyk

Sampler V Cortez

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Explosives | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-55 sleeves V.C. 8/28/13
1-8 oz JAR

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** PALE BROWN 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** _____ **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

| Location ID: DG 536 | Subarea: SD | Date Started: 08-28-13 | Date Completed: 08-28-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 2.4 4.5 |
| Company Name: CDM SMITH | Drill Contractor/Driller: STRATA | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: 2.1 FS |
| Radiological Background: γ=12 / αβ= 92 | Borehole diameter: 2.5 INCH | | |
| PID Background: 0.0 | Depth to GW: NA | | Sampling Method: MACRO CORE |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & Note: [signature] #7735 | | Geologist: B KASPOVIC |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 0 | 0.5/0.5 | 0.0 | 12/90 | SL-536-SA5D-SB-0.0-0.5 | 11:00 | SP-SM | SAND: PALE BROWN (10YR 6/3), SAND 90% FINE, PG, LOOSE, DRY; SILT, 10%, SOFT, NON-PLASTIC; NO ODOR w/ SILT |
| 1 | 1.9/2.4 | 0.0 | 12/66 | | | | |
| 2 | | 0.0 | 12/66 | | | | |
| | | 0.0 | 12/60 | | | ML | SILT: PALE BROWN (10YR 6/3): SILT HARD NON-PLASTIC, DRY; W/ LAMINATED WEATHERED SILT STONE, NO ODOR |
| 3 | 2.1/2.1 | 0.0 | 12/66 | SL-536-SA5D-SB-3.5-4.5 | 12:00 | | |
| 4 | | 0.0 | 12/60 | | | | refusal at 4.5 |
| | | 0.0 | 12/60 | | | | |
| 5 | | | | | | | |
| 6 | | | | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |

8-28-13

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | Φ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** KB

**Sample ID** SL-536-SA5D-SB-3.5-4.5 **Date/Time** 08.28.13 12:00

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

**Start Depth** 3.5

**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** BOB KASPZYK

**Sampler** VIDAL CORTEZ

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Standard | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 904S (Soil) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | |
| | Herbicides | EPA 8151 | |
| | Pesticides | EPA 8081 | |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encore | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Optional | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2 16-OZ JARS

2 ENCORES

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** PALE BROWN 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** [signature] **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL-537-SA5D-SB-0.0-0.5 Date/Time 08-28-13/ 10:20

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

Start Depth 0.0

End Depth 0.5

**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 NA

Field Geologist B KASPZYK

Sampler V. CORTES

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Energetics | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 - S.S. SLEEVES
1 - Amber 4 oz Jar

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** Brown 7.5 YR 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** N/A

NA – Not Applicable

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG537 | SD | 08-28-13 | 08-28-13 |

| | | |
|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | Total Depth: 4.5/3.3/3.5 |
| Company Name: CDM SMITH | Drill Contractor/Driller: STRINGARM | |
| GPS collected? (Yes) or No | Drill Method: DPT | Depth Drilled into Bedrock: 0 |
| Radiological Background: Y-12/αβ 79 | Borehole diameter: 2.5 INCH | |
| PID Background: 0.0 | Depth to GW: N/A | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Miller Hoffman #735 | Geologist: BLASZYK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 0 | 0.5/0.5 | 0.0 | 12/99 | SL-537-SA5D-SB-0.0 | 10:20 | CL | CLAY; BROWN (7.5YR 4/4) 90% CLAY, HARD, NON-PLASTIC, DRY, 10% SILT; NO ODOR. |
| 1 | | 0.0 | 12/48 | 05 | | | |
| 2 | 2.1/3.5 | 0.0 | 12/54 | | | CL | AS ABOVE |
| 3 | | 0.0 | 12/60 | SL-537-SA5D-SB-2.5-3.5 | 10:30 | | |
| 4 | | 0.0 | 12/60 | | | | |
| | 0.5/0.5 | 0.0 | 12/66 | | | SP-SM | SAND; BROWN (7.5YR 4/4) SAND 90%, FINE, AS COARSE, 10% SILT; DRY, NO ODOR. |
| 5 | | | | | | | REFUSAL AT 4.5 FT |
| 6 | | | | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |

CDM Smith

## BORING LOG AND SAMPLING RECORD



ABBREVIATIONS:

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SL-537-SA5D-SB 2.5-3.5 **Date/Time** 08-28-13 / 10:30

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

**Start Depth** 2.5

**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** B Kastyk

**Sampler** V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encore | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 - ENCORE
2 - 16 oz JARS

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** Brown 7.5 YR 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** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Gt

Sample ID SL-538-SA5D-SB-00-0.5 Date/Time 08-28-13/13:45

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

Start Depth 0.0

End Depth 0.5

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 B Kasprzyk

Sampler V Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | 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 | |

2-SS Sleeve
~~1-4oz Jar~~ V.C. 8/28/13
1 4oz Jar

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** (7.5 YR 5/4) 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** Julia Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

| Location ID: DG-538 | Subarea: SD | Date Started: 08-28-13 | Date Completed: 08-28-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 4.0 / 4.0 |
| Company Name: CDM SMITH | Drill Contractor/Driller: STRONGARM | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: -0- |
| Radiological Background: ~~DG~~ 13/YB 90 | Borehole diameter: 2.5 INCH | | |
| PID Background: 0.0 | Depth to GW: N/A | | Sampling Method: MACROCORE |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No: [signature] #7735 | | Geologist: BKASPOYK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/0.5 | 0.0 | 13/68 | SL-538-SA5B-SB-0.0-4.0.5 | ~~14:35~~ 13:45 | CL | SANDY CLAY; Brown 7.5 YR 5/4 CLAY, 60%, Hard, non plastic, dry; SAND, 40% Fine, pg, loose, TRACE GRAVEL AT 0-0.5FT, No odor |
| | | 0.0 | 12/60 | | | | |
| 1 | | 0.0 | 12/48 | | | | |
| | 3.5/3.5 | | | | | | |
| 2 | | 0.0 | 12/54 | | | | |
| 3 | | 0.0 | 12/54 | SL-538 SA5B-SB-3.0-4.0 | 14:00 | SP SM | SAND W/ SILT; ~~PALE~~ Brown (10YR 6/3); SAND 90%, FINE-MED, pg, loose, Dry; NO ODOR. |
| 4 | | 0.0 | 12/96 | | | | REFUSAL AT 4.0 FT BGS |
| 5 | | | | | | | |
| 6 | | | | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



**ABBREVIATIONS:**

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

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# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. CRUZ

**Sample ID** SL-538-SASD-SB-3.0-4.0 **Date/Time** 08-28-13 14:00

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

**Start Depth** 3.0

**End Depth** 4.0

**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** BRASPOYIC

**Sampler** V Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 16-oz JARS

2 ENCORES

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** (10 YR 6/3) Pale 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SC-539-SA5D-SB-0.0-0.5 **Date/Time** 08-29-13/ 09:10

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

**Start Depth** 0.0

**End Depth** 0.5

**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** B. KASPRZYK

**Sampler** V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Energetics | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Archive | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2 - SS Sleeves
1 - 4oz JAR

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** DK 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** _____ **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG-539 | SD | 08-29-13 | 08-29-13 |

| | | |
|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | Total Depth: 4, 4, 4 |
| Company Name: CDM SMITH | Drill Contractor/Driller: STRATAPRM | |
| GPS collected? (Yes) or No | Drill Method: DPT | Depth Drilled into Bedrock: 0 |
| Radiological Background: α=12 γ=94 | Borehole diameter: 2.5 INCH | |
| PID Background: 0.0 | Depth to GW: NA | Sampling Method: MACRO CORE |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No: [signature] #7735 | Geologist: B KASPCVIC |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 0 | | 0.0 | 12/78 | SL-539 SASD-SB-0.0-0.5 | 09:10 | CL | CLAY - DARK BROWN (10YR 3/3); 90% CLAY, SOFT, NON-PLASTIC, DRY; 10% FINE SAND, PG, LOOSE, NO ODORS. |
| | | 0.0 | 12/54 | | | | |
| 1 | | 0.0 | 12/48 | | | | |
| | 4.0 | | | | | | |
| 2 | 4.0 | 0.0 | 12/54 | | | SM | SILTY SAND - V. PALE BROWN (10YR 7/4), 80% SAND, FINE-MEDIUM, PG, LOOSE DRY; 20% SILT SOFT, NON-PLASTIC, NO ODORS |
| | | | | | | | W/ INTERBEDDED LENSES OF V. HARD CLAY MAX THICKNESS < 2 INCHES. |
| 3 | | 0.0 | 12/48 | SL539-SA5D-SB-3.0-4.0 | 09:20 | | |
| 4 | | 0.0 | 12/60 | | | | SAND STONE IN SHOE AT 4.0 FT |
| | | | | | | | REFUSAL AT 4.0 FT |
| 5 | | | | | | | |
| 6 | | | | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL-539-SA50-SB-3.0-4.0 Date/Time 08-29-13 / 09:20

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

Start Depth 3.0

End Depth 4.0

**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 NA

Field Geologist BOB KASPRZYK

Sampler V. Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X HH 8/29/13 |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 - 16 oz JAR

2 - ENCORES

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** 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. GE

**Sample ID** SL540-SA5D-SB-0.0-0.5 **Date/Time** 9/3/13 @ 12:00

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

**Start Depth** 0.0

**End Depth** 0.5

**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** B Kacprzyk

**Sampler** V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Soil Jars | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2-SS Sleeves
1-402 JAR

# 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** DK 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** _____ **PG Registration #** 7735

**Additional Comments** _____

NA – Not Applicable

| Location ID: DG 540 | Subarea: 5D | Date Started: 9/3/13 | Date Completed: 9/3/13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 6.2, 6.0, 6.1 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm / F Rodriguez | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: 0.5 FT |
| Radiological Background: 13/78 | Borehole diameter: 2.25-inch | | |
| PID Background: 0.0 | Depth to GW: NA | | Sampling Method: Macro Core |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mila Hoffman #7735 | | Geologist: B Kasprzyk |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 0.0 | | 0.0 | 13/84 | SL-540-SA50-SB-0.0-0.5 | 12:00 | ML | SILT - DK BROWN (10YR 3/3); 90% SILT, SOFT loose dry nonplastic, no odor, 10% Clay |
| 1 | | 0.0 | 13/48 | | | | |
| 2 | 4.0/4.0 | 0.0 | 13/72 | | | ML | SILT - DK Brown (10YR 3/3); 90 SILT, Hard non plastic, semi moist, no odor; 10% clay. |
| 3 | | 0.0 | 13/78 | | | CL | Clay w/SAND - Pale brown (10YR 6/3) 70% Clay, Hard, non plastic dry; 25% SAND, F-C, ~~WG~~ WG, subAng grains, 5% SILT, NO ODOR |
| 4 | | 0.0 | 13/66 | | | | |
| 5 | 2.2/2.2 | 0.0 | 13/66 | SL-540-SA50-SB-5.0-6.05 | 12:10 | SP | SAND - U. Pale brown (10YR 7/3); 95% SAND F-M, PG, loose, dry, 5% silt, NO ODORS |
| 6 | | 0.0 | 13/66 | 9/3/13 | | ML | SILTSTONE - U Pale brown (10YR 7/3), HIGHLY WEATHERED, FISSILE DRY. NO ODOR |
| | | | | | | | REFUSAL AT 6.2 FT |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



**ABBREVIATIONS:**

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. GE

**Sample ID** SL-540-SASD-SB-5.0-6.0 **Date/Time** 9-3-13 @ 12:10

**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** B Kospyk

**Sampler** V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encore | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 - 16 oz JAR
2 - Encore

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** Pale Brown (10YR 7/3)

### 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL-541-SASD-SB-0.0-0.5 Date/Time 9-3-13/ 13:35

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 NA

Field Geologist R Knapp/V Cortes

Sampler V Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | X Sm9/3/13 |
| | Perchlorate Confirmation | EPA 6850/6860 | X |
| | pH | EPA 9045 (Soil) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | |
| | Herbicides | EPA 8151 | |
| | Pesticides | EPA 8081 | |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Energetics | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-SS Sleeves
1-4 oz Jar

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** DK 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** N/A

NA – Not Applicable

| Location ID: DG-541 | Subarea: SD | Date Started: 9/3/13 | Date Completed: 9/3/13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 3.6, 3.3, 2.5 |
| Company Name: CDM SMITH | | Drill Contractor/Driller: Strongarm/F. Rodriguez | |
| GPS collected? (Yes) or No | | Drill Method: DPT | Depth Drilled into Bedrock: 0 |
| Radiological Background: 13 / VB-94 | | Borehole diameter: 2 1/4 inch | |
| PID Background: 0.0 | | Depth to GW: NA | Sampling Method: MacroCore |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | | PG Review & Sign: Mike Hoffman #7735 | Geologist: B Kasprzyk |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 0 | | 0.0 | 13/99 | SL-541-SA-SD-SB-0.0 | 13:34 | ML | SILT - DK BROWN (10YR 3/3) - 90% SILT, SOFT, LOOSE, NON PLASTIC DRY, 10% Clay |
| 1 | | 0.0 | 13/56 | | | | |
| | | 0.0 | 13/66 | 0.5 | | CL | CLAY w/SAND - BROWN (10YR 5/3); 85% Clay Hard, non plastic, dry; 15% Sand, fine, pg. |
| 2 | 3.6 / 3.6 | 0.0 | 13/54 | | | | Gradational transition |
| 3 | | 0.0 | 13/66 | SL-541-SASD-SB-3.5 | 13:45 | SP | SAND w/SAND - V. pale brown (10YR 7/3) 95% SAND, Fine, pg, dry loose, 5% silt, NO odor. |
| 4 | | 0.0 | 13/72 | | | | Refusal at 3.6 FT |
| 5 | | | | | | | |
| 6 | | | | | | | |
| 7 | | | | | | | |

**CDM Smith** **BORING LOG AND SAMPLING RECORD** Page 1 of 1

ABBREVIATIONS:

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

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# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. GK

Sample ID SL-541-SA5D-SB-25-3.5 Date/Time 9/13/13 / 13:45

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

Start Depth 2.5

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 BRESNYAC

Sampler V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encore | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16 oz Jar
2- Encore

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** V Pale Brown 10 yr 7/3

**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** Nicole Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V.G-T

**Sample ID** SL-542-SA5D-SB-0.0-05 **Date/Time** 08-29-13/13:25

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

**Start Depth** 0.0

**End Depth** 0.5

**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** BKASPRZYK

**Sampler** V CORTES

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 – SS Sleeves
1 – 4oz JAR

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** 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** N/A

NA – Not Applicable

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DU-542 | SD | 08-29-13 | 08-29-13 |

| | | |
|---|---|---|
| Client: DOE — Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 5 FT |
| Company Name: CDM SMITH | Drill Contractor/Driller: STRONGARM | |
| GPS collected? (Yes) or No | Drill Method: DPT | Depth Drilled into Bedrock: 0 |
| Radiological Background: Y 14/AD=89 | Borehole diameter: 2.5 INCHES | |
| PID Background: 0.0 | Depth to GW: NA | Sampling Method: MACRO CORE |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mark Hoffman #7735 | Geologist: S KASPZYK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 14/64 | SL-542-SA5D-SB-0.0-0.5 | 1325 | CL | CLAY – BROWN (10YR 4/3); 70% CLAY, HARD, NON-PLASTIC DRY; 30% SILT, NO ODORS |
| 1 | 3.4/4.0 | 0.0 | 14/42 | | | | |
| 2 | | 0.0 | 14/48 | | | | |
| 3 | | 0.0 | 14/42 | | | | |
| 4 | | 0.0 | 14/60 | SL-542-SA5D-SB-4.0-5.0 | 1335 | SP | SAND – V. PALE BROWN (10YR 7/4); 95% SAND, FINE, PG, DRY LOOSE, 5% SILT, NO ODOR |
| 5 | 1.0/1.0 | 0.0 | 14/72 | | | | REFUSAL AT 5 FT |

CDM Smith

**BORING LOG AND SAMPLING RECORD**

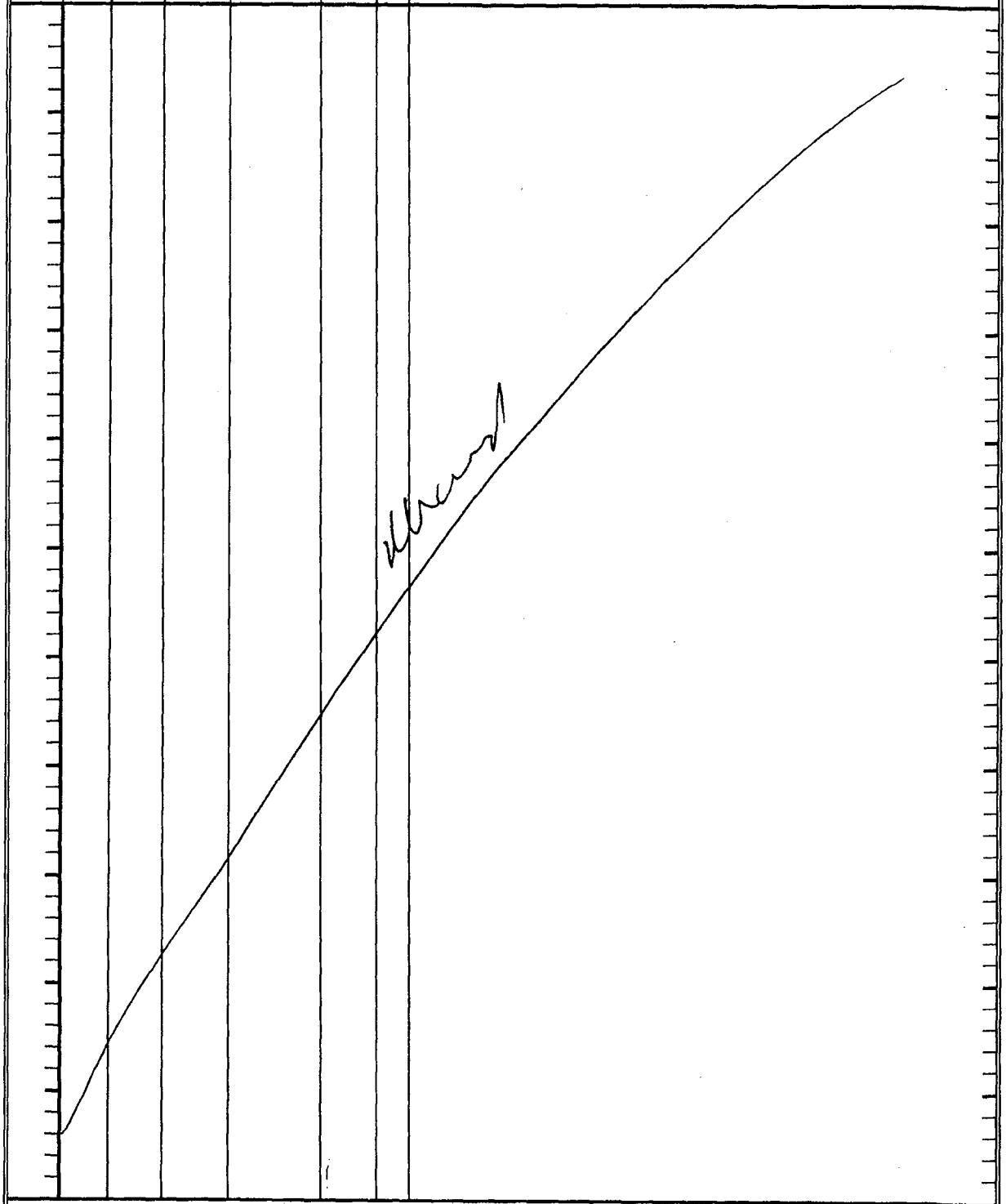


ABBREVIATIONS:

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|



CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** J. GT

**Sample ID** SL-542-SA5D-SB-4.0-5.0 **Date/Time** 08-29-13 / 13:35

**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** BKASPZYK

**Sampler** V CORTES

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16oz JARS
2 - ENCORES

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** Light 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** Mike Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL-543-SA5D-SB-0.0-0.5 Date/Time 08-29-13/ 12:00

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

Start Depth 0.0

End Depth 0.5

**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 B KASPRZYK

Sampler V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Energetics | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 - 5 g ~~SLEEVES~~ SLEEVES
(KH) 8-29-13
1 - 4 oz JAR

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) VC 8/29/13

**Color** ~~Brown 5/3~~ (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 #** 735

**Additional Comments** N/A

NA – Not Applicable

| Location ID: DG-543 | Subarea: SD | Date Started: 08-29-13 | Date Completed: 08-29-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 11.5, 7, 7 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: 1 FT |
| Radiological Background: 9213 YB274 | Borehole diameter: 2.5 INCHES | | |
| PID Background: 0.0 | Depth to GW: NA | | Sampling Method: Macro core |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No: Miller Hoffman #7735 | | Geologist: BKASPRZYK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 13/95 | SL-543 SA5D-SB-0.0 | 12:00 | | RK 8-29-13 |
| | | 0.0 | 13/60 | | | CL | CLAY ~~w/ SILT~~ – BROWN (10YR 5/3); 90% HARD, LOW PLASTIC DRY CLAY, 10% SILT, TRACE FINE PG, SAND; NO ODOR |
| 1 | | 0.0 | 13/60 | 0.5 | | | |
| 2 | 3.0/4.0 | 0.0 | 13/66 | | | | |
| 3 | | 0.0 | 13/78 | | 4:29-13 | | |
| 4 | | 0.0 | 13/72 | SL-543 SA5D-SB 4.0 | 12:10 12:30 | | RK |
| 5 | 4.0/4.0 | 0.0 | 13/60 | 5.0 | | | KH 8-29-13 |
| 6 | | 0.0 | 13/48 | | | SP | SAND – U. PALE BROWN (10YR 7/4); 100% SAND, FINE, PG, DRY. TRACE SILT, NO ODOR |
| 7 | | 0.0 | 13/54 | | | | |
| 8 | | 0.0 | 13/66 | | | | AS ABOVE |
| 9 | 3.5/3.5 | 0.0 | 13/48 | | | | |
| 10 | | 0.0 | 13/54 | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: DG-543 | Subarea: 5D | Date Started: 08-29-13 | Date Completed: 0829-13 |
|---|---|---|---|
| Project: SSFL | | Geologist: BKASPZYK | Total Depth: 11.5 FT |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials (RK) 9/4 |
|---|---|---|---|---|---|---|---|
| 10 | | 0.0 | 13/54 | | | SP | SAND ~~W/SILT~~ - v PALE BROWN (10YR 7/4) 95% SAND, FINE, PG, LOOSE, DRY; 5% SILT; NO ODOR |
| 11 | | 0.0 | 13/60 | | | | WEATHERED SANDSTONE |
| | | | | | | | REFUSAL AT 11.5 |
| 12 | | 0.0 | 13/66 | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortez

**Sample ID** SL-543-SA5D-SB-4.0-5.0 **Date/Time** 08-29-13/12:30

**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** NONE

**Field Geologist** B KASPAR

**Sampler** V Cortez

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16oz JARS
2-ENCORES

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** 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** _____ **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By

Sample ID SL-544-EA5D-SB-0.0-0.5 Date/Time 9/4/13 @ 9:40

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

Start Depth 0.0

End Depth 0.5

**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 K. KASPRZYK

Sampler V. CORTES

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Chemistry | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-SS Sleeves
1-4oz JAR

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** DK BROWN 10YR3/3

**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** N/A

NA – Not Applicable

| Location ID: DG-544 | Subarea: SD | Date Started: 9/4/13 | Date Completed: 9/4/13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 7.2, 7.3, 7.2, 1 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm / E. Rodriguez | | Depth Drilled into Bedrock: ⌀ |
| GPS collected? Yes or No | Drill Method: DPT | | |
| Radiological Background: X = 13 / YB = 91 | Borehole diameter: 2.25 INCH | | Sampling Method: MACRO CORE |
| PID Background: 0.0 | Depth to GW: -0- | | |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mike Hoffman #7735 | | Geologist: B KASPOK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 0 | | 0.0 | 13/98 | SL-544-SA5D-SB-0.0 | 9:40 | | CLAY – DARK BROWN (10YR3/3); 70% HARD, NON-PLASTIC, DRY, CLAY; 30% SILT; NO ODOR. |
| | | 0.0 | 13/78 | | | | |
| 1 | 3.0 / 4.0 | 0.0 | 13/60 | 0.5 | | CL | |
| 2 | | 0.0 | 13/42 | | | | |
| 3 | | 0.0 | 13/78 | | | | |
| 4 | | 0.0 | 13/84 | | | | |
| 5 | 5.2 / 3.3 | 0.0 | 13/72 | | | | |
| 6 | | 0.0 | 13/72 | SL-544-SA5D-SB 6.5-7.5 | 9:50 | | GRADATIONAL CONTACT — SAND – Brownish Yellow (10YR6/8); 100%, F, PG, DRY, NO, ODOR. |
| 7 | | 0.0 | 13/60 | | | SP | |
| 8 | | | | | | | REFUSAL AT 7.2 FT |
| 9 | | | | | | | |
| 10 | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By [signature]

Sample ID EL-544-SA5D-SB-6.5-7.5 Date/Time 9/4/13 @ 9:50

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

Start Depth 6.5

End Depth 7.5

**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 K Kaspzyk

Sampler U Cortes

**Analysis**

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16oz JAR
2-Encore

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

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortez

Sample ID SL-545-SA50-SB-00-0.5 Date/Time 9-3-13 @12:50

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

Start Depth 0.0

End Depth 0.5

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 B Kaspzyk

Sampler V Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | 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 | |

2-SSS leaves
1-4oz JAR

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** DK 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** Nicole Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

| Location ID: DG545 | Subarea: 5D | Date Started: 9/3/13 | Date Completed: 9-3-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 6.8, 7.0, 6.8 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongpoint/F Rodiguez | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: -0- |
| Radiological Background: γ=13/~~XB~~=82 | Borehole diameter: 2.25 inch | | |
| PID Background: | Depth to GW: NA | | Sampling Method: Macrocore |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mike Hoffman #7735 | | Geologist: BKASP 2YR |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 13/71 | SL545-SA5B-SB 0.0-0.5 | | ML | SILT - DK brown (10 yr 3/3) - 90% silt soft, loose, non plastic, dry; 10% Clay; No odor |
| 1 | 3.0/4.0 | 0.0 | 13/72 48 | | | | |
| | | | | | | CL | Clay - DK brown (10 yr 3/3); 80% Clay Hard, non-plastic, Dry, 20% silt, no odor |
| 2 | | 0.0 | 13/66 | | | | |
| 3 | | 0.0 | 13/78 | | | | |
| 4 | | 0.0 | 13/72 | | | | |
| 5 | 2.8/2.8 | 0.0 | 13/~~90~~ 78 | | | | |
| 6 | | 0.0 | 13/~~66~~ 90 | SL545-SA5D-SB-6.0-7D | 1300 | SP | SAND - U pale brown (10 yr 7/3); 95% Sand, F-M, pg, loose, dry no odor Trace of concrete @ 5.4 ft |
| | | | 13/66 | | | | |
| 7 | | | | | | | REFUSAL AT 7.0 FT |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortez

Sample ID SL-545-SA5D-SB-~~5.0-6.0~~ 6.0-7.0 VC 9/3/13 Date/Time 9-3-13 @13:00

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

Start Depth ~~5.0~~ 6.0 V.C.

End Depth ~~6.0~~ 7.0 V.C 9/3/13

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 B Kasprzyk

Sampler V Cortez

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16 oz Jar
2-Encore

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 (%)** Trace

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** Pale brown (10 yr 7/3)

**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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By N. Cortes

Sample ID SL546-SA5D-SB0.0-0.5 Date/Time 9/4/13 13:25

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 NA

Field Geologist BRADYK

Sampler V Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Chemistry | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | 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 | |

2 SS SLEEVES
1 4-OZ JAR

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** DK. YL. BR. (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** _____

N/A

NA – Not Applicable

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG-546 | 5D | 9-4-13 | 9/4/13 |

| | | |
|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | Total Depth: |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm/F. Rodriguez | 14.0, 13.8, 13.9 |
| GPS collected? (Yes) or No | Drill Method: DPT | Depth Drilled into Bedrock: |
| Radiological Background: 13/70 | Borehole diameter: 2.25 INCH | 0 |
| PID Background: 0.0 | Depth to GW: NA | Sampling Method: MACRO CORE |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: [illegible] #7735 | Geologist: B KASPRZAK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 13/94 | SC-546-SA5D-SB-0.0-0.5 | 13:25 | | |
| | | 0.0 | 13/54 | | | | |
| 1 | | 0.0 | 13/72 | | | CL | CLAY - DK YELLOWISH BROWN (10YR 4/4) 70% CLAY, HARD, NON-PLASTIC, DRY 30% SILT; NO ODOR. |
| | 3.0 | | | | | | |
| 2 | 4.0 | 0.0 | 13/54 78 | 9/4/13 | | | |
| 3 | | 0.0 | 13/54 | | | | |
| 4 | | 0.0 | 13/66 | SC-546-SA5D-SB-4.0-5.0 | 13:45 | CL | SAME AS ABOVE |
| 5 | | 0.0 | 13/66 | | | | |
| | 4.0 | | | | | | |
| 6 | 4.0 | 0.0 | 13/60 | | | | |
| 7 | | 0.0 | 13/78 | | | CL | AS ABOVE BUT LOW-PLASTIC AND SEMI MOIST. |
| 8 | | 0.0 | 13/66 | | | | |
| 9 | 4.0 | 0.0 | 13/72 | | | | |
| | 4.0 | | | | | CL | CLAY - PALE BROWN (10YR 6/3), 90% CLAY, FIRM, LOW PLASTIC, SEMI MOIST 10% SAND, F, NG ~~CONSOLIDATED~~ DENSE, NO ODOR |
| 10 | | 0.0 | 13/78 | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD** (NW) 9/4/13



| ABBREVIATIONS: | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: DG 546 | Subarea: SD | Date Started: 9/4/13 | Date Completed: 9/4/13 |
|---|---|---|---|
| Project: SSFL | | Geologist: [illegible] | Total Depth: 14.0 |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 11 | 00 | 0.0 | 13/92 | | | CL | CLAY – PALE BROWN (10YR 6/3) 90% CLAY, FIRM, LOW PLASTIC, SEMI-MOIST; 10% SAND, F, PG, DENSE; NO ODOR. |
| 12 | | 0.0 | 13/82 | | | | GRADUAL CONTACT |
| 13 | 2.0/2.0 | 0.0 | 13/90 | | | SM | SILTY SAND – PALE BROWN (10YR 6/3) 70% SAND, F, PG, SEMI MOIST, LOOSE, 30% SILT, SOFT, NON PLASTIC; NO ODOR |
| 14 | | 0.0 | 13/90 | | | | REFUSAL AT 14.0 FT |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V Cortes

**Sample ID** SL-546-SA5D-SB-4.0-5.0 **Date/Time** 9/4/13 13:45

**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** Raspuzzi C

**Sampler** V. Cortes

## Analysis

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

| | Parameters | Method | Analyte? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 16-oz JARS

2 ENCORES

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** DK 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SC-547-SA5D-SB-00-05 Date/Time 9/4/13 @ 12:00

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

Start Depth 0.0

End Depth 0.5

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 R Kasprzyk

Sampler V Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | 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 | |

2 SS SLEEVES
1 4-oz JAR

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 DK YELLOWISH BROWN (10 YR 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 N/A

NA – Not Applicable

| Location ID: DG-547 | Subarea: 5D | Date Started: 9-4-13 | Date Completed: 9-4-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 11.0 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm/F Rodriguez | | ~~8.0~~ 11.0/9.0/~~8.0~~/0.5 |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: 0.5 FT |
| Radiological Background: γ=13 / γB=78 | Borehole diameter: 2.25-inch | | |
| PID Background: 0.0 | Depth to GW: N/A | | Sampling Method: Macro core |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mike Hoffman #7735 | | Geologist: B. KASPZYK |

9/4/13 (RE)

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 13/80 | SL-547-SA5D-SB-0.0-0.5 | 12:00 | CL | CLAY - DK YELLOWISH BROWN (10YR 4/4) 70% CLAY, HARD, NON-PLASTIC, DRY. 30% SILT; NO ODORS |
| | | 0.0 | 13/84 | | | | |
| 1 | | 0.0 | 13/66 | | | | |
| 2 | 3.0/4.0 | 0.0 | 13/72 | | | | |
| 3 | | 0.0 | 13/84 | | | | |
| 4 | | 0.0 | 13/96 | SL-547-SA5D-SB-4.0-5.0 | 12:15 | | |
| 5 | | 0.0 | 13/66 | | | | |
| 6 | 4.0/4.0 | 0.0 | 13/48 | | | | |
| 7 | | 0.0 | 13/72 | | | | |
| 8 | | 0.0 | 13/66 | | | | GRADUAL TRANSITION |
| 9 | 3.0/4.0 | 0.0 | 13/84 | | | SP | SAND - BROWNISH YELLOW (10YR 6/8); 95% SAND, F, PG, DRY; 5% SILT; NO ODOR |
| | | 0.0 | 13/84 | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | φ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG-547 | 5D | 9/4/13 | 9/4/13 |
| **Project: SSFL** | | **Geologist:** R KASPZYK | **Total Depth:** 11 |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | SW | SAND – BROWNISH YELLOW (10YR 6/8); 95% SAND, F, MG, DRY; 5% SILT; NO ODOR |
| 11 | | 00 | 13/72 | | | ML | SILTSTONE – Brown Yellow (10YR 6/8) HIGHLY WEATHERED. |

CDM Smith

**BORING LOG AND SAMPLING RECORD**

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SC-547-SASD-SB-4.0-5.0 **Date/Time** 9/4/13 @ 12:15

**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** BLASIAK

**Sampler** V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Organics | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Inorganics | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2 16-oz JARS

2 ENCORES

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** DK Yellow 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By P. Hartman

Sample ID SL-548-SASD-SB-0005 Date/Time 08/26/13 / 13:00

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

Start Depth 0.0

End Depth 0.5

**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 B KASPZYK

Sampler U. CORTES

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Organics | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Biological | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

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** 7.5 YR 3/4

**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** N/A

NA – Not Applicable

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG-548 | SD | 08-26-2013 | 08-27-2013 |

| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | Total Depth: |
|---|---|---|
| Company Name: CDM SMITH | Drill Contractor/Driller: NA | 22.6 |
| GPS collected? (Yes) or No | Drill Method: HAND AUGER | Depth Drilled into Bedrock: |
| Radiological Background: 8-13 / AB = 96 | Borehole diameter: 2.5 INCH | 0 |
| PID Background: 0.0 | Depth to GW: NA | Sampling Method: SLIDE HAMMER |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PO Reviewer & No.: Mike Hoffman #7735 | Geologist: B. KASPRZYK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 0 | 1/1 | 0.0 | 13/87 | SL-548-SA5D-SB-0.0-0.5 | 13:00 | ML | SILT: DARK BROWN 7.5YR 3/4; 95% SILT, NON-PLASTIC, FIRM, DRY, 5% SAND, FINE pgraded, NO ODOR. |
| 1 | 1/1 | 0.0 | 13/60 | | | | SAME AS ABOVE BUT SOFT. |
| 2 | 1/1 | 0.0 | 13/96 | | | | |
| 3 | 1/1 | 00 | 13/66 | | | | |
| 4 | 1/1 | 0.0 | 13/66 | SL-548-SA5D-SB-4.0-5.0 | 14:35 | ML | SAME AS ABOVE - LOW PLASTIC, SOFT |
| 5 | 1/1 | 00 | 13/96 | | | | |
| 6 | 1/1 | 0.0 | 13/96 | | | ML | SAME AS ABOVE |
| 7 | 1/1 | 0.0 | 13/54 | | | ML | SILT; DK BROWN 7.5 YR 3/4; 100% LOW PLASTIC, MOIST, NO ODOR |
| 8 | 1/1 | 00 | 13/96 | | | | |
| 9 | 1/1 | 00 | 13/96 | | | ML | |
| 10 | | 0.0 | 13/60 | | | | SILT; DK BROWN 7.5YR 3/4; 90% SILT; LOW PLASTIC, SOFT, 10% SAND, FINE, pgraded MOIST NO ODOR |

CDM Smith

## BORING LOG AND SAMPLING RECORD



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: DG 548 | Subarea: SD | Date Started: 8-26-13 | Date Completed: 8-27-13 |
|---|---|---|---|
| Project: SSFL | | Geologist: B KASPOK | Total Depth: 22.6 |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 11 | 1/1 | 0.0 | 13/60 | | | ML | SILT; STRONG BROWN (7.5YR 5/6); SOFT LOW PLASTIC, MOIST, T. SAND, FN, A gravel NO ODOR |
| 12 | 1/1 | 0.0 | 13/72 | | | ML | SILT: STRONG BROWN (7.5YR 4/4); 100% SOFT, LOW PLASTIC, MOIST, T. SAND, FN PG NO ODOR. |
| 13 | 1/1 | 0.0 | 13/72 | | | ML | SAME AS ABOVE - NON-PLASTIC |
| 14 | 1/1 | 0.0 | 13/84 | | | ML | SAME AS ABOVE - |
| 15 | 1/1 | 0.0 | 13/72 | | | ML | SAME AS ABOVE |
| 16 | 1/1 | 0.0 | 13/90 | | | ML | SAME AS ABOVE |
| 17 | 1/1 | 0.0 | 13/66 | | | ML | SAME AS ABOVE |
| 18 | 1/1 | 0.0 | 13/84 | | | ML | SAME AS ABOVE |
| 19 | 1/1 | 0.0 | 13/66 | | | ML | SAME AS ABOVE |
| 20 | 1/1 | 0.0 | 13/84 | | | ML | SAME AS ABOVE W/ TRACE SAND, PG; F |
| 21 | 1/1 | 0.0 | 13/78 | | | ML | SAME AS ABOVE W/ 10% SAND, PG; F |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG 548 | 5D | 8-27-13 | 8-27-13 |
| Project: SSFL | | Geologist: | Total Depth: 22.6 |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 1/1 | | | | | ML | SILT W/ SAND - REDDISH YELLOW (7.5 YR 6/6); 85% SILT, SOFT, NON-PLASTIC, MOIST; 15% SAND, F, PP, LOOSE, NO ODOR. |
| 22 | | 0.0 | 13/60 | | | | REFUSAL @ 22.6 |
| 22.6 | 0.6/1.0 | 0.0 | 13/12 | | | ML | SAME AS ABOVE ↓ |

22

23

CDM Smith

BORING LOG AND SAMPLING RECORD

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: |
| Company Name: CDM SMITH | Drill Contractor/Driller: | | |
| GPS collected? Yes or No | Drill Method: | | Depth Drilled into Bedrock: |
| Radiological Background: | Borehole diameter: | | |
| PID Background: | Depth to GW: | | Sampling Method: |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: | | Geologist: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

KK 8-27-13

CDM Smith

# BORING LOG AND SAMPLING RECORD



**ABBREVIATIONS:**

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By P Hartman

Sample ID SL-548-GASD-SB-4.0-5.0 Date/Time 8/26/13 / 14:35

**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 B Kasprzak

Sampler V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Enfos | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

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** DK BROWN 7.5YR 3/4

**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** Walter Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By C. COX

Sample ID SL549-SA5D-SB-0.0-0.5 Date/Time 11/12/2013 1025

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

Start Depth 0.0

End Depth 0.5

**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 NA

Field Geologist C. COX

Sampler A. UIJAN

## Analysis

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

| Parameters | Method | Analyze? |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

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 (%) NA

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 (7YR 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 [signature] PG Registration # 7735

Additional Comments None

[signature] 11/12/13

NA – Not Applicable

| Location ID: DG-549 | Subarea: 5D | Date Started: 1020 TUES 11/12/13 | Date Completed: 11/12/13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 12.2' |
| Company Name: CDM SMITH | Drill Contractor/Driller: SAFS | | |
| GPS collected? (Yes) or No | Drill Method: DPT | | Depth Drilled into Bedrock: NA |
| Radiological Background: 12/89 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 | Depth to GW: NA | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mike Hodgson #7735 | | Geologist: C. Cox |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 3.6/4 | 0.0 | | SL-549-SASD-SB-0.0-0.5 | 1025 | | |
| 1 | | 0.0 | 12/48 | | | CL 11/12/13 ~~Clayey~~ ML 11/12/13 | Silt: Brown (7YR 5/3) 90% silt, pg, f-m, 5% clay low plasticity, m stiff, 5% weathered SS pieces throughout, dry, no odor |
| 2 | | 0.0 | 12/36 | | | | |
| 3 | | 0.0 | 12/60 | | | | |
| 4 | | 0.0 | 12/96 | SL-549-SASD-SB-4.0-5.0 | 1040 | | reddish brown (5YR 4/4) |
| 5 | | 0.0 | 10/54 | | | ML | Same as above ^ with ~~stiff~~ 11/12/13 slightly stiffer and moist at ~4.5' bgs no odor. |
| 6 | 4.0/4.0 | 0.0 | 10/48 | | | | |
| 7 | | 0.0 | 10/72 | | | | |
| 8 | | 0.0 | 10/48 | | | | |
| 9 | 3.8/4.0 | 0.0 | 10/54 | | | | |

**CDM Smith** **BORING LOG AND SAMPLING RECORD** Page 1 of 2 11/12/13

| ABBREVIATIONS: | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: DG-549 | Subarea: 5D | Date Started: 11/12/13 | Date Completed: 11/12/13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 12.2' |
| Company Name: CDM SMITH | Drill Contractor/Driller: SAFS | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: NA |
| Radiological Background: | Borehole diameter: 2.25" | | |
| PID Background: | Depth to GW: NA | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: | | Geologist: C. Cox |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 0 | | 0.0 | 10/54 | SL-549-SA5D-SB-11.0-12.0 | 1105 | | See above |
| 11 | | 0.0 | 10/60 | | | | |
| 12 | | 0.0 | 10/96 | | | | Refusal @ 12.2 top of Sandstone |

**CDM Smith** **BORING LOG AND SAMPLING RECORD** Page 2 of 2

ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By C. Cox

Sample ID SL-549-SA5058-4.0-5.0 Date/Time 11/12/2013 1040

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 NA

Field Geologist C. Cox

Sampler A. UJUJAM

## Analysis

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

| Parameters | Method | Analyze? |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | X |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

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 (%)** NA

**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** Reddish brown (5YR 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** None

8/12/13

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By C. COX

Sample ID SL-549-SA50-SB-11.0-12.0 Date/Time 11/12/2013 1105

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

Start Depth 11.0

End Depth 12.0

**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 NA

Field Geologist G Cox

Sampler A. UIUIAN

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Organics | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Organotin | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

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 (%)** NA
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** Reddish brown (5YR 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** None

