Detterman, Mark, Env. Health

From: Glenn Young [gyoung@sca-enviro.com]
Sent: Wednesday, January 14, 2015 8:17 AM
To: Detterman, Mark, Env. Health
Subject: HACA
Attachments: SOPs for Workplan.pdf

Good morning Mark. Thanks for the feedback and your patience. Please find attached the SOPs relevant to the proposed work. Also, moving B-3 55 feet is reasonable. See attached to confirm that we are on the same page. Please let us know if we need to re-submit anything etc.

Enjoy your day.

--
Glenn S. Young, PG, LEED AP
Principal Geologist
510.500.5574

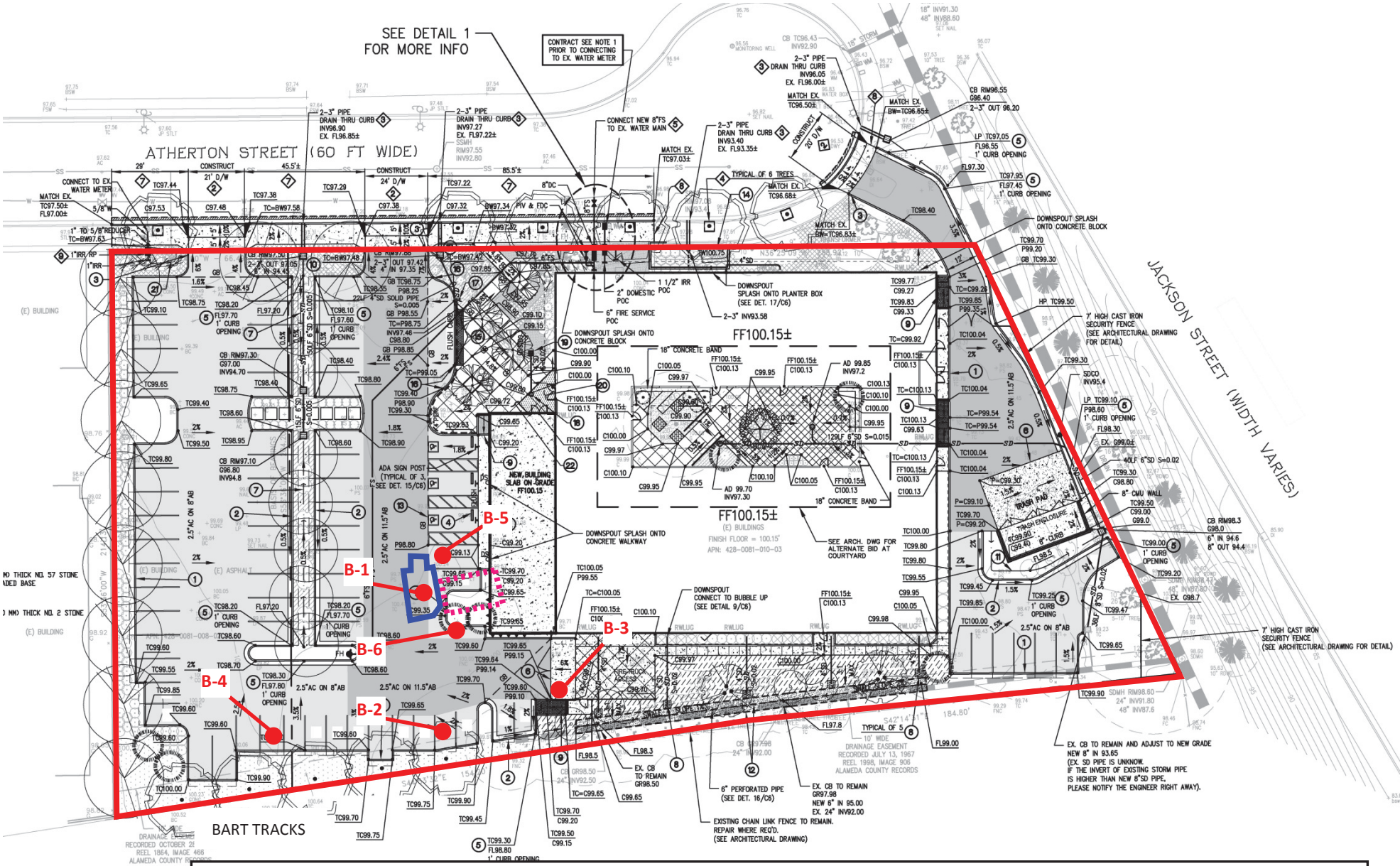

Image Source: Grading and Utility Plan, Alameda County Housing Authority, HACA Office Remodel, Underwood & Rosenblum, Inc., Sheet C3, 2013

SCA ENVIRONMENTAL, INC.

Approximate Site Boundary

Approximate Former UST Area

Approximate Location of UST (closed in place)

Approximate Boring Location

North

1" = 55'

(Approximate Scale)

SITE MAP
Housing Authority of the County of Alameda
22941 Atherton Street
Hayward, California
SCA Project No.: B11167.04

Figure 1

Soil Sampling

1.0 Sampling Equipment

Soil sampling equipment includes, but is not limited to the following:

- Stainless steel mixing bowl;
- Stainless steel trowels or spoons;
- Stainless steel hand auger;
- Shovel and picks;
- Rubber mallet;
- Slide hammer sampler;
- Glass jars and stainless steel liners with plastic end caps.

2.0 Decontamination

Before initial use and after each subsequent use, all sampling equipment must be decontaminated as outlined in the Equipment Decontamination SOP.

3.0 Procedures

All soil samples will be collected in glass jars, tubes, or plastic bags. Sample containers will typically be filled to avoid having headspace. Samples can be collected by driving tubes into the soil or by filling proper containers with loose materials depending on project needs. Care should be taken to fill the entire container thereby avoiding headspace in the sample container.

3.1 Biased Sampling

This form of sampling is based on subjective selection of sample locations where contamination is most likely to occur. Locations are based on historical site information and on-site investigation (site observation, PID readings) where contamination is most likely to occur.

3.2 Random/Grid Sampling

The area of concern can be divided into a square or triangular grid. The distance between intersection points (nodes) is dependent upon the size of the site area and the number of samples to be collected. Samples would then be collected at random locations within the grid.

3.3 Homogenizing Samples

Homogenizing is the mixing of a sample to provide a uniform distribution of the contaminants. Proper homogenizing ensures that the containerized samples are representative of the total samples collected. **Samples subject to VOC analysis should be collected as discrete samples and should not be homogenized.**

3.4 Composite Samples

Compositing is the process of physically combining and homogenizing several individual soil aliquot of the same volume. Compositing samples provide an average concentration of contaminants over a certain number of sampling points. This is commonly conducted for soil

stockpile evaluation. Composite samples well or pair equal fractions of the soil that will be either composited in the field or by the laboratory prior to analysis

3.5 Discrete Samples

A sample collected and unaltered in the field. **Required when testing samples for VOC analyses.** Collected by driving a clean sample tube directly into the soil. Use a rubber mallet to drive the tube or hand held slider hammer sampler fitted with sampling tube.

3.6 Surface Soil Sampling Procedures

- Prior to sampling remove leaves, grass, and surface debris using a stainless steel trowel;
- Label the sample container with indelible pen or affix the sample label to the jar or liner;
- Collect the surface soil sample with a decontaminated stainless steel trowel, spoon, or hand auger and transfer to a stainless steel bowl for homogenizing. If VOC analyses are to be conducted, fill the appropriate VOC sample containers and then proceed to transfer the aliquot to the stainless steel bowl for homogenizing;
- Transfer the sample to the container appropriate for the analysis being performed;
- Secure sample within ziplock baggie;
- Place the samples in a cooler with ice for transport to the laboratory;
- Decontaminate all sampling equipment see Equipment Decontamination SOP.
- Complete chain-of custody and other field documentation.

3.7 Shallow Depth Soil Sampling Procedures

- Use decontaminated stainless steel trowel to remove topsoil;
- Excavated soil to the pre-determined sampling depth by using a hand auger;
- When the proper sample depth is reached remove the hand auger and all of the cuttings from the hole;
- Lower a decontaminated core sampler or auger into the hole. When using a core sampler, it must contain a decontaminated liner;
- Mark the sample interval on the hammer stem or auger;
- Operate the slide hammer on the core sampler to drive the sampler head into the soil, or advance the auger until it is flush with the interval mark at ground level;

- When the core sampler or auger has advanced the total depth of the required sample, remove it from the bottom of the hole;

- Immediately remove the liner from the core sampler and transfer to a stainless steel bowl for homogenizing or composting if necessary. If a discrete sample is desired, cap liner with Teflon sheets and end caps;

- Label samples with indelible ink;

- Secure sample within ziplock baggie;

- Place the samples in a cooler with ice for transport to the laboratory;

- Decontaminate all sampling equipment see Equipment Decontamination SOP.