11/12/13

NA = Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Gt

**Sample ID** SL-550-SASW-SB-0.0-0.5 **Date/Time** 9/6/13 @ 8:40

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

**Start Depth** 0.0

**End Depth** 0.5

**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** NA

**Field Geologist** B Kasprzyk

**Sampler** U Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | 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 | |

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

**Additional Comments** N/A

NA – Not Applicable

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG-550 | SD | 9/6/13 | 9/6/13 |

| | | |
|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | Total Depth: |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm/F. Rodriguez | 13/14.7/15.2 |
| GPS collected? Yes or No | Drill Method: DPT | Depth Drilled into Bedrock: .5 ft |
| Radiological Background: α=13/γβ=87 | Borehole diameter: 2.25 INCH | |
| PID Background: 0.0 | Depth to GW: NA | Sampling Method: MACRO CORE |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mike Hoffman #7735 | Geologist: B KASPOVIC |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (μR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 0 | | 0.0 | 13/81 | SL550-SA5D-SB-0.0-0.5 | 8:40 | ML | SILT - BROWN (10YR 4/3) - 60% SILT, SOFT, NON-PLASTIC, DRY, 40% CLAY NO ODOR. |
| | | 0.0 | 13/60 | | | | |
| 1 | 4.0/4.0 | 0.0 | 13/48 | | | | |
| 2 | | 0.0 | 13/54 | | | | |
| 3 | | 0.0 | 13/78 | | | | |
| 4 | | 0.0 | 13/78 | SL550-SA5D-SB-4.0-5.0 MS | 9:00 | ML | AS ABOVE W COLOR CHANGE TO YELLOWISH BROWN 10 YR 5/6 |
| 5 | | 0.0 | 13/66 | SL850-SA5D-SB-4.0-5.0 | 9:10 | | |
| 6 | 4.0/4.0 | 0.0 | 13/60 | | | | |
| 7 | | 0.0 | 13/72 | | | | |
| 8 | | 0.0 | 13/78 | | | | |
| 9 | 4.0/4.0 | | 66 | | | ML | SILT - LT YELLOWISH BROWN (10 YR 6/4); 80% SILT, FIRM, LOW PLASTIC, SEMI MOIST, 20% CLAY, NO ODOR, TRACE GRAVEL & LIGNITE FLAKES. |
| 10 | | | 84 | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG550 | 5D | 9/6/13 | 9/6/13 |
| **Project: SSFL** | | **Geologist:** BKAMPZYIC | **Total Depth:** 15' |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 4.0/4.0 | | | | | | SILT – LT YELLOWISH BROWN (10YR 6/4); 80% SILT, FIRM, LOW PLASTIC, SEMI MOIST; 20% CLAY; TRACE GRAVEL & LIGNITE FLAKES, NO ODOR |
| 11 | | 0.0 | 13/72 | | | | |
| 12 | | 0.0 | 13/90 | | | | SILT W/ SAND – MOTTLED GRAY (10YR 6/1) & STRONG BROWN (7.5 YR 5/8); 75% SILT SOFT LOW PLASTIC, SEMI MOIST, 25% SAND, F, PG, LOOSE; NO ODOR |
| 13 | 3.0/3.0 | 0.0 | 13/72 | | | | |
| 14 | | 0.0 | 13/78 | | | | |
| 15 | | 0.0 | 13/90 | | | | SILTSTONE – LT GRAY (7.5 YR 6/1) W/ IRON OXIDE STAINING, HIGHLY WEATHERED |
| | | | | | | | REFUSAL ON BEDROCK AT 15.0 FT |

CDM Smith

**BORING LOG AND SAMPLING RECORD**

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. G F

**Sample ID** SL-550-SASD-SB-4.0-5.0 MS **Date/Time** 9/6/13 @ 9:00

**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** NA

**Field Geologist** B Kasprzyk

**Sampler** V Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

6 – 16 oz JARS
6 – ENCORE

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** 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 D Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. C

**Sample ID** SL-850-SA5D-SB-4.0-5.0 **Date/Time** 9/6/13 @ 9:10

**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** SL-550-SA5D-SB-4.0-5.0 MS

**Field Geologist** BKASPZYIC

**Sampler** V Cortes

**Analysis**

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16oz Jars
2- Encores

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** 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL551-SA5D-SB-0.0-0.5 Date/Time 9/12/13 09:05

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 BKASZYK

Sampler VCortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Energetics | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| Propellants | 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 | |

2-SS Sleeves
1-4oz Jar

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** DK Brown 7.5 YR 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** Mike Hoffman **PG Registration #** 7735

**Additional Comments** _____

NA – Not Applicable

| Location ID: DG-551 | Subarea: 5D | Date Started: 9/12/13 | Date Completed: 9/12/13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 18.5, 19.7, 18.5 |
| Company Name: ~~CDM~~ SMITH | Drill Contractor/Driller: STRONGARM | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: 2.0 FT |
| Radiological Background: 12, AM=13 | Borehole diameter: 2.25 INCH | | |
| PID Background: 0.0 | Depth to GW: NA | | Sampling Method: MACRO CORE |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mike Hoffman #7735 | | Geologist: KASPRZYK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 0 | | 0.0 | 13/83 | SL-551-SA5D-SB-0.0-0.5 | 9:05 | CL | CLAY W/ SAND – DK BROWN (7.5YR 3/3) 75% CLAY, SOFT NON-PLASTIC, DRY, 25% SAND, F, PG; NO ODOR |
| 1 | | 0.0 | 13/84 | | | | |
| 2 | 3.5/4.0 | 0.0 | 13/86 | | | | ~~Clay w/Sand~~ |
| 3 | | 0.0 | 13/84 | | | CL | ~~SANDY CLAY~~ – STRONG BROWN (7.5YR 5/6) 75% CLAY SOFT NON PLASTIC, SEMI MOIST, 25% SAND, F, PG; NO ODOR |
| 4 | | 0.0 | 13/78 | SL-551-SA5D-SB-4.0-5.0 | 9:15 | | |
| 5 | | 0.0 | 13/72 | | | | |
| 6 | 4.0/4.0 | 0.0 | 13/84 | | | | |
| 7 | | 0.0 | 13/84 | | | | |
| 8 | | 0.0 | 13/90 | | | | |
| 9 | 4.0/4.0 | | 78 | SL-551-SA5D-SB-9.0-10.0 | 9:25 | | |
| 10 | | | 102 | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| 06551 | 5D | 9/12/13 | 9/12/13 |
| **Project:** SSFL | | **Geologist:** KASPOR | **Total Depth:** 18.5 |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | ~~clay w/ Sand~~ |
| 4 | 4.0/4.0 | 0.0 | 13/78 | | | CL | ~~SAND CLAY~~ - STRONG BROWN (7.5YR 5/6) 75% CLAY, SOFT, NON-PLASTIC SEMI MOIST; 25% SAND, F, PS; NO ODOR |
| 12 | | 0.0 | 13/84 | | | | |
| 13 | | 0.0 | 13/78 | | | | |
| 14 | 4.0/4.0 | 0.0 | 13/78 | SL-551-SAED-GB 14.0-15.0 | 9:35 | | |
| 15 | | 0.0 | 13/90 | | | ML | SILT - BROWNISH YELLOW (10YR 6/6) - 90% SILT, FIRM, NON PLASTIC, SEMI MOIST, 10% CLAY; NO ODOR. |
| 16 | | 0.0 | 13/90 | | | | GRADATIONAL ↓ CONTACT |
| 17 | 2.5/2.5 | 0.0 | 13/102 | | | | |
| 18 | | 0.0 | 13/84 | SL-551-SAED-GB-17.5-18.5 | 9:45 | WR | Siltstone - Brown Yellow (10YR 6/6), Hard, Highly Weathered & Broken Dry. |
| 19 | | | | | | | REFUSAL AT 18.5 FT ON BEDROCK |
| 20 | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortez

Sample ID SL-551-GASD-SB-4.0-5.0 Date/Time 9/12/13 @ 09:15

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 BKASZYK

Sampler V Cortez

Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encore | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 - 16 oz Jar
2 - Encore

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** Strong brown 7.5YR 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** Willie Hoffman **PG Registration #** 7785

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V Cortes

Sample ID 4-551-SA5D-SB-9.0-10.0 Date/Time 9/12/13 09:25

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 NA

Field Geologist B Kasprzyk

Sampler V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encore | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16 oz Jar
2- Encore

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** Strong brown (7.5YR 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. G

Sample ID SL-551-SASD-SB-14.0-15.0 Date/Time 9/12/13 09:35

Matrix (circle one): (Soil) Sediment Water

Start Depth 14.0

End Depth 15.0

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 B Kasprzyk

Sampler V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16 oz Jar
2 - Encore

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 6/6)

**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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL-551-SA5D-SB-17.5-18.5 Date/Time 9/12/13 09:45

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

Start Depth 17.5

End Depth 18.5

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 BKaspryk

Sampler V Cortes

Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16 oz Jar
2-Encore

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 6/6)

**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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By [signature]

Sample ID SL-552-SA5D-SB-0.0-0.5 Date/Time 9/6/13 13:10

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

Start Depth 0.0

End Depth 0.5

**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 BKASPZYK

Sampler V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 - SS Sleeves
1 - 4oz Jar

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** DK 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** Willie Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

| Location ID: DG552 | Subarea: 5D | Date Started: 9/6/13 | Date Completed: 9/6/13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 11.8/12.8 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Rodriguez/Stringer | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: 0.8 |
| Radiological Background: αs=13 VD=98 | Borehole diameter: 2.25 inch | | |
| PID Background: 0.0 | Depth to GW: N/A | | Sampling Method: MacroCore |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Nila Hoffman #7735 | | Geologist: BKASPCYK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 13/72 | SL552-SA5D-SB-0.0-0.5 | 13:10 | ML | SILT - DK YELLOW BROWN (10YR 5/6); 80% SILT, SOFT, NON-PLASTIC DRY, 20% CLAY, NO ODOR |
| 1 | 3.0/4.0 | 0.0 | 13/90 | | | | |
| 2 | | 0.0 | 13/102 | | | | AS ABOVE - SEMI MOIST |
| 3 | | 0.0 | 13/96 | | | | |
| 4 | | 0.0 | 13/96 | SL552-SA5D-SB-4.0-5.0 | 13:25 | | AS ABOVE |
| 5 | 4.0/4.0 | 0.0 | 13/90 | | | | |
| 6 | | | 13/84 | | | ML | SILT W/ SAND - YELLOWISH BROWN (10YR 5/6); 75% SILT, SOFT, NON PLASTIC SEMI MOIST, 25% SAND, F, PG, LOOSE |
| 7 | | | 13/78 | | | | |
| 8 | | | 13/80 | | | | |
| 9 | | | 13/72 | | | | |
| 10 | | | 96 | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



**ABBREVIATIONS:**

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | φ: diameter |

| Location ID: DG-552 | Subarea: SD | Date Started: 9/6/13 | Date Completed: 9/6/13 |
|---|---|---|---|
| Project: SSFL | | Geologist: B KALPAKIS | Total Depth: 11.8 FT/BGS |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials | |
|---|---|---|---|---|---|---|---|---|
| 11 | 4.0/4.0 | 0.0 | 13/84 | | | ML | SILT w/ SAND – YELLOWISH BROWN (10YR 5/6); 75% SILT, SOFT, NON-PLASTIC SEMI MOIST, 25% SAND, F, PG; NO ODOR | 11 |
| 12 | 0.8/0.8 | 0.0 | 13/90 | | | SP | ABRUPT CONTACT SAND – LT. GRAY (2.5YR 7/2), 100% SAND, F, PG, LOOSE, DRY, INTERBEDDED W/ WEATHERED SAND STONE NO ODOR | 12 |
| | | | | | | | | 13 |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V GK

**Sample ID** SL-552-SA5D-SB-4.0-5.0 **Date/Time** 09/06/13 @ 13:25

**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** NA

**Field Geologist** BKasprzyk

**Sampler** V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Explosives | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 16-oz JARS

2 ENCORES

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** Dk Yellow 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** [signature] **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL-553-SA5D-SB-0.0-0.5 MS Date/Time 9/12/13 7:30

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

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

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

Parent Sample ID NA

Field Geologist B Kaszyk

Sampler V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Energetics | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

6 - 5g sleeves
2 - 40z VOA

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 (%)** 10
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 7.5 YR 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** Mike Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

| Location ID: DG-553 | Subarea: 5D | Date Started: 9-12-13 | Date Completed: 9-12-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 5.4, 5.7, 5.1 |
| Company Name: CDM SMITH | Drill Contractor/Driller: STRONGARM | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: 1.7 FT |
| Radiological Background: τ=13 / γ=80 | Borehole diameter: 2.25 INCH | | |
| PID Background: 0.0 | Depth to GW: N/A | | Sampling Method: MACRO CORE |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: [signature] #7735 | | Geologist: KASPZYK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 13/100 | SL553-SA5D-SB-0.0-0.5MS | 7:30 | CL | CLAY - BROWN (7.5YR 4/3); 80% CLAY, SOFT, NONPLASTIC, DRY; 10% SILT, 10% GRAVEL, F, WG, SUBROUNDED TO SUBANGULAR MAX SIZE 3/4 INCH; NO ODORS. |
| | | 0.0 | 13/78 | | | | |
| 1 | | 0.0 | 13/102 | | | | |
| | 3.5/4.0 | | | SL853-SA5D-SB-0.0-0.5 | 7:35 | | AS ABOVE WITHOUT GRAVEL |
| 2 | | 0.0 | 13/86 | | | | |
| 3 | | 0.0 | 13/90 | | | | |
| | | | | | | ML | SILT - BROWN (7.5YR 4/3); SILT 100%, SOFT NON PLASTIC, SEMI MOIST, LOOSE NO ODOR |
| 4 | | 0.0 | 13/102 | | | | |
| | 1.7/1.7 | | | SL553-SA5D-SB 4.5-5.5 | 7:45 | ML | SILTSTONE - BROWN (7.5YR 4/3) 100% WEATHERED SILTSTONE, DRY |
| 5 | | 0.0 | 78 | | | | |
| | | 0.0 | 13/90 | | | | |
| 6 | | | | | | | REFUSAL AT 5.7 FT ON SILTSTONE |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



**ABBREVIATIONS:**

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | φ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL-853-SASD-SB-0.0-05 Date/Time 9/12/13 07:35

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one): ~~Drive~~ 9/12/13 (Slide Hammer) Hand Auger/Slide Hammer Trenching Sediment

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

Parent Sample ID SL-553-SASD-SB-0.0-0.5MS

Field Geologist BKASPZYK

Sampler V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Eurofins | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 - 55 SLEEVES

2 - 40Z JARS

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 (%)** 10
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 7.5YR 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** Mike Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL-553-SA5D-SB-4.5-5.5 Date/Time 9/12/13 7:45

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 B. Kasprzyk

Sampler V. Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Speciation | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2 16-oz Jars
2 Encores
1 4-oz Jar

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** Brown 7.5 YR 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** [signature] **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SB-SC-554-SA5D-0.0-0.5 **Date/Time** 9/5/13 @ 13:15

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

**Start Depth** 0.0

**End Depth** 0.5

**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** B Kasprzyk

**Sampler** V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Effluent | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 55 SLEEVES
1 4-oz JAR

NA – Not Applicable

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| TB-554 | SD | 9/5/13 | 9/5/13 |

| | | |
|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | Total Depth: |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm/F Rodriguez | 8.0/7.8/7.9 |
| GPS collected? Yes or No (LW) 9/6/13 | Drill Method: DPT | Depth Drilled into Bedrock: 0 |
| Radiological Background: 13 88 | Borehole diameter: 2.25 INCH | |
| PID Background: 0.0 | Depth to GW: NA | Sampling Method: Macro Core |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mull Ogram #7735 | Geologist: BLACKPYR |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 1 | | 0.0 | 13/91 | SL-554 SA5D SB-0.0 0.5 | 13:15 | ML | SILT - DK REDDISH BROWN (10YR 4/4) 80% SILT, FIRM, NON-PLASTIC, DRY; 20% Clay; NO ODORS. |
| | | 0.0 | 13/70 | | | | |
| | | 0.0 | 13/72 | | | | |
| 2 | 3.5/4.0 | 0.0 | 13/66 | | | | |
| 3 | | 0.0 | 13/78 | | | | |
| 4 | | 0.0 | 13/72 | SL-554 SA5D SB-4.0 | 13:30 | | ABRUPT CONTACT |
| 5 | | 0.0 | 13/60 | 5.0 | | ML | WEATHERED SILT STONE — Very PALE BROWN (10YR 7/4) DRY |
| 6 | 4.0/4.0 | 0.0 | 13/72 | | | | |
| 7 | | 0.0 | 13/66 | SL554 SA5D SB-7.0 | 13:40 | | |
| 8 | | 0.0 | 13/68 | 8.0 | | | REFUSAL AT 8.0 FT ON BEDROCK |
| 9 | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



| ABBREVIATIONS: | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SC-554-SA5D-SB-4.0-5.0 **Date/Time** 9/5/13 @ 13:30

**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** BKASPER

**Sampler** V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encore | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 16-oz JARS

2 ENCORES

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** DK 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL-SS4-SA5D-SB-7.0-8.0 Date/Time 9/5/13 @ 13:40

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

Start Depth 7.0

End Depth 8.0

**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 NA

Field Geologist BKosgrzyk

Sampler V. Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Energetics | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Organotin | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2 16-oz Jars

2 Encores

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

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. GE

**Sample ID** SL-555-SA5D-SB-0005 **Date/Time** 9-5-13 @ 8:55

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

**Start Depth** 0.0

**End Depth** 0.5

**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** RKaspzyk

**Sampler** V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Explosives | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | ~~X~~ RK 9/6/13 |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

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

**Additional Comments** N/A

NA – Not Applicable

| Location ID: DG-555 | Subarea: 5D | Date Started: 9/5/13 | Date Completed: 9/5/13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 11.3/11.4/11.4 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm/F Rodriguez | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: 0 |
| Radiological Background: 2x=13/YB=78 | Borehole diameter: 2 1/4 inch | | |
| PID Background: 00 | Depth to GW: NA | | Sampling Method: MACRO CORE |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No: [signature] #7735 | | Geologist: BKASPCYK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 13/81 | SL555-SA5D-SB-0.0-0.5 | 8:55 | ML | SILT — Brown (10YR 4/3) - 80% silt, SOFT, NON-PLASTIC, DRY; 20% CLAY, NO ODOR |
| | | 0.0 | 13/68 | | | | |
| 1 | | 0.0 | 13/78 | | | | |
| 2 | 3.5/4.0 | 0.0 | 13/66 | | | | |
| 3 | | 0.0 | 13/66 | | | CL | CLAY — STRONG BROWN (7.5YR 5/8); 60% CLAY, HARD, NON-PLASTIC, DRY, 40% SILT; NO ODOR |
| 4 | | 0.0 | 13/90 | SL-555-SA5D-SB-4.0-5.0 | 9:15 | CL | SAME AS ABOVE W/ TRACE FN SAND |
| 5 | | 0.0 | 13/84 | | | | AS ABOVE GRADING TO MOTTLED STRONG BROWN (7.5YR 5/8) W/ BROWN (10YR 5/3) AND YELLOW 10YR 7/8. NO SAND |
| 6 | 4.0/4.0 | 0.0 | 13/72 | | | | |
| 7 | | 0.0 | 13/66 | | | | |
| 8 | | 0.0 | 13/90 | | | | |
| 9 | 3.4/3.4 | 0.0 | 13/72 | | | | |
| 10 | | | /96 | | | CL | CLAY W/ SAND - MOTTLED BROWN (10YR 5/3 AND ~~YEL~~ STRONG BROWN, 80% CLAY (CONTINUE ON PG 2) |

CDM Smith

MD 9-5-13

**BORING LOG AND SAMPLING RECORD**



**ABBREVIATIONS:**

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: DG-555 | Subarea: 5D | Date Started: 9-5-13 | Date Completed: 9-5-13 |
|---|---|---|---|
| Project: SSFL | | Geologist: RKASPRZYK | Total Depth: 11.4 |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 11 | 3.4 / 3.4 | 0.0 | 13/96 | SL-555-SA5D-SB-10.5-11.5 | 9:30 | CL | CLAY W/ SAND - MOTTLED ~~STRONG~~ BROWN (10YR 5/6) STRONG BROWN (7.5YR 5/8); 80% CLAY SOFT, NON PLASTIC, DRY; 20% SAND, F, MG DENSE; NO-ODOR. (BS 9/5/13) 11 |
| | | | | | | | REFUSAL @ 11.4 FT |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** VIGT

**Sample ID** SL-555-SA5D-SB-4.0-5.0 **Date/Time** 9/5/13 @ 9:15

**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** BKasparc

**Sampler** V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Soil/Sediment | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

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 (%)** ⊘

**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** Strong brown 7.5YR 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** [signature] **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. G

**Sample ID** SL-555-SA5D-SB-10.5-11.5 **Date/Time** 9/5/13 @ 9:30

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

**Start Depth** 10.5

**End Depth** 11.5

**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** [illegible]

**Sampler** U Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

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** Brown 10 YR 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By _____

Sample ID SC-556-SASD-SB-0.0-0.5 Date/Time 9/5/13 10:20

Matrix (circle one): Soil Sediment Water

Start Depth 0.0

End Depth 0.5

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 BOB KASPZYK

Sampler VIDAL CORTES

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | ~~X~~ VC. 9/5/13 |
| | Perchlorate Confirmation | EPA 6850/6860 | X |
| | pH | EPA 9045 (Soil) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | X |
| | Herbicides | EPA 8151 | X |
| | Pesticides | EPA 8081 | |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Energetics | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Tributyltin | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2 SS SLEEVES

2 4-oz JARS

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** BR (7.5 YR 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** N/A

NA – Not Applicable

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG556 | SP | 9/5/13 | 9/5/13 |

| | | |
|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | Total Depth: 12.0 / 11.8 |
| Company Name: CDM SMITH | Drill Contractor/Driller: STRATAPROBE/Kostas/RR2 | |
| GPS collected? (Yes) or No | Drill Method: DPT | Depth Drilled into Bedrock: 0.25 FT |
| Radiological Background: Y=13 / YB=81 | Borehole diameter: 2.25 INCH | |
| PID Background: 0.0 | Depth to GW: NA | Sampling Method: MACRO CORE |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & KO: Julie Hoffman #7735 | Geologist: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 0 | | 0.0 | 13/85 | SL-556-SA5D-SB-0.0- | 10:20 | ML | SILT - BROWN (7.5YR 4/4) 100% SILT, SOFT, NON-PLASTIC, LOOSE DRY TRACE FN gravel, NO ODOR |
| | | 0.0 | 13/72 | | | | |
| 1 | | 0.0 | 13/60 | 0.5 | | | |
| | 3.0 / 4.0 | | | | | | |
| 2 | | 0.0 | 13/70 | | | | |
| 3 | | 0.0 | 13/84 | | | | |
| 4 | | 0.0 | 13/66 | SL-556-SA5D-SB-4.0- | 12:20 | | |
| 5 | | 0.0 | 13/66 | 5.0 | | | |
| | 4.0 / 4.0 | | | | | | |
| 6 | | 0.0 | 13/78 | | | | |
| 7 | | 0.0 | 13/96 | | | | |
| 8 | | 0.0 | 13/64 | | | | ABRUPT CONTACT |
| | | | | | | SM | SILTY SAND DK Yellow Brown (10YR 4/6); 70 % SAND, F, PG, LOOSE, DRY; 30% SILT, NO ODOR |
| 9 | 4.0 / 4.0 | 0.0 | 13/90 | | | | |
| 10 | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DB-556 | SD | 9/5/13 | 9/5/13 |
| **Project: SSFL** | | **Geologist:** K KASPOK | **Total Depth:** 11.4 |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cm) | Sample Name | Sample Time | USCS | Description of Materials | |
|---|---|---|---|---|---|---|---|---|
| 11 | | 0.0 | 13/90 | ~~SL-556-SA5D-SB-11.0-12.0~~ | (12) 1240 | ~~SM~~ | SILTY SAND – DK YELLOW BROWN (10YR 6/4) 70% SAND, F, PG, LOOSE, DRY, | 12 |
| 12 | | 0.0 | 13/90 | | | ML | SILTSTONE – Brownish Yellow | 12 |
| | | | | | | | REFUSAL AT 12.1 FT ON ROCK | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL556-SA5D-SB-4.0-5.0 Date/Time 9-5-13 / 12:20

**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 B Kasprzyk

Sampler V Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Energetics | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16 oz JARS
2-ENCORE
1-4 oz JAR

# 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** Brown (7.5YR 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** _____

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortez

Sample ID SL-556-SA50-SB-11.0-12.0 Date/Time 9/5/13 12:40

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

Start Depth 11.0

End Depth 12.0

**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 BRADRAC

Sampler V Cortez

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Energetics | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16 oz JAR
2 - ENCORE
1 - 40z JAR

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** Dk 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 #** 2235

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SL-557-SA5D-SB-0.0-0.5 **Date/Time** 9-24-13 / 0935

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

**Start Depth** 0.0

**End Depth** 0.5

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

**Analysis**

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Excess | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2 SS Sleeves & 1 4 oz jar

# 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 (%)** None
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 7.5YR 4/2

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

**Additional Comments** NA

NA – Not Applicable

| Location ID: DG-557 | Subarea: 5D | Date Started: 9-24-13 | Date Completed: 9-24-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1st NA = 1.1 2nd NA = 1.6 |
| Company Name: CDM SMITH | Drill Contractor/Driller: NA | | |
| GPS collected? (Yes) or No | Drill Method: Hand Auger | | Depth Drilled into Bedrock: NA |
| Radiological Background: $\gamma$ = 13 $\alpha\beta$ = 90 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 | Depth to GW: NA | | Sampling Method: Slide Hammer |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & Non: Mila [illegible] #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/0.5 | 0.0 / 0.0 | 18 97 / 12 90 | SL-557 SA5D-SB 0.0-0.5 | 0935 | SP-SM | SAND w/SILT, brown (7.5YR 4/2) f grn w/ few ang-med grn, subrounded, quartz, dry, some ang silty sand mod poorly consolidated material, 90% SD 10% SILT, few amount org (roots) — 0.5 |
| 1 | HA | 0.0 | 13 96 | | | SM | |
| | | 0.0 | 13 84 | | | GW-GM | SILTY SAND w/GRAVEL, lt yel brn (10YR 6/4) mottled w/ brown (10YR 5/3) f grn w/ few to some med grn & tr ang coarse, mod poorly ~~sorted~~ graded quartz and sd stn, Gravel is f-c sized (becoming coarser w/depth) subangular to angular, sd stn mod well- to well cemented, 50% SD, 15% SILT, 35% GRAVEL (increasing gravel & decreasing silt w/depth), dry — 1.0 |
| 2 | | | | | | | GRAVEL w/SILT & SAND, A.A. except 60% GRAVEL, 30% SD, 10% SILT, dry — 1.6 |
| | | | | | | | Refusal @ 1.6' bls |

**CDM Smith** **BORING LOG AND SAMPLING RECORD** Page 1 of 1

| ABBREVIATIONS: | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. GF

**Sample ID** SL-558-SA5D-SB-0.0-0.5 **Date/Time** 9-24-13 / 0830

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

**Start Depth** 0.0

**End Depth** 0.5

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

**Analysis**

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

| Parameter | Method | Analyze |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

2 SS Sleeves & 1 4oz jar

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 (%)** None
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 (7.5YR 4/2)

**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** _____ **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

| Location ID: DG-558 | Subarea: 5D | Date Started: 9-24-13 | Date Completed: 9-24-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1st HA=5.0 2nd HA=4.8 |
| Company Name: CDM SMITH | Drill Contractor/Driller: NA | | |
| GPS collected? Yes or No | Drill Method: Hand Auger | | Depth Drilled into Bedrock: NA |
| Radiological Background: γ=11 αβ=98 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 | Depth to GW: NA | | Sampling Method: Slide Hammer |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mike Hoffman #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/0.5 | 0.0<br>0.0 | 11/68<br>11/78 | SL-558 SA5D-SB 0.0-0.5 | 0830 | SM | SILTY SAND brown (7.5YR 4/2), f grn w/ few amt med & tr amt coarse grn, mod poorly ~~sorted~~ graded SM101S13 subrounded to subangular, quartz, dry, few to some poorly consolidated silty sand material, 70% SD, 30% SILT, few to some amt org (roots), tr amt gravel - sdsth f sized subangular to angular |
| 1 | HA | 0.0 | 11/30 | | | | |
| 2 | | 0.0 | 11/66 | | | SM | SILTY SAND, grayish brown (10YR 5/2) mottled w/ v pale (10YR 7/4), A, A except only tr amt org (roots) & no gravel — 2.0' |
| 3 | | 0.0 | 11/72 | | | SM | SILTY SAND, lt gray (10YR 7/2) mottled w/ pale brown (10YR 6/3) f grn w/ few med grn & tr coarse grn, poorly ~~sorted~~ graded SM101S13 quartz & some sdstn dry 60% SD 40% SILT, tr amt gravel; few amt mod poorly consolidated silty sand material increasing in amt @ refusal — 3.0' |
| 4 | | 0.0 | 11/84 | SL-558 SA5D-SB 4.0-5.0 | 0845 | | |
| 5 | | 0.0 | 11/66 | | | | — 5.0' |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



**ABBREVIATIONS:**

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | φ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. G 7

**Sample ID** SL-558-SA5D-SB-4.0-5.0 **Date/Time** 9-24-13 / 0845

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

**Analysis**

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

| Parameter | Method | Analyte |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | X |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

2 SS Sleeves, 1 4oz jar + 2 Encores

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 (%)** None
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** lt gray (10YR 7/2)

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

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID 56559-SA5D-SB-0.0-05 Date/Time 9/5/13 @ 07:40

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

Start Depth 0.0

End Depth 0.5

**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 Rob Kasprak

Sampler V. Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Explosives | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Specialty | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2-SS SLEEVES
1-4oz JAR

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

**Additional Comments** N/A

NA – Not Applicable

| Location ID: DG-559 | Subarea: 5D | Date Started: 9/5/13 | Date Completed: 9/5/13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 6.2/6.8/6.9 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm/F. Rodriguez | | Depth Drilled into Bedrock: 0 |
| GPS collected? Yes or No | Drill Method: DPT | | |
| Radiological Background: γ=13/ αβ=106 | Borehole diameter: 2.25 INCH | | |
| PID Background: 0.0 | Depth to GW: NA | | Sampling Method: MACRO CORE |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Nikki Hoffman #7735 | | Geologist: B KASPZYK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (μR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 1 | | 0.0 | 13/83 | SL-559-SA5D-SB-0.0-0.5 | 7:40 | ML | SILT - BROWN (10YR 4/3); 80% SILT, SOFT NON-PLASTIC, DRY; 20% CLAY, NO ODOR. |
| 2 | 4.0/4.0 | 0.0 | 13/84 | | | | |
| 3 | | 0.0 | 13/66 | | | CL | CLAY - BROWNISH YELLOW (10YR 6/6); 80% CLAY, FIRM, NON PLASTIC, DRY; 20% SAND, F, PG, DENSE, NO ODOR. |
| 4 | | 0.0 | 13/66 | | | | |
| 5 | 2.9/2.9 | 0.0 | 13/90 | | | SC | CLAY SAND - BROWNISH YELLOW (10YR 6/6) 70% SAND, F, PG, LOOSE DRY; 30% CLAY FIRM, NON-PLASTIC; W/ FRAGMENTS OF WEATHERED LIMESTONE (RENTS W/ HCL) NO ODOR |
| 6 | | 0.0 | 13/86 | SL-559-SA5D-SB-6.0-7.0 | 7:55 | | |
| 7 | | 0.0 | | | | | REFUSAL @ 6.9 FT |
| 8 | | | | | | | |
| 9 | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



| ABBREVIATIONS: | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

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# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SS559-SA5D-SB-6.0-7.0 **Date/Time** 9/5/13 @ 7:55

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

**Start Depth** 6.0

**End Depth** 7.0

**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 Kasprzyk

**Sampler** V. Cortes

**Analysis**

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encore | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Special | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2 - 1602 JARS
2 - Encores

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** Brown 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** Mike Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By P. Hortness

Sample ID SL-560-SA50-SB-0.0-0.5 Date/Time 11/12/2013 0835

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

Start Depth 0.0

End Depth 0.5

**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 C. Cox

Sampler A. VIJIAN

## Analysis

| Parameter | Method | Analyze |
|---|---|---|
| Metals | EPA 6010 | X |
| | EPA 6020 | X |
| | EPA 7471 (Soil) | X |
| | EPA 7470 (Water) | |
| Fluoride | EPA 300.0/9056 | |
| SVOCs | EPA 8270 | X |
| TIC | EPA 8270 | |
| PAHs | EPA 8270 SIM | X |
| 1,4 Dioxane | EPA 8270 SIM | |
| Dioxins | EPA 1613 | X |
| PCBs/PCTs | EPA 8082 | X |
| Perchlorate | EPA 314.0/331 | |
| Perchlorate Confirmation | EPA 6850/6860 | |
| pH | EPA 9045 (Soil) | X |
| | EPA 9040 (Water) | |
| Hexavalent Chromium | EPA 7196/7199 | X |
| Herbicides | EPA 8151 | X |
| Pesticides | EPA 8081 | ~~X~~ PH 11/12/13 |

| Parameter | Method | Analyze |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | ~~X~~ PH 11/12/13 |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

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 (%)** NA
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** olive brown (2.5Y 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** Miles Hoffman **PG Registration #** 7735

**Additional Comments** None

10/4/13

NA – Not Applicable

| Location ID: DG-560 | Subarea: 5D | Date Started: 11/12/13 TUES 0826 | Date Completed: 11/12/2013 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 8.2' |
| Company Name: CDM SMITH | Drill Contractor/Driller: SAFS | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: NA |
| Radiological Background: 14/76 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 | Depth to GW: NA | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No: [signature] | | Geologist: C. Cox |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 14/96 | SL-560-SA5D-SB-0.0-0.5 | 0835 | | SANDY CLAY ~~lean clay with sand~~ CC 11/15/13 olive brown (2.5Y 4/4); |
| | 3/4 | 0.0 | 14/72 | | | | |
| 1 | | 0.0 | 12/54 | | | CL ~~MC~~ CC 11/12/13 | ~~70%~~ CC 11/12/13 70% ~~silt~~ CC 11/12/13 clay ~~pg~~ Non plastic CC 11/15/13 30% ~~silt~~ sand CC 11/15/13 ~~pg~~ CC 11/15/13, f, moist, no odor. to dry |
| 2 | | 0.0 | 12/90 | | | | |
| 3 | | 0.0 | 12/78 | | | | |
| 4 | | 0.0 | 12/72 | SL-560-SA5D-SB-4.0-5.0 | 0905 | | silt with sand: pale brown (2.5Y 7/4); 80% silt, ~~pg~~ low plasticity CC 11/15/13, Fm20 sand, pg. f, dry, no odor. |
| 5 | | 0.0 | 12/66 | SL-560-SA5D-SB-4.0-5.0MS | | ML | |
| 6 | | 0.0 | 12/84 | | | | |
| 7 | | 0.0 | 12/48 | | | | |
| 8 | | 0.0 | 12/84 | SL-560-SA5D-SB-7.0-8.0 | 0935 | | Refusal at sandstone at 8.2', 7.8' |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



**ABBREVIATIONS:**

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By [signature] AM 11/12/13

Sample ID SL-560-SA5D-SB-4.0-5.0MS Date/Time ~~11/12/13~~ 11/12/2013 0920

**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

Field Geologist C. Cox

Sampler A. Uiuiam

## Analysis

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

| Parameters | Method | Analyze? |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | X |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

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 (%)** NA

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** Pale brown (2.5Y 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** None

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By P. Hartman

Sample ID SL-~~560~~ 860 AM 11/12/13 - SA5D - SB 4.0 - 5.0 Date/Time 11/12/2013 0905

**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 (circled) FB RB

Parent Sample ID SL-S60-SA5D-SB-4.0-5.0MS

Field Geologist C. Cox

Sampler A. Vivian

## Analysis

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

| Parameters | Method | Analyze? |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | X |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

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 (%) NA

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 Pale brown (2.5Y 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 [signature] PG Registration # 7735

Additional Comments None

[signature] 11/12/13

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By P. Hartman

Sample ID SL-560-SA50-SB 7.0-8.0 Date/Time 11/12/2013 0935

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

Start Depth 7.0

End Depth 8.0

**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 C. COX

Sampler A. UICIAM

## Analysis

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

| Parameters | Method | Analyze? |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | X |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

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 (%)** NA

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** pale brown (2.5 Y 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** NONE

11/12/13

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortez

**Sample ID** SL-561-SA5D-SB-0.0-0.5 **Date/Time** 10-8-13 / 0840

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

**Start Depth** 0.0

**End Depth** 0.5

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

**Analysis**

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

| Parameters | Method | Analyze? |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

2 SS Sleeves + 1 4oz jar

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 (%)** None

**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** brn (7.5YR 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** Niles Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

Santa Susana Field Laboratory/94489

| | | | |
|---|---|---|---|
| Location ID: DG-561 | Subarea: 5D | Date Started: 10-8-13 | Date Completed: Did not have Refusal @ 10.0' 10-8-13 |
| Client: DOE | Project Name/#: ~~GSFL-66959-033376.4903.009.933.02231 SSPH3~~ SM 10-113 | | Total Depth: 1st NA = 10.0 ~~2nd NA =~~ |
| Company Name: CDM SMITH | Drill Contractor/Driller: NA | | |
| GPS collected? (Yes) or No | Drill Method: Hand auger | | Depth Drilled into Bedrock: NA |
| Radiological Background: γ = 12 αβ = 87 | Borehole diameter: 3" ø | | |
| PID Background: 0.0 ppm | Depth to GW: NA | | Sampling Method: Slide hammer |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mulli Hoffman #735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (μR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 0 | 0.5/0.5 | 0.0<br>0.0 | 12/80<br>12/67 | SL-561 SA5D-SB 0.0-0.5 | 0840 | SM | SILTY SAND, brn (7.5YR 5/4) f grn w/tr ant med grn, poorly ~~graded~~ subrounded, quart, dry, 80% SD 20% SILT few to some organics (roots), sli to mod well compacted, sli crumbly — 0.5 |
| 1 | HA | 0.0 | 12/78 | | | SM | |
| 2 | | 0.0 | 12/78 | | | | SILTY SAND, dk reddish gray (5YR 4/2) mottled w/reddish brown (5YR 5/4) and lt reddish brown (5YR 6/3) f w/some med grn, poorly to mod poorly ~~graded~~ sorted, subrounded to subangular, quartz & sdstn, dry 85% SD, 15% SILT, tr ant organics (roots) sli compacted, mod crumbly |
| 3 | | 0.0 | 12/72 | | | SP-SM | — 2.8 |
| 4 | 1.0/1.0 | 0.0 | 12/66 | SL-561 SA5D-SB 4.0-5.0 | 0900 | SC | SAND w/SILT brn (7.5YR 4/3) mottled w/(7.5YR 5/3) f-m grn w/tr coarse grn, mod poorly ~~graded~~ sorted sr to sa, quartz & sdstn, dry, few to some amounts of $CaCO_3$ deposits (white (7.5YR 8/1)) on grains suspected to be in root molds & burrows, 90% SD 10% SILT tr ant gravel, f-sized, sa to angular, sdstn — 4.0 |
| 5 | | 0.0 | 12/96 | | | | CLAYEY SAND, strong brn (7.5YR 4/6) mottled w/brn (7.5YR 4/4), low plasticity, mod crumble, firm to sli soft SD is f-m grn A.A.; clay is mostly disseminated in sd but also present as sandy clay blebs, some to common $CaCO_3$ deposits on grns suspected to be deposits in root molds & burrows 60% SD 30% CLAY 10% SILT, becoming less clayey w/depth |
| 6 | HA | 0.0 | 12/84 | | | | |
| 7 | | 0.0 | 12/96 | | | SM | SILTY SAND brn (7.5YR 5/4) mottled w/lt brn (7.5YR 6/4) and strong brn (7.5YR 5/6) f grn w/tr ant med and coarse grn, quartz & tr ant sdstn, dry, mod poorly ~~graded~~ sorted sr to sa; ~~grns~~ SILT is disseminated in sd, tr ant clay A.A.; 75% SD, 20% SILT, 5% clay mod well compacted, few to some $CaCO_3$ deposits on grains — 6.5 |
| 8 | | 0.0 | 12/84 | | | | |
| 9 | 1.0/1.0 | 0.0 | 12/96 | SL-561 SA5D-SB 9.0-10.0 | 1010 | SM | SILTY SAND, strong brown (7.5YR 5/6) mottled w/(7.5YR 5/8) and brn (7.5YR 4/4), A.A w/tr to few amount of yel red (5YR 4/6) blebs of sandy clay; sli more compacted than 6.5-8.2 unit above. |
| 10 | | 0.0 | 12/84 | | | | Ceased advancing HA @ 10' bls - No Refusal |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.G

Sample ID SL-561-SA5D-SB-4.0-5.0 Date/Time 10-8-13/0900

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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

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

| Parameters | Method | Analyze? |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | X |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

2 SS Sleeves, 2 Encores, 1 4oz jar

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 (%)** None

**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** strong brn (7.5YR 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** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By √, GK

Sample ID SL-561-SA5D-SB-9.0-10.0 Date/Time 10-8-13/1010

**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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

**Analysis**

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

| Parameter | Method | Analyze? |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | X |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

2 SS Sleeves, 2 Encores, 1 4oz jar

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 (%)** None

**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** strong brown (7.5YR 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** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V.G.E

**Sample ID** SL-562-SA5D-SB-0.0-0.5 **Date/Time** 9-25-13 / 1335

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

**Start Depth** 0.0

**End Depth** 0.5

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

**Analysis**

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Explosives | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Tributyltin | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2 SS Sleeves & 1 4oz jar