- Complete chain-of custody and other field documentation.

3.8 Hollow Stem Auger (HSA) Soil Sampling Procedures

- Advance hollow stem augers to the pre-determined sampling depth;

- When the proper sample depth is reached place pre-cleaned steel liners into the split spoon sampler and lower into the hole;

- All excess soil cuttings should be placed into 55-gallon steel drums/stockpile, or appropriate container as they are generated during the drilling process;

- Mark the sample interval on the drilling rod or wireline;

- Drive the sampler head into the soil with the 140lb hammer falling 18 inches until it is flush with the interval mark at ground level;

- When the core sampler has advanced the total depth of the required sample, remove it from the bottom of the hole;

- Immediately remove the liner from the core sampler and transfer to a stainless steel bowl for homogenizing or composting if necessary. If a discrete sample is desired, cap liner with Teflon sheets and end caps;

- Label samples with indelible ink;

- Secure sample within ziplock baggie;

- Place the samples in a cooler with ice for transport to the laboratory;

- Decontaminate all sampling equipment see Equipment Decontamination SOP.

- Complete chain-of custody and other field documentation.

3.9 Direct Push (Geoprobe®) Soil Sampling

- Advance direct push equipment to the pre-determined sampling depth;
- When the proper sample depth is reached place pre-cleaned acetate liners or other into the sampler and lower into the hole;
- Any excess soil cuttings should be placed into 55-gallon steel drums, stockpile or other containers as they are generated during the drilling process;
- Mark the sample interval on the drilling rod;
- Push the sampler head into the soil until it is flush with the interval mark at ground level;
- When the core sampler has advanced the total depth of the required sample, remove it from the bottom of the hole;
- Immediately remove the liner from the core sampler and transfer to a stainless steel bowl for homogenizing or composting if necessary. If a discrete sample is desired, cap liner with Teflon sheets and end caps;
- Label samples with indelible ink;
- Place the samples in a cooler with ice for transport to the laboratory;
- Decontaminate all sampling equipment see Decontamination SOP.
- Complete Chain-of-Custody and field documentation.

3.10 Probe and Borehole Backfill Procedure

Backfill boreholes by filling to grade with native soil cuttings or neat cement grout as required by permits.

Groundwater Sampling
STANDARD OPERATING PROCEDURES (SOPs)
Reference SOP#29

Groundwater Sampling

All equipment to be used that may contact the well or water is to be cleaned prior and after use using standard Equipment Decontamination SOP.

1.0 Water Level Measurement

Measure the depth to groundwater in the well or boring using an electric well sounder per Water Level Measurements SOP.

2.0 Purging

Prior to purging and sampling of groundwater monitoring wells, the wells will be checked for the presence of free floating product using a steel tape coated with petroleum sensitive paste, other electronic device, or bailer. Results to be noted in the appropriate field form.

Typically a minimum of three well volumes of groundwater will be purged from each well prior to sampling. The purge volume can be calculated by using the following formula:

$$V=[\text{feet of water} * \text{casing diameter}^2 * 0.408 * \#\text{ of volumes to purge}]$$

Temperature, pH, and specific conductance will be measured at regular intervals. In accordance with USEPA guidance, the wells will not sampled until groundwater has recharged to within at least 80 percent of its initial level and pH, temperature, and electrical conductivity of groundwater has stabilized. Well sampling forms will be filled out for each well.

3.0 Water Sample Field Measurements

Read and follow Manufacturer's Operating Instructions prior to use of any equipment. Calibrate equipment as appropriate per manufacturer's specifications. Collect sample in a clean container and insert temperature, pH, conductivity, and dissolved oxygen probes into sample. Do not agitate the probe as air bubbles could cause erroneous dissolved oxygen measurements. When the readings stabilize, record them on the appropriate field form.

4.0 Purging Methods

Purging will be conducted by one of the following methods:

4.1 Bailer Method

Groundwater will be purged with a disposable bailer by lowering the bailer into the well using disposable nylon line. Cause will be taken to avoid contacting the ground or any other surface with the line and bailer will be avoided. The bailer will be lowered into the well in a controlled manner.

The bailer will be raised to the surface and emptied into a 55-gallon steel drum or other storage device. Purge water will be disposed of at a later date.

4.2 Peristaltic Pump Method

Consult manufacturer's operating instructions prior to use of a peristaltic pump. Polyethylene tubing is attached to the pump and then the tubing is lowered into the well. Purge water will be collected into a 55-gallon steel drum or other storage device. The pump and tubing will be decontaminated between wells. Purge water will be disposed of at a later date.