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 (%)** None
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 (7.5YR 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** Mike Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

| Location ID: DG-562 | Subarea: 5D | Date Started: 9-25-13 | Date Completed: 9-25-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1st HA = 13.1<br>2nd HA = 13.1 |
| Company Name: CDM SMITH | Drill Contractor/Driller: NA | | |
| GPS collected? Yes or No | Drill Method: Hand auger | | Depth Drilled into Bedrock: NA |
| Radiological Background: $\gamma$=12 $\alpha\beta$=75 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 ppm | Depth to GW: NA | | Sampling Method: Slide Hammer |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mike Hoffman #735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/.05 | 0.0<br>0.0 | 12/105<br>12/78 | SL-562 SA5D-SB 0.0-0.5 | 1335 | SM | SILTY SAND, brown (7.5YR 4/3) f-m gnd w/ tr amt coarse gnd, mod well sorted, subrounded to subangular, quartz & siltstone, dry, 70% SD, 25% SILT, 5% GRAVEL GRAVEL is siltstone, mod poorly cemented, f-m sized few to some org. (roots) |
| 1 | HA | 0.0 | 12/78 | | | | |
| 2 | | 0.0 | 12/90 | | | SC | CLAYEY SAND, reddish brn (5YR 4/3) mottled w/ (5YR 5/4) f gnd w/ Few amt med gnd, mod poorly graded, subrounded quartz, dry 60% SD 30% CLAY 10% SILT, mod well to well compacted, hard, low plasticity, Friable, Few amt org (roots) decreasing in amount w/ depth — 2.0 |
| 3 | | 0.0 | 12/72 | | | | |
| 4 | 1.0/1.0 | 0.0 | 12/60 | SL-562 SA5D-SB 4.0-5.0 | 1350 | | |
| 5 | | 0.0 | 12/78 | | | CL | SANDY CLAY, reddish brn (5YR 4/4) mottled w/ brn (10YR 5/4), low plasticity, hard, Friable, dry, well compacted, few to some amt of calcium carbonate inclusions & bedding planes? SD is disseminated in — 5.0 |
| 6 | HA | 0.0 | 12/78 | | | CL | clay, 50% CLAY, 30% SD, 20% SILT — 6.0<br>SANDY CLAY, brn (7.5YR 4/4) mottled w/ strong brn (7.5YR 5/6) low plasticity, firm to hard, friable, laminated, dry to sl moist 65% CLAY 30% SD, 5% SILT |
| 7 | | 0.0 | 12/72 | | | | |
| 8 | | 0.0 | 12/60 | | | | |
| 9 | | 0.0 | 12/84 | | | CL | SANDY CLAY, strong brown (7.5YR 5/6) mottled w/ (7.5YR 5/8), A.A except 60% CLAY 30% SD 10% SILT and no laminations observed — 8.5 |
| 10 | | 0.0 | 12/60 | | | SC | CLAYEY SAND, yel brn (10YR 5/8) mottled w/ dk yel brn (10YR 4/6) f gnd, few amt med gnd, mod poorly graded, subrounded quartz, dry to sl moist. 60% SD 30% CLAY, 10% SILT — 9.5 |

**CDM Smith** **BORING LOG AND SAMPLING RECORD** Page 1 of 2

ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

78e11

| Location ID: DG-562 | Subarea: 5D | Date Started: 9-25-13 | Date Completed: 9-25-13 |
|---|---|---|---|
| Project: SSFL | | Geologist: David Rojas | Total Depth: 13.1 |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | HA | | | | | | SEE LITHOLOGY ON PG 1 |
| 11 | | 0.0 | 12/78 | | | CLAYEY SC | SAND WITH ~~CLAY~~ SILT, lt yel brn (10YR 6/4) mottled w/ yel brn (10YR 5/4) f-m grn w/ Tr to Few ant coarse grained, well sorted, clay is disseminated in sd dry ~~10~~ 65% SD, 20% CLAY, ~~5~~ 15 silt — 11 |
| 12 | | 0.0 | 12/66 | | | | |
| | | | | | | SM | SILTY SAND lt yel brn (10YR 6/4) mottled, w/ v pale brn (10YR 7/4) f grn w/ Few to some med-coarse grained, quartz & silty sandstone, mod poorly sorted, subrounded, dry, Tr amount gravel, f sized mod well to well cemented sdstone, 80% SD 20% SILT — 12.5 |
| 13 | | 0.0 | 12/72 | | | | — 13.1 |

Refusal @ 13.1' bls

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V.G.K

**Sample ID** SL-562-SA5D-SB-4.0-5.0 **Date/Time** 9-25-13/1350

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Explosives | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Specialty | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2 SS Sleeves, 2 Sleeves, 1 4oz jar

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 (%)** None
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** reddish brown (5YR 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** Mike Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cost

**Sample ID** SL-563 - SA5D-SB-0.0-0.5 **Date/Time** 9-25-13 / 12:15

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

**Start Depth** 0.0

**End Depth** 0.5

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

**Analysis**

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| VOCs | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Tissue | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2 SS Sleeves # / 4oz jar

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 (%)** NONE
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 yellow 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** NA

NA – Not Applicable

| Location ID: DG-563 | Subarea: 5D | Date Started: 9-25-13 | Date Completed: 9-25-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1st HA = 9.5, 2nd NA = 9.5 |
| Company Name: CDM SMITH | Drill Contractor/Driller: NA | | |
| GPS collected? (Yes) or No | Drill Method: Handauger | | Depth Drilled into Bedrock: NA |
| Radiological Background: $\bar{x}$ = 10 $\sigma$ = 83 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 | Depth to GW: NA | | Sampling Method: Slide Hammer |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & Sign: Mike Hoffman #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 0 | 0.5/0.5 | 0.0<br>0.0 | 10/75<br>10/54 | SL-563 SA5D-SB 0.0-0.5 | 1215 | SM | SILTY SAND, lt yel brn (10YR 6/4) mottled w/ brown (10YR 5/3) f grn with few ant med grn, subrounded to subangular quartz, dry, few to some org. (rootlets) 80% SD, 15% SILT 5% GRAVEL, Gravel is sdstn F-c sized, sa. decreasing w/ depth, sr to sa |
| 1 | | 0.0 | 10/60 | | | | 1.0 |
| 2 | HA | 0.0 | 10/78 | | | SM | SILTY SAND, v pale brn (10YR 7/4) mottled w/ pale brn (10YR 6/3), AA except 75% SD 25% SILT & tr gravel A.A except mostly f-m sized, mod well to well cemented |
| 3 | | 0.0 | 10/60 | | | | 3.0 |
| 4 | 1.0/1.0 | 0.0 | 10/66 | SL-563 SA5D-SB 4.0-5.0 MS SL-563 SA5D-SB 4.0-5.0 | 1245<br>1300 | SM | SILTY SAND, lt gray (10YR 7/2) mottled w/ lt brn gray (10YR 6/2), f grn, few ant med grn & coarse grn, mod well poorly sorted, subrounded quartz & sdstn, dry 70% SD, 30% SILT, tr gravel A.A. except sa to angular, Siltstone, mod poorly to poorly cemented, lt gray (10YR 7/1) to white (10YR 8/1) |
| 5 | | 0.0 | 12/48 | | | SM | SILTY SAND w/ GRAVEL, A.A. except 60% SD 25% SILT 15% GRAVEL Gravel is predominantly f-sized, sa to angular, siltstone, mod poorly to poorly cemented 4.4 |
| 6 | HA | 0.0 | 12/78 | | | SP SM | SILTY SAND w/ GRAVEL, A.A except pale brn (10YR 6/3) mottled w/ lt gray (10YR 7/2); 55% SD, 25% SILT 20% GRAVEL, GRAVEL is siltstone AA except grayish brown (10YR 5/2) mottled w/ lt gray (10YR 7/1), & f-c grn 6.0 |
| 7 | | 0.0 | 12/96 | | | | |
| 8 | | | 12/78 | | | | |
| 9 | | | 12/60 | | | SM | SILTY SAND w/ GRAVEL brown (10YR 5/3) mottled w/ lt yel brn (10YR 6/4) & yel brn (10YR 5/6) f-m grn w/ few to some coarse gravel, mod well sorted, subrounded to subangular quartz, siltstone, & sdstn, dry 60% SD 25% SILT 15% GRAVEL GRAVEL is mostly sdstn, sa, mod well to well cemented, some siltstone A.A. 8.4 |
| | | | 12/84 | | | | 9.5 Refusal @ 9.5 |

**CDM Smith** **BORING LOG AND SAMPLING RECORD** Page 1 of 1

| ABBREVIATIONS: | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Gt

Sample ID SL-563-SA5D-SB-4.0-5.0MS Date/Time 9-25-13 / 1245

**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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Explosives | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

6 SS Sleeves, 6 Encores, 1 9oz jar

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 w/ GRAVEL |
| | | | | 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 (%)** None

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** lt gray (10YR 7/2)

**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** Nikki Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. G L.

Sample ID SL-863-SA5D-SB-4.0-5.0 Date/Time 9-25-13 / 1300

**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 SL-563-SA5D-SB-4.0-5.0MS

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Enviros | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Frontier | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2 SS Sleeves, 2 Encores, 1 4oz jar

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 w/ GRAVEL |
| | | | | 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 (%)** None
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** lt gray (10YR 7/2)

**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** Nicole Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SL-564-SA5D-SB-0.0-0.5 **Date/Time** 10-1-13/1250

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

**Start Depth** 0.0

**End Depth** 0.5

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

**Analysis**

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

| Parameter | Method | Analysis |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

2 SS Sleeves + 1 Hoz jar

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 w/ SAND |
| | | | | 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 (%)** NONE
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** yel brn (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** _____ **PG Registration #** 7735

**Additional Comments** Sdstn gravel is suspected to be weathered material

NA – Not Applicable

| Location ID: DG-564 | Subarea: 5D | Date Started: 10-1-13 | Date Completed: 10-1-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1st DPT = 9.6 2nd DPT = 9.4 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: NA |
| Radiological Background: γ = 11 αβ = 68 | Borehole diameter: 2.25" | | |
| PID Background: 0.0ppm | Depth to GW: NA | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No: [signature] #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/0.5 | 0.0<br>0.0 | 11/87<br>11/60 | SL-564 SA5D-SB 0.0-0.5 | 1250 | GM | SILTY GRAVEL w/ SAND yel brn (10YR 5/4) mottled w/ (10YR 5/6) f-m grn, mod poorly graded ~~sorted~~ ~~subrounded~~ angular to subangular, ~~quartz~~ sdstn, mod well to well cemented, dry, SD is F-C grn, subrounded to subangular quartz & sdstn, 60% GRAVEL 20% SILT 20% SD |
| 1 | 2.8/3.5 | 0.0 | 11/48 | | | | GRADATIONAL CONTACT |
| 2 | | 0.0 | 11/54 | | | ~~SP~~ ~~SM~~ SM | SILTY SAND w/ ~~sorted~~ GRAVEL lt yel brn (10YR 6/4) mottled w/ grayish brn (10YR 5/2) and dk grayish brn (10YR 4/2) f-c grn, mod poorly graded ~~sorted~~ ~~smoothly~~ subrounded to subangular quartz & sdstn, dry; 50% SD 30% GRAVEL 20% SILT GRAVEL is mod well cemented |
| 3 | | 0.0 | 11/66 | | | | |
| | | | | | | | Abrupt Contact |
| 4 | | 0.0 | 11/48 | SL-564 SA5D-SB 4.0-5.0 | 1300 | SM | SILTY SAND w/ GRAVEL dk grayish brown (10YR 4/2) mottled w/ yel brn 10YR (5/6) 60% SD, 25% GRAVEL 15% SILT f-m grn w/ Few ant coarse grn, subangular to angular, quartz & sdstn, dry; GRAVEL is subangular to angular f-m sized sdstn, mod well cemented becoming less well cemented w/ depth |
| 5 | 3.2/4.0 | 0.0 | 11/60 | | | | GRADATIONAL CONTACT |
| 6 | | 0.0 | 11/60 | | | SM | SILTY SAND w/ GRAVEL A.A except yel brn (10YR 5/4) w/ Zones of $CaCO_3$ deposits @ 6.2' & 6.8' bls, sdstn is less well cemented (mod poorly cemented) & predominantly F grn 55% SD 25% SILT 20% GRAVEL |
| 7 | | 0.0 | 11/72 | | | | |
| 8 | | 0.0 | 11/72 | | | SM | SILTY SAND w/ GRAVEL lt yel brn (10YR 6/4) mottled w/ yel brn (10YR 5/6) & strong brown (7.5YR 5/6) 60% SD 25% SILT 15% GRAVEL, F grn mod well sorted, quartz & sdstn, GRAVEL is F ~~gr~~ sized, mod poorly cemented, silty sdstn |
| 9 | | 0.0<br>0.0 | 11/72<br>11/90 | | | SM | SILTY SAND, lt olive brn (2.5Y 5/3) mottled w/ olive brn (2.5Y 4/3) 65% SD, 25% SILT 10% GRAVEL, compacted, F grn, well sorted, quartz |
| | | | | | | | Refusal @ 9.6' bls |

1.7

3.8

5.5

7.4

9.0

**CDM Smith** **BORING LOG AND SAMPLING RECORD** Page 1 of 1

**ABBREVIATIONS:**

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

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# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** J. Catz

**Sample ID** SL-564-SA5D-SB-4.0-5.0 **Date/Time** 10-1-13 1300

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

**Analysis**

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

| Parameter | Method | Analysis |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | X |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

2 16oz jars, 2 Encores, 1 4oz jar

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 w/ GRAVEL |
| | | | | 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 (%) NONE

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** dk grayish (10YR 4/2)

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

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SL-565-SA5D-SB-0.0-0.5MS **Date/Time** 9-24-13/0740

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

**Start Depth** 0.0

**End Depth** 0.5

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

**Analysis**

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

| Parameter | Method | Analyze? |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

6 SS Sleeves & 1 9oz jar

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 w/SAND |
| | | 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 (%)** None
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** v pale brown (10YR 7/3)

**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** Nikki Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

| Location ID: DG-565 | Subarea: 5D | Date Started: 9-24-13 | Date Completed: 9-24-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1st HA = 1.3' 2nd HA = 1.7' |
| Company Name: CDM SMITH | Drill Contractor/Driller: NA | | |
| GPS collected? (Yes) or No | Drill Method: Hand Auger | | Depth Drilled into Bedrock: NA |
| Radiological Background: γ = 10 αβ = 73 | Borehole diameter: 2.25 | | |
| PID Background: 0.9ppm | Depth to GW: NA | | Sampling Method: Side Hammer |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Nikki Hoffman #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/0.5 | 0.0 | 10/69 | SL-565 SA5D-SB p.0-0.5 | 0740 | GP | GRAVEL w/SAND v pale brn (10YR 7/3) mottled w/ pale brn (10YR 6/3) and brown (10YR 5/3) f sized w/some to few med sized, silty sdstn, mod poorly cemented, subangular to angular, SD is f-m gr, subrounded to subangular, mod poorly sorted quartz and sdstn, dry ~65% GRAVEL, 30% SD, 5% SILT — 0.5' |
| 1 | HA | 0.0 | 10/60 | SL-565 SA5D-SB 0.0-0.5 | 0750 | SM | |
| 2 | | | | | | | SILTY SAND w/ GRAVEL, same colors as above, A.A. f-m gr A.A. GRAVEL is A.A; 50% SD, 30% SILT, 20% GRAVEL dry — 1.7' |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

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# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SL-865-SA5D-SB-0.0-0.5 **Date/Time** 9-24-13/0750

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

**Start Depth** 0.0

**End Depth** 0.5

**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** SL-565-SA5D-SB-0.0-0.5MS

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

**Analysis**

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

| Parameter | Method | Analyze |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

2 SS Sleeves + 1 4oz jar

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 w/SAND |
| | | 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 (%)** None
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** V pale brown (10YR 7/3)

**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** Nicole Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. GK

**Sample ID** SL-566-SA5D-SB-0.0-0.5 **Date/Time** 9-24-13/1230

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

**Start Depth** 0.0

**End Depth** 0.5

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Soil | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 SS Sleeves & 1 4oz jar

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 (%)** None
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 (7.5YR 4/2)

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

**Additional Comments** NA

NA – Not Applicable

| Location ID: DG-566 | Subarea: 5D | Date Started: 9-24-13 | Date Completed: 9-24-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 1st HA= 5.0 2nd HA= 3.5 |
| Company Name: CDM SMITH | Drill Contractor/Driller: NA | | |
| GPS collected? Yes or No | Drill Method: Handauger | | Depth Drilled into Bedrock: NA |
| Radiological Background: $\gamma$= 13 $\alpha\beta$= 86 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 | Depth to GW: NA | | Sampling Method: Slide Hammer |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: [signature] #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/0.5 | 0.0<br>0.0 | 13/80<br>13/78 | SL-566<br>SA50-SB<br>0.0-0.5 | 1230 | SP<br>SM | SAND w/silt, brown (7.5YR 4/2) mottled w/ lt brn (7.5YR 6/3) f grained w/ few to some med grn, subrounded to subangular mod poorly ~~sorted~~ graded SM101513 quartz, dry, some mod poorly to poorly ~~[illegible]~~ compacted silty sand material; 90% SD 10% SILT, Few amount organics (roots) |
| 1 | HA | 0.0 | 13/84 | | | | |
| 2 | | 0.0 | 13 66 | | | SM | SILTY SAND, brown (7.5YR 5/4) mottled w/ lt brn (7.5YR 6/4) f reddish yel (7.5YR 6/6) f-m grn subrounded to subangular, mod poorly ~~sorted~~ graded SM101513 to some few amt mod poorly to poorly compacted clayey silty sand material, 75% SD 20% silt, tr to few org (roots) 5% CLAY 1.4 2.5 |
| 3 | | 0.0 | 13 60 | | | SC | CLAYEY ~~SILTY~~ SAND, yel brn (10YR 5/4) mottled w/ brn yel (10YR 6/6) f grn, mod poorly ~~sorted~~ graded SM101513 subrounded, quartz, dry some mod well to well compacted ~~[illegible]~~ clayey silty ~~clay~~ sand material 55% SD 30% CLAY 15% SILT, dry, The compacted material becomes more common & more compacted and slightly lithified w/ depth dk yel brn (10YR 4/4) |
| 4 | 1.0/1.0 | 0.0 | 13/54 | | | | |
| 5 | | 0.0 | 13/78 | | | | Refusal @ 5.0' |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



**ABBREVIATIONS:**

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

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# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. SE

Sample ID SL-566-SA5D-SB-4.0-5.0 Date/Time 9-24-13/1315

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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Organics | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Tissue | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

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 ~~Silty~~ SM10 SC3 |
| 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 (%)** None
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** yel 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** Mike Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL-567-SA5D-SB-0.0-0.5 Date/Time 10-7-13/ 0950

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

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

| Parameters | Method | Analyze? |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

2 SS Sleeves & 1 4oz jar

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 (%)** None
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** yel brn (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** Mike Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

| Location ID: DG-567 | Subarea: 5D | Date Started: 10-7-13 | Date Completed: 10-7-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 1st DPT = 4.5' 2nd DPT = 3.7 3rd DPT = 3.7 |
| Company Name: CDM SMITH | Drill Contractor/Driller: NA | | |
| GPS collected? Yes or No | Drill Method: Handauger | | Depth Drilled into Bedrock: NA |
| Radiological Background: γ = 12 αβ = 85 | Borehole diameter: 3" | | |
| PID Background: 0.0 ppm | Depth to GW: NA | | Sampling Method: Slide hammer |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: [signature] #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/0.5 | 0.0<br>0.0 | 12/60<br>12/78 | SL-567 SA5D-SB 0.0-0.5 | 0950 | SM | SILTY SAND, yel brn (10YR 5/4), f grn, poorly ~~sorted~~ graded subrounded, quartz, mod well to well compacted, dry tr to few amt organics (roots) 70% SD, 30% SILT SM101413 |
| 1 | HA | 0.0 | 12/66 | | | | |
| 2 | | 0.0 | 12/102 | | | SM | SILTY SAND, brn (10YR 4/3) mottled w/ dk brn (10YR 3/3) and lt yel brn (10YR 6/4) f grn w/ tr amt med & coarse grn, sr, quartz, dry, 80% SD 20% SILT tr amt org (roots), mod well compacted 1.8 |
| 3 | | 0.0 | 12/72 | | | SM | SILTY SAND, strong brn (7.5YR 5/6) mottled w/ brn (7.5YR 4/4), f grn, sr, poorly ~~sorted~~ graded quartz, dry, sli compacted to loose, 70% SD 30% SILT 2.6 |
| 4 | 1.0/1.0 | 0.0<br>0.0 | 12/72<br>12/72 | SL-567 SA5D-SB 3.5-4.5 | 1020 | SM | SILTY SAND, dk yel brn (10YR 4/4) mottled w/ yel brn 10YR 5/6, f-m grn w/ tr to few amt coarse grn, sr to sa, quartz & sdstn; dry 80% SD, 15% SILT 5% GRAVEL; Gravel is sdstn, mod well to well cemented, sa to angular, becoming more common w/ depth, sdstn is lt gray (10YR 7/2) 4.0 |
| 5 | | | | | | | 4.5 |

Refusal @ 4.5'

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | φ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**

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# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Lafaro

**Sample ID** SL-567-SA5D-SB-3.5-4.5 **Date/Time** 10-7-13 / 1020

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

**Start Depth** 3.5

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

**Analysis**

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

| Parameter | Method | Analyze? |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | X |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

2 SS SLEEVES
2 ENCORES
1 4-oz JAR

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 (%)** None *
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** dk yel 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** [signature] **PG Registration #** 7735

**Additional Comments** * 5% GRAVEL is suspected to be weathered sandstone bedrock

ARR

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. GK

Sample ID SL-568-SA5D-SB-0.0-0.5 Date/Time 9-23-13/ 0730

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

Start Depth 0.0

End Depth 0.5

**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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

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

| Parameters | Method | Analyze? |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

2 SS SLEEVES
1 4-OZ JAR

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 w/GRAVEL |
| | | | | 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 (%)** 25%

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

Asphalt Metal Plastic

(Concrete) Wood Glass

~~Igneous/Metamorphic~~ (Sdstn Gravel) N/A

Other _____

**Is Staining Present** Yes (No)

**Color** grayish brown (10YR 5/2)

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

**Additional Comments** N/A

NA – Not Applicable

| Location ID: DG-568 | Subarea: 5D | Date Started: 9-23-13 | Date Completed: 9-23-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1st HA = 3.5, 2nd HA = 3.4 |
| Company Name: CDM SMITH | Drill Contractor/Driller: NA | | |
| GPS collected? (Yes) or No | Drill Method: Handauger | | Depth Drilled into Bedrock: NA |
| Radiological Background: γ = 12 αβ = 89 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 ppm | Depth to GW: NA | | Sampling Method: Handauger/Slidehammer |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Miller Hoffman #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (μR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/0.5 | 0.0<br>0.0 | 12/80<br>12/60 | SL-568 SA5D-SB 0.0-0.5 | 0730 | SW | SAND w/GRAVEL, grayish brn (2.5YR 5/2) mottled w/ dk gry brn (10YR 4/2), f-mgrn w/ some coarse grn, subrounded to subangular, gritty, dry, Gravel is predominantly sdstn but also some concrete rubble, f-c sized, subangular to angular; 70% SD & 25% GRAVEL tr to few amts organics (roots & twigs) decreasing w/ depth |
| 1 | HA | 0.0 | 12/54 | | | | 5% SILT |
| 2 | | 0.0 | 12/66 | | | | Gravel becomes mostly f sized w/ depth and less common (but remains >15%) — 2.0 |
| | | | | SL-568 SA5D-SB 2.5-3.5 MS | 0800 | SM | SAND, YellBrn (10YR 6/4), fgrn w/ few-some med grn & tr coarse grn, subrounded to subangular, quartz and Sdstone, dry, 60% SD, 30% SILT, 10% GRAVEL |
| 3 | | 0.0 | 12/66 | SL-568 SA5D-SB 2.5-3.5 | 0810 | | GRAVEL is predominantly sdstn, f sized w/ tr med & coarse sized sa, tr amt concrete gravel. — 3.5 |
| | | | | | | | Refusal @ 3.5' bls |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortez

**Sample ID** SL-568-SA5D-SB-2.5-3.5 MS **Date/Time** 9-23-13 / 0800

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

**Start Depth** 2.5

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

**Analysis**

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

| Parameters | Method | Analyze? |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | X |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

6 SS Sleeves, 6 Encores, 1 9oz jar

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 (%)** 10

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

Asphalt Metal Plastic

(Concrete) Wood Glass

~~Igneous/Metamorphic~~ Sdstn Gravel N/A

Other _____

**Is Staining Present** Yes (No)

**Color** Ltyel brn (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** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SL-868-SA5D-SB-2.5-3.5 **Date/Time** 9-23-13/0810

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

**Start Depth** 2.5

**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** SL-568-SA5D-SB-2.5-3.5 MS

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

## Analysis

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

| Parameter | Method | Analyze? |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | X |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

2 SS Sleeves, 2 Encores, 1 4oz jar

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 (%)** 10
3. **Fill Description (circle all that apply)**

| | | |
|---|---|---|
| Asphalt | Metal | Plastic |
| (Concrete) | Wood | Glass |
| ~~Igneous/Metamorphic~~ | (Sdstn Gravel) | N/A |
| Other _____ | | |

**Is Staining Present** Yes (No)

**Color** lt yel brn (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** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V.C.

**Sample ID** SL-569-SA5D-SB-0.0-0.5 **Date/Time** 9-25-13 / 10:00

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

**Start Depth** 0.0

**End Depth** 0.5

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

**Analysis**

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Metals | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | |
| | Herbicides | EPA 8151 | X V.C. |
| | Pesticides | EPA 8081 | X 9/25/13 |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Explosives | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2 SS Sleeves, 1 4-oz JAR

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 (%)** NONE

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** Olive brown (2.5Y 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** [signature] **PG Registration #** 7735

**Additional Comments** GRAVEL is suspected to be native material

NA – Not Applicable

| Location ID: DG-569 | Subarea: 5D | Date Started: 9-25-13 | Date Completed: 9-25-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 1st HA=2.1 2nd HA=2.3 |
| Company Name: CDM SMITH | Drill Contractor/Driller: NA | | |
| GPS collected? (Yes) or No | Drill Method: Hand auger | | Depth Drilled into Bedrock: NA |
| Radiological Background: γ=13 αβ=86 | Borehole diameter: 2.25' | | |
| PID Background: 0.0 ppm | Depth to GW: NA | | Sampling Method: Slide Hammer |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No: Mike Jeffron #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/0.5 | 0.0 0.0 | 13/100 13/60 | SL-569 SA5D-SB 0.0-0.5 | 1000 | SP-SM | SAND w/ SILT & GRAVEL, lt olive brn (2.5Y5/3) mottled w/ lt yel brn (2.5Y6/4), f-m grained, mod poorly ~~sorted~~ graded, subrounded quartz, dry, 75% SD, 15% GRAVEL 10% SILT GRAVEL is F-m sized sdstn, subangular to angular, well cemented SM101S13 — 0.5 |
| 1 | HA | 0.0 | 13/60 | | | SM | SILTY SAND w/ GRAVEL, yel brn (10YR5/4) mottled w/ brn (10YR4/3) f grn w/ few ant med grn, poorly ~~sorted~~ graded quartz, dry, 70% SD, 20% SILT, 10% GRAVEL becoming siltier w/ depth → 60% → 30% GRAVEL is AA except few coarse-sized SM101S13 |
| 2 | | 0.0 | 13/74 | | | | — 2.3 |

Refusal @ 2.3' bls

CDM Smith

**BORING LOG AND SAMPLING RECORD**



**ABBREVIATIONS:**

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**

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# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortez

**Sample ID** SL-570-SA5D-SB-0.0-0.5 **Date/Time** 10-1-13 / 1010

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

**Start Depth** 0.0

**End Depth** 0.5

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

**Analysis**

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

| Parameter | Method | Analysis |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

2 SS Sleeves & 1 4oz jar

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 + GRAVEL |
| | | | | SP-SC | Poorly graded SAND with clay |
| | | SAND WITH ≥ 15% FINES | | SM | Silty SAND + GRAVEL |
| | | | | 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 (%)** 25

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

| | | |
|---|---|---|
| Asphalt | Metal | Plastic |
| Concrete | Wood | Glass |
| (Igneous/Metamorphic Gravel) ~5% | | N/A |
| Other Sdstn Gravel ~20% | | |

**Is Staining Present** Yes (No)

**Color** lt yel 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** _____ **PG Registration #** 7735

**Additional Comments** Sdstn gravel is suspected to be weathered local material

NA – Not Applicable

| Location ID: DG-570 | Subarea: 5D | Date Started: 10-1-13 | Date Completed: 10-1-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 1st DPT = 8.4 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm | | 2nd DPT = 8.2 |
| GPS collected? (Yes) or No | Drill Method: DPT | | Depth Drilled into Bedrock: 3rd DPT = 8.7 |
| Radiological Background: γ = 11 αβ = 67 | Borehole diameter: 2.25" | | NA |
| PID Background: 0.0 ppm | Depth to GW: NA | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Reviewed & No: [illegible] #7755 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/0.5 | 0.0<br>0.0 | 11/65<br>11/66 | SL-570 SA5D-SB 0.0-0.5 | 1010 | SM | ~~SAND & SILT & GRAVEL~~ Silty sand w/ gravel<br>lt yel brn (10YR 6/4), F-m gnd w/ few c gnd, mod poorly ~~graded~~ cemented, subangular to angular, quartz & sdstn, dry. GRAVEL is F-med sized, subangular to angular, sdstn & ignesous; 60% SD 25% GRAVEL 15% SILT, dry, SDSTN gravel is well cemented * in top 0.5' |
| 1 | 2.5/3.5 | 0.0 | 11/48 | | | | Silty sand w/ gravel |
| 2 | | 0.0 | 11/114 | | 1013 | SM | ~~SAND & SILT & GRAVEL~~, yel brn (10YR 5/4) mottled w/ dk yel brn (10YR 4/4) and strong brown (7.5YR 4/6), F.A except GRAVEL is sdstn & subrounded to subangular w/ few sub angular becoming more angular w/ depth sdstn gravel is becoming less well cemented & sli friable w/ depth, 55% SD 30% GRAVEL, 15% SILT Zone w/ $CaCO_3$ deposit @ 5.5' 1.6 |
| 3 | | 0.0 | 11/48 | | | | |
| 4 | | 0.0 | 11/72 | SL-570 SA5D-SB 4.0-5.0 | 1020 | | |
| 5 | 3.5/4.0 | 0.0 | 11/78 | | | | Poor Gravel w/ Silt + sand<br>GRADUAL TRANSITION 6.0 |
| 6 | | 0.0 | 11/66 | | | GP-GM | ~~SILTY GRAVEL w/ SAND~~, dk yel brn (10YR 4/4) mottled w/ yel brn (10YR 5/4), GRAVEL is predominantly dk grayish brown (10YR 4/2), F-m sized ~~w/ few sand~~ mostly F-sized, subangular to angular sdstn, mod poorly cemented, mod friable to friable, dry to sli moist, SD is predom F-m gnd, quartz & sdstone, Zones of $CaCO_3$ deposit @ 7.6' bls & 8.4' bls 60% GRAVEL 30% SD, 10% SILT * v dk grayish brn (10YR 3/2) |
| 7 | | 0.0 | 11/42 | | | | |
| 8 | 0.7/0.7 | 0.0<br>0.0 | 11/54<br>11/60 | | | | Refusal @ 8.7' bls 8.7 |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



| ABBREVIATIONS: | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**

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# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cifuentes

**Sample ID** SL-570-SA5D-SB-4.0-5.0 **Date/Time** 10-1-13/1020

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

**Analysis**

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

| Parameters | Method | Analysis |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | X |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

2 16 oz jars, 2 Encores, 1 4oz jar

# 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 |
| | | | | GP-GM | Poorly graded SAND with silt +GRAVEL SM1D1513 |
| | | | | SP-SC | Poorly graded SAND with clay |
| | | SAND WITH ≥ 15% FINES | | SM | Silty SAND +GRAVEL |
| | | | | 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 (%)** ? 30
3. **Fill Description (circle all that apply)**

| | | |
|---|---|---|
| Asphalt | Metal | Plastic |
| Concrete | Wood | Glass |
| Igneous/Metamorphic Gravel | | N/A |
| Other Sdstn Gravel | | |

**Is Staining Present** Yes (No)

**Color** yellowish (10YR5/4)

**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** Nicole Hoffman **PG Registration #** 7235

**Additional Comments** Sdstn gravel is suspected to be weathered local material

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By VC GE

Sample ID SL-571-SA5D-SB-0.0-0.5 Date/Time 9-23-13 / 1025

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

| Parameter | Method | Analyze? |
|---|---|---|
| Metals | EPA 6010 | X |
| | EPA 6020 | X |
| | EPA 7471 (Soil) | X |
| | EPA 7470 (Water) | |
| Fluoride | EPA 300.0/9056 | |
| SVOCs | EPA 8270 | |
| TIC | EPA 8270 | |
| PAHs | EPA 8270 SIM | X |
| 1,4 Dioxane | EPA 8270 SIM | |
| Dioxins | EPA 1613 | X |
| PCBs/PCTs | EPA 8082 | X |
| Perchlorate | EPA 314.0/331 | X 9/23/13 |
| Perchlorate Confirmation | EPA 6850/6860 | X |
| pH | EPA 9045 (Soil) | X |
| | EPA 9040 (Water) | |
| Hexavalent Chromium | EPA 7196/7199 | |
| Herbicides | EPA 8151 | X |
| Pesticides | EPA 8081 | X |

| Parameter | Method | Analyze? |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

2 SS Sleeves + 1 4oz jar

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 (%)** NONE

**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** lt yel brn (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 #** 7235

**Additional Comments** NA

NA – Not Applicable

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG-571 | 5D | 9-23-13 | 9-23-13 |

| | | |
|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | Total Depth: 1ST HA = 1.0 2ND HA 2.2 |
| Company Name: CDM SMITH | Drill Contractor/Driller: NA | |
| GPS collected? (Yes) or No | Drill Method: Hand auger | Depth Drilled into Bedrock: NA |
| Radiological Background: γ = 12 αβ = 77 | Borehole diameter: 2.25 | |
| PID Background: 0.0 ppm | Depth to GW: NA | Sampling Method: Slide Hammer |
| Radiological Equipment Used: [✓] MicroR [✓] Alpha/Beta [✓] Pancake | PG Review & No.: #7735 | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/0.5 | 0.0 | 12/89 12/78 | SL-571 SA5D-SB 0.0-0.5 | 1025 | SP SM | SAND w/SILT and GRAVEL, lt yel brn (10YR 6/4) mottled w/ yel brn (10YR 5/4) f-m gnd w/some coarse grained, mod poorly graded subrounded to subangular quart and sdstn, dry, tr to few ante org (roots) 60% SD, 15% SILT 25% GRAVEL, GRAVEL is sdstn, f-med sized w/a coarse, subangular to angular 1 |
| 1 | HA | 0.0 | 12/72 | | | SP SM | |
| 2 | | 0.0 | 12/60 | | | Silty Sand SD | SD w/SILT and GRAVEL, lt yel brn (2.5Y 6/4) mottled w/ lt olive brn (2.5Y 5/3), f-m gnd, mod poorly sorted, subrounded, quart & sdstn, 55% SD 20% SILT, 25% GRAVEL, GRAVEL is A.A., dry 2.2 |

Refusal @ 2.2' bls

**CDM Smith** **BORING LOG AND SAMPLING RECORD** Page 1 of 1

ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

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# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V.Cortes

**Sample ID** SL-572-SA5D-SB-0.0-0.5 **Date/Time** 9-23-13 / 0945

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

**Start Depth** 0.0

**End Depth** 0.5

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

**Analysis**

| | Parameters | Method | Analyze |
|---|---|---|---|
| Soil | 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 | X |
| | 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 | X |
| | Pesticides | EPA 8081 | X |

| | Parameters | Method | Analyze |
|---|---|---|---|
| Soil | 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 | |
| | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

1 SS Sleeve

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 (%)** NA
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** strong brown (7.5YR 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** NA

NA – Not Applicable

| Location ID: DG-572 | Subarea: 5D | Date Started: 9-23-13 | Date Completed: 9-23-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1st HA = 2.5<br>2ND HA = 2.0 |
| Company Name: CDM SMITH | Drill Contractor/Driller: NA | | |
| GPS collected? Yes or No | Drill Method: Hand Auger | | Depth Drilled into Bedrock: NA |
| Radiological Background: γ = 18 αβ = 99 | Borehole diameter: 2.25 | | |
| PID Background: 0.0 | Depth to GW: NA | | Sampling Method: Slide hammer |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No: Mill Hoffman #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.9/1.05 | 0.0 | 18/115 | SL-572-SA5D-SB 0.0-0.5 | 0945 | SP-SM | SILTY SAND w/GRAVEL, strong brown (7.5YR 4/6) mottled w/ (7.5YR 5/6) f grn w/ few med grn, mod poorly graded SM10ISI3 Subrounded to subangular quartz, dry; 70% SD, 20% SILT 10% GRAVEL, GRAVEL is subangular to angular, sdstn well cemented, mostly f sized w/ tr to occ med sized. tr to few amt organics (roots) |
| 1 | | 0.0 | 18/48 | | | | |
| | | | 18/72 | | | | |
| 2 | | | | | | SM | SILTY SAND w/GRAVEL yel brn (10YR 5/6) mottled w/ dk yel brn (10YR 4/4). f grn, mod poorly graded SM10ISI3 Subrounded quartz, dry 60% SD, 25% SILT, 15% GRAVEL, GRAVEL is f-c sized, subrounded to angular, sdstn Well cemented, tr to occ org (roots) 2 2.5 |
| | | | | | | | Refusal @ 2.5' bls |

**CDM Smith** **BORING LOG AND SAMPLING RECORD** Page 1 of 1

ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** Vidal

**Sample ID** SL-573-SA5D-SB-0.0-0.5 **Date/Time** 9-25-13/ 0745

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

**Start Depth** 0.0

**End Depth** 0.5

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Volatiles | 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 | |
| Inorganics | Nitrates | EPA 300.0/9056 | |
| | Energetics | EPA 8330 | |
| | Cyanide | EPA 9012 | |
| | Formaldehyde | EPA 8315 | |
| | NDMA | EPA 1625 | |
| Organotins | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

1 SS Sleeve

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 (%)** None
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** [signature] **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

| Location ID: DG-573 | Subarea: 5D | Date Started: 9-25-13 | Date Completed: 9-25-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 1st HA = 18.8 ~~2nd HA = 8.8~~ |
| Company Name: CDM SMITH | Drill Contractor/Driller: NA | | |
| GPS collected? (Yes) or No | Drill Method: Handauger | | Depth Drilled into Bedrock: NA |
| Radiological Background: $\gamma$ = 16 $\alpha\beta$ = 85 | Borehole diameter: 2.25 | | |
| PID Background: 0.0 ppm | Depth to GW: NA | | Sampling Method: Slide Hammer |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mike Jeffrson #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/0.5 | 0.0<br>0.0 | 16/100<br>16/84 | SL-573 SA5D-SB 0.0-0.5 | 0745 | SM | SILTY SAND, brown (10YR 5/3) f grn, poorly ~~sorted~~ graded SM101513, quartz, dry, 80% SD 20% SILT, few org (roots), few amt of poorly compacted sandy silt material decreasing w/ depth |
| 1 | HA | 0.0 | 16/84 | | | SM | SILTY SAND, dk yel brn (10YR 4/4) f grn, poorly ~~sorted~~ graded SM101513, few amt med grn, subrounded, dry becoming slightly moist and siltier w/ depth, 65% → 55% SD, 35 → 45% SILT tr amt sdstone gravel near base of unit, SDSTN gravel is f-med sized, subrounded to subangular, mod well to well cemeted, tr amt org (roots) 1.0 |
| 2 | | 0.0 | 16/72 | | | | |
| 3 | | 0.0 | 16/78 | | | SM | SILTY SAND, ~~dk~~ brn (7.5 10YR 5/4) tr to few amt mottled w/ dk yel brn (10YR 4/4) and lt yel brn (10YR 6/4) f grn w/ tr amt med grn, poorly ~~sorted~~ graded SM101513, quartz, dry, tr dirt org (roots), tr to few amount sli compacted, friable sandy silt material, tr sdstn gravel @ 5.5' bls - mod well cemeted, coarse sized, 70% SD 30% SILT Mottling is rare to absent from 5'-10', tr amt @ 10'-10.8', rare to absent from 10.8-13' 3.0 |
| 4 | 1.0/1.0 | 0.0 | 16/96 | SL-573 SA5D-SB 4.0-5.0 | 0800 | | |
| 5 | HA | 0.0 | 16/84 | | | | Becoming silter w/ depth ~~SD~~ 70 → 60% SD 30 → 40% SILT |
| 6 | | 0.0 | 16/72 | | | | |
| 7 | | 0.0 | 16/96 | | | | |
| 8 | | 0.0 | 16/78 | | | | |
| 9 | | 0.0 | 16/30 | | | | |
| 10 | | 0.0 | 16/78 | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



**ABBREVIATIONS:**

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: DG-573 | Subarea: 5D | Date Started: 9-25-13 | Date Completed: 9-25-13 |
|---|---|---|---|
| Project: SSFL | | Geologist: David Rojas | Total Depth: 1st HA = 18.8 |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | SEE LITHOLOGY ON Page 1 |
| | HA | | | | | | |
| 11 | | 0.0 | 16/84 | | | | |
| 12 | | 0.0 | 16/78 | | | | |
| 13 | | 0.0 | 16/90 | | | | Gradual transition |
| | | | | | | SM | SILTY SAND brn (7.5YR 5/4) mottled w/ strong brown (7.5YR 5/6) f grn, poorly graded SUBROUNDED, quartz, dry, few to some sandy silt material that is poorly compacted, but is friable, tr amt, mod well compacted silty sand material that is present as subrounded to subangular fine gravel-sized material, becoming more common w/ depth, 55% SD 45% SILT — 13 |
| 14 | | 0.0 | 16/96 | | | | |
| 15 | | 0.0 | 16/78 | | | | |
| 16 | | 0.0 | 16/72 | | | | |
| 17 | | 0.0 | 16/78 | | | | |
| 18 | | 0.0 | 16/96 | | | | Abrupt transition |
| | | | | | | SM | SILTY SAND, brn yel (10YR 6/6) mottled w/ yel brn (10YR 5/4) f grn, poorly graded SUBROUNDED, quartz, dry, tr amt mod well to well compacted silty sand material A.A. — 18 |
| | | | | | | | 60% SD 40% SILT — 18.8 |
| | | | | | | | Refusal @ 18.8' bls |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page ___ of ___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.C

Sample ID SL-573-SA5D-SB-4.0-5.0 Date/Time 9-25-13 / 0800

**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 ~~DPR~~ Slide Hammer (Hand Auger/Slide Hammer) Trenching Sediment

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

Parent Sample ID NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Soil | 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 | X |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Soil/Water | 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 | |

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 (%)** None
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 brn.~~ 7.5 (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** Mike Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By J. Cortez

Sample ID SL-57H-SA5D-SB-0.0-0.5 Date/Time 9-23-13/0920

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Soil | 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 | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | 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 | X |
| | Pesticides | EPA 8081 | X |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Soil | 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 | |
| Biota | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

1 SS Sleeve

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 w/GRAVEL |
| | | | | 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 NPR

2. Percentage Fill (%) None 15%

3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (sd stn) N/A

Other _____

Is Staining Present Yes No

Color yel brn (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 NA

NA – Not Applicable

| Location ID: DG-574 | Subarea: 5D | Date Started: 9-23-13 | Date Completed: 9-23-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1ST HA = 0.5 2ND HA = 0.5 |
| Company Name: CDM SMITH | Drill Contractor/Driller: NA | | |
| GPS collected? Yes or No | Drill Method: Hand auger | | Depth Drilled into Bedrock: NA |
| Radiological Background: $\gamma$ = 15 $\alpha\beta$ = 95 | Borehole diameter: 2.25 | | |
| PID Background: 0.0 ppm | Depth to GW: NA | | Sampling Method: Slide Hammer |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No: Mike Hoffman #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/0.5 | 0.0 | 15/97 | SL-574 SA5D-SB | 0920 | SM | SILTY SAND w/GRAVEL, yel brn (10YR 5/4) mottled w/(10YR 5/6), f-grn w/tr to few ant med grn, tr ant coarse, mod poorly graded subrounded to subangular quartz, dry, 60% SD, 20% SILT 15% GRAVEL. GRAVEL is f-c sized sa to angular sdstn, well cemented |
| | HA ARA | 0.0 | 15/84 | 0.0-0.5 | | | |

0.5

Refusal @ 0.5' bls

CDM Smith

**BORING LOG AND SAMPLING RECORD**



**ABBREVIATIONS:**

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. G K

Sample ID SL-575-SA5D-SB-0.0-0.5 Date/Time 10-7-13 / 0830

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

Start Depth 0.0

End Depth 0.5

**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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## 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 | X |
| 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 | X |
| Pesticides | EPA 8081 | |

| Parameters | Method | Analyze? |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 SS Sleeve

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 (%) None*
3. Fill Description (circle all that apply)

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic **Gravel** N/A

Other Sdstn

Is Staining Present Yes **No**

Color brn (7.5YR 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 [signature] PG Registration # 7735

Additional Comments Gravel is suspected to be weathered from adjacent outcrops

NA – Not Applicable

| Location ID: DG-575 | Subarea: 5D | Date Started: 10-7-13 | Date Completed: 10-7-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 1st HA = 3.4, 2nd HA = 4.0 |
| Company Name: CDM SMITH | Drill Contractor/Driller: NA | | |
| GPS collected? Yes or No | Drill Method: Handauger | | Depth Drilled into Bedrock: NA |
| Radiological Background: Y = 16 αβ = 72 | Borehole diameter: 3" | | |
| PID Background: 0.0 ppm | Depth to GW: NA | | Sampling Method: Slidehammer |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: [illegible] #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (μR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/0.5 | 0.0 | 17/113 | SL-575 SA5D-SB 0.0-0.5 | 0830 | SM | SILTY SAND, brn (7.5YR 4/3) mottled w/ (7.5YR 5/3), f gw w/ few ant med & coarse gw, poorly graded, subrounded quartz & sdstn, dry, 80% SD, 15% SILT, 5% GRAVEL, Gravel is sub angular to subrounded, sdstn, f-m sized, few ant org (roots & grasses) |
| | | 0.0 | 17/138 | | | | |
| 1 | HA | 0.0 | 17/96 | | | SM | |
| 2 | | 0.0 | 17/72 | | | | SILTY SAND, reddish brown (5YR 5/4), A.A except some silt nodules, mod poorly compacted, tr to ~~few~~ few ant org (roots) |
| 3 | | 0.0 | 17/114 | SL-575 SA5D-SB 2.5-3.5 3.0-4.0 | 0900 | SM | SILTY SAND, strong brn (7.5YR 5/6) mottled w/ brown (7.5YR 5/4) f gw w/ tr ant m & c gw, poorly graded, subrounded quartz; dry; 85% SD, 15% SILT, tr ant sdstn gravel, sr to sa, f-m sized |
| | | 0.0 | 17/102 | | | | |
| 4 | | 0.0 | 17/102 | | | | Refusal @ 4.0' bls |

0.5

3.0

4.0

**CDM Smith** **BORING LOG AND SAMPLING RECORD** Page 1 of 1

| ABBREVIATIONS: | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

# BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cruz

Sample ID SL-575-SA5D-SB-~~2.5~~ 3.0-4.0 Date/Time 10-7-13 / 0900

Matrix (circle one): (Soil) Sediment Water

Start Depth ~~2.5~~ 3.0

End Depth ~~3.5~~ 4.0

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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Soil | 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 | X |
| | 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 | X |
| | Pesticides | EPA 8081 | |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Soil | 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 | |

1 SS Sleeve

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 (%)** None*
3. **Fill Description (circle all that apply)**

| | | |
|---|---|---|
| Asphalt | Metal | Plastic |
| Concrete | Wood | Glass |
| ~~Igneous/Metamorphic~~ NRR | (Gravel) | N/A |
| Other sdstn | | |

**Is Staining Present** Yes (No)

**Color** Strong ~~reddish~~ brn (5YR 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** sdstn suspected to be weathered material from adj outcrops

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. GL

Sample ID SL-576-SA5D-SB-0.0-0.5 Date/Time 9-19-13 / 1310

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Soil | 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 | X |
| | 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 | X |
| | Pesticides | EPA 8081 | X |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Soil | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| | *Organotin* | NOAA Status and *Trends, Krone et al.* | |
| | Methyl Mercury | EPA 1630 | |

1 SS Sleeve

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 (%)** None
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 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** NA

NA – Not Applicable

| Location ID: DG-576 | Subarea: 5D | Date Started: 9-19-13 | Date Completed: 9-19-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1st HA = 4.4, 2nd HA = 4.5 |
| Company Name: CDM SMITH | Drill Contractor/Driller: NA | | |
| GPS collected? (Yes) or No | Drill Method: Handauger | | Depth Drilled into Bedrock: NA |
| Radiological Background: 8-15 avg = 93 | Borehole diameter: 2.25 | | |
| PID Background: 0.0 | Depth to GW: NA | | Sampling Method: Slide hammer |
| Radiological Equipment Used: [✓] MicroR [✓] Alpha/Beta [✓] Pancake | PG Reviewer's No: Mike Hoffman #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5 | 0.0 | 15/95 | SL-576 SA5D-SB 0.0-0.5 | 1310 | SP-SM | SAND w/SILT ~~+ GRAVEL~~ AND, brown (10YR 4/3) f grn w/tr amt med grn, mod well sorted, subrounded quartz, 85% SD 10% SILT, 5% GRAVEL, dry GRAVEL is f-m Φ sized, mod poorly indurated friable sdstn, Few amt org (roots), Few silt nodules - |
| | 0.5 | 0.0 | 15/66 | | | SP-SM | 0.5 |
| 1 | HA | 0.0 | 15/84 | | | SP-SM | |
| 2 | | 0.0 | 15/90 | | | SP-SM | SAND w/SILT, A.A. except yel brn (10YR 5/4) 90% SD 10% SILT, Tr GRAVEL, Few to some sandy silt nodules - friable |
| 3 | | 0.0 | 15/72 | | | SP-SM | 3.0 |
| 4 | | 0.0 | 15 48 | SL-576 SA5D-SB ~~2.5-3.5~~ 3.5-4.5 | 1330 | SM | SILTY SAND, dK yel brown (10YR 4/4) mottled w/yel brown (10YR 5/6), F grn w/ Few med grn, mod well to well sorted, subrounded quartz & tr amt sdstn, dry, Few sandy silt nodules, most Friable, some weakly cemented 85% SD 15% SILT, Tr amt org (roots) |
| | | 0.0 | 15 60 | | | | 4.5 |

REFUSAL @ 4.5' bls

**CDM Smith** **BORING LOG AND SAMPLING RECORD** Page 1 of 1

ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | Φ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V-GE

Sample ID SL-576-SA5D-SB-3.5-4.5 Date/Time 9-19-13/1330

Matrix (circle one): (Soil) Sediment Water

Start Depth 3.5

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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## 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 | X |
| Pesticides | EPA 8081 | X |

| Parameters | Method | Analyze? |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | X |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 SS Sleeve & 2 Encores

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 (%)** NA
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** dk yel 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** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortez

Sample ID SL-577-SA5D-SB-0.0-0.5 Date/Time 9-19-13 1040

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

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

| Parameter | Method | Analyze |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

2 SS Sleeves / 4oz jar

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 | SM101513 Well-graded SAND with silt ~~+GRAVEL~~ SM101513 |
| | | | | SW-SC | Well-graded SAND with clay |
| | | | | SP-SM | Poorly graded SAND with silt +GRAVEL |
| | | | | 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 (%) NONE
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 dk brn (7.5YR 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 [signature] PG Registration # 7735

Additional Comments GRAVEL is weathered natural material

NA – Not Applicable

| Location ID: DG-577 | Subarea: 5D | Date Started: 9-19-13 | Date Completed: 9-19-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1st HA = 0.5<br>2nd HA = 0.5 |
| Company Name: CDM SMITH | Drill Contractor/Driller: NA | | |
| GPS collected? (Yes) or No | Drill Method: Handauger | | Depth Drilled into Bedrock: NA |
| Radiological Background: γ = 14 cpm 86 | Borehole diameter: 2.25 | | |
| PID Background: 0.0 | Depth to GW: NA | | Sampling Method: Slide Hammer |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & Not: [signature] #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | SP-SM | |
| 1 | 0.5/0.5 | 0.0<br>0.0 | 14/99<br>14/78 | SL-577 SA5D-SB 0.0-0.5 | 1040 | SW<br>SM<br>GW<br>GP | SAND w/SILT & GRAVEL, dk brn (7.5YR 3/2) mottled w/brown (7.5YR 4/3) f-m grn w/Few ant coarse grn, poorly graded, sbang to sa, quartz & sdstn, dry; GRAVEL is sdstn, F-C sized sa to angular, more common w/depth, mod well to well indurated, v pale brn (10YR 7/3) 70% SD, 10% SILT, 20% GRAVEL<br>GRAVEL w/SAND, v pale brn (10YR 7/3), well indurated, sdstn, f-c sized, coarse w/depth; 70% GRAVEL, 30% SD decreasing sand w/depth, dry<br>Refusal @ 0.5' bls |

0.4
0.5

**CDM Smith** **BORING LOG AND SAMPLING RECORD** Page 1 of 1

ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. G

Sample ID SL-578-SA5D-SB-0.0-0.5 Date/Time 9-19-13/1235

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

| Parameter | 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 | X |
| 1,4 Dioxane | EPA 8270 SIM | |
| Dioxins | EPA 1613 | X |
| 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 | X |
| Pesticides | EPA 8081 | |

| Parameter | Method | Analyze |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 SS Sleeve

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 (%)** None
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** grayish brown (10YR 5/2)

**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** [signature] **PG Registration #** 2735

**Additional Comments** NA

NA – Not Applicable

| Location ID: DG-578 | Subarea: 5D | Date Started: 9-19-13 | Date Completed: 9-19-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1st HA = 2.2, 2.0 |
| Company Name: CDM SMITH | Drill Contractor/Driller: NA | | |
| GPS collected? (Yes) or No | Drill Method: Hand Auger | | Depth Drilled into Bedrock: NA |
| Radiological Background: 8=18 ~~9=79~~ | Borehole diameter: 2.25 | | |
| PID Background: 0.0 | Depth to GW: NA | | Sampling Method: Slide hammer |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No: [signature] #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5 | 0.0 | 18/102 | SL-578 SA5D-SB 0.0-0.5 | 1235 | SM | SILTY SAND, grayish brown (10YR 5/2), f grn w/ tr amt med grn, well sorted, subrounded quartz, dry, 85% SD, 15% SILT, tr amt CLAY — 0.6 |
| | .05 | 0.0 | 18/72 | | | | |
| 1 | HA | 0.0 | 18/84 | | | SP SM | SAND w/ SILT ~~and GRAVEL~~ light brown (10YR 5/4) f grn w/ few to some med grn, mod well sorted, subrounded quartz & sandstone, tr gravel - sandstone, F-m sized, mod friable, dry; 85% SD, 10% SILT, 5% GRAVEL — 1.4 |
| 2 | | 0.0 | 18/90 | | SP-SM1353 | SP SM | ~~GRAVEL~~ SAND w/ SILT & GRAVEL brown 7.5YR 5/4 mottled w/ strong brown (7.5YR 5/6) f-m grn w/ few to some coarse grn, poorly sorted, subrounded to subangular, quartz & sdstn, GRAVEL is sdstn v pale brn (10YR 7/4) F to c sized, mod well to well cemented, some friable 75% SD 15% GRAVEL 10% SILT, dry — 2.2 |

**CDM Smith** **BORING LOG AND SAMPLING RECORD** Page 1 of 1

ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By J. Cruz

Sample ID SL-579-SA5D-SB-0.0-0.5 MS Date/Time 9-19-13/ 0830

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

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

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

Parent Sample ID NA

Field Geologist David Rojas

Sampler Vidal Cortes

## 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 | X |
| PCBs/PCTs | EPA 8082 | |
| Perchlorate | EPA 314.0/331 | X SM 9/13 |
| Perchlorate Confirmation | EPA 6850/6860 | X |
| pH | EPA 9045 (Soil) | ~~X~~ DRR |
| | EPA 9040 (Water) | |
| Hexavalent Chromium | EPA 7196/7199 | ~~X~~ DRR |
| Herbicides | EPA 8151 | |
| Pesticides | EPA 8081 | X |

| Parameters | Method | Analyze |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

3 SS Sleeve ~~1 2 4 oz jars~~ DRR

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 (%)** None
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** yel brn (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** Mike Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

| Location ID: DG-579 | Subarea: 5D | Date Started: 9-19-13 | Date Completed: 9-19-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1st HA = 1.5 2nd HA = 1.5 |
| Company Name: CDM SMITH | Drill Contractor/Driller: NA | | |
| GPS collected? (Yes) or No | Drill Method: Hand Auger | | Depth Drilled into Bedrock: NA |
| Radiological Background: γ = 13 αβ = 60 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 ppm | Depth to GW: NA | | Sampling Method: Slide Hammer / ~~HA~~ DPR |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | QC Review & No: Mike Hoffman #7735 | | Geologist: David R Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/0.5 | 0.0 | 13/74 | SL-579 SA5D-SB 0.0-0.5 ft | 0830 | SP-SM | SAND w/ SILT yel brn (10YR 5/4), F gr w/ few ant med gvl, mod well ~~graded~~, subrounded to sa, quart, dry, 90% SD 10% SILT few to some ant org (roots), tr ant sdstn gravel increasing w/ depth to ~5% Gravel sa to angular, well cemented, quartz, dry |
| | HA | 0.0 | 13/84 | SL-579 SA5D-SB 0.0-0.5 Also | 0835 | | |
| 1 | | 0.0 | 13/84 | | | | 1.5 |
| | | | | | | | Refusal @ 1.5' bls |

**CDM Smith** **BORING LOG AND SAMPLING RECORD** Page 1 of 1

ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (μR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL-879-SA5D-SB-0.0-0.5 Date/Time 9-19-13 / 0835

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 SL-579-SA5D-SB-0.0-0.5MS

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

| Fraction/Parameter | 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 | X |
| PCBs/PCTs | EPA 8082 | |
| Perchlorate | EPA 314.0/331 | X |
| Perchlorate Confirmation | EPA 6850/6860 | |
| pH | EPA 9045 (Soil) | |
| | EPA 9040 (Water) | |
| Hexavalent Chromium | EPA 7196/7199 | |
| Herbicides | EPA 8151 | |
| Pesticides | EPA 8081 | X |

| Fraction/Parameter | Method | Analyze |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 SS Sleeve

# 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 (%)** None
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** yel brn (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** Julia Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortez

Sample ID SL-580-SA5D-SB-0.0-0.5 Date/Time 9-19-13/0800

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

Depth Units (circle one): Inches (Feet)

Collection Method (circle one): V. Cortez 9/19/13

Check if Composite ☐ DPT (Slide Hammer) ~~(Hand Auger/Slide Hammer)~~ Trenching Sediment

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

Parent Sample ID NA

Field Geologist David R Rojas

Sampler Vidal Cortes

## 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 | X SMAA13 |
| Perchlorate Confirmation | EPA 6850/6860 | X |
| pH | EPA 9045 (Soil) | X |
| | EPA 9040 (Water) | |
| Hexavalent Chromium | EPA 7196/7199 | X |
| Herbicides | EPA 8151 | |
| Pesticides | EPA 8081 | |

| Parameters | Method | Analyze? |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 SS Sleeve + 2 4oz jars

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 | | GW-SM (circled) | Well-graded SAND with silt |
| | | | | SW-SC | Well-graded SAND with clay |
| | | | | SP-SM (circled) | 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 |

5/10/13

**Fill Material**

1. **Is Fill Material Present** (Yes) No
2. **Percentage Fill (%)** 5
3. **Fill Description (circle all that apply)**

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic (Gravel) N/A

Other Sandstone gravel

**Is Staining Present** Yes (No)

**Color** dk yel 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** _____ **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

| Location ID: DG-580 | Subarea: 5D | Date Started: 9-19-13 | Date Completed: 9-19-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1st HA = 1.0<br>2nd HA = 1.0 |
| Company Name: CDM SMITH | Drill Contractor/Driller: NA | | |
| GPS collected? (Yes) or No | Drill Method: 3" Hand Auger | | Depth Drilled into Bedrock: NA |
| Radiological Background: Y = 17 Φ = 74 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 | Depth to GW: NA | | Sampling Method: Slide Hammer / HA |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review/& No.: Matt Hoffman #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 0 | 0.5/0.5 | 0.0<br>0.0 | 17/102<br>17/78 | SL-580-SA5D-SB 0.0-0.5 | 0800 | SP-SM | SAND w/SILT, dk yel brn (10YR 4/4) f-m grn w/some to few coarse grn, poorly graded sr to sa, quartz & sandstone, 85% SD, 10% SILT 5% GRAVEL, dry, Sdstn gravel is lt yel brn (10YR 6/4) sa to angular, few ant org (roots) |
| 1 | HA | 0.0 | 17/90 | | | SP-SM | SAND w/SILT & GRAVEL, yel brn (10YR 5/4) f-m grn w/some coarse grn, poorly graded, sr to sa quartz & sdstn, 70% SD 20% GRAVEL, 10% SILT dry, sdstn gravel is A.A, few ant org (roots) |
| | | | | | | | Refusal @ 1.0' bls |

**CDM Smith** — **BORING LOG AND SAMPLING RECORD** — Page 1 of 1

ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | Φ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL-581-SA5D-SB-0.0-0.5 Date/Time 9-19-13/ 0930

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

Start Depth 0.0

End Depth 0.5

**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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

**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 | X |
| 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) | X |
| | EPA 9040 (Water) | |
| Hexavalent Chromium | EPA 7196/7199 | X |
| Herbicides | EPA 8151 | |
| Pesticides | EPA 8081 | |

| Parameters | Method | Analyze? |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 SS Sleeve & 2 4oz jars

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 (%)** None
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** yel brn (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** Nicole Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

| Location ID: DC-581 | Subarea: 5D | Date Started: 9-19-13 | Date Completed: 9-19-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1st HA = 3.7<br>2nd HA = 3.9 |
| Company Name: CDM SMITH | Drill Contractor/Driller: NA | | |
| GPS collected? (Yes) or No | Drill Method: Handauger | | Depth Drilled into Bedrock: NA |
| Radiological Background: γ = 18 αβ = 94 | Borehole diameter: 2.25 | | |
| PID Background: 0.0 | Depth to GW: NA | | Sampling Method: Slide Hammer |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PC Reviewed: Yes No Mulli Hoffman #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (μR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/0.5 | 0.0 | 18/106 | SL-581 SA5D-SB 0.0-0.5 | 0930 | SP-SM | SAND w/ SILT, yel brn (10YR 5/4) f grn w/ tr amt med grn, well sorted, subrounded, quartz dry, 90% SD, 10% SILT, tr amt clay, few amt org (roots), ~~dry~~ decreasing w/ depth |
| | | 0.0 | 18/96 | | | | |
| | HA | | | | | | |
| 1 | | 0.0 | 18/72 | | | | |
| 2 | | 0.0 | 18/54 | | | | |
| | | | | SL-581 SA5A-SB 2.5-3.5 | 0940 | SP-SM | SAND w/ SILT strong brown (7.5YR 4/6) w/ trace mottling w/ strong brown (7.5YR 5/8), f grn w/ tr to few amt med grn, well sorted, subrounded quartz, dry 90% SD 10% SILT tr amt clay tr amt organics (roots) becoming less w/ depth 2.5 |
| 3 | | 0.0 | 18/60 | | | | |
| | | 0.0 | 18/90 | | | | 3.9 |
| | | | | | | | REFUSAL @ 3.9' bls<br>Tr amt of sdstn gravel @ 3.8'-3.9' bls, f-med-sized, quartz sdstn, poorly consolidated friable |

**CDM Smith** **BORING LOG AND SAMPLING RECORD** Page 1 of 1

| ABBREVIATIONS: | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL-581-SA5D-SB-2.5-3.5 Date/Time 9-19-13/0940

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

Start Depth 2.5

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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

**Analysis**

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Metals | 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 | X |
| | 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) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | X |
| | Herbicides | EPA 8151 | |
| | Pesticides | EPA 8081 | |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Organics | 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 | |
| Other | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

1 SS Sleeve + 2 4oz jars

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 (%)** None

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** Strong brown (7.5YR 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** Nicki Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By [illegible]

Sample ID SW-582-SA5D-SB-0.0-0.5 Date/Time 9-30-13/0845

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

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

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

Parent Sample ID NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| VOCs | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Tissue | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2 SS Sleeves & 1 4oz jar

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 (%)** None

**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** yel brn (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** NA

NA – Not Applicable

| Location ID: DG-582 | Subarea: 5D | Date Started: 9-30-13 | Date Completed: 9-30-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1st DPT = 10.8 2nd DPT = 11.3 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm | | |
| GPS collected? (Yes) or No | Drill Method: DPT | | Depth Drilled into Bedrock: 3rd DPT = 11.3 |
| Radiological Background: $\gamma$ = 12 $\beta$ = 91 | Borehole diameter: 2.25" | | NA |
| PID Background: 0.0 | Depth to GW: NA | | Sampling Method: Slickhammer DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PC Review & No: Mike Hoffman #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (μR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 0 | 0.5/0.5 | 0.0 | 12/99 | SL-582 SA5D-SB 0.0-0.5 | 0845 | SP-SM | SAND w/SILT, yel brn 10YR 5/4, f gr w, mod well sorted, well sorted subrounded quartz, dry, 90% SD 10% SILT, sli to mod compacted w/silty sand matrix, tr to few ant org (roots) |
| 1 | | 0.0 | 12/72 | | | | |
| 2 | 3.2/3.5 | 0.0 | 12/66 | | | SM | SILTY SAND dk yel brn (10YR 3/4) mottled w/ (10YR 4/4) and yel brn (10YR 5/4), f gr w, well sorted, quartz, mod well compacted becoming sli clayey and more compacted w/depth 70% SD, 25% SILT 5% CLAY dry 2.0 |
| 3 | | 0.0 | 12/60 | | | SC | CLAYEY SAND, yel brn (10YR 5/6) mottled w/ lt yel brn (10YR 6/4) and tr amts red (2.5YR 5/8), f gr w, mod well sorted, quartz, mod well to well compacted, clay is low plasticity, soft, crumbly, dry 65% SD, 20% CLAY 15% SILT, burrows & decayed root molds are filled w/ $CaCO_3$ deposits 3.0 |
| 4 | | 0.0 | 12/72 | SL-582 SA5D-SB 4.0-5.0MS | 0855 | | |
| 5 | | 0.0 | 12/96 | SL-582 SA5D-SB 4.0-5.0 | 0900 | | |
| 6 | 4.0/4.0 | 0.0 | 12/72 | | | | GRADUAL TRANSITION |
| 7 | | 0.0 | 12/84 | | | SC | CLAYEY SAND, strong brown (7.5YR 4/6) mottled w/ yel red (5YR 4/6), f gr w, mod well to well sorted, quartz, dry to sli moist, 55% SD, 25% CLAY 20% SILT, CLAY & SILT are dispersed in SD, unit is mod well to well compacted, CLAY is low plasticity soft, becoming mod low plasticity w/depth, crumbly becoming less crumbly w/depth, tr to few ant laminations, tr ant burrows & decayed root molds some filled w/ $CaCO_3$ deposits 6.0 |
| 8 | | 0.0 | 12/90 | | | | |
| 9 | 3.8/3.8 | 0.0 | 12/90 | | | | |
| 10 | | 0.0 | 12/96 | | | | Refusal @ 11.3' bls |
| 10.3 | | 0.0 | 12/84 | SL-582 SA5D-SB 9.0-10.0 | 0910 | | 11.3 |

CDM Smith **BORING LOG AND SAMPLING RECORD** Page 1 of 1

ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. GA

**Sample ID** SL-582-SA5D-SB-4.0-5.0MS **Date/Time** 9-30-13/ 0855

**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** NA

**Field Geologist** David Rojas

**Sampler** Noah Cortes

**Analysis**

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

| Parameters | Method | Analyze? |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | X |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

16 oz jars
to ~~SS Sleeves~~, & to Encore

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 (%)** None

**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** yel brown (10YR5/6)

**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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V.G.A

**Sample ID** SL-882-SA5D-SB-4.0-5.0 **Date/Time** 9-30-13/0900

**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** SL-582-SA5D-SB-4.0-5.0MS

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

**Analysis**

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

| Parameter | Method | Analysis? |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | X |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

2 16oz jars & 2 Encores

# 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 (%)** None

**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 5/6)

**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 #** 7135

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Stef Mypel

Sample ID SL-582-SA5D-SB-10.0-11.0 Date/Time 9-30-13/0910

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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | | EPA 300.0/9056 | |
| | | EPA 8270 | |
| | | EPA 8270 | |
| | | EPA 8270 SIM | X |
| | | EPA 8270 SIM | |
| | | EPA 1613 | |
| | | EPA 8082 | X |
| | | EPA 314.0/331 | |
| | | EPA 6850/6860 | |
| | | EPA 9045 (Soil) | X |
| | | EPA 9040 (Water) | |
| | | EPA 7196/7199 | |
| | | EPA 8151 | X |
| | | EPA 8081 | |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 16oz jars & 2 Encores

# SSFL Phase 3 – Field Data Sample Sheet (Sample Des[illegible]tions)

## Soil Classification (circle one)

| MAJOR DIVISION | | | GROUP SYMBOL | LETTER SYMBOL | GROUP NAM[illegible] |
|---|---|---|---|---|---|
| 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 GR[illegible] |
| | | | | GP | Poorly graded GR[illegible] |
| | | GRAVEL WITH BETWEEN 5% AND 15% FINES | | GW-GM | Well-graded GRAV[illegible] |
| | | | | GW-GC | Well-graded GRAVE[illegible] |
| | | | | GP-GM | Poorly graded GRAV[illegible] |
| | | | | GP-GC | Poorly graded GRAV[illegible] |
| | | GRAVEL WITH ≥ 15% FINES | | GM | Silty GRAVE[illegible] |
| | | | | GC | Clayey GRAV[illegible] |
| | SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE | SAND WITH ≤ 5% FINES | | SW | Well-graded S[illegible] |
| | | | | SP | Poorly graded S[illegible] |
| | | SAND WITH BETWEEN 5% AND 15% FINES | | SW-SM | Well-graded SAND[illegible] |
| | | | | SW-SC | Well-graded SAND[illegible] |
| | | | | SP-SM | Poorly graded SAN[illegible] |
| | | | | SP-SC | Poorly graded SAN[illegible] |
| | | SAND WITH ≥ 15% FINES | | SM | Silty SAND |
| | | | | SC | Clayey SAN[illegible] |
| FINE GRAINED SOILS CONTAINS MORE THAN 50% FINES | SILT AND CLAY | LIQUID LIMIT LESS THAN 50 | | ML | Inorganic SILT with [illegible] |
| | | | | CL | Lean inorganic CLAY wit[illegible]ticity |
| | | | | OL | Organic SILT with [illegible] |
| | | LIQUID LIMIT GREATER THAN 50 | | MH | Elastic inorganic SILT with mod[illegible]gh plast[illegible] |
| | | | | CH | Fat inorganic CLAY with mod[illegible]gh plast[illegible] |
| | | | | OH | Organic SILT or CLAY with mo[illegible]gh p[illegible] |
| HIGHLY ORGANIC SOILS | | | | PT | PEAT soils with high org[illegible]nts |

### Fill Material

1. Is Fill Material Present Yes (No)
2. Percentage Fill (%) NONE
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 Strong brown (7.5YR 4/6)

### Odor

1. Odor Strength (circle o[illegible])

(None) Sli[illegible]t [illegible]ong

2. Odor Descri[illegible]tion (circl[illegible]ne)

Organic Petroleum [illegible]

(N/A) Other _____

Moisture Condition (circ[illegible]ne)

(Dry) Moi[illegible]t

PG Signature [signature] PG Registration # 7735

Additional Comments NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. GF

**Sample ID** SL-583-SA5D-SB-0.0-0.5 **Date/Time** 9-23-13/1240

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

**Start Depth** 0.0

**End Depth** 0.5

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

**Analysis**

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

| Parameters | Method | Analyze? |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

2 SS Sleeves & 1 4oz jar

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 (%)** None

**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** yel brn 10YR5/4

**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** NA

NA – Not Applicable

| Location ID: DG-583 | Subarea: 5D | Date Started: 9-23-13 | Date Completed: 9-23-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1st HA = 2.4, 2nd HA = 2.5 |
| Company Name: CDM SMITH | Drill Contractor/Driller: NA | | |
| GPS collected? (Yes) or No | Drill Method: Hand Auger | | Depth Drilled into Bedrock: NA |
| Radiological Background: $\gamma$ = 12 $\alpha\beta$ = 74 | Borehole diameter: 2.25 | | |
| PID Background: 0.0 ppm | Depth to GW: NA | | Sampling Method: Slide Hammer |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mike Hoffman #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/0.5 | 0.0<br>0.0 | 12/80<br>12/78 | SL-583 SA5D-SB 0.0-0.5 | 1240 | SM | SILTY SAND, yel brn (10YR 5/4) mottled w/ dk yel brn (10YR 4/4), f-grn w/ some med grn & few coarse grn, mod poorly graded, subrounded to subangular quartz & some sandstone; 75% SD, 20% SILT 5% GRAVEL, Gravel is sdstn, F-m sized, sa to angular, well cemented, dry — 1 |
| 1 | HA | 0.0 | 12/78 | | | SM | |
| 2 | | 0.0 | 12/78 | | | SM | SILTY SAND w/ GRAVEL dk yel brn (10YR 4/4) mottled w/ yel brn (10YR 5/6) and brn yel (10YR 6/6), f-m grn w/ some coarse grn, mod poorly graded, subrounded to subangular quartz & sdstn 60% SD, 20% silt 20% GRAVEL, Gravel is f-c sized, sdstn, well cemented, sa to angular; dry — 2 |
| | | 0.0 | 12/78 | | | | SILTY SAND w/ GRAVEL brn yel (10YR 5/6) f-grn w/ some med-coarse grn, S rounded to subangular quartz & sdstn, dry 60% SD, 20% SILT 20% GRAVEL, Gravel is A.A. — 2.5 |
| | | | | | | | Refusal @ 2.5' bls |

**CDM Smith** **BORING LOG AND SAMPLING RECORD** Page 1 of 1

| ABBREVIATIONS: | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortez

**Sample ID** SL-589-SA5D-SB-0.0-0.5 **Date/Time** 10-2-13 / 1030

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

**Start Depth** 0.0

**End Depth** 0.5

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

**Analysis**

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

| Parameters | Method | Analyses |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

2 SS Sleeves + 1 4oz jar

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** DK. YEL. 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** N/A

NA – Not Applicable

| Location ID: DG-589 | Subarea: 5D | Date Started: 10-2-13 | Date Completed: 10-2-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1st DPT = 27.0 2ND DPT = 26.8 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: NA |
| Radiological Background: γ = 13 αβ = 76 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 ppm | Depth to GW: NA | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: [signature] #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/0.5 | 0.0<br>0.0 | 13/87<br>13/90 | SL-589 SA5D-SB 0.0-0.5 | 1030 | SM | SILTY SAND, dk yel brn (10YR 4/4) mottled w/ yel brn (10YR 5/4) and strong brn (7.5YR 5/6) f grn, poorly ~~sorted~~ graded smooth quartz dry, mod well compacted, dry, 70% SD 30% SILT tr ant clay increasing to 10% CLAY w/ depth |
| 1 | | 0.0 | 13/72 | | | | |
| 2 | 2.8/3.5 | 0.0 | 13/66 | | | | |
| 3 | | 0.0 | 13/108 | | | | GRADUAL TRANSITION 3.4 |
| 4 | | 0.0 | 13/78 | SL-589 SA5D-SB 4.0-5.0 | 1040 | SC | CLAYEY SAND, dk ~~gr~~ brn (10YR 3/3) mottled w/ dk yel brn (10YR 4/4) and strong brn (7.5YR 5/8) f grn, poorly ~~sorted~~ graded smooth, quartz, dry, clay is dissimulated in SD. 55% SD 30% CLAY 15% SILT. clay is low plasticity firm to hard, crumbly |
| 5 | 3.8/4.0 | 0.0 | 13/66 | | | | GRADUAL TRANSITION 5.4 |
| 6 | | 0.0 | 13/48 | | | CL | SANDY CLAY brn (7.5YR 4/4) mottled w/ strong brown (7.5YR 5/6) & lt yel brn (2.5Y 6/3), F-m grn SD is predominantly f grn, quartz, CLAY is, low plasticity hard, Friable, 60% CLAY 30% SD 10% SILT |
| 7 | | 0.0 | 13/48 | | | | |
| 8 | | 0.0 | 13/66 | | | | GRADUAL TRANSITION 8.6 |
| 9 | 4.0/4.0 | | 102 | | 1050 | CL | SANDY CLAY yel brn (10YR 5/8) mottled w/ dk yel brn (10YR 4/4) & brn (7.5YR 4/4), mod low plasticity, moderately crumbly, firm to sli soft, tr ant mottling w/ yel red (5YR 5/8) from 11-13' |
| 10 | | | 78 | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



**ABBREVIATIONS:**

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | φ: diameter | bgs:below ground surface |

| Location ID: DG-589 | Subarea: 5D | Date Started: 10-2-13 | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: David Rojas | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | CLAY ~~CLAYEY~~ SANDY see pg 1 |
| 11 | See Pg 1 | 0.0 | 13/90 | | | | |
| 12 | | 0.0 | 13/114 | | | SC | GRADUAL TRANSITION ~~SAND~~ CLAYEY SAND, dk yel brn (10YR 4/6) mottled w/ yel brn (10YR 5/8), f grn, poorly ~~sorted~~, graded quartz, clay is disturbed in sd CLAY is mod low plasticity, mod soft to sli firm, dry to sli moist, 60% SD 30% CLAY 10% SILT SM101413 — 11.8 |
| 13 | 4.0/4.0 | 0.0 | 13/66 | | | | |
| 14 | | 0.0 | 13/84 | SL-589 SA5D-SB 14.0-15.0 | 1100 | | |
| 15 | | 0.0 | 13/66 | | | | |
| 16 | | 0.0 | 13/72 | | | SC | CLAYEY SAND strong brn (7.5YR 5/6) mottled w/ brn (7.5YR 4/4) and yel red (5YR 4/6), A.A. — 15.6 |
| 17 | 3.5/4.0 | 0.0 | 13/84 | | | | |
| 18 | | 0.0 | 13/96 | | | | |
| 19 | | 0.0 | 13/84 | SL-589 SA5D-SB 19.0-20.0 | 1110 | | |
| 20 | | 0.0 | 13/42 | | | | |
| 21 | 4.0/4.0 | 0.0 | 13/84 | | CL | | Clay w/ sand SM101413 ~~SANDY CLAY~~ strong brn (7.5YR 4/6) mottled w/ dk yel brn (10YR 4/4) & yel red 5YR 4/6, mod low plasticity firm to sli soft, dry to sli moist 60% CLAY 25% SD 15% SILT — 20.3 |

CDM Smith

BORING LOG AND SAMPLING RECORD

| Location ID: DG-589 | Subarea: 5D | Date Started: 10-2-13 | Date Completed: 10-2-13 |
|---|---|---|---|
| Project: SSFL | | Geologist: David Rojas | Total Depth: 27.0' |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | SM101413 ~~SANDY CLAY~~ A.A Clay w/sand |
| 22 | | 0.0 | 13/42 | | | | |
| 23 | See pg 2 | 0.0 | 13/54 | | | | |
| 24 | | 0.0 | 13/78 | | | | |
| 25 | 3.0/3.0 | 0.0 | 13/78 | | | | |
| 26 | | 0.0 | 13/96 | | | | |
| 27 | | 0.0 | 13/66 | | | SP | SAND brn yel (10YR 6/6) mottled w/ pale brn (10YR 6/3) f-m gn, mod poorly ~~sorted~~ graded sr to sa, quartz, dry SM101413 |

26.6

Refusal @ 27.0' bls

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: |
| Company Name: CDM SMITH | Drill Contractor/Driller: | | |
| GPS collected? Yes or No | Drill Method: | | Depth Drilled into Bedrock: |
| Radiological Background: | Borehole diameter: | | |
| PID Background: | Depth to GW: | | Sampling Method: |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: | | Geologist: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

**CDM Smith**

## BORING LOG AND SAMPLING RECORD



**ABBREVIATIONS:**

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** [signature]

**Sample ID** SC-SB9-SASD-SB-4.0-5.0 **Date/Time** 10.2.13 / 1040

**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** DAVID ROJAS

**Sampler** VIDAL CORTES

## Analysis

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

| Parameter | Method | Analyze |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | X |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

2 16-OZ JARS & 2 ENCORES

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** DK BRN. (10 YR 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** Nate Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SC-590-SA5D-SB-0.0-0.5 Date/Time 9/6/13 @ 11:50

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

Start Depth 0.0

End Depth 0.5

**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 BKASPZYK

Sampler VCortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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 | ~~X~~ SM 9/6/13 |
| | Perchlorate Confirmation | EPA 6850/6860 | X |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | |

1-SS Sleeve
1-4oz VAR

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** DK Yellow 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** N/A

NA – Not Applicable

| Location ID: DG590 | Subarea: 5D | Date Started: 9/6/13 | Date Completed: 9/6/13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 12.0 / 11.8 / 11.7 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm/Rodriguez | | |
| GPS collected? Yes or No 16 (LW) 9/6/13 | Drill Method: DPT | | Depth Drilled into Bedrock: 0 |
| Radiological Background: α = 13 / 8/1=6.8 | Borehole diameter: 2.25 INCH | | |
| PID Background: 0.0 | Depth to GW: NA | | Sampling Method: Macro Core |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No: [signature] #7735 | | Geologist: BRASPZYK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 13/95 | SL590-SA5D-SB-0.0-0.5 | 11:50 | ML | SILT - DK YELLOWISH BROWN (10YR 5/6) 80% SILT, SOFT, NON-PLASTIC, DRY, 20% CLAY NO ODOR |
| | | 0.0 | 13/60 | | | | |
| 1 | | 0.0 | 66 | | | | |
| | 3.5/4.0 | | | | | | |
| 2 | | 0.0 | 78 | | | CL | CLAY - DK YELLOWISH BRN (10YR 5/6) 90% CLAY, HARD, NON-PLASTIC, DRY, 10% Gravel, FN, Rounded PG, INTER BEDDED SANDSTONE, FN, PG, LT. RED HIGHLY WEATHERED |
| 3 | | 0.0 | 66 | | | | |
| 4 | | 0.0 | 13/72 | SL-590 SA5D-SB-4.0-5.0MS | 12:00 | | |
| 5 | | 0.0 | 13/90 | SL 890-SA5D-SB-4.0-5.0 | 12:11 | | |
| 6 | 3.5/4.0 | 0.0 | 13/90 | | | | |
| 7 | | 0.0 | 13/90 | | | | GRADITIONAL CONTACT |
| 8 | | 0.0 | 13/72 | | | CL | CLAY - BROWNISH YELLOW (10YR 6/6) 100% CLAY, HARD NON PLASTIC DRY |
| 9 | 4.0/4.0 | 0.0 | 13/60 | | | | |
| 10 | | 0.0 | 13/66 | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



**ABBREVIATIONS:**

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG 590 | SD | 9/6/13 | 9/6/13 |
| **Project: SSFL** | | **Geologist:** | **Total Depth:** 12.0 |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | CL | CLAY - BROWNISH YELLOW (10YR 6/6) 100% CLAY, HARD NON PLASTIC DRY |
| 11 | | 0.0 | 13/12 | DG590 SB50-11.0-12.0 | 12:20 | ML | SANDY SILT - V PALE BROWN (10YR 7/4). 70% SILT, SOFT, DRY; SAND 30%, F, MD, LOOSE; NO ODOR |
| 12 | | 0.0 | 13/90 | | | | REFUSAL AT 12 FT |

**CDM Smith** **BORING LOG AND SAMPLING RECORD** Page 2 of 2

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortez

**Sample ID** SL-590-SA50-SB-4.0-5.0 MS **Date/Time** 9/6/13 @ 12:00

**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** BKASPZYIC

**Sampler** VCortez

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Inorganics | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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 | X |
| | pH | EPA 9045 (Soil) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | |
| | Herbicides | EPA 8151 | |
| | Pesticides | EPA 8081 | |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Organics | 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 | |
| Specialty | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

3-16 of 2 Jars

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** DK YELLOW BRN (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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortez

**Sample ID** SL-890-~~SSD~~ SASD -SB-4.0-5.0 (KW 9/6/13) **Date/Time** 9/6/13 @ 1210

**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** SL890-~~SSD~~ SASD -SB-4.0-5.0 MS (KW 9/6/13)

**Field Geologist** B Knapczyk

**Sampler** V Cortez

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Soil | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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 | X |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | |
| | Herbicides | EPA 8151 | |
| | Pesticides | EPA 8081 | |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Soil/Water | 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 | |
| Solid | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

1-16oz Jar

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** DK 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By [signature]

Sample ID SL-590-SASD-SB-11.0-12.0 Date/Time 9/6/13 12:20

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

Start Depth 11.0

End Depth 12.0

**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 [illegible]

Sampler ✓ Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Metals | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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 | X |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | |
| | Herbicides | EPA 8151 | |
| | Pesticides | EPA 8081 | |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Energetics | 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 | |
| Tributyltin | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

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

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. G

Sample ID SL-591-SA5D-SB-0.0-05 Date/Time 9/12/13 12:35

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

Start Depth 0.0

End Depth 0.5

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 NA

Field Geologist BKASP24L

Sampler V Cortez

Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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) | X |
| | | 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 | |

1 – SS Sleeve
1 – 4oz Jar

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** Brown 10 yr 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** Nikki Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DB 591 | 5D | 9/12/13 | 9/12/13 |

| | | |
|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | Total Depth: 7.1, 7.4, 7.4 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm | |
| GPS collected? Yes or No | Drill Method: DPT | Depth Drilled into Bedrock: 3.4 FT |
| Radiological Background: 9:13/16-90 | Borehole diameter: 2.25 | |
| PID Background: 0.0 ppm | Depth to GW: N/A | Sampling Method: Macro Core |
| Radiological Equipment Used: [✓] MicroR [✓] Alpha/Beta [✓] Pancake | PG Review & No.: Mike Hoffman #7735 | Geologist: RACHEVIC |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 0 | | 0.0 | 13/103 | SL591-SA5D-SB-0.0-0.5 | 1235 | CL | ~~CLAY SILT~~ 9/12/13 |
| 1 | 4.0 | 0.0 | 12/72 | | | ML CL | CLAY - BROWN 10YR 5/3, 80% CLAY, HARD, NON-PLASTIC, DRY 20% SILT, NO ODOR |
| 2 | 4.0 | 0.0 | 13/84 | | | | |
| 3 | | 0.0 | 13/84 | | | | |
| 4 | | 0.0 | 13/84 | | | | SILTSTONE - V PALE BROWN 10YR 7/4 FISSILE, HIGHLY WEATHERED, DRY |
| 5 | | 0.0 | 14/84 | | | MU | |
| 6 | | 0.0 | 12/72 | | | | |
| 7 | | 0.0 | 13/90 | SL591-SA5D-SB-6.5-7.5 | 1240 | | REFUSAL AT 7.4 FT ON BEDROCK |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V.S.