4.3 Submerged Electrical Pump Method

Consult manufacturer's operating instructions prior to use of a stainless steel electrical pump. Polyethylene tubing is attached to the pump and then the pump and tubing are lowered into the well. Purge water will be collected into a 55-gallon steel drum or other storage device. The pump and tubing will be decontaminated between wells. Purge water will be disposed of at a later date.

5.0 Sample Collection Methods (Wells or Borings)

Only Teflon®, stainless steel or disposable sampling devices will be used. All non-disposable devices should be decontaminated prior to use per Equipment Decontamination SOP.

Groundwater samples will be retained in glass and polyethylene containers provided by the testing laboratory. Containers will be pre-cleaned by the supplier in accordance with EPA protocol. The samples will be placed in ice chests and remained chilled in a cooler or refrigerator until transmitted to the analytical laboratory. Chain-of-custody records will accompany the samples to the laboratory.

5.1 Bailer Method

Groundwater samples will be collected with a disposable bailer by lowering the bailer into the well or borehole using disposable nylon line. Contacting the ground or any other surface with the line and bailer will be avoided. The bailer will be lowered into the well or borehole in a controlled manner to avoid slapping the groundwater surface with the bailer, which could cause outgassing of the water from the bailer's impact.

The bailer will be raised to the surface and emptied through the bottom into the appropriate container. The bailer will be emptied at a slow controlled rate to minimize sample aeration. Disposable bailers will be disposed of and do not require decontamination.

5.2 Peristaltic Pump Method

Consult manufacturer's operating instructions prior to use of a peristaltic pump. Polyethylene tubing is attached to the pump and then the tubing is lowered into the well or borehole. The pump and tubing will be decontaminated between wells/borings. When collecting samples for analysis of volatile constituents, a pumping rate of 100 milliliters per minute will not be exceeded.

5.3 Submerged Electrical Pump Method

Consult manufacturer's operating instructions prior to use of a stainless steel electrical pump. Polyethylene tubing is attached to the pump and then the pump and tubing is lowered into the well or borehole. The pump and tubing will be decontaminated between wells/borings. When collecting samples for analysis of volatile constituents, a pumping rate of 100 milliliters per minute will not be exceeded.

6.0 Sample Filtering

Samples that require field filtering will be filtered using disposable in-line filters, or equivalent setup, equipped with a 0.45-micron glass fibre filter. New filters will be used for each sample. Samples will be collected directly into appropriate containers with proper acid solutions as a sample preservative.

7.0 Chain-of-Custody

All samples shall be accompanied by appropriate Chain-of-Custody documentation during transportation as outlined in the Sample Handling and Documentation SOP.

Equipment Decontamination

Field personnel shall routinely document all equipment decontamination in daily field notes or instrument specific journals. Each piece of sampling equipment should be decontaminated, at a minimum as follows:

1. Brush with bristle brush or other to remove particulates;
2. Scrub with Alconox or Liquinox, and clean water solution;
3. Rinse thoroughly with clean tap or bottled water.

All oversized and drilling equipment will be decontaminated using a high-pressure water sprayer.

Field measurement equipment such as pH and conductivity meters will be decontaminated by double rinsing with distilled water only.

Additional decontamination and rinsing measures may be necessary when contaminants are water insoluble.

Water Level Measurements

A measuring point should be marked on every well casing, either by an impressed mark or ink mark. If a measuring point is not marked then measurements should be taken from the north side of the casing, a standard default assumption used in the industry. The measuring point used (a mark or north side of casing), time, and date should be noted in the daily field log or other form.

Groundwater measurement will be taken with an electronic water level indicator or steel tape. For the electronic sounder, the alarm will be tested prior to use. If steel tape, the tape fitted with stainless steel weight, rinse before used and chalked, if needed, to accurately determine depth. The depth should be recorded to the nearest 0.1 foot and noted in the daily field log or well sampling form.

The water level probe, or steel tape, will be decontaminated prior to and after each use as follows:

1. wipe tape with detergent saturated cloth;
2. wipe with clean water saturated cloth;
3. repeat wipe with clean water saturated cloth; and
4. rinse with bottled water.

Measure water level in monitoring wells in order of increasing contaminant level, where levels of contamination have been determined as a precautionary measure.