**Sample ID** SC-591-SA50-SB-6.5-7.5 **Date/Time** 9/12/13 12:40

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

**Start Depth** 6.5

**End Depth** 7.5

**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** Braepzyk

**Sampler** J Cortez

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | |
| | Herbicides | EPA 8151 | |
| | Pesticides | EPA 8081 | |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | 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 | |
| | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

1-1602 Jan

NA – Not Applicable



FSDS Revision 2.0 5/30/2012

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

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Gt

Sample ID SC-592-SA5D-SB-0.0-0.5 Date/Time 9-12-13 @ 12:00

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 NA

Field Geologist BKASPZYK

Sampler V Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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 | |

1-SS Sleeve

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** DK 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** Mike Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

| Location ID: DG592 | Subarea: 5D | Date Started: 9/12/13 | Date Completed: 9/12/13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 11.4, 11.2, 11.3 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: 1 FT |
| Radiological Background: γ = 13 AB-81 | Borehole diameter: 2.25 inch | | |
| PID Background: 0.0 | Depth to GW: NA | | Sampling Method: MacroCore |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No: Mike Hoffman #7735 | | Geologist: KASPAIK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 13/63 | SL592-SA-5D-SB-0.0-0.5 | 12:00 | CL | CLAY – DK Brown (10YR 3/3) 80% CLAY, Soft Non Plastic, Semi Moist, 20 SILT, No odors. |
| | | 0.0 | 13/72 | | | | |
| 1 | | 00 | 13/54 | | | | |
| 2 | 4.0/4.0 | 0.0 | 13/54 | | | | |
| 3 | | 0.0 | 13/78 | | | | |
| 4 | | 0.0 | 13/54 | SL-592-SA5D-SB-4.0-5.0 | 1205 | CL | SANDY CLAY – YELLOWISH BROWN 10YR 5/6; FIRM, NON PLASTIC CLAY 70%; 30% SAND, F-PG, SEMI MOIST NO ODOR |
| 5 | | 0.0 | 13 54 | | | | |
| 6 | 4.0/4.0 | 0.0 | 13/60 | | | | – Trace claystone |
| 7 | | 0.0 | 13/72 | | | | |
| 8 | | 0.0 | 13/66 | | | CL | AS ABOVE W/ color change to Brown 10YR 5/3 |
| 9 | 4 | | 66 | | | | |
| 10 | | | 66 | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



**ABBREVIATIONS:**

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | φ: diameter |

| Location ID: DG 592 | Subarea: SD | Date Started: 9/11/13 | Date Completed: 9/12/13 |
|---|---|---|---|
| Project: SSFL | | Geologist: [illegible] | Total Depth: 11.4 |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 4.0 / 4.0 | | | DG592-SASD-SB10.5-11.5 | 12:10 | CL | SANDY CLAY - BROWN (10YR 5/3), CLAY 60%, SOFT, NON PLASTIC SEMI MOIST; 40% SAND, F, PG, NO ODOR |
| 11 | | 00 | 13/84 | | | ML | SILTSTONE - V PALE BROWN (10YR 8/4) DRY. HIGHLY WEATHERED |
| | | 00 | 13/72 | | | | |
| | | ~~0.0~~ | ~~13/72~~ | | | | REFUSAL AT 11.4 FT ON ROCK |
| 12 | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.CK

Sample ID 4592-SA5D-4.0-5.0 Date/Time 9/12/13 12:05

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 BKASPRZYK

Sampler V CONTCG

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Inorganics | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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? |
|---|---|---|---|
| Organics | 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 | |
| Radiochemistry | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

1-16oz JAR

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** 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** Nikki Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cf

Sample ID SL592-SA5D-SB-10.5-16.5 Date/Time 9/12/13 12:10

Matrix (circle one): (Soil) Sediment Water

Start Depth 10.5

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 A Kasprzyk

Sampler V Cortez

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Metals | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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? |
|---|---|---|---|
| VOCs | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| Glycols | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | |
| | Glycols | EPA 8015 | |
| | Alcohols | EPA 8015 | |
| | Terphenyls | EPA 8015 | |
| Other | Nitrates | EPA 300.0/9056 | |
| | Energetics | EPA 8330 | |
| | Cyanide | EPA 9012 | |
| | Formaldehyde | EPA 8315 | |
| | NDMA | EPA 1625 | |
| Biological | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

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** ✓ Pale Brown 8/4

**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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By [signature]

Sample ID SL-593-SA5D-SB-0.0-0.5 Date/Time 10-7-13 / 1240

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

Start Depth 0.0

End Depth 0.5

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

Check if Composite ☐

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

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

Parent Sample ID NA

Field Geologist David Rojas

Sampler Vidal Cortes

**Analysis**

| Parameters | Method | Analyze |
|---|---|---|
| Metals | EPA 6010 | |
| | EPA 6020 | |
| | EPA 7471 (Soil) | |
| | EPA 7470 (Water) | |
| Fluoride | EPA 300.0/9056 | X |
| 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) | X |
| | EPA 9040 (Water) | |
| Hexavalent Chromium | EPA 7196/7199 | |
| Herbicides | EPA 8151 | |
| Pesticides | EPA 8081 | |

| Parameters | Method | Analyze |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 SS Sleeve & 1 4oz jar

# 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 (%)** None
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** ypl brn (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** Mike Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

| Location ID: DG-593 | Subarea: 5D | Date Started: 10-7-13 | Date Completed: 10-7-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 1st NA = 4.5' 2nd NA = 4.0 |
| Company Name: CDM SMITH | Drill Contractor/Driller: NA | | |
| GPS collected? Yes or No | Drill Method: Handauger | | Depth Drilled into Bedrock: NA |
| Radiological Background: γ = 16 αβ = 88 | Borehole diameter: 3" | | |
| PID Background: 0.0 ppm | Depth to GW: NA | | Sampling Method: Slide Hammer |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mike Hoffman #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/0.5 | 0.0<br>0.0 | 16/91<br>16/98 | SL-593 SA5D-SB 0.0-0.5 | 1240 | SM | SILTY SAND, yel brn (10YR 5/4), f grn, poorly ~~sorted~~ graded quartz, dry, tr amt org (roots); 70% SD, 30% SILT mod well compacted, silt is disseminated in sd SM101413 |
| 1 | HA | 0.0 | 16/90 | | | SM | SILTY SAND, yel brn (10YR 5/6) mottled w/ brn yel (10YR 6/6), f grn, poorly ~~sorted~~ graded quartz, dry; 65% SD 35% SILT, tr amt org (roots) sli to mod compacted silt is disseminated in sd SM101413 |
| 2 | | 0.0 | 16/102 | | | | |
| 3 | | 0.0 | 16/96 | | | SM | SILTY SAND, dk yel brn (10YR 4/4) mottled w/ yel brn (10YR 5/6) and lt yel brn (10YR 6/4), f-m grn mod poorly ~~sorted~~ graded sr quartz & sdstn; dry 75% SD 25% SILT SM101413 |
| 4 | | 0.0 | 16/60 | | | SC | CLAYEY SAND, lt olive brn (2.5Y 5/3) mottled w/ lt yel brn (2.5Y 6/4) and olive brn (2.5Y 4/4) f grn w/ tr amt med grn, poorly ~~sorted~~ graded sr, quartz, dry, CLAY is disseminated in sd and present as lenses, Clay is low plastic, firm to hard, crumbly, 65% SD, 25% CLAY 10% SILT SM101413 |
| 5 | | 0.0 | 16/72 | SL-593 SA5D-SB ~~4.0-5.0~~ 3.5-4.5 | 1300 | SM | SILTY SAND, same as 2.4-3.2 except few amt mod well cemeted sdstn gravel from 4.3'-4.5' bls f-m sized, pale brn (2.5Y 7/4) mottled w/ yellow (2.5Y 7/6) & brn yel (10YR 6/8) becoming better cemeted and more common w/ depth |

Refusal @ 4.5

0.8

2.4

3.2

3.8

4.

CDM Smith

**BORING LOG AND SAMPLING RECORD**



**ABBREVIATIONS:**

| | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Sky Mupel

Sample ID SL-593-SA5D-SB-~~4.0~~ 3.5-4.5 Date/Time 10-7-13/ 1300

Matrix (circle one): (Soil) Sediment Water

Start Depth ~~4.0~~ 3.5

End Depth ~~5.0~~ 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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

| Parameter | Method | Analyze? |
|---|---|---|
| Metals | EPA 6010 | |
| | EPA 6020 | |
| | EPA 7471 (Soil) | |
| | EPA 7470 (Water) | |
| Fluoride | EPA 300.0/9056 | X |
| 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) | X |
| | EPA 9040 (Water) | |
| Hexavalent Chromium | EPA 7196/7199 | |
| Herbicides | EPA 8151 | |
| Pesticides | EPA 8081 | |

| Parameter | Method | Analyze? |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 SS Sleeve & 1 4oz jar

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 (%)** None
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** Olive brn (2.5Y 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** [signature] **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SL-594-SA5D-SB-0.0-0.5 **Date/Time** 10-2-13 / 0940

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

**Start Depth** 0.0

**End Depth** 0.5

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

## Analysis

| Parameter | Method | Analyze? |
|---|---|---|
| Metals | EPA 6010 | |
| | EPA 6020 | |
| | EPA 7471 (Soil) | |
| | EPA 7470 (Water) | |
| Fluoride | EPA 300.0/9056 | X |
| 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 | |

| Parameter | Method | Analyze? |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 SS Sleeve

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 (%)** None

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** yel brn (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** Willis Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

| Location ID: DG-594 | Subarea: 5D | Date Started: 10-2-13 | Date Completed: 10-2-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1st DPT-8.0 2nd DPT = 7.7 3rd DPT = 7.7 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm | | |
| GPS collected? (Yes) or No | Drill Method: DPT | | Depth Drilled into Bedrock: NA |
| Radiological Background: χ = 12 AB = 74 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 ppm | Depth to GW: NA | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No: Nikki Hoffman #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (μR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 0 | 0.5/0.5 | 0.0<br>0.0 | 12/95<br>12/78 | SL-594 SA5D-SB 0.0-0.5 | 0940 | SM | SILTY SAND yel brn (10YR 5/4) F gr, poorly graded, quartz dry, mod well compacted, tr ort org (roots) 70% SD 30% SILT tr ort clay, becomes only sli compacted w/ depth |
| 1 | 2.2/3.5 | 0.0 | 12/72 | | | | |
| 2 | | 0.0 | 12/84 | | | | |
| 3 | | 0.0 | 12/90 | | | SC | CLAYEY SAND brn (7.5YR 4/4) F gr, poorly graded, quartz dry, sli to mod compacted, Clay is disseminated in SD 70% SD 20% CLAY 10% SILT |
| 4 | | 0.0 | 12/78 | SL-594 SA5D-SB 4.0-5.0 | 0950 | | |
| 5 | 4.0/4.0 | 0.0 | 12/66 | | | CL | Clay w/ sand → strong brn (7.5YR 4/6) mottled w/ (7.5YR 5/6) & (10YR 5/4) yel brn SANDY CLAY low plasticity, Firm to hard mod crumbly, dry to sli moist, becomes sandier w/ depth 55% CLAY 20% SD 25% SILT → 55% CLAY 40% SD 5% SILT |
| 6 | | 0.0 | 12/66/78 | | | SP-SC | Abrupt Contact SAND, brn yel (10YR 5/6) mottled w/ yel brn (10YR 5/4) F gr, poorly graded, quartz, dry to sli moist, 90% SD 10% CLAY, Clay is present as lenses @ 6.5' & 7.2' bls, Clay is mod low plasticity but same color as 4.8-6.0' bls |
| 7 | | 0.0 | 12/66/78 | SL-594 SA5D-SB 7.0-8.0 | 0955 | | |
| 8 | | 0.0 | 12/60 | | | | Refusal @ 8.0' bls |

graded SP 10/14/13 — 3.0 — graded SC 10/14/13 — 4.8 — 6.0

**CDM Smith** — **BORING LOG AND SAMPLING RECORD** — Page 1 of 1

| ABBREVIATIONS: | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.G.E

Sample ID SL-594-SA5D-SB-4.0-5.0 Date/Time 10-2-13/0950

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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

| Parameter | Method | Analyze? |
|---|---|---|
| Metals | EPA 6010 | |
| | EPA 6020 | |
| | EPA 7471 (Soil) | |
| | EPA 7470 (Water) | |
| Fluoride | EPA 300.0/9056 | X |
| 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 | |

| Parameter | Method | Analyze? |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 4oz jar

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 (%)** None
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** brn (7.5YR 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** Nila Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.S.T

Sample ID SL-594-SA5D-SB-7.0-8.0 Date/Time 10-2-13/0955

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

Start Depth 7.0

End Depth 8.0

**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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

**Analysis**

| Parameter | Method | Analysis |
|---|---|---|
| Metals | EPA 6010 | |
| | EPA 6020 | |
| | EPA 7471 (Soil) | |
| | EPA 7470 (Water) | |
| Fluoride | EPA 300.0/9056 | X |
| 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 | |

| Parameter | Method | Analysis |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 4oz jar

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 |

SM10413

### Fill Material

1. Is Fill Material Present Yes No
2. Percentage Fill (%) None
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 brn yel (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 NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By VLS

Sample ID SL-595-SA5D-SB-0.0-0.5 Date/Time 9-30-13/0950

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

Start Depth 0.0

End Depth 0.5

**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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

**Analysis**

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Metals | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | |
| | Herbicides | EPA 8151 | |
| | Pesticides | EPA 8081 | |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Energetics | 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 | |

1 SS Sleeve & 1 4oz jar

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 (%)** None
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** yel brn (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** Nathan Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

| Location ID: DG-595 | Subarea: 5D | Date Started: 9-30-13 | Date Completed: 9-30-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1st DPT = 17.6<br>2nd DPT = 17.6<br>3rd DPT 17.5 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm | | |
| GPS collected? (Yes) or No | Drill Method: DPT | | Depth Drilled into Bedrock: NA |
| Radiological Background: $\bar{X}$ = 12 $\sigma$ = 79 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 | Depth to GW: NA | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Nikki Hoffman #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 0 | 0.5 / 0.5 | 0.0<br>0.0 | 12/85<br>12/66 | SL-595 SA5D-SB 0.0-0.5 | 0950 | SM | SILTY SAND, yel brn (10YR 5/4) mottled w/ lt yel brn (10YR 6/4) F grn, mod well to well sorted, subrd, dry, mod well to well compacted, tr to Few dist organics (roots) some mod decayed and filled w/ $CaCO_3$ deposits, tr to Few ant laminations becoming more prevalent w/ depth, 70% SD, 20% SILT, 10% CLAY |
| 1 | 2.8 / 3.5 | 0.0 | 12/60 | | | | |
| 2 | | 0.0 | 12/72 | | | SC | CLAYEY SAND, brn (7.5YR 5/4) mottled w/ (7.5YR 4/3) F grn, well sorted, subrd, dry, well compacted, Clay is dispersed in SD, low plasticity, firm to mod hard 55% SD, 35% CLAY 10% SILT, tr ant org (roots) mod well laminated, Few root & burrow molds Filled w/ $CaCO_3$ deposits 1.6 |
| 3 | | 0.0 | 12/78 | | | CL | GRADUAL TRANSITION 3.0 |
| 4 | | 0.0 | 12/90 | SL-595 SA5D-SB 4.0-5.0 | 1000 | | CLAY w/ SAND, dk brn (7.5YR 3/4) mottled w/ strong brn (7.5YR 4/6) and brn (7.5YR 5/4), hard, low plasticity, crumbly tr to Few ant rootlets molds & burrows filled w/ $CaCO_3$ deposits 75% CLAY, 15% SD, 10% SILT, dry, slightly laminated less laminated and siltier w/ depth |
| 5 | 4.0 / 4.0 | 0.0 | 12/60 | | | | |
| 6 | | 0.0 | 12/78 | | | CL | GRADUAL TRANSITION 6.0 |
| 7 | | 0.0 | 12/66 | | | | CLAY ~~w/ SAND~~, strong brown (7.5YR 4/6) mottled w/ brown (7.5YR 4/4) and lt brn (7.5YR 6/3), some mottles w/ strong brown (7.5YR 5/8) w/ depth, A.A except less laminated & siltier 75% CLAY, 15% SILT 10% SD |
| 8 | | 0.0 | 12/72 | | | | |
| 9 | 4.0 / 4.0 | 0.0 | 12/60 | SL-595 SA5D-SB 9.0-10.0 | 1010 | CL | GRADUAL TRANSITION 9.0 |
| 10 | | 0.0 | 12/90 | | | | CLAY ~~w/ SAND~~ dk yel brn (10YR 4/4) mottled w/ yel brn (10YR 5/8), hard to firm, mod low plasticity, moderately crumbly, 80% CLAY, 15% SILT, 5% SD, dry becoming slightly moist w/ depth |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



| ABBREVIATIONS: | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: DG-595 | Subarea: 5D | Date Started: 9-30-13 | Date Completed: 9-30-13 |
|---|---|---|---|
| Project: SSFL | | Geologist: David Rojas | Total Depth: 17.7 |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | CLAY A.A see Pg 1 |
| 11 | See Pg 1 | 0.0 | 12/78 | | | | |
| 12 | | 0.0 | 12/72 | | | | |
| 13 | | 0.0 | 12/66 | | | | |
| 14 | 3.6/4.0 | 0.0 | 12/72 | SL-595 SA5D-SB 14.0-15.0 | 1020 | | |
| 15 | | 0.0 | 12/84 | | | | |
| 16 | | 0.0 | 12/72 | | | | |
| 17 | 1.6/1.7 | 0.0 | 12/60 | SL-595 SA5D-SB 17.0-18.0 | 1030 | SC | CLAYEY SAND, yel brn (10YR 5/4) mottled w/ pale brn (10YR 6/3), f grn, well sorted, fract clay is disminated in SD, clay is mod low plasticity, mod soft to firm, sli crumbly, dry to sli moist. — 16.3 |
| 17.0-18.0 | | 0.0 | 12/66 | ~~ORR~~ | | | — 17.7 |
| 18 | | | | | | | REFUSAL @ 17.7' |

CDM Smith

**BORING LOG AND SAMPLING RECORD**

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V.R.S

**Sample ID** SL-595-SA5D-SB-4.0-5.0 **Date/Time** 9-30-13/1000

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Soil | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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? |
|---|---|---|---|
| Soil | 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 | |

1 9 oz jar

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 (%)** None

**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** dk brn (7.5YR 3/4)

**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** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.G.K

Sample ID SL-595-SA5D-SB-9.0-10.0 Date/Time 9-30-13 / 1010

**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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Soil | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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? |
|---|---|---|---|
| Soil | 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 | |

1 9oz jar

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 (%)** None

**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** dk yel 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** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.G.B

Sample ID SL-595-SA5D-SB-14.0-15.0 Date/Time 9-30-13/1020

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

Start Depth 14.0

End Depth 15.0

**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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

**Analysis**

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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? |
|---|---|---|---|
| Explosives | 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 | |

1 9oz jar

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 (%)** NONE
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** dk yel 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** [signature] **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By [signature]

Sample ID SL-595-SA5D-SB-17.0-18.0 Date/Time 9-30-13/1030

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

Start Depth 17.0

End Depth 18.0

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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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 | |

1 9oz jar

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 (%)** None
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** yel brn (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** _____ **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** Y. Cortez

**Sample ID** SW-596-SA50-SB-00-0.5 **Date/Time** 9-30-13/1235

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

**Start Depth** 0.0

**End Depth** 0.5

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

## Analysis

| Parameters | Method | Analyze? |
|---|---|---|
| Metals | EPA 6010 | |
| | EPA 6020 | |
| | EPA 7471 (Soil) | |
| | EPA 7470 (Water) | |
| Fluoride | EPA 300.0/9056 | X |
| 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? |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 SS Sleeve

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 (%)** None
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** brn (7.5YR 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** NA

NA – Not Applicable

| Location ID: DG-596 | Subarea: 5D | Date Started: 9-30-13 | Date Completed: 9-30-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1st DPT = 12.4<br>2nd DPT = 12.5<br>3rd DPT = 12.5 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm | | |
| GPS collected? (Yes) or No | Drill Method: DPT | | Depth Drilled into Bedrock: NA |
| Radiological Background: $\gamma$ = 12 $\alpha/\beta$ = 83 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 ppm | Depth to GW: NA | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: [signature] #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 0 | 0.5/0.5 | 0.0 | 12/102<br>12/60 | SL-596 SA5D-SB 0.0-0.5 | 1235 | SC | CLAYEY SAND, brn (7.5YR 4/4) mottled w/ strong brown 7.5YR 4/6, F gr, well sorted, quartz, dry, clay is disseminated in sd. low plasticity, crumbly, Firm to sli soft 60% SD 30% CLAY 10% SILT, tr to few org (roots) |
| 1 | 3.0/3.5 | 0.0 | 12/66 | | | CL | SANDY CLAY, dk brn (7.5YR 3/4) mottled w/ brn 7.5YR 4/4 and strong brn (7.5YR 4/6), low plasticity, Firm to hard, dry, tr to Fa ant org (roots), Few to some root molds & burrows filled w/ $CaCO_3$ deposits sli to mod laminated, mod well to well compacted |
| 2 | | 0.0 | 12/66 | | | | |
| 3 | | 0.0 | 12/60 | | | | |
| 4 | | 0.0 | 12/72 | | | | Abrupt Contact |
| 4 | | 0.0 | | SL-596 SA5D-SB 4.0-5.0 | 1245 | CL | CLAY, strong brown (7.5YR 4/6) mottled w/ strong brown (7.5YR 4/6), del brn (10YR 5/6) and brn yel (10YR 6/8) low plasticity, Firm to hard, crumbly, sli to mod silty 70% CLAY 20% SILT 10% SD, sli to mod laminated, becoming more laminated and less silty w/ depth, tr ant org (roots) mod well compacted |
| 5 | 4.0/4.0 | 0.0 | 12/66 | | | | |
| 6 | | 0.0 | 12/90 | | | | |
| 7 | | 0.0 | 12/72 | | | | |
| 8 | | 0.0 | 12/90 | | | | |
| 9 | 4.0/4.0 | 0.0 | 12/60 | | | | GRADUAL CONTACT |
| 9 | | 0.0 | 12/72 | | | CL | CLAY, yel brn (10YR 5/4) mottled w/ (10YR 5/8) and dk grayish brown (2.5Y 4/2), Firm, mod low plasticity, moderately crumbly, dry to sli moist, tr ant org (roots) 80% CLAY, 15% SILT, 5% SD, mod well compacted |

No Sample

0.5

4.0

9.0

**CDM Smith** **BORING LOG AND SAMPLING RECORD** Page 1 of 2

| ABBREVIATIONS: | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: DC-596 | Subarea: 5D | Date Started: 9-30-13 | Date Completed: 9-30-13 |
|---|---|---|---|
| Project: SSFL | | Geologist: David Rojas | Total Depth: 12.5 |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | CLAY - See Pg 1 |
| 11 | See Pg 1 | 0.0 | 12/78 | | | | CLAY WITH SAND |
| | | | | | | | ~~SAND~~ Abrupt Contact 11.5 |
| | | | | SL-596 SA5D-SB 11.5-12.5 | 1255 | CL | ~~SANDY CLAY~~, dk yel brn (10YR 4/4) mottled w/ yel brn (10YR 5/4) and lt yel brn (10YR 6/4), hard, low plasticity, well compacted, SD is disseminated in clay, ~~65~~ 75% CLAY, 30% SD, ~~5~~ 10% SILT, dry |
| 12 | | 0.0 | 12/72 | | | | |
| | | 0.0 | 12/72 | | | | 12.5 |
| | | | | | | | Refusal @ 12.5' bs |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL-596-SA5D-SB-4.0-5.0 Date/Time 9-30-13 / 1245

**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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Target | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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? |
|---|---|---|---|
| Target | 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 | |
| Suspect | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

1 ~~8~~ oz jar

# 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 (%)** None

**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 7.5YR (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** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SL-596-SA5D-SB-11.5-12.5 **Date/Time** 9-30-13/ 1255

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

**Start Depth** 11.5

**End Depth** 12.5

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

**Analysis**

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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 | |
| | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

~~1 Jar~~ 1 ~~4~~ 4 oz jar

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 w/SAND |
| | | | | 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 (%)** None

**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** dk yel 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** [signature] **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SL-597-SA5D-SB-0.0-0.5 **Date/Time** 9-30-13/ 1340

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

**Start Depth** 0.0

**End Depth** 0.5

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

**Analysis**

| Parameter | Lab Method | Analyze |
|---|---|---|
| Metals | EPA 6010 | |
| | EPA 6020 | |
| | EPA 7471 (Soil) | |
| | EPA 7470 (Water) | |
| Fluoride | EPA 300.0/9056 | X |
| 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) | X |
| | EPA 9040 (Water) | |
| Hexavalent Chromium | EPA 7196/7199 | |
| Herbicides | EPA 8151 | |
| Pesticides | EPA 8081 | |

| Parameter | Lab Method | Analyze |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 SS Sleeve & 1 4oz jar

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 (%)** None
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** brn (7.5YR 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** NA

NA – Not Applicable

| Location ID: DG-597 | Subarea: 5D | Date Started: 9-30-13 | Date Completed: 9-30-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1st DPT = 17.6 2nd DPT = 18.0 ~~3rd DPT~~ |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm | | |
| GPS collected? (Yes) or No | Drill Method: DPT | | Depth Drilled into Bedrock: NA |
| Radiological Background: $\gamma$=12 $\alpha\beta$=75 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 ppm | Depth to GW: NA | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mike Hoffman #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/0.5 | 0.0 | 12/63 | SL-597 SASD-SB 0.0-0.5 | 1340 | SC | CLAYEY SAND brn (7.5YR 4/4) mottled w/ strong brn (7.5YR 4/6) F grn, well sorted, round, dry, clay is dissemnated in sd, low plasticity, crumbly, firm to sli soft |
| | | 0.0 | 12/60 | | | | |
| 1 | 3.5/3.5 | 0.0 | 12/60 | | | CL | 60% SD, 25% CLAY, 15% SILT GRADUAL CONTACT 1.0 |
| 2 | | 0.0 | 12/54 | | | CL | SANDY CLAY, yel brn (10YR 5/4) mottled w/ (10YR 5/6) & (10YR 5/8), low plasticity, mod well to well ~~consolidated~~ compacted, sli to mod laminated SD is dissemnated in clay, 60% CLAY, 30% SD 10% SILT, becomes siltier w/ depth, dry |
| 3 | | 0.0 | 12/66 | | | CL | ~~SILTY~~ CLAY, dk yel brn (10YR 4/4) mottled w/ yel brn (10YR 5/4), low plasticity, firm to hard, well compacted, sli to moderately laminated, 60% CLAY 30% SILT, 10% SD, dry ABRUPT CONTACT 2.7 |
| 4 | | 0.0 | 12/78 | SL-597 SASD-SB 4.0-5.0 | 1356 | | |
| 5 | 3.7/4.0 | 0.6 | 12/66 | | | | |
| 6 | | 0.0 | 12/78 | | | | |
| 7 | | 0.0 | 12/84 | | | | |
| 8 | | 0.0 | 12/72 | | | | |
| 9 | | | 84 | SL-597 SASD-SB 9.0-10.0 | 1400 | CL | ~~SANDY~~ W/SAND CLAY yel brn (10YR 5/4) mottled w/ (10YR 5/6) and (10YR 5/8), hard, low plasticity, well compacted sli laminated, dry to sli moist 70% CLAY 20% SD 10% SILT 8.5 |
| 10 | | | 90 | | | | |

**CDM Smith** **BORING LOG AND SAMPLING RECORD** Page 1 of 2

ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: DG-597 | Subarea: 5D | Date Started: 9-30-13 | Date Completed: 9-30-13 |
|---|---|---|---|
| Project: SSFL | | Geologist: David Rojas | Total Depth: 18.0 |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 11 | | 0.0 | 12/78 | | | CL | CLAY, dk yel brn (10YR 4/4) mottled w/ yel brn (10YR 5/6), hard, mod low plasticity mod crumbly dry to sli moist, 80% CLAY 15% SILT, 5% SD tr amt mottles w/ brn yellow (10YR 6/8) |
| 12 | | 0.0 | 12/72 | | | | 12 |
| 13 | 4.0/4.0 | 0.0 | 12/60 | | | CL | SANDY CLAY, lt yel brn (10YR 6/4) mottled w/ brn yel (10YR 6/6) & tr amt strong brown (7.5YR 5/8) low plasticity, firm, crumbly, dry to sli moist 65% CLAY, 30% SD, 5% SILT, becoming silty w/ depth |
| 14 | | 0.0 | 12/84 | SL-597 SA5D-SB 14.0-15.0 | 1410 | CL | 13.6 CLAY w/ SAND, yel brn (10YR 5/4) mottled w/ (10YR 5/6) and lt yel brn (10YR 6/4), low plasticity, mod firm to sli soft, crumbly, dry, mod well laminated becoming more laminated w/ depth to 16.5 then sli laminated from 16.5 to 18.0 ~~80~~ 70% CLAY, 10% SILT, 20% SD |
| 15 | | 0.0 | 12/90 | | | | |
| 16 | | 0.0 | 12/108 | | | | |
| 17 | | 0.0 | 12/72 | SL-597 SA5D-SB 17.0-18.0 | 1410 1415 | | |
| 18 | | 0.0 | 12/72 | | | | 18.0 Refusal @ 18.0' bls |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. C/E

**Sample ID** SL-597-SA5D-SB-4.0-5.0 **Date/Time** 9-30-13 / 1350

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Metals | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | |
| | Herbicides | EPA 8151 | |
| | Pesticides | EPA 8081 | |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Energetics | 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 | |
| Organotin | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

1 9oz jar

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 (%)** None
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** dk yel 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** Nikki Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortez

**Sample ID** SL-597-SA5D-SB-9.0-10.0 **Date/Time** 9-30-13 / 1400

**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** NA

**Field Geologist** DAVID ROJAS

**Sampler** VIDAL CORTES

**Analysis**

| Parameters | Method | Analyze? |
|---|---|---|
| Metals | EPA 6010 | |
| | EPA 6020 | |
| | EPA 7471 (Soil) | |
| | EPA 7470 (Water) | |
| Fluoride | EPA 300.0/9056 | X |
| 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) | X |
| | EPA 9040 (Water) | |
| Hexavalent Chromium | EPA 7196/7199 | |
| Herbicides | EPA 8151 | |
| Pesticides | EPA 8081 | |

| Parameters | Method | Analyze? |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 9 oz jar

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 (%)** None
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** yel brn (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** _____ **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.G.T

Sample ID SL-597-SA5D-SB-14.0-15.0 Date/Time 9-30-13/1410

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

Start Depth 14.0

End Depth 15.0

**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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

| Parameters | Method | Analyze |
|---|---|---|
| Metals | EPA 6010 | |
| | EPA 6020 | |
| | EPA 7471 (Soil) | |
| | EPA 7470 (Water) | |
| Fluoride | EPA 300.0/9056 | X |
| 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) | X |
| | EPA 9040 (Water) | |
| Hexavalent Chromium | EPA 7196/7199 | |
| Herbicides | EPA 8151 | |
| Pesticides | EPA 8081 | |

| Parameters | Method | Analyze |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 9oz jar

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 (%)** None

**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** yel brn (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** Nikki Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.GA

Sample ID SL-597-SA5D-8B-~~16.5~~ 17.0 - 18.0 Date/Time 9-30-13/ ~~1400~~ 1415

Matrix (circle one): (Soil) Sediment Water

Start Depth ~~16.5~~ 17.0

End Depth ~~17.5~~ 18.0

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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

| Parameters | Method | Analysis |
|---|---|---|
| Metals | EPA 6010 | |
| | EPA 6020 | |
| | EPA 7471 (Soil) | |
| | EPA 7470 (Water) | |
| Fluoride | EPA 300.0/9056 | X |
| 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) | X |
| | EPA 9040 (Water) | |
| Hexavalent Chromium | EPA 7196/7199 | |
| Herbicides | EPA 8151 | |
| Pesticides | EPA 8081 | |

| Parameters | Method | Analysis |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 9oz jar

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 (%)** None
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** yel brn (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** Mike Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Gf

**Sample ID** SL-598-SA5D-SB-0.0-0.5 **Date/Time** 10-1-13/ 0835

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

**Start Depth** 0.0

**End Depth** 0.5

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

## Analysis

| Parameters | Method | Analysis |
|---|---|---|
| Metals | EPA 6010 | |
| | EPA 6020 | |
| | EPA 7471 (Soil) | |
| | EPA 7470 (Water) | |
| Fluoride | EPA 300.0/9056 | X |
| 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 | Analysis |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 SS Sleeve

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 (%)** None
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** H brown 7.5YR 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** Mike Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

| Location ID: DG-598 | Subarea: 5D | Date Started: 10-1-13 | Date Completed: 10-1-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1st DPT = 18.8 2nd DPT = 18.7 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: NA |
| Radiological Background: γ = 12 αβ = 75 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 ppm | Depth to GW: NA | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No. Mike Hoffman #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/0.5 | 0.0<br>0.0 | 12/81<br>12/66 | SL-598 SA5D-SB 0.0-0.5 | 0835 | ~~SP~~ SM | Silty SAND ~~w/ silt~~ brown (7.5YR 5/4) f gm, mod poorly ~~sorted~~ to poorly graded quartz, dry; 85% SD 10% SILT 5% CLAY, tr to few amt org (roots), few to some compacted material — 0.5 |
| 1 | 3.0/3.5 | 0.0 | 12/36 | | | SM | SILTY SAND, brn (7.5YR 5/4) f gm w/ tr amt med gm mod poorly ~~sorted~~ graded, subrounded to subangular, quartz dry, mod well compacted, sli laminated, rootlet molds & burrows filled w/ $CaCO_3$ deposits. 80% SD 25% SILT 15% CLAY |
| 2 | | 0.0 | 12/66 | | | | |
| 3 | | 0.0 | 12/72 | | | SC | CLAYEY SAND, dk yel brn (10YR 4/4) mottled w/ yel brn (10YR 5/6) f gm, mod poorly to poorly ~~sorted~~ graded quartz dry; 60% SD, 30% CLAY, 10% SILT, mod well to well compacted, sli laminated, rootlet molds & burrows filled w/ $CaCO_3$ deposits becoming more laminated w/ depth — 2.5 |
| 4 | | 0.0 | 12/90 | SL-598 SA5D-SB 4.0-5.0 | 0845 | | |
| 5 | 4.0/4.0 | 0.0 | 12/60 | | | | |
| 6 | | 0.0 | 12/54 | | | | GRADUAL TRANSITION |
| 7 | | 0.0 | 12/78 | | | CL | SANDY CLAY, dk yel brn (10YR 4/4) mottled w/ yel brn (10YR 5/6), strong brn (7.5YR 5/8) and tr amt yel red (5YR 5/8) and black (5YR 2.5/1), low plasticity, firm to hard, crumbly, dry becoming sli moist w/ depth 60% CLAY, 30% SD 10% SILT — 6.0 |
| 8 | | 0.0 | 12/60 | | | | GRADUAL TRANSITION |
| 9 | | 0.0 | 12/48 | SL-598 SA5D-SB 9.0-10.0 | 0855 | CL | CLAY, brown (10YR 4/3) mottled w/ strong brn (7.5YR 4/6) mod low plasticity, mod crumbly, firm to hard, dry to sli moist; 80% CLAY 10% SILT 10% SD becoming less sandy w/ depth, tr amt mottling w/ black w/ depth — 8.5 |
| 10 | | 0.0 | 12/66 | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



**ABBREVIATIONS:**

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | φ: diameter | bgs:below ground surface |

| Location ID: DG-598 | Subarea: 5D | Date Started: 10-1-13 | Date Completed: 10-1-13 |
|---|---|---|---|
| Project: SSFL | | Geologist: David Rojas | Total Depth: 18.8 |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | CLAY A.A See Pg 1 |
| 11 | See Pg 1 | 0.0 | 12/90 | | | | |
| 12 | | 0.0 | 12/60 | | | | |
| | | | | | | | GRADUAL TRANSITION |
| 13 | | 0.0 | 12/60 | | | CL | CLAY yel brn (10YR 5/6) mottled w/ (10YR 5/4) and brownish yel (10YR 6/6), mod low plastic becoming more plastic w/depth, sli to mod crumbly, sli moist 90% CLAY, 10% SILT, tr ant F-gru SD, Firm to sli soft, some mottly w/ strong brown (7.5YR 5/8) w/depth. |
| | 4.0/4.0 | | | | | | |
| 14 | | 0.0 | 12/84 | SL-598 SA5D-SB 14.0-15.0 | 0905 | | |
| 15 | | 0.0 | 12/78 | | | | |
| 16 | | 0.0 | 12/66 | | | | CLAY w/SAND, A.A. except 70% CLAY 15% SD 15% SILT |
| 17 | 2.8/2.8 | 0.0 | 12/90 | | | | |
| 18 | | 0.0 | 12/98 | SL-598 SA5D-SB 18.0-19.0 | 0915 | | |
| | | 0.0 | 12/48 | | | | Refusal @ 18.8' bls |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By √. GL

Sample ID SL-598-SA5D-SB-4.0-5.0 Date/Time 10-1-13 / 0845

**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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

**Analysis**

| Parameter | Method | |
|---|---|---|
| Metals | EPA 6010 | |
| | EPA 6020 | |
| | EPA 7471 (Soil) | |
| | EPA 7470 (Water) | |
| Fluoride | EPA 300.0/9056 | X |
| 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 | |

| Parameter | Method | |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 Hoz jar

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 (%)** NONE
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** dk yel 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** [signature] **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. SK

Sample ID SL-59B-SA5D-SB-9.0-10.0 Date/Time 10-1-13 / 0855

**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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

| Parameter | Method | Analyze? |
|---|---|---|
| Metals | EPA 6010 | |
| | EPA 6020 | |
| | EPA 7471 (Soil) | |
| | EPA 7470 (Water) | |
| Fluoride | EPA 300.0/9056 | X |
| 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 | |

| Parameter | Method | Analyze? |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 4oz jar

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 (%) None
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** brn (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** [signature] **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. G K

**Sample ID** SL-598-SA5D-SB-14.0-15.0 **Date/Time** 10-1-13/0905

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

**Start Depth** 14.0

**End Depth** 15.0

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

**Analysis**

| Parameter | Method | Analyze |
|---|---|---|
| Metals | EPA 6010 | |
| | EPA 6020 | |
| | EPA 7471 (Soil) | |
| | EPA 7470 (Water) | |
| Fluoride | EPA 300.0/9056 | X |
| 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 | |

| Parameter | Method | Analyze |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 4oz jar

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 (%)** None
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** yel brn (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** [signature] **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL-598-SA5D-SB-18.0-19.0 Date/Time 10-1-13 / 0915

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

Start Depth 18.0

End Depth 19.0

**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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

| Parameter | Method | Analyze |
|---|---|---|
| Metals | EPA 6010 | |
| | EPA 6020 | |
| | EPA 7471 (Soil) | |
| | EPA 7470 (Water) | |
| Fluoride | EPA 300.0/9056 | X |
| 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 | |

| Parameter | Method | Analyze |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 4oz jar

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 w/SAND |
| | | | | 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 (%)** None
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** yel brn (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** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SL-599-SA50-SB-00-0.5 **Date/Time** 9/9/13 @ 7:45

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

**Start Depth** 0.0

**End Depth** 0.5

**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** NA

**Field Geologist** BKASPZYK

**Sampler** V CORTES

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Chemistry | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | |
| | Herbicides | EPA 8151 | |
| | Pesticides | EPA 8081 | |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Chemistry | 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 | |
| Biology | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

1-SS Sleeve
1-4oz JAR

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** DK 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** _____ **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG-599 | SD | 9/9/13 | 9/9/13 |

| | | |
|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | Total Depth: |
| Company Name: CDM SMITH | Drill Contractor/Driller: STRONGARM/R. PANIAGUA | 23FT/23FT |
| GPS collected? (Yes) or No | Drill Method: DPT | Depth Drilled into Bedrock: |
| Radiological Background: $\lambda$=13 / VB=67 | Borehole diameter: 2.25 INCH | 0 |
| PID Background: | Depth to GW: NA | Sampling Method: |
| Radiological Equipment Used: | PG Review & No.: | MACRO CORE |
| ✓ MicroR ✓ Alpha/Beta ✓ Pancake | Mike Hoffman #7735 | Geologist: S KASHYAP |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological ($\mu$R/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 1 | 3.0/4.0 | 00 | 13/66 | SL-599-SA5D-SB-00-0.5 | 7:45 | ML | SILT W SAND – DK BROWN (10YR 3/3) – 80% FIRM NONPLASTIC, DRY; 20% SAND, SILT FINE, PG; NO ODOR |
| 2 | | 00 | 13/78 | | | | |
| 3 | | 00 | 13/72 | | | | |
| 4 | | 00 | 13/66 | SL-599-SA5D-SB-4.0-5.0 | 7:55 | | GRADATIONAL CONTACT |
| 5 | 4.0/4.0 | 00 | 13/66 | | | CL | CLAY – STRONG BROWN 7.5YR (5/6); 70% CLAY, HARD, NON PLASTIC, SEMI MOIST, 30% SILT, NO ODOR TRACE LIGNIGHT. |
| 6 | | 0.0 | 13/72 | | | | |
| 7 | | 0.0 | 13/90 | | | | |
| 8 | | 00 | 13/102 | | | CL | AS ABOVE |
| 9 | 4.0/4.0 | 00 | 13/60 | SL-599-SA5D-SB-9.0-10.0 | 8:05 | | |
| 10 | | | 13/72 | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DB599 | SD | 9/9/13 | 9/9/13 |
| **Project: SSFL** | | **Geologist:** R. Kasprzyk | **Total Depth:** 23 FT |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 11 | 4.0 / 4.0 | 0.0 | 13/78 | | | CL | CLAY – STRONG BROWN (7.5 YR 5/6); 70% CLAY, HARD NON PLASTIC, SEMI MOIST; 30% SILT; NO ODOR TRACE LIGNITE. |
| 12 | | 0.0 | 13/84 | | | | |
| 13 | | 0.0 | 13/84 | | | CL | AS ABOVE |
| | 4.0 | | | | | | |
| 14 | 4.0 | 0.0 | 13/90 | SL-599-SASD-SB-14.0-15.0 | 8:15 | | |
| 15 | | 0.0 | 13/72 | | | | |
| 16 | | 0.0 | 13/90 | | | CL | AS ABOVE |
| 17 | | | 13/84 | | | | |
| 18 | 4.0 / 4.0 | | 13/84 | | | | |
| 19 | | | 13/96 | SL-599-SASD-SB-19.8-20.0 | 8:25 | | |
| 20 | | | 13/78 | | | CL | CLAY W/SAND – STRONG BROWN (7.5 YR 5/6); 60% CLAY, HARD, NON PLASTIC, SEMI MOIST; 20% SILT, 20% ~~Gravel~~ SAND w/ white Calcium Carbonate |
| | 3.0 / 3.0 | | /84 | | | | TRACE FINE GRAVEL |

CDM Smith

**BORING LOG AND SAMPLING RECORD**

| Location ID: DG599 | Subarea: 5D | Date Started: 9/9/13 | Date Completed: 9/9/13 |
|---|---|---|---|
| Project: SSFL | | Geologist: BKASPZYK | Total Depth: 23 FT |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 3.0 / 3.0 | | | | | CL | CLAY W/ SAND - STRONG-BROWN (7.5YR 5/6); 60% Clay, HARD, non plastic Semi MOIST; 20% SILT; 20% SAND, Fn, pg; Trace gravel w/ white Calcium Carbonate |
| 22 | | 0.0 | 13/90 | SL-599-SA50-SB-220-23.0 | 8:35 | | |
| 23 | | 0.0 | 13/72 | | | | |
| | | | | | | | REFUSAL AT 23 FT |
| 24 | | | | | | | |
| 25 | | | | | | | |
| 26 | | | | | | | |
| 27 | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: |
| Company Name: CDM SMITH | Drill Contractor/Driller: | | |
| GPS collected? Yes or No | Drill Method: | | Depth Drilled into Bedrock: |
| Radiological Background: | Borehole diameter: | | |
| PID Background: | Depth to GW: | | Sampling Method: |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: | | Geologist: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

RM 9/9/13

CDM Smith

# BORING LOG AND SAMPLING RECORD

Page 1 of ___

ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SL-599-SASB-SB-4.0-5.0 **Date/Time** 9/9/13 @ 7:55

**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** NA

**Field Geologist** BLASZYK

**Sampler** VCORTES

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Soil/Sediment | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | |
| | Herbicides | EPA 8151 | |
| | Pesticides | EPA 8081 | |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Soil/Sediment | 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 | |

1-16oz Jar

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** Strong brown (7.5 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** _____ **PG Registration #** 7735

**Additional Comments** M-H

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL-599-SASD-SB-9.0-10.0 Date/Time 9/9/13 @ 8:05

**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 B KASPERYC

Sampler V Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | |
| | Herbicides | EPA 8151 | |
| | Pesticides | EPA 8081 | |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Energetics | 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 | |

1-16 oz VAR

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** Strong brown (7.5 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** _____ **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SC-599-SA5D-EB-14.0-15.0 **Date/Time** 9/9/13 @ 8:15

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

**Start Depth** 14.0

**End Depth** 15.0

**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** BKASPZYLC

**Sampler** V Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | |
| | Herbicides | EPA 8151 | |
| | Pesticides | EPA 8081 | |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Enpores | 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 | |

1 - 16 oz VAR

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** Strong brown (7.5 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** Julia Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL-599-SA5D-SB-19.0-20.0 Date/Time 9/9/13 @ 8:25

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

Start Depth 19.0

End Depth 20.0

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 BRASPZYK

Sampler V Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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) | X |
| | | 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 | |

1-16 oz JAR

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** Strong Brown (7.5YR 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** N/A

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** VLA

**Sample ID** SC-599-SASD-SB-220-23.0 **Date/Time** 8/9/13 @ 8:35

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

**Start Depth** 22.0

**End Depth** 23.0

**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** NA

**Field Geologist** B KACZYK

**Sampler** V CONTES

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | |
| | Herbicides | EPA 8151 | |
| | Pesticides | EPA 8081 | |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Explosives | 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 | |
| Specialty | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

1-160z VAR

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** Strong brown (7.5YR 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cr

Sample ID SL-600-SA5D-SB-0.0-0.5MS Date/Time 10-2-13 / 1325

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

Start Depth 0.0

End Depth 0.5

**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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

**Analysis**

| Constituent | Method | Check |
|---|---|---|
| Metals | EPA 6010 | |
| | EPA 6020 | |
| | EPA 7471 (Soil) | |
| | EPA 7470 (Water) | |
| Fluoride | EPA 300.0/9056 | X |
| 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) | X |
| | EPA 9040 (Water) | |
| Hexavalent Chromium | EPA 7196/7199 | |
| Herbicides | EPA 8151 | |
| Pesticides | EPA 8081 | |

| Constituent | Method | Check |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

3 SS Sleeves + 1 9oz jar

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 (%)** None
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** dk red brn (5YR 4/2)

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

**Additional Comments** NA

NA – Not Applicable

| Location ID: DG-~~3~~600 | Subarea: 5D | Date Started: 10-2-13 | Date Completed: 10-2-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1st DPT = 19.4 ~~2nd DPT~~ |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: NA |
| Radiological Background: γ = 12 αβ = 68 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 ppm | Depth to GW: NA | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mike [illegible] #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/0.5 | 0.0<br>0.0 | 12/80<br>12/72 | SL-~~3~~600 SA5D-SB 0.0-0.5 | 1325 | SP-SM | SAND w/SILT, dk red brn (5YR 4/2), f grn w/ few med grn, poorly ~~graded~~ sm101415 subrounded to subangular, quartz, dry, 90% SD 10% SILT, tr to few amt org (roots) 0.8 |
| 1 | | 0.0 | 12/78 | AND SL-900 SA5D-SB 0.0-0.5 | 1330 | SM | SILTY SAND, dk brn (7.5YR 3/4) mottled w/ brown (7.5YR 4/3) f grn, poorly ~~sorted~~ graded sm101413 sr to sa, quartz, dry tr amt clay dispersed in SD. 75% SD 20% SILT 5% clay tr amt org (roots) |
| 2 | 2.4/3.5 | 0.0 | 12/66 | | | | |
| 3 | | 0.0 | 12/78 | | | | 3.0 |
| 4 | | 0.0 | 12/66 | SL-600 SA5D-SB 4.0-5.0 | 1335 | SC | CLAYEY SAND, dk brn (7.5YR 3/4) mottled w/ strong brown (7.5YR 4/6) f grn w/ few to some med grn poorly ~~sorted~~ graded sm101413 subrounded to subangular quartz, clay is disseminated in SD, few mottling w/ yel red (5YR 5/6) w/ depth; Clay is mod low plasticity, mod crumbly, becoming more common w/ depth 60% SD 30% CLAY 10% SILT → 55% SD 35% CLAY 10% SILT 4.0 |
| 5 | | 0.0 | 12/72 | | | CL | |
| 6 | 3.8/4.0 | 0.0 | 12/54 | | | ~~lean~~ Clay w/ Sand | SM101413 ~~SANDY CLAY~~, ~~strong~~ brown yel red (5YR 4/6) mottled w/ red brn (5YR 4/4) mod low plasticity, sli crumbly dry to sli moist firm, SD is f grn w/ tr amt med grn, subrounded to subangular, quartz 60% CLAY ~~30~~ 25% ~~CLAY~~ SD 15% SILT |
| 7 | | 0.0 | 12/84 | | | | |
| 8 | | 0.0 | 12/54 | | | | Clay w/ sand 8.0 |
| 9 | 4.0/4.0 | 0.0 | 12/72 | SL-600 SA5D-SB 9.0-10.0 | 1345 | CL | ~~SANDY CLAY~~, A.A except also mottled w/ strong sm101413 brown (7.5YR 5/6) and red (2.5YR 4/6) |
| 10 | | 0.0 | 12/66 | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



**ABBREVIATIONS:**

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | φ: diameter | bgs:below ground surface |

| Location ID: DG-600 | Subarea: 5D | Date Started: 10-2-13 | Date Completed: 10-2-13 |
|---|---|---|---|
| Project: SSFL | | Geologist: David Rojas | Total Depth: 19.4 |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | CL | ~~SANDY CLAY~~, A.A. see pg 1 Clay w/ Sand |
| 11 | see Pg 1 | 0.0 | 12/72 | | | | |
| 12 | | 0.0 | 12/60 | | | | |
| 13 | | 0.0 | 12/54 | | | | |
| 14 | 4.0/4.0 | 0.0 | 12/84 | SL-600 SA5D-SB 14.0-15.0 | 1355 | | |
| 15 | | 0.0 | 12/54 | | | | |
| | | | | | | CL | CLAY w/SAND, yel red (5YR 4/6) mottled w/ red brn (5YR 4/3), mod low plasticity to sli high plasticity, mod Firm to sli soft, mod Silty, SD is F qtz, SR to SA, quartz, CL is becoming less plastic w/ depth & Firm to hard 70% CLAY 20% SD 10% SILT 15.5 |
| 16 | | 0.0 | 12/78 | | | | |
| 17 | | 0.0 | 12/72 | | | | |
| 18 | | | 12/102 | | | | |
| 19 | | | 12/72 | SL-600 SA5D-SB 18.5-19.5 | 1405 | | |
| | | | 12/72 | | | CL | CLAY, same colors AA, CLAY is low plasticity Firm to hard, some to common $CaCO_3$ material and subtn gravel, F-sized |
| | | | | | | | Refusal at 19.4 bls. |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. G K

**Sample ID** SL-900-SA5D-SB-0.0-0.5 **Date/Time** 10-2-13 / 1330

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

**Start Depth** 0.0

**End Depth** 0.5

**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** SL-600-SA5D-SB-0.0-0.5MS

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

## Analysis

| Parameter | Method | Analyze? |
|---|---|---|
| Metals | EPA 6010 | |
| | EPA 6020 | |
| | EPA 7471 (Soil) | |
| | EPA 7470 (Water) | |
| Fluoride | EPA 300.0/9056 | X |
| 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) | X |
| | EPA 9040 (Water) | |
| Hexavalent Chromium | EPA 7196/7199 | |
| Herbicides | EPA 8151 | |
| Pesticides | EPA 8081 | |

| Parameter | Method | Analyze? |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 SS Sleeve & 1 4oz jar

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 (%)** None
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** dk red brn (5 YR 4/2)

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

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortez

**Sample ID** SL-600-SA5D-SB-4.0-5.0 **Date/Time** 10-2-13/1335

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

## Analysis

| Parameter | Method | Analyze? |
|---|---|---|
| Metals | EPA 6010 | |
| | EPA 6020 | |
| | EPA 7471 (Soil) | |
| | EPA 7470 (Water) | |
| Fluoride | EPA 300.0/9056 | X |
| 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) | X |
| | EPA 9040 (Water) | |
| Hexavalent Chromium | EPA 7196/7199 | |
| Herbicides | EPA 8151 | |
| Pesticides | EPA 8081 | |

| Parameter | Method | Analyze? |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 9oz jar

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 | SANDY 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 (%)** NONE
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** yel red (5YR 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** Mike Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SL-600-SA5D-SB-9.0-10.0 **Date/Time** 10-2-13/1345

**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** NA

**Field Geologist** David Rojas

**Sampler** Vidal Cortes

**Analysis**

| Parameter | Method | Analyze |
|---|---|---|
| Metals | EPA 6010 | |
| | EPA 6020 | |
| | EPA 7471 (Soil) | |
| | EPA 7470 (Water) | |
| Fluoride | EPA 300.0/9056 | X |
| 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) | X |
| | EPA 9040 (Water) | |
| Hexavalent Chromium | EPA 7196/7199 | |
| Herbicides | EPA 8151 | |
| Pesticides | EPA 8081 | |

| Parameter | Method | Analyze |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 9oz jar

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) | SANDY 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 (%)** None
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** yel red (5YR 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** Mike Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** D Rojas

**Sample ID** SL-600-SASD-SB-14.0-15.0 **Date/Time** 10.2.13 / 1355

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

**Start Depth** 14.0

**End Depth** 15.0

**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** DAVID ROJAS

**Sampler** VIDAL CORTES

**Analysis**

| Parameter | 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 | |

| Parameter | Method | Analyze |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 9-oz JAR

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 (%)** None

**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** yel red (5YR 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** Nelli Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By DRojas

Sample ID SL-600-SASD-SB-18.5-19.5 Date/Time 10.2.13 / 1405

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

Start Depth 18.5

End Depth 19.5

**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 DAVID ROJAS

Sampler VIDAL CORTES

**Analysis**

| Parameter | Method | Analysis |
|---|---|---|
| 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 | |

| Parameter | Method | Notes |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 9-oz Jar

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 (%)** None

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** yel red (5YR 4/6) SM 12/14/19

**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** Julie Hoffman **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortez

Sample ID SC-601-SA5D-SB-0.0-0.5 Date/Time 9/9/13 13:10

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 NA

Field Geologist B. KASPZAK

Sampler V. CORTEZ

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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? |
|---|---|---|---|
| Explosives | 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 | |

1 SS SLEEVE

~~2 16 oz Jars~~ V. Cortez 9/9/13

~~8 Encores~~

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

**Additional Comments**

NA – Not Applicable

| Location ID: DG-601 | Subarea: 5D | Date Started: 9/9/13 | Date Completed: 9/9/13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: (FT) 21.5, 21.0 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm/ | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: 0.5FT |
| Radiological Background: γ=13 αβ=84 | Borehole diameter: 2.25 inch | | |
| PID Background: 0.0 | Depth to GW: N/A | | Sampling Method: MACRO CORE |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: [signature] from #7735 | | Geologist: R Kasprzyk |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 13/81 | SL-601-SA5D-SB-0.0-0.5 | 13:10 | ML | SILT W/ SAND - BROWN (10YR 4/3); 80% SILT, SOFT, NON-PLASTIC, DRY 20% SAND, F, PG, LOOSE, NO ODOR |
| | | 0.0 | 13/66 | | | | |
| 1 | | 0.0 | 13/79 | | | | |
| 2 | 4.0/4.0 | 0.0 | 13/66 | | | | |
| 3 | | 0.0 | 13/78 | | | CL | CLAY W/ SAND - DK Brown (10YR 3/3) Hard, non plastic, 80% CLAY; 20% SAND, F, PG, DRY, NO ODOR T |
| 4 | | 0.0 | 13/90 | SL-601-SA5D-SB-4.0-5.0 | 13:20 | | CLAY - STRONG BROWN (7.5YR 5/8) 80% CLAY, HARD, NON-PLASTIC, DRY 10% SILT; 10% WEATHERED LIMESTONE; NO ODORS; TRACE LIGNITE |
| 5 | 4.0/4.0 | 0.0 | 13/102 | | | | |
| 6 | | 0.0 | 13/102 | | | | |
| 7 | | 0.0 | 13/108 | | | | |
| 8 | | 0.0 | 13/96 | | | CL | AS ABOVE W/ ONLY TRACE WEATHERED LIMESTONE |
| 9 | 4.0/4.0 | 0.0 | 13/96 | SL-601-SA5D-SB-9.0-10.0 | 13:30 | | |
| 10 | | 0.0 | 13/90 | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



**ABBREVIATIONS:**

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: DG 601 | Subarea: SD | Date Started: 9/9/13 | Date Completed: 9/9/13 |
|---|---|---|---|
| Project: SSFL | | Geologist: KASPRYK | Total Depth: 21.5 FT |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 11 | 4.0/4.0 | 0.0 | 13/78 | | | CL | CLAY – STRONG BROWN (7.5YR 5/6) 90% CLAY, HARD, NON PLASTIC, DRY; 10% SILT, TRACE LIMESTONE, NO ODOR |
| 12 | — | 0.0 | 13/96 | | | CL | AS ABOVE |
| 13 | | 00 | 13/90 | | | | |
| 14 | 4.0/4.0 | 0.0 | 13/100 | SL-601 SA5D-GB-14.0-15.0 | 1340 | | |
| 15 | | 00 | 13/90 | | | | |
| 16 | — | 0.0 | 13/96 | | | CL | AS ABOVE |
| 17 | | 0.0 | 13/94 | | | | |
| 18 | 4.0/4.0 | 0.0 | 13/90 | | | | |
| 19 | | 0.0 | 13/114 | | | | |
| 20 | — | 00 | 13/96 | SL-601-SA5D-GB-20.5-21.5 | 1345 | SP | SAND – V PALE BROWN (10YR 7/4); 90% SAND F-M, PG, LOOSE, DRY; 10% GRAVEL, F, PG, ROUND, LOOSE, NO ODOR WEATHERED SAND STONE IN LAST 0.5 FT |
| 21 | | | 90/96 | | | | |

21.5

CDM Smith

**BORING LOG AND SAMPLING RECORD**



REFUSAL AT 21.5 ON SANDSTONE

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortez

Sample ID SL-601-SA5D-SB-4.0-5.0 Date/Time 9/9/13 13:20

**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 B. KASPZYK

Sampler V. CORTEZ

## 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? |
|---|---|---|---|
| Enviro | 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 | |
| Special | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

1 16-oz Jar

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** DK 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** KC

**Sample ID** SL-601-SASD-SB-90-10.0 **Date/Time** 9/9/13 13:30

**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** B. KASPAR

**Sampler** Y. CORTES

## 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? |
|---|---|---|---|
| Enclaves | 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 | |

1 16-oz JAR

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** Strong Brown 7.5 YR 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** _____ **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL-601-SA5D-SB-14.0-15.0 Date/Time 9/9/13 13:40

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

Start Depth 14.0

End Depth 15.0

**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 BKASPRZYK

Sampler V Cortes

## 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? |
|---|---|---|---|
| Explos. | 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 | |
| Various | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

1 - 160z Jar

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** Strong brown 7.5 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** Mike Hodgson **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By _____

Sample ID SL-601-SA50-SB-20.5-21.5 Date/Time 9/9/13 - 13:45

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

Start Depth 20.5

End Depth 21.5

**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 B. KASPZYK

Sampler V. CORTES

## 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? |
|---|---|---|---|
| Biocides | 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 | |
| Tributyltin | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

1 16-oz Jar

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

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Sly Myser

Sample ID SL-602-SA5D-SB-0.0-0.5 Date/Time 10-8-13 / ~~1018~~ 1220

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

| Parameters | Method | Analyze? |
|---|---|---|
| Metals | EPA 6010 | |
| | EPA 6020 | |
| | EPA 7471 (Soil) | |
| | EPA 7470 (Water) | |
| Fluoride | EPA 300.0/9056 | X |
| 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) | X |
| | EPA 9040 (Water) | |
| Hexavalent Chromium | EPA 7196/7199 | |
| Herbicides | EPA 8151 | |
| Pesticides | EPA 8081 | |

| Parameters | Method | Analyze? |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 SS Sleeve & 1 4oz jar

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 (%)** None
3. **Fill Description (circle all that apply)**

Asphalt Metal Plastic

Concrete Wood Glass

Igneous/Metamorphic Gravel (N/A)

Other _____

**Is Staining Present** Yes (No) 10 DRR

**Color** ~~DRR~~ ~~Strong~~ brown (7.5YR 5/8) DRR

**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** NA

NA – Not Applicable

| Location ID: DG-602 | Subarea: 5D | Date Started: 10-8-13 | Date Completed: DID NOT REACH REFUSAL 10-8-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Laboratory/94489 | | Total Depth: 1st HA = 10' 2nd HA = |
| Company Name: CDM SMITH | | Drill Contractor/Driller: NA | |
| GPS collected? (Yes) or No | | Drill Method: Handauger | Depth Drilled into Bedrock: NA |
| Radiological Background: γ = | αβ = | Borehole diameter: 3" | |
| PID Background: 0.0 ppm | | Depth to GW: NA | Sampling Method: Slide hammer |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | | PG Review & No.: Julie Hoffman #7735 | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (μR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/0.5 | 0.0 | 12/97 | SL-602 SA5D-SB 0.0-0.5 | 1220 | SM | SILTY SAND brn (10YR 5/3) f-gm, poorly graded sm101413 subrounded to subangular, quartz, dry, silt is disseminated in sd, mod well compacted, some organics (roots) 80% SD 20% SILT 0.5' |
| 1 | HA | 0.0 | 12/66 | | | SM | SILTY SAND, dk yel brn (10YR 4/4) mottled w/ brn (10YR 5/3) and yel brn (10YR 5/4), f-gm w/ few ant med-gm sr to sa, quartz, sli to mod compacted, dry, few to some organics (roots); 75% SD 25% SILT. Becomes siltier w/ depth to ant clayey sand increasing w/ depth clay is brn (7.5YR 4/2), low to mod low plasticity, crumbly |
| 2 | | 0.0 | 12/90 | | | | |
| 3 | | 0.0 | 12/72 | | | | |
| 4 | | 0.0 | 12/72 | SL-602 SA5D-SB 4.0-5.0 | 1250 | SC | CLAYEY SAND, brn (7.5YR 4/3) mottled w/ (7.5YR 5/4) and strong brown (7.5YR 5/6), f-gm, poorly sorted, graded, quartz, dry, clay is disseminated in sd and present as sandy clay blebs, clay is low to moderate plasticity, mod crumbly, firm to hard 3.4' |
| 5 | | 0.0 | 12/84 | | | CL | 65% SD, 20% CLAY 15% SILT becoming more clayey w/ depth 4.6' few ant org (roots) 2" root @ 4' bls |
| 6 | | 0.0 | 12/78 | | | | SANDY CLAY strong brn (7.5YR 5/6) mottled w/ lt brn (7.5YR 6/4) and yel red (5YR 4/6); 50% CLAY, 30% SD 20% SILT, blebs of silty sand brn yel (10YR 6/6); clay is low plasticity, hard to firm, sli to mod crumbly, sd is dispersed in clay and present as blebs; some to common $CaCO_3$ deposits in root molds, burrows, & laminations to ant org (roots) |
| 7 | | 0.0 | 12/96 | | | | 7.8' |
| 8 | | 0.0 | 12/84 | | | CL | clay w/ sand sm101413 SANDY CLAY, yel red (5YR 4/6) mottled w/ red brn (5YR 4/4) & (5YR 5/4) and strong brn (7.5YR 5/6) low plasticity, firm to hard, crumbly, sd is disseminated in clay and present as clayey silty sand blebs; 55% CLAY, 25% SD 20% SILT, SD is f-gm, quartz, poorly graded sm101413; dry |
| 9 | | 0.0 | 12/78 | SL-602 SA5D-SB 9.0-10.0 | 1350 | | |
| 10 | | 0.0 | 12/102 | | | | Ceased Handaugering @ 10' bls - NOT REFUSAL |

**CDM Smith** **BORING LOG AND SAMPLING RECORD** Page 1 of 1

| ABBREVIATIONS: | | | |
|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace |
| c: coarse | lt: light | rnd: rounded | v: very |
| dk: dark | m: medium | sa: subangular | wg: well graded |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Shy Myal

Sample ID SL-602-SA50-SB-4.0-5.0 Date/Time 10-8-13/1250

**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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

**Analysis**

| Parameters | Method | Analyzed |
|---|---|---|
| Metals | EPA 6010 | |
| | EPA 6020 | |
| | EPA 7471 (Soil) | |
| | EPA 7470 (Water) | |
| Fluoride | EPA 300.0/9056 | X |
| 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) | X |
| | EPA 9040 (Water) | |
| Hexavalent Chromium | EPA 7196/7199 | |
| Herbicides | EPA 8151 | |
| Pesticides | EPA 8081 | |

| Parameters | Method | Analyzed |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 SS Sleeve & 1 4oz jar

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 (%)** None
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** brn (7.5YR 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** [signature] **PG Registration #** 7735

**Additional Comments** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Shy Mypeel

Sample ID SL-602-SA5D-SB-9.0-10.0 Date/Time 10-8-13/1350

**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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

| Parameters | Method | Analyze? |
|---|---|---|
| Metals | EPA 6010 | |
| | EPA 6020 | |
| | EPA 7471 (Soil) | |
| | EPA 7470 (Water) | |
| Fluoride | EPA 300.0/9056 | X |
| 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) | X |
| | EPA 9040 (Water) | |
| Hexavalent Chromium | EPA 7196/7199 | |
| Herbicides | EPA 8151 | |
| Pesticides | EPA 8081 | |

| Parameters | Method | Analyze? |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

1 SS Sleeve & 1 4oz jar

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) | SANDY 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 (%)** None
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** yel red (5YR 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** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SC-603-SA5D-SB-0.0-0.5 **Date/Time** 9/10/13 @ 10:10

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

**Start Depth** 0.0

**End Depth** 0.5

**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** B KASPZYK

**Sampler** V. Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | |
| | Herbicides | EPA 8151 | |
| | Pesticides | EPA 8081 | |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Enviros | 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 | |

1 SS Sleeve

1 - 4oz Jar

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** DK BROWNISH YELLOW 10 YR 3/4

**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** N/A

NA – Not Applicable

| Location ID: DG-603 | Subarea: SD | Date Started: 9/10/13 | Date Completed: 9/10/13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 14.0, 13.7, 13.7 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm/F Rodriguez | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: — |
| Radiological Background: α-13/γB-75 | Borehole diameter: 2.25 INCH | | |
| PID Background: 0.0 | Depth to GW: N/A | | Sampling Method: MACRO CORE |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: [signature] #7735 | | Geologist: KASPAIK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | ~~13/88~~ 13/88 | 9/10/13 | | CL | CLAY - DK BROWNISH YELLOW (10YR 3/4) 70% CLAY, HARD, NON-PLASTIC, DRY; 25% SILT; 5% $CaCO_3$ STRINGERS, NO ODOR |
| | 2.3 | 0.0 | 13/60 | SL-603-SA5D-SB-0.0-0.5 | 1040 | | |
| 1 | 4.0 | 0.0 | 13/66 | | | | |
| 2 | | 0.0 | 13/90 | | | | |
| 3 | | 0.0 | 13/90 | | | | |
| | | 0.0 | 13/66 | | | | GRADATIONAL CONTACT |
| 4 | | | | SL-603-SA5D SB-4.0-5.0 | 10:20 | CL | CLAY - STRONG BROWN (7.5YR 5/8); 95% CLAY, FIRM, NON PLASTIC, SEMI MOIST, 5% $CaCO_3$ STRINGERS, NO ODORS |
| 5 | | 0.0 | 13/60 | | | | |
| 6 | 4.0 / 4.0 | 0.0 | 13/72 | | | | |
| 7 | | 0.0 | 13/54 | | | | |
| 8 | | 0.0 | 13/96 | | | | |
| 9 | 4.0 / 4.0 | 0.0 | 13/78 | SL-603-SA5D SB-9.0-10.0 | 10:30 | | |
| 10 | | 0.0 | 13/72 | | | | |



CDM Smith

**BORING LOG AND SAMPLING RECORD**



**ABBREVIATIONS:**

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: DG603 | Subarea: 50 | Date Started: 9/10/13 | Date Completed: 9/10/13 |
|---|---|---|---|
| Project: SSFL | | Geologist: [redacted] | Total Depth: 14.0 |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 11 | | 0.0 | 13/60 | | | CL | CLAY – STRONG BROWN (7.5YR 5/8) 90% CLAY, SOFT, NON PLASTIC, SEMI MOIST, 10% SILT W/ CACO3 STRINGERS; TRACE LIMESTONE FRAGMENTS (WEATHERED) NO ODORS |
| 12 | | 0.0 | 13/72 | | | | |
| 13 | | 0.0 | 13/78 | SC603-SA50-SB-13.0-14.0 | 10:40 | CL | CLAY – LT. BROWNISH GRAY (10YR 6/2) Hard, non plastic, semi moist, 80% Clay; with LIMESTONE FRAGMENTS |
| 14 | | 0.0 | 13/72 | | | | REFUSAL AT 14.0 FT |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. G

Sample ID SL-603-SASD-SB-4.0-5.0 Date/Time 9/10/13 @ 10:20

**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 NA

Field Geologist B KASPZYK

Sampler V Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Inorganics | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | |
| | Herbicides | EPA 8151 | |
| | Pesticides | EPA 8081 | |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Inorganics | 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 | |
| Organics | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

1-9-03 JAE

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** Strong brown 7.5YR 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** [signature] **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. GA

**Sample ID** SL-603-~~SA~~SD-SB-9.0-10.0 **Date/Time** 9/10/13 at 10:30

**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** NA

**Field Geologist** B Kasprzyk

**Sampler** V Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Inorganics | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | |
| | Herbicides | EPA 8151 | |
| | Pesticides | EPA 8081 | |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Organics | 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 | |
| Radiologics | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

1-9 or Van

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** Strong Brown 7.5YR5/8

### 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] (KW) 9/10/13 **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. S

Sample ID SL-603-SA-SD-SB-13.0-14.0 Date/Time 9/10/13 @ 10:40

Matrix (circle one): (Soil) Sediment Water

Start Depth 13.0

End Depth 14.0

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 B Knapp

Sampler N Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | |
| | Herbicides | EPA 8151 | |
| | Pesticides | EPA 8081 | |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Groups | 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 | |

1-9 on Jar

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** Lt brownish gray 10yr6/2

**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** _____ **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL-604-SA5D-SB-0.005 Date/Time 9/10/13 @ 8:55

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 R. KASPAR

Sampler V Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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? |
|---|---|---|---|
| Energetics | 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 | |

1 - SS Sleeve

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** DK Brownish Yellow 10YR 3/4

**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** N/A

NA – Not Applicable

| Location ID: DG 604 | Subarea: 5D | Date Started: 9/10/13 | Date Completed: 9/10/13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 17.4, 17.4, 17.2 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm/F Rodriguez | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: 0.4 FT |
| Radiological Background: γ=13 / αβ=79 | Borehole diameter: 2.25 inch | | |
| PID Background: 0.0 | Depth to GW: N/A | | Sampling Method: Macro Core |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: [signature] #7735 | | Geologist: [illegible] |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 13/78 | SL-604-SA5D-SB-0.0-0.5 | 8:55 | CL | CLAY - DK Brownish Yellow (10yr 3/4) 70% CLAY, HARD, NON PLASTIC, DRY; 25% SILT; 5% CaCO3 stringers NO ODOR |
| | | 0.0 | 13/66 | | | | |
| 1 | | 0.0 | 13/78 | | | | |
| | 2.0/4.0 | | | | | | |
| 2 | | 0.0 | 13/90 | | | | |
| | | | | | | | CLAY, strong brown (7.5 yr 5/8) 95% Clay, Firm, Non Plastic, Semi MOIST, 5% CaCO3 Stringers - NO ODOR |
| 3 | | 0.0 | 13/102 | | | CL | |
| 4 | | 0.0 | 13/84 | SL-604-SA5D-SB-4.0-5.0 | 9:05 | CL | AS ABOVE |
| 5 | | 0.0 | 13/72 | | | | |
| | 4.0/4.0 | | | | | | |
| 6 | | 0.0 | 13/[illegible] | | | | |
| 7 | | 0.0 | 13/84 | | | | |
| 8 | | 0.0 | 13/72 | | | CL | AS ABOVE |
| 9 | | | 72 | SL604-SA5D-SB-9.0-10.0 | 9:15 | | |
| 10 | | | 90 | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



**ABBREVIATIONS:**

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG-604 | SD | 9/10/13 | 9/10/13 |
| **Project:** SSFL | | **Geologist:** KASPZYK | **Total Depth:** 17.4 |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | GRADATIONAL CONTACT |
| | | | | | | CL | CLAY W/ SAND – STRONG BROWN 7.5YR 5/8, 75% CLAY, SOFT, NON PLASTIC SEMI MOIST, 25% SAND, F, PG, TRACE LIMESTONE |
| 11 | | 0.0 | 13/78 | | | | |
| 12 | | 0.0 | 13/84 | | | | |
| 13 | | 0.0 | 13/78 | | | | |
| 14 | 4.0/4.0 | 0.0 | 13/96 | | | | |
| | | | | | | | ABRUPT CONTACT |
| 15 | | 0.0 | 13/90 | | | | SAND – V PALE BROWN (10YR 7/4); 100% SAND, F, PG, SEMI MOIST, NO ODOR |
| 16 | | 0.0 | 13/66 | | | SP | |
| | 1.4 | | | SC-604-SA5D-SB-16.5-17.5 | 9:25 | | |
| 17 | | 0.0 | 13/72 | | | | |
| | | 0.0 | | | | ML | SILT STONE – V PALE BROWN (10YR 7/4), WEATHERED |
| | | | | | | | REFUSAL AT 17.4 FT ON BEDROCK |

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. GE

Sample ID SC-604-SA5D-SB-4.0-5.0 Date/Time 9/10/13 9:05

**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 B Kasprzyk

Sampler V Cortez

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Soil | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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? |
|---|---|---|---|
| Groundwater | 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 | |

1 – 902 SAN

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** Straw brown 7.5 YR 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** [signature] **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. GK

**Sample ID** SC-604-SASD-SB-9.0-10.0 **Date/Time** 9/10/13 9:15

**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** B Kasprzyk

**Sampler** V Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Chemistry | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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? |
|---|---|---|---|
| Encore | 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 | |

1-902 JAR

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** strong brown 7.5 YR 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** √ CE

**Sample ID** SL-604-SASD-SB-16.5-17.5 **Date/Time** 9/10/13 @ 9:25

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

**Start Depth** 16.5

**End Depth** 17.5

**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** Blagoevich

**Sampler** V Cortez

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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? |
|---|---|---|---|
| Soil/Sed | 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 | |

1-902 Jar

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

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortez

Sample ID SC-605-SA5D-SB-0.0-0.5 Date/Time 9/10/13 @ 7:45

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

Start Depth 0.0

End Depth 0.5

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 B Kasprzyk

Sampler V Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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 | |

~~9-0 Z JAA~~ (KK) 9/10/13
1-SS Sleeve

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** DK Brownish Yellow 10YR 3/4

**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** N/A

NA – Not Applicable

| Location ID: DG 605 | Subarea: 5D | Date Started: 9/10/13 | Date Completed: 9/10/13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 15.6, 15.4, 14.7 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: 0 |
| Radiological Background: X=13/YB=77 | Borehole diameter: 2.25 inch | | |
| PID Background: 0.0 | Depth to GW: NA | | Sampling Method: Macro Core |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: [signature] #7735 | | Geologist: KASPZYK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 13/93 | SL605-SA5D-SB-0.0-0.5 | 7:45 | CL | CLAY - DK Brownish Yellow (10YR 3/4) 70% CLAY, HARD, NON-PLASTIC, DRY; 25% SILT; 5% CALCIUM CARBONATE STRINGERS. NO ODOR |
| | | 0.0 | 13/66 | | | | |
| 1 | 3.0 | 0.0 | 13/90 | | | | |
| | 4.0 | | | | | | |
| 2 | | 0.0 | 13/78 | | | | |
| 3 | | 0.0 | 13/72 | | | | |
| 4 | | 0.0 | 13/72 | SL-605-SA5D-SB-4.0-5.0 MS | 7:55 | CL | CLAY - STRONG BROWN (7.5 YR 5/8) ~~100% CL~~ RH 9/10/13 95% CLAY, FIRM, NON-PLASTIC, DRY, 5% CALCIUM CARBONATE STRINGERS NO ODOR |
| 5 | 4.0 | 0.0 | 13/60 | SL-905-SA5D-SB-4.0-5.0 | 8:00 | | |
| 6 | 4.0 | 0.0 | 13/72 | | | | |
| 7 | | 0.0 | 13/84 | | | | |
| 8 | | 0.0 | 13/84 | | | CL | CLAY - STRONG BROWN (7.5 YR 5/8) 85% CLAY, FIRM, NON PLASTIC, SEMI MOIST, 10% SAND, F, PG, 5% CaCO3 STRINGERS |
| 9 | | 0.0 | 13/84 | SL-605-SA5D-SB-9.0-10.0 | 8:05 | | |
| 10 | | 0.0 | 13/84 | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG 605 | SD | 9/10/13 | 9/10/13 |
| **Project: SSFL** | | **Geologist: KASPRZYK** | **Total Depth: 15.6** |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 4.0 | | | | | CL | CLAY - STRONG BROWN (7.5YR 5/8) 85% CLAY FINES, NON PLASTIC, SEMI MOIST; 10% SAND, F PG; 5% $CaCO_3$ STRINGERS |
| 11 | 4.0 | 0.0 | 13/84 | | | | |
| 12 | | 0.0 | 13/90 | | | | |
| 13 | | 0.0 | 12/90 | | | | |
| 14 | | 0.0 | 13/96 | SL-605-SA50-SB-14.5-15.5 | 8:15 | | |
| 15 | | 0.0 | 13/78 | | | CL | AS ABOVE W/ UP TO 20% WEATHERED LIMESTONE |
| | | 0.6 | 12/84 | | | | REFUSAL AT 15.6 FT |

9/10/13 (KW)

CDM Smith

**BORING LOG AND SAMPLING RECORD**

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. G E

Sample ID SL-605-SASD-SB-4.0-5.0 MS Date/Time 9/10/13 @ 7:55

**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 NA

Field Geologist VS Kasprzyk

Sampler V Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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? |
|---|---|---|---|
| Explosives | 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 | |
| Organotin | Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | Methyl Mercury | EPA 1630 | |

1-9 OL JAN
1-16 OL JAN

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** Strong brown 7.5 YR 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** Melissa Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL905-SA5D-SB-4.0-5.0 Date/Time 9/10/13 @ 8:00

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 SL-605-SA5D-SB-4.0-5.0 MS

Field Geologist B Kasprzyk

Sampler V Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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? |
|---|---|---|---|
| Explosives | 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 | |
| Perchlorate | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

1-907 JAN

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** Strong Brown 7.5 YR 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** Nila Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Gt

Sample ID SL-605-SA5D-SB-9.0-10.0 Date/Time 9/10/13 8:05

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

Start Depth 9.0

End Depth 10.0

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 BKASPZYK

Sampler VCortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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 | |

1 9-oz Jar

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** Strong brown 7.5YR 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** _____ (PG) 9/10/13 **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. G. E

Sample ID SL-605-SA5D-SB-14.5-15.5 Date/Time 9/10/03 @ 8:15

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

Start Depth 14.5

End Depth 15.5

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 BKASPZYK

Sampler U Cortez

Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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 | |

1 9-oz JAR

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 |
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| | | | | 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 |
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| | | | | 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** Strong brown 7.5 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortez

**Sample ID** SL-606-GA5D-SB-00.05 **Date/Time** 9/10/13 @ 12:20

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

**Start Depth** 0.0

**End Depth** 0.5

**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** B KAGEYIC

**Sampler** V Cortez

## 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? |
|---|---|---|---|
| Explosives | 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 | |
| Organics | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

1 - SS Sleeve
1 - 4oz Jar

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 |
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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 |
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| | | | | 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** DK 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** N/A

NA – Not Applicable

| Location ID: DG-606 | Subarea: 5D | Date Started: 9/10/13 | Date Completed: 9/10/13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 13.7, 13.9, 13.8 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongam/F. Rodriguez | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: 0 |
| Radiological Background: α=13 / γ=81 | Borehole diameter: 2.25 inch | | |
| PID Background: 0.0 | Depth to GW: NA | | Sampling Method: MACRO CORE |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mike Hoffman #7735 | | Geologist: KASPZYK |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 13/89 | SL-606-SA5D-SB-0.0-0.5 | 12:20 | CL | CLAY - DK Brown (10 YR 3/3); 70% CLAY, HARD, NON PLASTIC, DRY, 25% SILT; 5% CaCO3 STRINGERS, NO ODOR |
| | | 0.0 | 13/60 | | | | |
| 1 | | 0.0 | 13/78 | | | | |
| | 3.2/4.0 | | | | | | |
| 2 | | 0.0 | 13/60 | | | | |
| 3 | | 0.0 | 13/90 | | | | |
| 4 | | 0.0 | 13/96 | SL-606-SA5D-SB-4.0-5.0 | 12:30 | CL | CLAY - STRONG BROWN (7.5 YR 5/8) 90% Clay, SOFT, NON PLASTIC, SEMI MOIST; 10% SAND, F, PG; TRACE CaCO3 STRINGERS, |
| 5 | | 0.0 | 13/96 | | | | |
| | 4.0/4.0 | | | | | | |
| 6 | | 0.0 | 13/96 | | | | |
| 7 | | 0.0 | 13/72 | | | | |
| 8 | | 0.0 | 13/78 | | | | AS ABOVE W/ MORE SAND |
| 9 | 4.0/4.0 | 0.0 | 13/72 | SL-606-SA5D-SB-9.0-10.0 | 12:40 | CL | CLAY WITH SAND - STRONG BROWN (7.5 YR 5/8); 75% CLAY, SOFT, NON PLASTIC SEMI MOIST; 25% SAND, F, PG, Trace CaCO3 Stringers, NO Odor |
| 10 | | 0.0 | 13/84 | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



**ABBREVIATIONS:**

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: DG-606 | Subarea: SD | Date Started: 9/10/13 | Date Completed: 9/10/13 |
|---|---|---|---|
| Project: SSFL | | Geologist: [illegible] ZYL | Total Depth: 13.7 |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | W/ SAND |
| | | | | | | CL | CLAY – MOTTLED STRONG BROWN (7.5YR 5/8) & BROWN 7.5YR 5/2. 75% Clay, Soft, Non-Plastic, semi moist; 25% SAND, F, PG; Trace $CaCO_3$ stringers and fragments of Weathered limestone |
| | 4.0 | | | | | | |
| 11 | 4.0 | 00 | 13/72 | | | | |
| 12 | | 00 | 13/66 | | | | |
| | 1.7 | | | | | | |
| 13 | 1.7 | 00 | 13/78 | SL-606 SA5D SB-13.0 | 1250 | | |
| | | 0.0 | 13/90 | 14.0 | | | |
| | | | | | | | REFUSAL AT 13.7 FT |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SC-6660-SASD-SB-4.0-5.0 Date/Time 9/10/13 @ 12:30