Investigation Derived Waste
STANDARD OPERATING PROCEDURES (SOPs)
Reference SOP#33

Investigation Derived Waste

Types of investigation-derived waste (IDW) include, but are not limited to the following:

- Soil cuttings and drilling mud
- Purge water and well development water
- Water, solvents, or fluids used to decontaminate field equipment and personal protective equipment (PPE)
- PPE and disposable field supplies / equipment

Except for PPE and disposable field supplies all IDW will be drummed, stockpiled, or handled onsite in coordination with the site owner. All drums and stockpiles will be labeled, logged, and identified on a site map or field sketch in SCA field forms.

Disposal of drums and/or stockpiled soil will be coordinated in accordance with State and Federal waste handling requirements, typically conducted by a subcontractor to SCA.

PPE and disposable field supplies will be double bagged and disposed of in a dumpster on site or in a dumpster at SCA's office.

Sample Handling and Documentation
STANDARD OPERATING PROCEDURES (SOPs)
Reference SOP#34

Sample Handling and Documentation

1.0 Sample Label

Each Label must be: waterproof, durable, and retain indelible ink markings when wet. The following information should be included on all sample labels:

- Date;
- Time;
- Project Number;
- Sample ID number;
- Depth (if applicable);
- Preservative; and
- Initials of field personnel that collected the sample.

2.0 Sample Packing and Shipping

Pack all samples for shipment following the guidelines below:

- Clean the inside and outside of the cooler;
- Wrap all glass in bubble wrap or equivalent to secure for transport;
- Plastic sample bottles should be placed in ziplock bags.
- Check all sample labels to the corresponding chain-of-custody.

Ice for the coolers will be secured in two to three large ziplock bags to prevent any leaking. There should be no glass touching glass or shifting inside the cooler.

If the cooler is to be sent via Federal Express or equivalent Custody seals should be placed on the shipping container. Fill out custody seals and sign and date each. Affix custody seals such that any opening of the shipping container will be indicated by a broken seal. Note that the chain-of-custody will be placed inside the cooler for shipment.

Field Screening

1.0 Introduction

Field personnel shall routinely screen soil samples with an Photoionization Detector (PID).

2.0 Calibration

Read and follow Manufacturer's Operating Instructions prior to use of any equipment. Calibrate equipment as appropriate per manufacturer's specifications. Fill out the calibration log for the equipment complete with date, time, personnel conducting calibration and type of calibration gas used.

3.0 Procedure

At regular intervals samples should be collected and placed into sealable plastic bags. The bags will be labeled with the corresponding boring and sample depth or as appropriate and allowed to volatilize for up to 5 minutes. A reading of the headspace in the bag should be conducted with the PID. The PID reading in parts per million (ppm) should be noted on the log or in the field notes along with any other field observations regarding possible contaminants in sample (e.g., staining, discoloration, fill matrix, odor, etc).

Geologic Borehole Logging

1.0 Introduction

Logging should document both general and specific lithologic information about the soil encountered during drilling the borehole. In all cases, the log should include: project number; well/boring number; drilling methods; location; date of drilling; field geologist; drilling contractor; Photoionization Detector reading; visible evidence of contamination; depth to water (initial & final); well/boring elevation (if available); total depth in feet; lithologic description; sample intervals; sample recovery; and samples retained.

Lihologic descriptions for unconsolidated materials are based on the Unified Soil Classification System (USCS). A copy is attached. Soil Descriptions conforming to the USCS will describe the following.

2.0 USCS Classification System

- **Soil Type** (principal and minor constituents)
- **Color**
- **Density/Hardness**
- **Moisture Content**

Terms ranging from dry to saturated arte used to describe the relative moisture content of the soil.

  - Dry – The sample is completely without moisture.
  - Damp – Samples containing very slight amounts of water.
  - Moist – near maximum water content (soil will form a ball when compressed in hand).
  - Wet – The soils are wet enough to produce free water upon shaking, but contain unoccupied air voids.
  - Saturated – Soils with zero air void and have standing water when placed in jars or bags after a short period of time.

- **Blow Counts** (if applicable)
- **Particle Morphology**
- **Particle Size**
- **Other Observations** (Such as aggregate content, odors, descriptions of any observations)

References

ASTM 1984. “ASTM D1586, Description and Identification of Soils, Visual Manuel Procedure” in “annual Book of ASTM Standards.” V.04.08

Compton, R. R. 1985. “Geology in the Field”. John Wiley and Sons, Inc., New York New York, 49p.

Munsell. 1988. “Munsell Soil Color charts.” Macbeth Division, Kollmorgen Instruments Corporation, Baltimore, Maryland, 1988 edition.