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 BKasprzyk

Sampler V Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | |
| | Herbicides | EPA 8151 | |
| | Pesticides | EPA 8081 | |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Explosives | 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 | |

1 9-oz Jar

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** Strong Brown 7.5 YR 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** [signature] **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By J. Gt

Sample ID SL-606-SA5D-SB-9.0-10-0 Date/Time 9/10/13 @ 12:40

**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 NA

Field Geologist B Kasprzyk

Sampler V Cortes

**Analysis**

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | |
| | Herbicides | EPA 8151 | |
| | Pesticides | EPA 8081 | |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Energetics | 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 | |

1 9-oz Jar

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** Strong Brown 7.5YR 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** _____ **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Gt

**Sample ID** SL-606-SA50-SB-130-14.0 **Date/Time** 9/10/13 1250

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

**Start Depth** (KW) 9/10/13 13.0

**End Depth** (KW) 9/10/13 14.0

**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** B Kasprzyk

**Sampler** V Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | X |
| | 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) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | |
| | Herbicides | EPA 8151 | |
| | Pesticides | EPA 8081 | |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Soil/Water | 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 | |

1 9-oz Jar

# 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** Strong brown 7.5 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Gt

Sample ID SL-607-SA5D-SB-0.0-0.5 Date/Time 10-1-13 / 1355

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

Start Depth 0.0

End Depth 0.5

**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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

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

| Parameter | Method | Analyze |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

2 SS Sleeves & 1 4oz jar

# 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~~ TRACE

**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** DK. YL. BRN. (10 YR 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** N/A

NA – Not Applicable

| Location ID: DG-607 | Subarea: 5D | Date Started: 10-1-13 | Date Completed: 10-1-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1st DPT = 10.7, 2nd DPT = 10.3 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm | | |
| GPS collected? (Yes) or No | Drill Method: DPT | | Depth Drilled into Bedrock: NA |
| Radiological Background: $\gamma$ = 12 $\alpha/\beta$ = 96 | Borehole diameter: 2.25 | | |
| PID Background: 0.0 ppm | Depth to GW: NA | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & Date: Mike Hoffman #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/0.5 | 0.0 | 12/89 | SL-607 SA5D-SB 0.0-0.5 | 1355 | SP-SM | SAND w/ SILT ~~+ GRAVEL~~, dk yel brn (10YR 4/4) mottled w/ yel brn (10YR 5/4) f-m gr, mod poorly ~~graded~~ Subrounded to subangular, quartz, dry, Gravel is ~~igneous~~ subrounded SM1015I3 |
| | | 0.0 | 12/60 | | | | |
| 1 | | 0.0 | 12/90 | | | SM | 70% SD, 10% SILT, tr ant gravel, trace (roots) 0.5 |
| | 2.1/3.5 | | | | | | SILTY SAND strong brown (7.5YR 4/6) mottled w/ brn (7.5YR 4/3) and yel red (5YR 5/6), f-m gr, mod well sorted subrounded to subangular, dry, 70% SD 30% SILT 1.8 |
| 2 | | 0.0 | 12/72 | | | SC | |
| | | | | | | | CLAYEY SAND, brn (7.5YR 4/4) mottled w/ (10YR 5/8) yel brn and brownish yellow (10YR 6/6) f gr, mod well to well sorted, quartz, Clay is dispersed in sd, Clay is mod soft to sli firm, 60% SD, 25% CLAY 15% SILT, dry |
| 3 | | 0.0 | 12/102 | | | | mod low plasticity |
| | | | | | | | GRADUAL TRANSITION |
| 4 | | 0.0 | 12/84 | | | SC | CLAYEY SAND, strong brown (7.5YR 4/6) mottled w/ dk brown (7.5YR 3/4) and red gel (7.5YR 6/8), tr ant red (2.5YR 5/8) f gr w/ tr to few ant med gr, quartz, Subrounded to subangular, quartz, dry to sli moist, Clay is dispersed in sd, soft to sli firm, mod low plasticity 60% SD 30% CLAY 10% SILT tr ant f gravel from 5.8-6.5 3.8 |
| | | | | SL-607 SA5D-SB 4.0-5.0 | 1405 | | |
| 5 | 4.0/4.0 | 0.0 | 12/54 | | | | |
| 6 | | 0.6 | 12/84 | | | | |
| 7 | | 0.0 | 12/66 | | | SC | CLAYEY SAND, dk yel brn (10YR 4/4) mottled w/ 10YR 4/6 yel brn (10YR 5/8), f-m gr w/ Few to some coarse gr, mod poorly ~~graded~~ sr to sa, quartz + silty sdstn, dry to sli moist Clay is dispersed in sd, mod low plasticity 60% SD 35% CLAY 5% SILT some calc CaCO3 deposits 6.5 |
| 8 | | 0.0 | 12/78 | | | SP-SM | SAND w/ SILT yel brn (10YR 5/8) f gr, well sorted, subrounded quartz, dry to sli moist, 90% SD 10% SILT SM1015I3 7.6 |
| | | | | | | | ~~8.4~~ |
| 9 | 2.7/2.7 | 0.0 | 12/66 | | | SC | CLAYEY SAND, Same as 6.5-7.6 9.4 |
| 10 | | 0.0 | 12/78 | | | | Refusal @ 10.7 10.7 |
| 10.7 | | 0.0 | 12/60 | | | | |

CDM Smith **BORING LOG AND SAMPLING RECORD** Page 1 of 1

ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** √. Cortez

**Sample ID** SL-607-SA5D-SB-4.0-5.0 **Date/Time** 10.1.13 1405

**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** DAVID ROJAS

**Sampler** VIDAL CORTES

**Analysis**

| Analyte Group | 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 | |

| Analyte Group | Method | Analyze |
|---|---|---|
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

2 16-oz JARS & 2 ENCORES

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** Strong Brn. (7.5YR 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** [signature] **PG Registration #** 7735

**Additional Comments** _____

N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Gt

Sample ID SL-608-SA5D-SB-0.0-0.5 Date/Time 10-3-13 / 1340

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

Start Depth 0.0

End Depth 0.5

**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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

**Analysis**

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

| | | |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

2 SSS leaves & 1 4oz jar

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 |
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| | | | | 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 (%) 5%

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 Brn. (10 YR 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 [signature] PG Registration # 7735

Additional Comments

N/A

NA – Not Applicable

| Location ID: DG-608 | Subarea: 5D | Date Started: 10-3-13 | Date Completed: 10-3-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 1st DPT = 10.7, 2ND DPT 10.6, 3RD DPT = 10.7 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: NA |
| Radiological Background: γ=13 αβ=72 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 ppm | Depth to GW: NA | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: [signature] #7735 | | Geologist: David Rojas |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | 0.5/0.5 | 3/70 13/84 | 0.0 0.0 | SL-608 SA5D-SB 0.0-0.5 | 1340 | SM | SILTY SAND, brn (10YR 5/3), F grn w/some med & tr ant coarse grn, mod poorly ~~sorted~~ graded SM10413 subrounded, quartz 70% SD 20% SILT 5% GRAVEL; SILT is disseminated w/sd, GRAVEL is sr to sa igneous, tr to few ant org (roots) 0.5 |
| 1 | | 13/72 | 0.0 | | | SC | |
| 2 | 2.8/3.5 | 13/60 | 0.0 | | | | CLAYEY SAND, brn (7.5YR 4/4) mottled w/(7.5YR 5/4) F grn w/tr ant med grn, poorly ~~sorted~~ graded SM10413, subrounded to subangular quartz, clay is disseminated w/SD 60% SD, 30% CLAY 10% SILT Clay is low plasticity crumbly, hard, few ant mottling w/strong brn 7.5YR 5/8 increasing w/depth, dry tr ant org (roots) 3.0 |
| 3 | | 13/84 | 0.0 | | | | |
| 4 | | 13/72 | 0.0 | SL-608 SA5D-SB 4.0-5.0 | 1350 | CL | SANDY CLAY, strong brn (7.5YR 5/6) mottled w/brn (7.5YR 4/4) low plasticity, hard to ~~sd~~ mod firm, becoming mod firm w/depth, dry, tr to few amt of $CaCO_3$ deposits in paleo root molds & burrows 60% CLAY 30% SAND 10% SILT, SD is F-m grn sr to sa, quartz |
| 5 | 3.8/4.0 | 13/42 | 0.0 | | | | |
| 6 | ~~0.0~~ | 13/36 | 0.0 | | | | |
| 7 | ~~0.0~~ | 13/48 | 0.0 | | | | |
| 8 | ~~0.0~~ | 13/60 | 0.0 | | | | GRADUAL TRANSITION |
| 9 | 2. | 13/84 | 0.0 | | | CL | SANDY CLAY A.A. except also mottled w/ yellowish red (5YR 5/8) and dk red brn (5YR 2.5/2) and clay is Firm to sli soft and mod low ant plasticity 60% CLAY 30% SD 10% SILT few ant $CaCO_3$ deposits 8.0 |
| 10 | | 13/72 | 0.0 | | | SC | CLAYEY SAND, lt olive brn (2.5Y 5/3) mottled w/brn (7.5YR 4/4) and strong brn (7.5YR 5/6), F-m grn mod poorly ~~sorted~~ graded SM10413 sr to sa quartz & sd stn, dry to sli moist, few to some ant $CaCO_3$ deposits in root molds & burrows 65% SD 25% CLAY 10% SILT 8.8 10.3 |
| 10.7 | | 13/84 | 0.0 | | | | 10.7 |

CDM Smith

**BORING LOG AND SAMPLING RECORD**

Page 1 of 1

SP-SM

Refusal @ 10.7' bls

**ABBREVIATIONS:**

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | φ: diameter | bgs:below ground surface |

10.3-10.7 SAND w/SILT lt yel brn (10YR 6/4) mottled w/yel brn (10YR 5/6) & brn (10YR 5/3) F grn, poorly ~~sorted~~ graded SM10413, sr to sa, quartz, dry 90% SD 10% SILT

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Gt

Sample ID SL-608-SA5D-SB-4.0-5.0 Date/Time 10-3-13/ 1350

**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 NA

Field Geologist David Rojas

Sampler Vidal Cortes

## Analysis

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

| Parameter | Method | Analysis |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | X |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

# 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 | SANDY 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** SR. BRN. (7.5 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** Mike Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By A. VIVIAN

Sample ID SL-609-SA5D-SB-0.0-0.5 Date/Time 11/15/2013 1250

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

Start Depth 0.0

End Depth 0.5

**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 NA

Field Geologist C. Cox

Sampler A. Vivian

## Analysis

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

| Parameter | Method | Analyze? |
|---|---|---|
| VOCs | EPA 8260 | |
| 1,4 Dioxane | EPA 8260 SIM | |
| TPH-GRO | EPA 8015 | |
| TPH-EFH | EPA 8015 | X |
| 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 | |
| Organotin | NOAA Status and Trends, Krone et al. | |
| Methyl Mercury | EPA 1630 | |

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 |
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| | | SAND WITH ≥ 15% FINES | | SM | Silty SAND |
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| 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 SS Formation

Is Staining Present Yes No

Color lightyellowish brown (2.5Y 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 None

11/18/13

NA – Not Applicable

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG-609 | SD | 11/15/2013 Friday 1230 | 11/15/2013 |

| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | Total Depth: ~~1.5'~~ 1.2', 1.1', 1.5' |
|---|---|---|
| Company Name: CDM SMITH | Drill Contractor/Driller: SAFS | |
| GPS collected? Yes or No | Drill Method: DPT, Handauger | Depth Drilled into Bedrock: NA |
| Radiological Background: 12/93 | Borehole diameter: 2.25" | |
| PID Background: 0.0 | Depth to GW: NA | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mike Hoffman #7735 | Geologist: C. Cook |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 1 | 0.7/1.2 | 0.0 | 12/72 | SL-609-SASD-SB-0.0-0.5 | 1250 | SM | SILTY SAND: light yellowish brown (2.5Y 6/4), 75% sand, pg, f-m, mostly f, 25% silt, ~~non~~ low plastic, trace igneous clasts, trace SS formation, dry, no odor (FILL) cc 11/15/13 |
| 2 | | 0.0 | 12/72 | | | | Refusal at SS formation 1.1', 1.5' |
| 3 | | | | | | | |
| 4 | | | | | | | |
| 5 | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



**ABBREVIATIONS:**

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.Cs

Sample ID SL-501-SA8-SB-0.0-0.5MS Date/Time 7-15-13 ~~1010~~ 1110

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 J. Faubion

Sampler V. Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

6-SS sleeves

~~3-4oz jars~~ jf

1-9oz jar

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** 10 R 3/6 red 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** N/A

NA – Not Applicable

Santa Susana Field Laboratory/94489

| Location ID: DG-501 | Subarea: 8 | Date Started: 7-15-13 | Date Completed: 7-15-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: ~~SSFL-65258-63370.1203.002.228.02234.SSPH8~~ SM 18412 | | Total Depth: 13.3 |
| Company Name: CDM SMITH | Drill Contractor/Driller: | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: N/A |
| Radiological Background: 14>90 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 | Depth to GW: N/A | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | ~~PG Review & No.~~ [signature] #7735 | | Geologist: J. Faubion |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 14>85 | SL-501 SA 8 SB 0.0-0.5 | 1115 | ML | silt, dry, loose red brown 10R 3/6 - trace root mottles |
| 1 | | 0.0 | 11>60 | | | | 1' silt, dry, loose 10R 3/6 red brown |
| 2 | | 0.0 | 11>72 | | | ML | 2' silt, becoming moist, ~~dense~~ loose - no organics stain or odor 10R 3/6 - caliche mottles |
| 3 | | 0.0 | 11>64 | | | ML | 3' silt as above, loose, non plastic 10R 3/6 - caliche mottling |
| 4 | | 0.0 | 11>78 | SL-501 SA-8 SB 4.0-5.0 | 1130 | ML | 4' silt, trace moist loose nonplastic color transition 4.5-5.0 to 5R 4/6 yellow red no stain/odor |
| 5 | | | 10>42 | | | ML | 5' silt, compacted, dense, moist 5R 4/6 yellow red |
| 6 | | | 10>78 | | | ML | 6' silt w/ sand back to 10R 3/6 red brown - strong FeOx stain throughout |
| 7 | | | 10>120 | | | ML | 7' sandy silt, 15% v.f.g. sa to sr silica sand 10R 3/6 |
| 8 | | | 10>90 | | | ML | 8' sandy silt 10R 3/6, dense non plastic moist no stain/odor |
| 9 | | | 11>66 | SL-501 SA-8 SB 9.0-10.0 | 1145 | ML | 9' sandy silt 10R 3/6 moist dense non-plastic 10R 3/6 |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr: no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs: below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG-501 | 8 | 7-15-13 | 7-15-13 |

Project: SSFL | Geologist: J. Faubion | Total Depth: 13.3

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | 9.5 color transition from 10R 3/6 to light brown 10YR 8/B |
| 10 | | 0.0 | 11>64 | | | ML | ~~Sandy~~ silt, caliche mottling persists 10' 10YR 8/B moist 10-12% v.f.g. - root relics |
| 11 | | 0.0 | 11>84 | SL-501 SA&SB 11.5-12.5 | | ML | ~~Sandy~~ silt, 12-15% v.f.g. sa to sr 11' silica sand - FeOx stain throughout light brown 10YR 8/3 |
| 12 | | 0.0 | 11>60 | SL-501 SA&SB 12.0-13.0 | 1200 | ML | Sandy silt, sand % picking up 17-20% 12' 10YR 8/B moist, non plastic |
| 13 | 13.3 TD | 0.0 | 11>84 | | | ML | sandy silt as above, FeOx stained 20% v.f.g. sa to sr silica sand in silt 10YR 8/B |

13.3 T.D. refusal Run #1
12.5 refusal Run #2
13.2 refusal Run #3

OK -jf

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By VL CAT

Sample ID SL-B01-SA8-SB-0.0-0.5 Date/Time 7-15-13 1115

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 SL-501-SA8-SB-0.0-0.5 MS

Field Geologist J. Faubion

Sampler V. Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | ~~X~~ jf |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 ~~1~~ - S.S. sleeves

1 ~~1~~ - 4oz jars

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** 10 R 3/6 red 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.G.

Sample ID SL-SOI-SAB-SB-4.0-5.0 Date/Time 7-15-13 1130

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 J. Fashion

Sampler V. Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16 oz jars

2-Encore

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** 5R 4/6 yellow red

**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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Gk

Sample ID SL-501-SA8-SB-9.0-10.0 Date/Time 7-15-13 1145

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 J. Faubion

Sampler V. Coffis

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 - 16 oz jars

2 - Encore

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 10YR 8/3 light brown

**Color** ~~10YR 3/6~~ ~~10YR 3/4~~ 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.C

Sample ID SC-501-SA8-SB-12.0-13.0 Date/Time 7-15-13 1200

Matrix (circle one): (Soil) Sediment Water

Start Depth 12.0

End Depth 13.0

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 J. Fashion

Sampler V. Curtis

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 - 16oz jars

2 - Encore

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** 10 YR 8/3 light 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL-SOZ-SA8-SB 0.0-0.5 Date/Time ~~7-13-13~~ 7/15/13 0840

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

Collection Method (circle one) 7/15/13: DPT (Slide Hammer) Hand Auger/~~Slide Hammer~~ Trenching Sediment

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

Parent Sample ID N/A

Field Geologist J. Faubion

Sampler V. Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | 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 | |

2 - 5.5. sleeves

1 - 4oz jar

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** 5 YR 4/6 yellow-red

**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** NA

NA – Not Applicable

Santa Susana Field Laboratory/94489

| Location ID: DG-502 | Subarea: 8 | Date Started: 7-15-13 | Date Completed: 7-15-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: ~~SSFL-05258-63376.1203.002.223.02231.SSPH3~~ MB | | Total Depth: 8.7' |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm F. Rodriguez | | |
| GPS collected? Yes or No | Drill Method: Hand Auger | | Depth Drilled into Bedrock: NA |
| Radiological Background: 14>84 | Borehole diameter: 2.23" | | |
| PID Background: 0.0 | Depth to GW: NA | | Sampling Method: HA |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: [signature] #7735 | | Geologist: J. Faubion |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | .5 | 0.0 | 14>84 | SL-502 SA8-SB 0.0-0.5 | 0840 | ML | 0.0-0.5 silt, dry, compacted 5YR 4/6 yellow red - strong oxidation, FeOx pervasive no stain/odor |
| 1 | | 0.0 | 14>64 | | | ML | 1' silt, dry, compacted 5YR 4/6 yellow red - 5/7% organics (decaying leaves, roots) |
| 2 | | 0.0 | 14>72 | | | ML | 2' silt, as above, organics dropping out no stain/odor 5YR 4/6 yellow red - trace caliche stringers |
| 3 | | 0.0 | 14>60 | | | ML | 3' silt, becoming moist, 5YR 4/6 yellow red |
| 4 | | 0.0 | 14>60 | SL-502 SA-8-SB 4.0-5.0 | 0930 | ML | 4' as above, silt, loose, moist - organics absent, trace clay 5YR 4/6 yellow red |
| 5 | | 0.0 | 14>48 | | | ML/~~CL~~ | 5' clayey silt, moist, loose 5YR 4/6 - 10/12% clay interstitual in silt/yellow red - color transition 5.6' to 10R 3/6 red brown |
| 6 | | 0.0 | 14>42 | | | ML/~~CL~~ | 6' clayey silt, moist, loose 10R 3/6 red brown - no stain/odor |
| 7 | | 0.0 | 14>48 | | | ML/~~CL~~ | 7' clayey silt as above 10R 3/6 red brown - trace v.f.g. sa silica sand |
| 8 | | 0.0 | 14>66 | SL-502 SA8-SB 7.5-8.5 | 1015 | ~~ML~~ ML | sandy silt w/ trace clay 10R 3/6 red brown - v.f.g. sa silica sand |
| | TD 8.7 | 0.0 | 14>68 | | | ~~SM~~ ML | 8.7' refusal sandy silt w/ trace clay 10R 3/6 red brown |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr: no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | HA: Hand Auger |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs: below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Coltis

Sample ID SL-502-SA8-SB-4.0-5.0 Date/Time 7-15-13 0930

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 J. Faubion

Sampler V. Coltis

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 - 16 oz jars if S.S. sleeves

1 - 4 oz jar

2 - Encore

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** 5YR 4/6 yellowrod

**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** NA

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.G.A

Sample ID SL-502-SA8-SB-7.5-8.5 Date/Time 7-15-13 1015

Matrix (circle one): (Soil) Sediment Water

Start Depth 7.5

End Depth 8.5

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 J. Faubion

Sampler V. Coltis

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 ~~4 8oz jars~~ S.S. sleeves

1-4oz jar

2-Encore

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 — JF |
| | | | | 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 — JF |
| | | | | 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 |

ML

**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** ~~5YR 4/6 yellowish red~~ JF
10 R 3/6 red 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** Nicole Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By VGT

Sample ID SL-503-SA8-SB-0.0-0.5 Date/Time 7-15-13 1455

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 J. Fawbion

Sampler V. Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | 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 | |

2-S.S. sleeves

1-4oz jar

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 10R 3/6 red 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 N/A

NA – Not Applicable

Santa Susana Field Laboratory/94489

| Location ID: DG-503 | Subarea: 8 | Date Started: 7-15-13 | Date Completed: 7-15-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: ~~SSFL-65268-63376.1203.002.223.02231.SSFH3~~ SM 12412 | | Total Depth: 4.2 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm/Rodriguez | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: N/A |
| Radiological Background: 12<66 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 | Depth to GW: N/A | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: [signature] #7735 | | Geologist: J. Faubion |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) 12<80 | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 12<60 | SL-503 SA8-SB 0.0-0.5 | 1455 | ML | ~~sandy~~ SMASSIS silt, v.f.g. sa to sr sand 10-12% 10R 3/6 red brown, dry, loose |
| 1 | | | 12<72 | | | ML | silt, moist, loose 10YR 8/3 light brown 1.5, picking up v.f.g. sa to sr sand |
| 2 | | 0.0 | 12<66 | | | ML | sandy silt, moist, loose 10YR 8/3 - clay lens 2.2-2.3, sandy silt below |
| 3 | | 0.0 | 12<54 | SL-503 SA8-SB 3.0-4.0 | 1505 | ML | sandy silt, 10YR 8/3 sand 12% v.f.g. sa to sr silica sand - transition to silty sand 3.8-4.2 |
| 4 | | 0.0 | 12<48 | | | SM | - 4.2 refusal in silty sand - decomposed sandstone bedrock 10YR 8/3 |
| ~~5~~ JF | | | | | | | - 3.7 refusal run #2 |
| | | | | | | | - 3.5 refusal run #3 |

OK JF

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (uR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By VLS

Sample ID SL-503-SA8-SB-3.0-4.0 Date/Time 7-15-13 1505

Matrix (circle one): (Soil) Sediment Water

Start Depth 3.0

End Depth 4.0

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 J. Faubion

Sampler V. Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16 oz jars

2-Encore

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 10 YR 8/3 light 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 N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.G

Sample ID SL-504-SA8-SB-0.0-0.5 Date/Time 7-16-13 1145

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

V.C 7/16/13 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 J. Faubion

Sampler V. Cortes

## Analysis

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

2-5.5. sleeves

1-4 oz jars

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 (%)** 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** 10 R 6/3 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** N/A

NA – Not Applicable

Santa Susana Field Laboratory/94489

| Location ID: DG-504 | Subarea: 8 | Date Started: 7-16-13 | Date Completed: 7-16-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: ~~GSFL-65258-63376.1203.002.223.02231.SSPH3~~ Stn 12410 | | Total Depth: 3.5 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm F. Rodriguez | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: N/A |
| Radiological Background: 11>85 | Borehole diameter: 2.25 | | |
| PID Background: 0.0 | Depth to GW: N/A | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: [signature] #7735 | | Geologist: J. Faubion |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 11>74 | | | | |
| | .5 | | 11>78 | SL-504 SA8-SB | 1145 | ML | silt, dry, loose - 10R 6/3 brown |
| 1 | | 0.0 | 11>78 | 0.0-0.5 | | ML | silt, dry, loose - 10R 6/3 brown |
| | | | | | | ML/SM | - 1.5 transition silt to silty sand |
| 2 | | 0.0 | 12>66 | | | | silty sand, v.fg. sa to sr silica sand 60% dry, loose 10YR 8/3 light brown |
| 3 | | 0.0 | 12>96 | SL-504 SA8-SB | 1200 | SM | silty sand, dry to moist loose, 10YR 8/3 75% v.fg. sa to sr silica sand |
| | 3.5 T.D. | 0.0 | 12>48 | ~~3.0-4.0~~ 2.5-3.5 MS | jf | SM | silty sand, silt dropping out 85% v.fg. sa to sr silica sand 10YR 8/3 light brown |
| | | | | SL-804 SA8-SB 2.5-3.5 | 1210 | | - 3.5' refusal run #1 |
| | | | | | | | - 3.8' " run #2 |
| | | | | | | | - 3.6' " run #3 |
| | | | | | | | - 3.3' " run #4 |
| | | | | | | | - 3.6' " run #5 |
| | | | | | | | - 3.4' " run #6 |
| | | | | | | | - 3.2 " run #7 |
| | | | | | | | - 3.4 " run #8 |
| | | | | | | | ~~MS/MSD sample 1210~~ jf |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.G.F

Sample ID SL-504-SA8-SB 2.5-3.5 MS Date/Time 7-16-13 1200

Matrix (circle one): (Soil) Sediment Water

Start Depth 2.5'

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) JF FB RB

Parent Sample ID N/A

Field Geologist J. Faubion

Sampler V. Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | X |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

1-9oz jar
6-16 oz jars
15-encore

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 (%)** 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** 10YR 8/3 light 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By VHT

Sample ID SL-804-SA8-SB-2.5-3.5 ~~MS~~ Date/Time 7-16-13 1210

Matrix (circle one): (Soil) Sediment Water

Start Depth 2.5

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 SL-504-SA8-SB 2.5-3.5 MS

Field Geologist J. Faubion

Sampler V. Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | X |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 - 16 oz jars
2 - Encore } 5 Encore total
3 - Encore
1 - 4oz jar

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 (%) 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** 10 YR 8/3 light 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**

N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Colts

Sample ID SL-505-SA8-SB 0.0-0.5 Date/Time 7-16-13 0855

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 J. Faubion

Sampler V. Colts

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | 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 | |

2 - S.S. sleeves

1 - 4 oz jar

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 FS,LT | | 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** _____ **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

Santa Susana Field Laboratory/94489

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG-505 | 8 | 7-16-13 | 7-16-13 |

| | | |
|---|---|---|
| Client: DOE | Project Name/#: ~~SSFL-00208-00070,1200,002.223.02201.SSPH8~~ SM 10418 | Total Depth: 10.8' |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm R. Rodriguez | |
| GPS collected? (Yes) or No | Drill Method: DPT | Depth Drilled into Bedrock: NA |
| Radiological Background: 11273 | Borehole diameter: 2.25" | |
| PID Background: 0.0 | Depth to GW: N/A | Sampling Method: DPT |
| Radiological Equipment Used: [✓] MicroR [✓] Alpha/Beta [✓] Pancake | PG Review & No: Julie Hoffman #7735 | Geologist: J. Faubion |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 11293 | | | | |
| .5 | | 0.0 | 12254 | SL-505 SA8-SB 0.0-0.5 | 0955 | ML | silt, dry, 10YR 6/3 brown, trace root hairs + mottling |
| 1 | | 0.0 | 12260 | | | GM | gravel-sand-silt - mixed fill + native |
| 2 | | 0.0 | 12266 | | | GM | gravel-sand-silt / approx = amounts Fill |
| 3 | | 0.0 | 12>108 | | | GM | Fill - mixed sand-gravel silt no stain/odor |
| | | | | | | | 3.6 fill / native contact |
| 4 | | 0.0 | ~~11248~~ 12248 | SL-505 SA8-SB 4.0-5.0 | 0930 | ML | sandy silt, dry, cohesive, 10YR 6/8 brown yellow brown yellow |
| 5 | | 0.0 | 12248 | | | CL | clay with silt (silty clay) moist, cohesive 5YR 4/6 yellow red) |
| 6 | | 0.0 | 12272 | | | ML | silt with clay (clayey silt) moist compact, clays dropping out 6.6, 5YR 4/6 yellow red |
| 7 | | 0.0 | 12266 | | | ML | sandy silt, moist, 5YR 4/6 yellow red |
| 8 | | 0.0 | 12284 | | | SM | silty sand moist, 60% v.f.g. sa to sr silica sand 5YR 4/6 yellow red |
| 9 | | 0.0 | 12254 | | | SM | silty sand, moist, 75% v. Fg. sa to sr silica sand 5YR 4/6 yellow red |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



| ABBREVIATIONS: | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG-505 | 8 | 7-16-13 | 7-16-13 |
| **Project:** SSFL | | **Geologist:** J. Faubion | **Total Depth:** 10.8' |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 10 | | 0.0 | 12266 | | | SM | silty sand, 80% u.f.g. silica sand, sa to sr, 5YR 4/6 yellowish red |
| | 10.8 TD | | 12266 | | | | - refusal 10.8' sandstone<br>-10.5 refusal run #2<br>-10.8 refusal run #3 |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cobb

Sample ID SL-505-SA8-SB-4.0-5.0 Date/Time 7-16-13 0930

**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 J. Faubion

Sampler J. Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16 oz jars

2-Encore

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 (%) 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** 10 YR 6/8 brown 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** Mike Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.C

Sample ID SL-506-SA8-SB 0.0-0.5 Date/Time 7-18-13 0735

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 J. Faubion

Sampler V. Cortes

## Analysis

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

2-S.S. sleeves

2-4oz jars

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 (%)** 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** 10 R 3/6 red 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** N/A

NA – Not Applicable

Santa Susana Field Laboratory/94489

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG-506 | 8 | 7-18-13 | 7-18-13 |

| | | |
|---|---|---|
| Client: DOE | Project Name/#: ~~SSFL-00268-63376:1203.002.223.02231.SGPH3~~ SM latha | Total Depth: 5.3 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm L. Rodriguez | |
| GPS collected? (Yes) or No | Drill Method: DPT | Depth Drilled into Bedrock: N/A |
| Radiological Background: 12>63 | Borehole diameter: 2.25" | |
| PID Background: 0.0 | Depth to GW: N/A | Sampling Method: DPT |
| Radiological Equipment Used: [✓] MicroR [✓] Alpha/Beta [✓] Pancake | PG Review & No.: Nula Hoffman #7735 | Geologist: J. Faubion |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 0 | | 0.0 | 12>92 | SL-506 SA8-SB 0.0-0.5 | 0735 | ML | silt, 10R 3/6 red brown, compact stiff, dry - .5-1.0 fill gravel over impacted soil dry |
| .5 | .5 | 0.0 | 12>84 | | | | |
| 1 | | | 12>84 | | | GM | silty gravel - roots, root hairs - relic organics sandstone clasts (angular) to 6mm ~~(FH-2)~~ |
| 2 | | 0.0 | 12>60 | | | ML | silt, 5YR 4/6 yellow red, dry, loose - grading through silt → silty sand 2.5-3.3 |
| | | | | | | SM | 3.3 transition silt to silty sand |
| 3 | | 0.0 | 12>48 | | | | 10R 3/6 red brown, dry - stiff Feox stain + caliche mottling pervasive |
| 4 | | 0.0 | 12>24 | SL-506 SA8-SB 4.0-5.0 | 0750 | SM | silty sand, 10R 3/6 - caliche mottling Feox stain - 70% v.fg. sa to Br silica sand |
| 5 | | 0.0 | 12>72 | | | SM | silty sand 10R 3/6 - decomposed sandstone |
| 5.3 TD | | | 12>60 | | | SM | 5.3 TD + refusal - weathered sandstone |

- 5.3 refusal #1
- 5.2 refusal #2
- 5.0 " #3

CDM Smith

**BORING LOG AND SAMPLING RECORD**



| ABBREVIATIONS: | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

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# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.GA

Sample ID SL-506-SA8-SB-4.0-5.0 Date/Time 7-18-13 0750

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 J. Faubion

Sampler V. Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | X |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16 oz jars

5-En core

1-4oz jar

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 (%)** 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** 10 R 3/6 red 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 #** 7035

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V, GT

Sample ID SL-507-SA8-SB 0.0-0.5 Date/Time 7-16-13 1255

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 J. Faubion

Sampler V. Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encore | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-5.5. sleeves

1-4oz jars

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 _____

Is Staining Present Yes **No**

Color 5YR 4/6 red 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 N/A

NA – Not Applicable

Santa Susana Field Laboratory/94489

| Location ID: DG-507 | Subarea: 8 | Date Started: 7-16-13 | Date Completed: 7-16-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: ~~SSFL-05258-03376.1203.002.223.02231.SSFH3~~ SM 12412 | | Total Depth: 4.5' |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm F. Rodriguez | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled Into Bedrock: NA |
| Radiological Background: 13 > 100 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 | Depth to GW: | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No: Mike Hoffman #7735 | | Geologist: J. Faubion |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 13 > 86 | SL-507 | | | |
| | .5 | 0.0 | 12 > 78 | SA-8SB 0.0-0.5 | 1255 | ML | silt, loose, dry 5YR 4/6 red brown - no stain/odor - moderate caliche mottles/root hairs |
| 1 | | | 12 > 66 | | | | |
| | | | ~~12 > 78~~ SF | | | | |
| 2 | | 0.0 | 11 > 96 | | | ML | ~~sandy silt~~ Silt w/ Sand SM 7.5 13 loose, dry, v.fg. sa to sr sand 20% 10YR 8/3 light brown |
| 3 | | 0.0 | 11 > 66 | SL-507 SA-8SB 3.0-4.0 | 1310 | SM | silty sand, 70% v.fg. sa to sr silica sand 10YR 8/3 light brown |
| 4 | | 0.0 | 11 > 30 | | SP - SM SM 7.5 13 | SM | silty sand, silt dropping out, 85-90% v.fg. silica sand 10YR 8/3 light brown - becoming moist at refusal - 4.5 |
| | | 0.0 | 11 > 54 | | | SM | - 4.5' refusal run #1 |
| | | | | | | | - 3.9 refusal " #2 |
| | | | | | | | - 4.0 " #3 |

jf

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr: no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs: below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

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# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By N.SZ

Sample ID SL-507-SA8-SB-3.0-4.0 Date/Time 7-16-13 1310

Matrix (circle one): (Soil) Sediment Water

Start Depth 3.0

End Depth 4.0

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 J. Faubion

Sampler V. Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 - 16oz jars

2 - Encore

1 ~~2~~ - 4oz jar

SM 7/6/13

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 (%)** 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** 10 YR 8/3 light 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.G.E.

Sample ID SL-508-SA8-SB 0.0-0.5 Date/Time 7-16-13 1330

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

Start Depth 0.0'

End Depth 0.5'

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 J. Faubion

Sampler V. Cortes

## Analysis

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

2 - S.S. sleeves
2 - 4oz jars

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 (%) 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** 10YR 8/3 light 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** N/A

NA – Not Applicable

Santa Susana Field Laboratory/94489

| Location ID: DG-508 | Subarea: 8 | Date Started: 7-16-13 | Date Completed: 7-16-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: ~~SSFL-05258-68370.1203.002.223.02231.SSFH3~~ SM 10412 | | Total Depth: 2.3 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm F. Rodriguez | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: N/A |
| Radiological Background: 13>86 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 | Depth to GW: N/A | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: [signature] #7735 | | Geologist: J. Faubion |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 12>90 | SL-508 SA-8-SB 0.0-0.5 | 1330 | ML | silt, dry, compact 10YR 8/3 light brown - no stain/odor |
| | .5 | 0.0 | 12>84 | | | | |
| 1 | | 0.0 | 12>66 | | | | |
| 2 | | 0.0 | 12>66 | | | ML/SM | sandy silt, dry, loose 10YR 8/3 light brown 2.1 - becoming silty sand 10YR 8/3 80% v.f.g. sand |
| | TD 2.3 | | | | | | - 2.3' refusal in sandstone |
| | | | | | | | - 2.7 " run #2 |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

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# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.Ort

Sample ID SL-509-SA8-SB 0.0-0.5 Date/Time 7-18-13 0850

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 J. Faubion

Sampler V. Cortes

## Analysis

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

2 - 5.5. sleeves

2 - 4oz jars

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 (%) 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** 10R 3/6 red 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** N/A

NA – Not Applicable

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG-509 | 8 | 7-18-13 | 7-18-13 |

| | | |
|---|---|---|
| Client: DOE | Project Name/#: ~~SSFL-05250-05370.1203.002.220.02231.SSPHS~~ (SM) (GAEA) | Total Depth: 4.7' |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strayer Drilling | |
| GPS collected? (Yes) or No | Drill Method: DPT | Depth Drilled into Bedrock: N/A |
| Radiological Background: 12286 | Borehole diameter: 2.25" | |
| PID Background: 0.0 | Depth to GW: N/A | Sampling Method: DPT |
| Radiological Equipment Used: [✓] MicroR [✓] Alpha/Beta [✓] Pancake | PG Review & No: Mulli Hoffmon #7735 | Geologist: J. Faubion |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 12285 | SL-509 SA8 SB 0.0-0.5 | 0850 | ML | silt, 10 R 3/6 red brown, dry, loose - no stain/odor |
| .5 | | 0.0 | 12254 | | | | |
| 1 | | 0.0 | 12256 | | | ML | 1' silt, 10R 3/6 red brown, dense - dry |
| 2 | | 0.0 | 12254 | | | ML | sandy silt 5R 4/6 yellow red, mod caliche mottling - moist |
| 3 | | 0.0 | 12248 | | | ML | sandy silt, 5R 4/6 yellow red caliche droppings out |
| | | | | | | SM | 3.6 transition to silty sand |
| 4 | | 0.0 | 12266 | SL-509 SA8 SB 4.0-5.0 | 0910 | SM | silty sand, 10 YR 8/3 light brown. |
| | | 0.0 | 12254 | | | SP | - poorly graded sand, decomposed bedrock Box stain 4.4-4.7 |
| | 4.7 TD | | | | | | 4.7' refusal sandstone<br>4.5 " #2<br>5.0 refusal #3 |

Mulli

CDM Smith

**BORING LOG AND SAMPLING RECORD**



| ABBREVIATIONS: | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. G.

Sample ID SL-509-SA8-SB-4.0-5.0 Date/Time 7-18-13 0900

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 J. Faubion

Sampler V. Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | X |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16 oz jars

1 ~~X~~ -4 oz jars

SM7/18/13

5-EN core

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 (%)** 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** 10YR 8/3 light 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL-510-SA8-SB 0.0-0.5 Date/Time 7-16-13 0830

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 J. Fawbion

Sampler V. Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encore | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-5.5. sleeves

1-4 oz. jars

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 (%) 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** 10 YR 6/8 brown-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** [signature] **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

Santa Susana Field Laboratory/94489

| Location ID: DG-510 | Subarea: 8 | Date Started: 7-16-13 | Date Completed: 7-16-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: ~~GSFL-05258-08076.1200.002.220.02291.GSPH3~~ SM 12412 | | Total Depth: 0.6' |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm F. Rodriguez | | |
| GPS collected? Yes or No | Drill Method: HA | | Depth Drilled Into Bedrock: N/A |
| Radiological Background: 14281 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 | Depth to GW: N/A | | Sampling Method: Hand Auger |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: [signature] #7735 | | Geologist: J. Faubion |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 12273 | | | GW/GM | - well graded gravel with silt - sandstone clasts to 10mm - angular to subround, |
| | | 0.0 | 12278 | | | | - 0.6 refusal - sandstone outcrop 5 N 10 YR 6/8 brown-yellow |
| 1 | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | HA: Hand Auger |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

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# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Gt

Sample ID SL-511-SA8-SB-0.0-0.5 Date/Time 7-15-13 1415

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 J. Faubion

Sampler V. Coffis

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Energetics | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-5.5. sleeves

1-4 oz jar

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** 10 R 3/6 red 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** N/A

NA – Not Applicable

Santa Susana Field Laboratory/94489

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG-511 | 8 | 7-15-13 | 7-15-13 |

| | | |
|---|---|---|
| Client: DOE | Project Name/#: ~~SSFL-65258,63376,1203,002,223,02281,SGPH9~~ SM 10-11a | Total Depth: 6.8' |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm F. Rodriguez | |
| GPS collected? (Yes) or No | Drill Method: DPT | Depth Drilled into Bedrock: N/A |
| Radiological Background: 13>87 | Borehole diameter: 2.25" | |
| PID Background: 0.0 ~~13>84~~ | Depth to GW: N/A | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PO Review & No.: Julie Hoffman #7735 | Geologist: J. Faubion |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| .5 | | 0.0 | 13>84 13>90 | SL-511 SAB-SB 0.0-0.5 | 1415 | ML | silt, dry, loose - trace v.f.g. silica sand - 10 R 3/6 red brown no stain/odor |
| 1 | | 0.0 | 12>42 | | | | |
| 2 | | 0.0 | 12>60 | | | ML | silt, dry, loose - sand absent, no stain odor 10R 3/6 red brown no stain/odor |
| 3 | | 0.0 | 12>48 | | | ML | silt, dry, loose 10 R 3/6 no stain/odor |
| 4 | | 0.0 | 12>36 | | | ML | silt, dry, loose 10R 3/6 no stain/odor |
| 5 | | 0.0 | 12>60 | | | ML | - color transition 4.6', 10R 3/6 to 10 YR 8/3 light brown - picking up 5% v.f.g. sand - sandy silt, moist |
| 6 | | 0.0 | 12>54 | SL-511 SAB-SB 6.0-7.0 | 1430 | ML | ~~Sandy~~ silt, 10% v.f.g. sa to sr sand in silt - 10 YR 8/3, moist to 6.8' TD |
| 7 | | 0.0 | 12>84 | | | | - 6.8' refusal run #1 10YR 8/3 light brown |
| | | | | | | | - 7.0 refusal run #2 |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



| ABBREVIATIONS: | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.G.L

Sample ID SL-511-SA8-SB-6.0-7.0 Date/Time 7-15-13 1430

Matrix (circle one): (Soil) Sediment Water

Start Depth 6.0

End Depth 7.0

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 J. Faubion

Sampler V. Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16 oz jars

2-Encore

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** 10 YR 8/3 light 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 Wolfson **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Gtz

Sample ID SL-512-SA8-SB 0.0-0.5 Date/Time 7-17-13 0800

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 J. Faubion

Sampler V. Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | 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 | |

2 - S.S. sleeves

1 - 4 oz jar

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 (%)** 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** 10 R 3/6 red 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** N/A

NA – Not Applicable

Santa Susana Field Laboratory/94489

| Location ID: DG-512 | Subarea: 8 | Date Started: 7-17-13 | Date Completed: 7-17-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: ~~SSFL-65258-63376.4203.002.223.03231.SSPH3~~ Sm 15412 | | Total Depth: 2' |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm F. Rodriguez | | |
| GPS collected? Yes or No | Drill Method: HA | | Depth Drilled into Bedrock: N/A |
| Radiological Background: 16 < 102 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 | Depth to GW: | | Sampling Method: HA |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mike Hoffman #7735 | | Geologist: J. Faubion |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| .5 | .5 | 0.0 | 19<70 16<55 | SL-512 SA8-5B 0.0-0.5 | 0800 | ML | silt, 10R 3/6 red brown, dry, loose no stain/odor - root hairs, mottles |
| 1 | | 0.0 | 16<60 | | | ML | silt, 10R 3/6 red brown, dry, loose no stain/odor |
| 2 | TD | 0.0 | 16<66 | | | ML | sandy silt, 5R 4/6 yellow brown 20% v.f.g. sa/sr silica sand |
| | | | | | | | refusal 2' |
| | | | | | | | " 1.8' run #2 |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | HA: Hand augur |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

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# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Gt

Sample ID SL-513-SA8-SB0.0-0.5 Date/Time 7-17-13 1345

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 J. Faubion

Sampler V. Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | X |
| | TIC | EPA 8270 | ~~X~~ V.C. 7/17/13 |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | X |
| | pH | EPA 9045 (Soil) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | X |
| | 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 | X |
| | 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 | |

2 - S.S. sleeves
2 - 4 oz jars

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 _____

**Is Staining Present** Yes (No)

**Color** 10 YR 3/3 dark 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** N/A

NA – Not Applicable

Santa Susana Field Laboratory/94489

| Location ID: DG-513 | Subarea: 8 | Date Started: 7-17-13 | Date Completed: 7-17-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: ~~SSFL-65258-63376.4203.002.223.02234.SSPH3~~ SM 1242 | | Total Depth: 8.9' |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm F. Rodriguez | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled Into Bedrock: |
| Radiological Background: 12277 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 | Depth to GW: | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: [signature] #7735 | | Geologist: J. Fawkion |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 17273 | | | | |
| | | 0.0 | 11284 | SL-513 SA-8 | 1345 | ML | .5 silt, 10YR 3/3 dark brown dry, cohesive, compacted |
| 1 | | 0.0 | 7248 | SB-0.0-0.5 | | ML | 1'-silt, 10YR 3/3 as above |
| 2 | | 0.0 | 7236 | | | ML | 2' silt, 10R 3/6 red brown, moist compact |
| 3 | | 0.0 | 7248 | | | ML | 3' silt, 10R 3/6 red brown, moist compact |
| | | | | | | ML | -3.4 transition to silty sand |
| 4 | | 0.0 | 7254 | SL-513 SA-8 SB4.0-5.0 | 1400 | SM | 4' silty sand, 10YR 3/3 dark brown v. f.g. sr/sa silica sand in silt |
| | | | | | | SM | -4.2 ~~bact~~ transition to clayey silt |
| 5 | | 0.0 | 10254 | | | ML | clayey silt 10YR 3/3 dark brown |
| | | | | | | ML | to 5.5 - silty sand 10YR 8/3 5.5-6.0 |
| 6 | | 0.0 | 10266 | | | SM | 6' silty sand 10YR 8/3 light brown - clay absent, loose, moist |
| 7 | | 0.0 | 10254 | | | SM | 7' silty sand, 10YR 8/3 light brown ~~dry~~ moist JF mod. dense |
| 8 | | 0.0 | 10272 | SL-513 SA 8 SB 8.0-9.0 | 1415 | SM | 8' silty sand 10YR 8/3 light brown moist dense - compact |
| | | | | | | SW | 8.4-8.9 grading to ~~poorly~~ well poorly graded sand 10YR 8/3 |
| TD | | 0.0 | 10284 | | | | - 8.9 refusal |
| | | | | | | | - 8.6 refusal run #2 |
| | | | | | | | - 8.6 " run #3 |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr: no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs: below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

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# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.C.

Sample ID SL-513-SA8-SB-4.0-5.0 Date/Time 7-17-13 1400

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 J. Faubion

Sampler V. Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16oz jars

2-Encore

1 & - 4oz jars

SM 7/17/13

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 (%) 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** 10YR 8/3 light 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** Julia Hoffman **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortez

Sample ID SL-513-SA8-SB-8.0-9.0 Date/Time 7-17-13 1415

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 N/A

Field Geologist J. Faubion

Sampler V. Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | X |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16 oz jars

12 SF - 4 oz jars SF

5 - EnCore

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 (%)** 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** 10YR 8/3 light 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.Gk

Sample ID SL-514-SA6-SB 0.0-0.5 Date/Time 7-17-13 0855

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

Depth Units (circle one): Inches (Feet)

Check if Composite ☐

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

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

Parent Sample ID N/A

Field Geologist J. Faubion

Sampler V. Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-S.S. sleeves

1-4oz jar

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 (%) 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** 10 R 3/6 red 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** N/A

NA – Not Applicable

Santa Susana Field Laboratory/94489

| Location ID: DG-514 | Subarea: 8 | Date Started: 7-17-13 | Date Completed: 7-17-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: ~~SSFL-65258-63370.4203.002.223.02231.SSPH9~~ SM 12412 | | Total Depth: 8.7' |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm E. Rodriguez | | |
| GPS collected? Yes or No | Drill Method: HA | | Depth Drilled into Bedrock: N/A |
| Radiological Background: 13>98 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 | Depth to GW: | | Sampling Method: HA |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mike Hoffman #7735 | | Geologist: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| .5 | | 0.0 | 12>84 | SL-514 SA8-SB 0.0-0.5 | 0855 | ML | silt, dry, loose 10R 3/6 red brown roots organics -.5' thin wire mesh (plastic) - soil stabilization |
| 1 | | 0.0 | 13>54 | | | ML | 1' silt, dry, loose 10R 3/6 red brown - no stain/odor - becoming moist |
| 2 | | 0.0 | 13>60 | | | ML | 2' sandy silt, dense, moist mod. cohesive 10YR 6/3 brown - no stain/odor - 12/15% v.f.g. sr/sa silica sand - organics absent |
| 3 | | 0.0 | 12>96 | | | ML | 3 Silty/Sand ~~Sandy silt~~ SM 7.5/3 15-17% v.f.g. silica sand in silt w/ trace clay (1-2%) 10R 6/8 brown yellow |
| 4 | | 0.0 | 13>60 | SL-514 SA8-SB 4.0-5.0 | 0955 | SM | 4' silty sand, 10YR 8/3 light brown loose, moist - trace interstitial clay (3-5%) - weak caliche mottling |
| 5 | | 0.0 | 13>72 | | | SM | 5' silty sand, 10YR 8/3 light brown loose, moist - clay absent - trace caliche mottling v.f.g. silica sand 85%, silt 15% 5.3 contact bedrock |
| 6 | | 0.0 | 13>90 | | | SC | 6' clayey sand w/silt 10YR 8/3 light brown, moist, loose - no stain/odor |
| 7 | | 0.0 | 13>108 | SL-514 SA8-SB 7.5-8.5 | 1015 | SC | 7' clayey sand w/silt 10YR 8/3 light brown moist, loose - no stain/odor |
| 8 | | 0.0 | 13>90 | | | SC | 8' clayey sand w/silt 10YR 8/3 light brown moist, loose - decomposed ss bedrock |
| 8.7 TD | | 0.0 | 13>60 | | | SC | 8.7' refusal in clayey sand - strong FEOX stain in some frags. 10YR 8/3 8.8' refusal - run #2 |

jf

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr: no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | HA = Hand auger |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs: below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL-514-SA8-SB-4.0-5.0 Date/Time 7-17-13 0955

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 J. Faubion

Sampler V. Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 - S.S. sleeves
1 - 4oz jar
2 - Encore

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 (%) 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** 10 YR 8/3

**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 Wolfgram **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By J.Fab

Sample ID SL-514-SA8-SB-7.5-8.5 Date/Time 7-17-13 1015

Matrix (circle one): (Soil) Sediment Water

Start Depth 7.5

End Depth 8.8

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 J. Faubion

Sampler V. Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 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) | X |
| | | EPA 9040 (Water) | |
| | Hexavalent Chromium | EPA 7196/7199 | |
| | Herbicides | EPA 8151 | X |
| | Pesticides | EPA 8081 | X |

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-S.S. sleeves
1-4oz jar
2-Encore

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 (%) 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** 10 YR 8/3 light 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Gz.

Sample ID SL-515-SA8-SB 0.0-0.5 Date/Time 7-17-13 1050

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 J. Faubion

Sampler V. Curtis

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | X |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | 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 | |

2-5.5. sleeves

1-4 oz jar

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 (%)** 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** 10YR 3/3 dark 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** N/A

NA – Not Applicable

Santa Susana Field Laboratory/94489

| Location ID: DG-515 | Subarea: 8 | Date Started: 7-17-13 | Date Completed: 7-17-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: ~~SSFL-65258-68376.1203.002.223.02231.CSPH0~~ SM 12412 | | Total Depth: 14' |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm F. Rodriguez | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled Into Bedrock: N/A |
| Radiological Background: 11>86 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 | Depth to GW: N/A | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mike Hoffman #7735 | | Geologist: J. Faubion |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| .5 | | 0.0 | 12>81 | SL-515 SA8-SB 0.0-0.5 | 1050 | ML | .5 silt 10YR 3/3 dark brown, dense compacted - trace caliche mottling |
| | | 0.0 | 12>78 | | | | |
| 1 | | 0.0 | 12>54 | | | GM | 1' dry silty gravel, dry, loose 10YR 6/3 brown (roadmix gravels + silt to 1.5' No Fill |
| 2 | | 0.0 | 12>90 | | | ML | silt, dense compacted moist 10YR 3/3 dark brown |
| 3 | | 0.0 | 12>90 | | | ML | silt, as above 10YR 3/3 |
| | | | | | | | - 3.5 color transition 10YR 3/3 to 10R 3/6 red brown |
| 4 | | 0.0 | 12>108 | SL-515 SA-8-SB 4.0-5.0 | 1105 | ML | silt, 10R 3/6 red brown, dense, compacted relic root mottles, trace caliche - grading to clayey silt 4.5 |
| 5 | | 0.0 | 12>102 | | | ML | clayey silt, root mottles prevalent 10R 3/6 red brown |
| 6 | | 0.0 | 12>108 | | | ML | clayey silt, root mottles 10R 3/6 red brown, moist, dense, compact |
| 7 | | 0.0 | 12>90 | | | SC | clayey sand, root mottling absent 10YR 6/8 brown yellow - dense compact, moist |
| 8 | | 0.0 | 12>70 | | | SC | silty clay 10YR 6/8 brown yellow compact, moist, dense |
| 9 | | 0.0 | 12>54 | SL-515 SA8-SB 9.0-10.0 | 1120 | CL | silty clay 10YR 6/8 brown/yellow compact, moist, dense |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr: no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs: below ground surface |

| Location ID: DG-515 | Subarea: 8 | Date Started: 7-17-13 | Date Completed: 7-17-13 |
|---|---|---|---|
| Project: SSFL | | Geologist: J. Fashion | Total Depth: 14' |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (uR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 10 | | 0.0 | 12260 | | | CL | silty clay 10YR 6/8 yellow brown moist, dense, compact |
| 11 | | 0.0 | 12254 | | | CL | silty clay as above 10YR 6/8 yellow brown, moist, dense |
| 12 | | 0.0 | 12272 | | | CL | silty clay 10YR 6/8 yellow brown - moist dense compact |
| | | | | | | | 12.5 grading to sandy clay |
| 13 | | 0.0 | 12266 | | | CL | sandy clay - 10YR 6/8 |
| | | | | | | | 13.2 clays dropping out |
| | | | | | | SW | well graded sand 10YR 8/3 |
| 14 | TD | 0.0 | 12260 | SL-515 SA8-SB 14.0-15.0 | 1135 | SW | well graded sand v. fg sa/sr sand 10YR 8/3 light brown |
| | | | | | | | 14' refusal #1 |
| | | | | | | | 15.3 refusal #2 |
| | | | | | | | 15.7 REFUSAL #3 |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Coates

Sample ID SL-515-SA8-SB 4.0-5.0 Date/Time 7-17-13 1105

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 J. Faubion

Sampler V. Coates

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | X JF |
| | Perchlorate Confirmation | EPA 6850/6860 | X |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2 - 16 oz jars

2 - Encore

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 (%)** 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** 10 R 3/6 red 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 I **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By J.Fa

Sample ID SL-515-SA8-SB 9.0-10.0 Date/Time 7-17-13 1120

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 J. Faubion

Sampler V. Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | X |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16oz jars

2-Encore

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 (%) 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 10YR 6/8 brown 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 Mike Hoffman PG Registration # 7735

Additional Comments N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. Cortes

Sample ID SL-515-SA8-SB 14.0-15.0 Date/Time 7-17-13 1135

Matrix (circle one): (Soil) Sediment Water

Start Depth 14.0

End Depth 15.0

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 J. Faubion

Sampler V. Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | X |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16oz jars

2-Encore

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 (%) 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** 10YR 8/3

**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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.Gt

Sample ID SL-516-SA8-SB0.0-0.5 Date/Time 7-19-13 0800

Matrix (circle one): Soil | Sediment | Water

Start Depth 0.0

End Depth 0.5

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 J. Fagbion

Sampler V. Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | 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 | |

2-9.5. sleeves

1-4oz jar

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 (%) 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** 10 YR 8/3

**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** N/A

NA – Not Applicable

Santa Susana Field Laboratory/94489

| Location ID: DG-516 | Subarea: 8 | Date Started: 7-19-13 | Date Completed: 7-19-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: ~~SSFL-65258-63378.4208.002.220.02234.SSPH3~~ SM 1a/1a | | Total Depth: .5' |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm / F. Rangel | | |
| GPS collected? Yes or No | Drill Method: HA | | Depth Drilled into Bedrock: N/A |
| Radiological Background: 13278 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 | Depth to GW: N/A | | Sampling Method: HA |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: [signature] #7735 | | Geologist: J. Faubion |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 14289 | SL-516 | 0800 | ML | Silty Sand ~~Sandy silt~~ 10YR 8/3 yellow brown SM 7a/1a 20/80/0 % |
| .5 | | 0.0 | 14278 | SA-8 SB 0.0 -0.5 | | | |
| .7 | | | | | | | .5 refusal #1 refusal #2 .7 |

JF

CDM Smith

BORING LOG AND SAMPLING RECORD



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

xxx sand/silt %

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.Cs

Sample ID SL-517-SA8 SB 0.0-0.5 Date/Time 7-19-13 0930

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 J. Faubion

Sampler V. Cortes

## Analysis

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

2 - S.S. sleeves
2 - 4 oz jars

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 (%)** 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** 10 YR 3/3 dark 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 #** _____

**Additional Comments** N/A

NA – Not Applicable

Santa Susana Field Laboratory/94489

| Location ID: DG-519(517) | Subarea: 8 | Date Started: 7-19-13 | Date Completed: 7-19-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: ~~SOFL-65266-03376.1203.002.223.02231.SSPH3~~ SM 12412 | | Total Depth: 4.2' |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm F. Rodriguez | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled into Bedrock: N/A |
| Radiological Background: 13<81 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 | Depth to GW: N/A | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: [signature] #7735 | | Geologist: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 13<82 | | | | |
| .5 | | 0.0 | 14<54 | SL-517 SA 8 SB 0.0-0.5 | 0930 | ML | .5 silt, dry, loose 10YR 3/3 dark brown - 100% silt, root hairs |
| 1 | | 0.0 | 15<54 | | | | 1' silt, dry, loose 10YR 3/3 dark brown 100% silt - root hairs / organics |
| 2 | | 0.0 | 15<84 | | | ML | silt, ~~dry~~ jf moist, loose 10YR 3/3 dark brown - 100% silt |
| | | | | | | ML | - 2.5 grading to silty sand 0/60/40/0 |
| 3 | | 0.0 | 15<90 | | | SM | silty sand, 10 R 3/6 red brown moist, strong caliche mottling |
| | | | | SL-517 SA 8 SB 3.0-4.0 | 0940 | SM | - 3.6 sharp transition to p.g. sand, v.f.g 100% sand 10YR 8/3 light brown |
| 4 | | 0.0 | 15<54 | | | SP | 4.0 10YR 8/3 SP sand - equigranular decomp. sandstone |
| | | | 15<72 | | | SP | - 4.2 refusal |
| | | | | | | | - 4.2 refusal #2 |
| | | | | | | | - 4.3 refusal #3 |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

0 x/x/x/x %
gravel/sand/silt/clay %

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.G.F

Sample ID SL-517-SA8-SB 3.0-4.0 Date/Time 7-19-13 0940

Matrix (circle one): (Soil) Sediment Water

Start Depth 3.0

End Depth 4.0

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 J. Faubion

Sampler V. Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16oz jars
1-4oz jar
2-Encore

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 (%)** 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** 10YR 8/3 light 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V. G-T

Sample ID SL-518-SA8-SB 0.0-0.5 Date/Time 7-19-13 0820

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

Start Depth 0.0

End Depth 0.5

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 J. Faubion

Sampler V. Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | ~~X~~ V.C 7/19/13 |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-S.S. sleeves, 1-2-4oz jars

~~1-4oz jar~~ JF,

~~2-encore~~ JP

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 (%): 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** 10 YR 8/3 light 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** N/A

NA – Not Applicable

Santa Susana Field Laboratory/94489

| Location ID: DG-518 | Subarea: 8 | Date Started: 7-19-13 | Date Completed: 7-19-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: ~~SSFL-65258-03370.1200.002.229.02201.00PH0~~ SM Santa Susana | | Total Depth: 5.0 |
| Company Name: CDM SMITH | | Drill Contractor/Driller: Strosnider Drilling | |
| GPS collected? (Yes) or No | | Drill Method: DPT | Depth Drilled into Bedrock: N/A |
| Radiological Background: 13767 | | Borehole diameter: 2.25" | |
| PID Background: 0.0 | | Depth to GW: N/A | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | | PG Review & No.: Mike Stoffregen #7735 | Geologist: J. Faubion |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 15248 | | | | |
| | .6 | | | 0820 | 0820 SA 8 SB 0.5 | SP | silty sand, v.fg. sa to sr silica sand 10YR 8/3 light brown 80/20 sand/silt |
| 1 | | 0.0 | 14766 | | | GM | 1'- silty gravel (gravel-sand-silt) No Fill 10R 3/6, dry, loose - angular clasts to 6 mm (sandstone) - transitions to ML 1.8' |
| | | | | | | GM/ML | |
| 2 | | 0.0 | 14760 | | | ML | 2' silt, 5YR 6/8 brown yellow caliche mottling, dry - compact 0/0/100/0 |
| 3 | | 0.0 | 14760 | | | ML | 2.8' grading to sandy silt |
| | | | | | | SM | 3.2 grading to silty sand 5YR 6/8 brown-yellow moist, compact 0/70/30/0 |
| 4 | | 0.0 | 14710 | SC-518 SA 8 SB 4.0-5.0 | 0900 | SM | 4.0 silty sand 10YR 6/8 brown yellow - caliche mottling 0/85/15/0 % |
| | | | | | | SP | 4.4 fg. v.FA. silica sand 100% 10YR 6/3 brown |
| 5 | - TP | 0.0 | 14742 | | | SP | 5.0 refusal #1 |
| | | | | | | | 4.3 refusal #2 |

**CDM Smith** **BORING LOG AND SAMPLING RECORD** Page 1 of 1

| ABBREVIATIONS: | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr: no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs: below ground surface |

x/x/x/x = gravel/sand/silt/clay
0/0

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (uR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.G

Sample ID SL-518-SA8-SB 4.0-5.0 Date/Time 7-19-13 0900

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 J. Fanbion

Sampler V. Colts

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Encores | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16oz jars
1-4oz jar
2-Encore

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 (%) 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** 10YR 6/3 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.C.F

Sample ID SL-519-SA8-SB0.0-0.5 Date/Time 7-18-13 1330

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 J. Fawbion

Sampler V. Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | 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 | |

2 - 5.5. sleeves

1 - 4oz jar

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 (%)** 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** 10YR 3/3 dark 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** N/A

NA – Not Applicable

Santa Susana Field Laboratory/94489

| Location ID: DG-519 | Subarea: 8 | Date Started: 7-18-13 | Date Completed: 7-18-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: ~~SSFL-05250-00070.1203.002.220.02231.SSPH3~~ SM 12412 | | Total Depth: 4.5 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm F. Rodriguez | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled Into Bedrock: N/A |
| Radiological Background: 12>73 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 | Depth to GW: N/A | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mike Hoffman #7735 | | Geologist: J. Faubion |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 12>89 | | | | .5' |
| .5 | | 0.0 | 12>84 | SL-519 SA8-SB 0.0-0.5 | 1330 | ML | silt, 10 YR 3/3 dark brown, moist loose - 100% silt |
| 1 | | | 13>48 | | | | 1' silt 10 YR 3/3 compact - trace caliche 100% |
| 2 | | 0.0 | 13>42 | | | ML | 2.0 silt 10 YR 3/3 dark brown, moist compact - slight caliche mottling 100% silt |
| 3 | | 0.0 | 13>60 | | | ML | 10 YR 3/3 silt - moist |
| | | | | SL519 SA8-SB 3.5-4.5 | 1340 | SP | 3.0' sharp contact silt & p.g. sand below sand, p.g., 10 YR 8/3 light brown |
| 4 | | 0.0 | 13>66 | | | SP | sand, p.g., 10 YR 8/3 light brown (decomposed sandstone) 100% v.f.g. silica sand |
| | | 0.0 | 13>78 | | | SP | - 4.5' refusal |
| | | | | | | | - 4.4' refusal #2 |
| | | | | | | | - 4.6' " #3 |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (uR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By V.GA

Sample ID SL-519-SA8-SB 3.5-4.5 Date/Time 7-18-13 1340

Matrix (circle one): (Soil) Sediment Water

Start Depth 3.5

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 J. Faubion

Sampler V. Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-16oz jars

2-Encore

~~1-4oz jar~~ JF

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 (%): 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: 10YR 8/3 light 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: N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Staff Mypel

Sample ID SL-520-SA8SB 0.0-0.5 Date/Time 7-18-13 1300

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 J. Faubion

Sampler V. Cortes

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Energetics | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-S.S. sleeves

1-4oz jar

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 (%)** 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** 10YR 8/3 light 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** N/A

NA – Not Applicable

Santa Susana Field Laboratory/94489

| Location ID: DG-520 | Subarea: 8 | Date Started: 7-18-13 | Date Completed: 7-18-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: ~~SSFL-65258-68376.1205.002.220.02334.SSPH3~~ SM 12412 | | Total Depth: 2.0' |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm - F. Rodriguez | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled Into Bedrock: |
| Radiological Background: 13 < 90 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 | Depth to GW: N/A | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: [signature] #7735 | | Geologist: J. Faubion |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| .5 | | 0.0 | 13 < 88 | SL-520 | | SP | sand, poorly graded, dry, loose 10YR 8/3 light brown |
| | | 0.0 | 12 < 76 | SA-8SB 0.0-0.5 | 1300 | | .5 refusal |
| 1 | | 0.0 | 12 < 78 | | | SP | sand, p.g. dry, loose 10YR 8/3 |
| 2 | | 0.0 | 12 < 66 | | | SP | sand, pog. loose, dry - decomp bedrock 10YR 8/3 |
| | | | | | | | 2.0 refusal |
| | | | | | | | refusal #1 - 0.5 |
| | | | | | | | " #2 - 2.0 |
| | | | | | | | #3 1.9 |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**

Page ___ of ___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

**FSDS Checked By** V. Cortes

**Sample ID** SL-521-SA8-SB 0.0-0.5 **Date/Time** 7-19-13 0730

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

**Start Depth** 0.0

**End Depth** 0.5

**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** J. Faubion

**Sampler** V. Cortes

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | 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 | |

2-5,5. sleeves
1-4oz jar

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 (%)** 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** 5YR 4/6 yellow red

**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** N/A

NA – Not Applicable

Santa Susana Field Laboratory/94489

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| DG-521 | 8 | 7-19-13 | 7-19-13 |

| | | |
|---|---|---|
| Client: DOE | Project Name/#: ~~SGFL-65859-63376,4969.002.023.00204.SGPH2~~ SM Trailer | Total Depth: 2' |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongfarm Rodriguez | |
| GPS collected? Yes or No | Drill Method: HA | Depth Drilled Into Bedrock: NA |
| Radiological Background: 14273 | Borehole diameter: | |
| PID Background: 0.0 | Depth to GW: NA | Sampling Method: HA |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mike Hoffman #7735 | Geologist: J. Faubion |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| .5 | | 0.0 | 14287 | SL-521 SM70513 | 0730 | ML | .5 ~~sandy~~ silt, 5R 4/6 yellow red, dry, loose ~~90% to 95%~~ - high organics (roots) 10/90/0 % |
| | | | 15288 | SAG-SB 0.0-0.5 | | | |
| 1 | | 0.0 | 14268 | SM70513 1 | | ML | ~~Sandy Silt~~ Silt w/ Sand 10R 3/6 red brown 15/85/0% - root hairs, dry, loose silt |
| 2 | TD | 0.0 | 14284 | | | SP | 2' p.g. sand - v.f.g. silica sand, sa to sr 10YR 8/3 light brown - decomposed bedrock 100/0/0 |
| | | | | | | | 2.0 refusal #1 |
| | | | | | | | 2.2 refusal #2 |

OIL JF

**CDM Smith** — **BORING LOG AND SAMPLING RECORD** — Page 1 of 1

ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | HA = Hand auger |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

x/x/x % = sand/silt/clay

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**

Page___of___

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By T. Bennett

Sample ID SL-522-SA8-SB 0.0-0.5 Date/Time 7-26-13 1250

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

Start Depth 0.0

End Depth 0.5

**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 J. Faubion

Sampler T. Bennett

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Solids | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |

2-S.S. sleeves

1-4oz jar

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 (%)** 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** 10 YR 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** _____ **PG Registration #** 7735

**Additional Comments** _____

NA – Not Applicable

| Location ID: DG-522 | Subarea: 8 | Date Started: 7-26-13 | Date Completed: 7-26-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 19.8 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm F. Rodriguez | | |
| GPS collected? (Yes) or No | Drill Method: DPT | | Depth Drilled into Bedrock: N/A |
| Radiological Background: 11246 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 | Depth to GW: N/A | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No: Mike Hoffman #7775 | | Geologist: J. Faubion |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| .5 | | 0.0 | 11210 | SL-522 | | ML | SILT, 10YR 3/3 dk. brown, dry 100% ML |
| | | 0.0 | 11284 | SA8-SB | 1250 | | 1' compact, no plas., No stain/odor |
| 1 | | 0.0 | 11296 | 0.0-0.5 | | | 1' FILL, angular gravel/dry sand 50/50% |
| 2 | | 0.0 | 11266 | | | ML | 2' SILT, 10R 3/6 red brown, moist dense, no plas, 100% ML |
| 3 | | 0.0 | 11248 | | | ML | 3' SILT, as above |
| 4 | | 0.0 | 11272 | SL-522 SA8-SB 4.0-5.0 | 1320 | ML | 4' SILT, 10R 3/6 red brown, moist compact, no plas. 100% silt |
| 5 | | 0.0 | 11266 | | | ML | 5' SILT, 10R 3/6, moist, compact - mod. caliche mottling, no plas. 100% ML |
| 6 | | 0.0 | 11254 | | | ML | 6' SILT - as above 100% - stg. caliche mottling |
| 7 | | 0.0 | 11272 | | | ML | 7' SILT - as above 100% - stg. caliche mottling |
| 8 | | 0.0 | 11210 | | | ML | 8' SILT, - as above, caliche mottling dropping out 100% ML |
| 9 | | 0.0 | 11266 | | | 8.8 | color Δ 10R 3/6 → 10YR 8/3 light brown 9' SILT, 10YR 8/3 light brown, moist, compact, no plas. 100% ML - mottling absent |

**CDM Smith** **BORING LOG AND SAMPLING RECORD** Page 1 of 2

ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: DG-522 | Subarea: 8 | Date Started: 7-26-13 | Date Completed: 7-26-13 |
|---|---|---|---|
| Project: SSFL | | Geologist: J. Faubion | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 10 | | 0.0 | 11242 | | | ML | SILT, 10YR 8/3, moist, compact no plas., 100% ML - mottling absent |
| 11 | | 0.0 | 11242 | | | ML | - as above |
| 12 | | 0.0 | 11284 | | | ML | - as above |
| 13 | | 0.0 | 10254 | | | ML | - as above |
| 14 | | 0.0 | 10254 | | | ML | SILT, moist abus ML 100% no plas, organics absent - no mottling |
| 15 | | 0.0 | 10284 | | | ML | SILT 10YR 8/3 as above |
| 16 | | 0.0 | 10266 | | | ML | SILT - as above 100% ML |
| | | | | | | ML/SP | -16.6 transition ML/SP |
| 17 | | 0.0 | 11248 | | | SP | P.G. v. fg. silica sand 10 YR 8/3 light brown, loose, moist 100% SP |
| 18 | | 0.0 | 11254 | | | SP | - as above |
| 19 | | 0.0 | 11248 | | | SP | P.G. v. f. g sr to sa silica sand 10YR 8/3 - loose, moist, no plas |
| | 1.9ft | | 11270 | | | | -19.8 refusal #1, -20.4 refusal #2 / 20.3 #3 100 |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By T. Bennett

Sample ID SL-522-SA8-SB 4.0-5.0 Date/Time 7-26-13 1320

**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 J. Faubion

Sampler T. Bennett

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Explosives | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| Other | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2 - 16 oz jars

2 - Encore

# 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)

**Color** 10 R 3/6 red 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** N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By Bennett

Sample ID SL-522-SA8-SB 0.0 0.5-DTSC Date/Time 7-24-13 1120

Matrix (circle one): (Soil) Sediment Water

Start Depth 0.0

End Depth 0.5

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 J. Faubion

Sampler P. Hartman

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | 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? |
|---|---|---|---|
| Explosives | 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 | |

1-16 oz jar 7/24/13

1-8 oz jar

(DTSC split sample)

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 JF |
| | | 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 (%)** _____

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 8/3 light 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** DTSC Split Sample

NA – Not Applicable

Santa Susana Field Laboratory/94489

| Location ID: DG-522 | Subarea: 8 | Date Started: 7-24-13 | Date Completed: 7-24-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: ~~GSPL-05258-63376.1203.002.223.02231.SSPH3~~ SM 12/12 | | Total Depth: .5 |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongerm Firm | | |
| GPS collected? Yes or No | Drill Method: SH | | Depth Drilled Into Bedrock: N/A |
| Radiological Background: 12 ≥ 57 | Borehole diameter: 2.25 | | |
| PID Background: 0.0 | Depth to GW: N/A | | Sampling Method: SH |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & No.: Mike Hoffman #7735 | | Geologist: J. Faubion |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| .5 | | 0.0 | 12 ≥ 85<br>12 ≥ 48 | SL-522<br>SA8-SB<br>0.0-0.5 | 1120 | SM | S.P. sand, 10YR 8/3 light brown, w/silt above 10 R 3/6 red brown gravel/sand/silt mix |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



**ABBREVIATIONS:**

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

CDM Smith

**BORING LOG AND SAMPLING RECORD**

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By T. Bennett

Sample ID SL-523-SA8-5B 4.0-5.0 MS Date/Time 7-25-13 0820

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 J. Fashion

Sampler T. Bennett

## Analysis

| | Parameters | Method | Analyze? |
|---|---|---|---|
| | Metals | EPA 6010 | X |
| | | EPA 6020 | X |
| | | EPA 7471 (Soil) | X |
| | | EPA 7470 (Water) | |
| | Fluoride | EPA 300.0/9056 | |
| | SVOCs | EPA 8270 | X |
| | TIC | EPA 8270 | |
| | PAHs | EPA 8270 SIM | X |
| | 1,4 Dioxane | EPA 8270 SIM | |
| | Dioxins | EPA 1613 | X |
| | PCBs/PCTs | EPA 8082 | X |
| | Perchlorate | EPA 314.0/331 | |
| | Perchlorate Confirmation | EPA 6850/6860 | |
| | pH | EPA 9045 (Soil) | X |
| | | 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 | X |
| | TPH-EFH | EPA 8015 | X |
| | Glycols | EPA 8015 | |
| | Alcohols | EPA 8015 | |
| | Terphenyls | EPA 8015 | |
| | Nitrates | EPA 300.0/9056 | |
| | Energetics | EPA 8330 | |
| | Cyanide | EPA 9012 | X |
| | Formaldehyde | EPA 8315 | |
| | NDMA | EPA 1625 | |
| Sediment | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

6-16 oz jars

6 - Encore

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 (%)** 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** 5YR 4/6 yellow-red

**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** N/A

NA – Not Applicable

Santa Susana Field Laboratory/94489

| Location ID: DG-523 | Subarea: 8 | Date Started: 7-25-13 | Date Completed: 7-25-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: ~~SSFL-65258-63376.1203.002.223.02231.SSPH8~~ Sm 12412 | | Total Depth: 11' |
| Company Name: CDM SMITH | Drill Contractor/Driller: Strongarm F. Rodriguez | | |
| GPS collected? Yes or No | Drill Method: DPT | | Depth Drilled Into Bedrock: N/A |
| Radiological Background: 12269 | Borehole diameter: 2.25" | | |
| PID Background: 0.0 | Depth to GW: N/A | | Sampling Method: DPT |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | ~~PG Review & No.~~ Mike Hoffman #7735 | | Geologist: JF |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 12297 | | | | |
| | | | 11296 | | | | |
| 1 | | 0.0 | 11266 | | | ML | silt, 5YR 4/6 yellow red, moist, compact ~~0/0/0/100~~ JF 0/0/100/0 |
| 2 | | 0.0 | 11254 | | | ML | silt 5YR 4/6 - moist ~~0/0/0/100~~ - moist, compact 0/0/100/0 |
| 3 | | 0.0 | 11272 | | | ML | silt 5YR 4/6 - moist ~~0/0/0/100~~ - no caliche mottling noted |
| 4 | | 0.0 | 11256 | SL-523 SA8-SB 4.0-5.0MS | 0820 | ML | silt w/clay 5YR 4/6 0/0/80/20 - 4.5 color Δ 5YR 1/6 to 10YR 6/8 brown yellow |
| 5 | | 0.0 | 12272 | SL-523 SA8-SB 4.0-5.0 | 0850 | ML | silt w/clay ~~5YR 4/6~~ JF 10YR 6/8 0/0/80/20 |
| 6 | | 0.0 | 12266 | | | ML | silt, clay dropping out 10YR 6/8 moist, compact 0/0/80/20 |
| 7 | | 0.0 | 12260 | | | ML | silt w/clay (clayey silt) 0/0/90/10 - color Δ 10YR 6/8 to 10YR 3/3 dk brown |
| 8 | | 0.0 | 12102 | | | CL | clay w/silt, 10YR 3/3 dk brown - moist, compact 0/0/15/85 |
| 9 | | 0.0 | 11252 | | | CL | clay w/silt 10YR 6/8 - moist, compact 0/0/15/85 |

CDM Smith

**BORING LOG AND SAMPLING RECORD**



ABBREVIATIONS:

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: | Subarea: | Date Started: | Date Completed: |
|---|---|---|---|
| Project: SSFL | | Geologist: | Total Depth: |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 10 | | 0.0 | 11/102 | | | SP | P.G. sand, bleached, trace interstitial clay - caliche mottling 0/100/0/0 10YR 6/8 |
| 11 | | 0.0 | 11/120 | | | SP | P.G. sand, loose, vf-f. silica sand 11' refusal @ 1 10YR/6/8 0/100/0/0 |
| | | | | | | | 11.2 " @ 2 |
| | | | | | | | 11.6 " @ 3 |

CDM Smith

BORING LOG AND SAMPLING RECORD

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By T Bennett

Sample ID SL-823-SA8-SB 4.0-5.0 Date/Time 7-25-13 0850

**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 SL-523-SA8-SB 4.0-5.0

Field Geologist J. Fasbird

Sampler T. Bennett

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Low Level | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | Glycols | EPA 8015 | |
| | Alcohols | EPA 8015 | |
| | Terphenyls | EPA 8015 | |
| | Nitrates | EPA 300.0/9056 | |
| | Energetics | EPA 8330 | |
| | Cyanide | EPA 9012 | X |
| | Formaldehyde | EPA 8315 | |
| | NDMA | EPA 1625 | |
| Trace | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2 - 16 oz jars

2 - En Core

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 (%) 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 5YR 4/6 yellow-red

### 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 N/A

NA – Not Applicable

# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By [signature]

Sample ID DG-524-SA8-SB 4.0-5.0 Date/Time 7-25-13 1000

**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 J. Faubion

Sampler T. Bennett

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| Liquids | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | X |
| | TPH-EFH | EPA 8015 | X |
| | Glycols | EPA 8015 | |
| | Alcohols | EPA 8015 | |
| | Terphenyls | EPA 8015 | |
| | Nitrates | EPA 300.0/9056 | |
| | Energetics | EPA 8330 | |
| | Cyanide | EPA 9012 | X |
| | Formaldehyde | EPA 8315 | |
| | NDMA | EPA 1625 | |
| Sediment | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2 - 16 oz jars

2 - Encore

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 (%)** 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** 10YR 6/8 brown 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** [signature] **PG Registration #** 7735

**Additional Comments** N/A

NA – Not Applicable

| Location ID: DG-524 | Subarea: 8 | Date Started: 7-25-13 | Date Completed: 7-25-13 |
|---|---|---|---|
| Client: DOE | Project Name/#: Santa Susana Field Lab/99489 | | Total Depth: 15.5' |
| Company Name: CDM SMITH | Drill Contractor/Driller: Stratagerm F. Rodriguez | | Depth Drilled into Bedrock: N/A |
| GPS collected? Yes or No | Drill Method: DPT | | Sampling Method: DPT |
| Radiological Background: 12250 | Borehole diameter: 2.25" | | Geologist: J. Faubion |
| PID Background: 0.0 | Depth to GW: N/A | | |
| Radiological Equipment Used: ✓ MicroR ✓ Alpha/Beta ✓ Pancake | PG Review & Nam: Julie Hoffman #7735 | | |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| | | 0.0 | 12250 | | | | |
| | | | 12276 | | | | |
| 1 | | | 12272 | | | ML | silt, 10R 3/6 red brown, dry, loose no stain/odor 100% silt, trace organics |
| 2 | | | 12276 | | | ML | silt 10R 3/6 red brown dry, loose, 100% silt |
| 3 | | | 12248 | | | ML | silt, 10R 3/6 red brown, low plas., 100% ML — color Δ 10R 3/6 to 10YR 6/8 brown yellow |
| 4 | | | 12254 | SL-524 SA-8-SB 4.0-5.0 | 1000 | ML | clayey silt, 10YR 6/8 brown yellow mod plas, moist, dense 0/0/70/30 |
| 5 | | | 12254 | | | ML | clayey silt, 10YR 6/8 brown yellow - mod plas, moist, dense 0/0/60/40 |
| 6 | | | 12242 | | | CL | clay w/silt 10YR 6/8 brown yellow, - mod plas, moist, dense 0/0/30/70 |
| 7 | | | 12260 | | | CL | clay w/silt as above 0/0/30/70 — color Δ 10YR 6/8 to 5YR 4/6 |
| 8 | | | 12272 | | | CL | yellow-red clay w/silt 5YR 4/6, clay % picking up, moist, dense, mod. plas 0/0/20/80 |
| 9 | | | 272 | | | CL | clay w/silt 5YR 4/6 moist, mod plas., dense - as above 0/0/20/80 |

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**BORING LOG AND SAMPLING RECORD**



**ABBREVIATIONS:**

| | | | | |
|---|---|---|---|---|
| amt: amount | gr: grained | pg: poorly graded | t: trace | nr:no recovery |
| c: coarse | lt: light | rnd: rounded | v: very | |
| dk: dark | m: medium | sa: subangular | wg: well graded | |
| f: fine | mod: moderate | sr: subrounded | ϕ: diameter | bgs:below ground surface |

| Location ID: DG-524 | Subarea: 8 | Date Started: 7-25-13 | Date Completed: 7-25-13 |
|---|---|---|---|
| Project: SSFL | | Geologist: J. Faubion | Total Depth: 15.5 |

| Depth (feet) bgs | Recovery (feet) | PID (ppm) | Radiological (µR/cpm) | Sample Name | Sample Time | USCS | Description of Materials |
|---|---|---|---|---|---|---|---|
| 10 | | | 11266 | | | CL | clay w/silt 5YR 4/6 moist, mod plas., dense 0/0/40/60 - clay dropping out |
| 11 | | | 11260 | | | ML | silt w/clay 5YR 4/6, moist, mod plastic, 0/0/60/40 |
| 12 | | | 11266 | | | ML | silt w/clay 5YR 4/6, moist, mod. plastic 0/0/60/40 -as above |
| 13 | | | 11278 | | | SM | silty sand, v.f.g. silica sand, in silt color change to 10YR 6/8 - moist, loose - no stain/odor |
| 14 | | | 11260 | | | SM | silty sand |
| | | | | | | SP | S.P. sand, loose, moist 0/70/30/10 |
| | | | | | | | - lens interbedded clay in SP sand 14.5-14.8 |
| 15 | | | 11264 | | | SP | S.P. v.f.g. saltgr silica sand |
| | | | | | | SM | (decomp. ss) 0/10/10/0 |
| 15.5 TP | | | 11276 | | | | - 15.5 refusal #1 |
| | | | | | | | - 15.2 " #2 |
| | | | | | | | - 15.2 " #3 |

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BORING LOG AND SAMPLING RECORD

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# SSFL Phase 3 – Field Sample Data Sheet

CDM Smith

FSDS Checked By A Bennett

Sample ID SL-525-SA8-SB-0.0-0.5 Date/Time 7-25-13 1305

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

Start Depth 0.0

End Depth 0.5

**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 J. Faubion

Sampler A. Bennett

## Analysis

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

| | Parameters | Method | Analyze? |
|---|---|---|---|
| VOCs | VOCs | EPA 8260 | |
| | 1,4 Dioxane | EPA 8260 SIM | |
| | TPH-GRO | EPA 8015 | |
| | TPH-EFH | EPA 8015 | X |
| | 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 | |
| | Organotin | NOAA Status and Trends, Krone et al. | |
| | Methyl Mercury | EPA 1630 | |

2-5.5, sleeves

1-4oz jar

NA – Not Applicable