WASTE MANAGEMENT

**Waste Management of Alameda County, Inc.**
**172 98th Avenue, Oakland, CA 94603**

August 31, 2012

**RECEIVED**

*9:10 am, Sep 04, 2012*

Alameda County
Environmental Health

Alameda County Health Care Services Agency
Environmental Health Services, Environmental Protection
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Attn: Mr. Jerry Wickham, PG, CEG, CHG
Senior Hazardous Materials Specialist

**Transmittal: Response to Comments - Work Plan for Additional Investigation**
**Former Waste Management Facility**
**6175 Southfront Road, Livermore, California**
**GeoTracker Global ID T10000003066**
**SLIC Case RO0003076**

Dear Mr. Wickham:

I declare, under penalty of perjury, that the information and recommendations contained in the attached Response to Comments - Work Plan are true and correct to the best of my knowledge.

Sincerely,
**Waste Management**

Barry Skolnick
Area Vice President
WM-California Bay Area

Attachment

10540 White Rock Road, Suite 180
Rancho Cordova, CA 95670
Tel: 916-444-0123
Fax: 614-635-8805
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August 27, 2012

Brown AND Caldwell

Mr. Jerry Wickham
Senior Hazardous Materials Specialist
Alameda County Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

142782

Subject: Response to Comments - Work Plan for Additional Investigation –
SLIC Case RO0003076 and GeoTracker Global ID T10000003066,
Former Waste Management of Alameda County, Inc. property,
6175 Southfront Road, Livermore, California 94550

Dear Mr. Wickham:

We have reviewed your letter dated July 24, 2012 regarding Alameda County Environmental Health (ACEH) review of the above-referenced Work Plan. This letter presents our response to these comments and, if approved by ACEH, we request that this letter be accepted as an addendum to the Work Plan and no further revisions will be required. The remainder of this letter summarizes the ACEH comments to the Work Plan along with our response.

ACEH Comment 1: ***Multi-Depth Soil Vapor Sampling****. The scope of the proposed multi-depth soil vapor sampling is generally acceptable. However, please expand the discussion of soil vapor sampling methods to include more detailed description of the proposed sampling methods for the two separate sampling methods to be used. Please include a diagram of the proposed sampling equipment and collection for both sampling methods. For the proposed use of "post-run" tubing, the type of tubing and the methods for assuring that the O-ring is properly seated into the drill rod should be described. Methods for shut-in tests, purging, and leak tests are to be included in the Revised Work Plan.*

**Response**: The multi-depth sampling will be conducted by advancing a drive point apparatus. A drill rod with a disposable tip and post-run tube fitting will be advanced into the subsurface to the desired sample depth. Following placement of the sample tip, ¼-inch diameter nylaflow tubing will be placed into the drill rod with an O-ring fitting that screw into the tip of the drill rod. Illustrations of this system are provided in Attachment 1. The tubing will be screwed into the fitting seating the o-ring. Before pulling up the rod to unseat the disposable tip, a vacuum check of the post-run tubing will be conducted using a syringe with a pressure gauge. A vacuum of 100 inches of water will be applied to the tubing as a shut-in test. If the tubing holds vacuum for one minute, the drill rod will be pulled to expose the sample point for sample collection. After 2 hours of equilibration time, the tubing will be purged prior to collecting samples using a glass syringe.

At the first location, a purge volume test will be conducted by collecting samples after one, three, and 10 purge volumes have been removed from the tubing. The samples will be analyzed by the mobile laboratory, and the purge volume with the highest VOC concentrations will be used for the remaining locations. If no VOCs are detected, a

default purge volume of 3 purge volumes will be used. Leak tests will be conducted using isopropanol placed on rags around the drill rod within a shroud.

Following collection of a sample using glass syringes for the mobile laboratory, the tubing will be sealed using an inline valve. If results from the sample are below the mobile lab's detection limits, a one-liter summa canister with flow controller will be used to sample for EPA Method TO-15 for VOCs. The summa canister will be fitted with a flow controller to flow at 200 milliliters per minute (mL/min). Prior to collecting the sample with the summa canister, a shut-in test will be conducted using the summa canister, and any associated fittings, flow controllers, valves, or tubing. A vacuum of at least 100 inches of water will be applied to the tubing and fittings with the valve on the summa canister shut. If the vacuum holds for at least 1 minute, then the summa canister will be ready for sampling. If there is a leak, the fittings will be checked, and the test will be repeated until a vacuum can be maintained for at least one minute. During collection of the summa canister, a leak test using isopropanol will be conducted as described above, with the addition of a shroud around the connection between the down-hole tubing and the shut-in tested fitting.

ACEH Comment 2: *Sub-slab Vapor Sampling Methods. The proposal to collect sub-slab vapor samples from three locations inside the building is acceptable. However, the proposed method for sub-slab vapor sampling is not acceptable. Consistent with Appendix G of the California Department of Toxic Substances Control "Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance)," dated October 2011, a minimum of two sampling events are warranted before a risk determination is made. Therefore, we request that permanent sub-slab probes that can be sampled more than once be installed. Please include a diagram of the proposed sub-slab sampling probes. Methods for shut-in tests, purging, and leak tests are to be included in the Revised Work Plan. The proposed equilibration time is to be increased to be consistent with guidance in Cal/EPAs Advisory Active Soil Gas Investigations dated April 2012.*

**Response:** Two sampling events will be conducted. The second sampling event will be scheduled after receipt and review of the results obtained from the first sampling event. The sub-slab soil vapor probe will be constructed by drilling a 1 ½" diameter hole approximately 1 ½" deep into the concrete slab. A 5/8" diameter hole will then be drilled through the remainder of the concrete slab and approximately 3 inches into the sub-slab soil. The hole will then be cleaned out prior to placement of a ¼" diameter stainless steel tube with a stainless steel filter. Sand (30 mesh) will then be placed around the filter prior to placement of granular bentonite, then cement up to the bottom of the 1 ½" diameter borehole. A Swagelok or similar type fitting with a cap will be installed at the top of the stainless steel tube to seal the sample tubing at the surface. A 1 ¼"diameter cap will be placed in the 1 ½" diameter hole to prevent damage to the tubing during periods between sampling. The attached Figure 1 provides a schematic of the sub-slab vapor probe construction.

After 2 hours of equilibration time, the tubing will be purged of the optimal volume calculated as discussed above for ACEH Comment 1 prior to collecting samples using a glass syringe by the TEG personnel. The sample will be analyzed by the on-site laboratory. If results from the sample are below the mobile lab's detection limits, a one-liter summa canister with flow controller will be used to sample for EPA Method TO-15 for VOCs. The summa canister will be fitted with a flow controller to flow at 200 milliliters per minute (mL/min). Prior to collection of the sample in the summa canister,

the canister, flow controller, and fittings will be tested by conducting a shut-in test as described above.

**ACEH Comment 3:** ***Analysis.*** *Please include analysis for oxygen, carbon dioxide, and methane using ASTM D1946 for all soil vapor and sub-slab vapor samples.*

**Response:** As stated in the Work Plan and in the March 26, 2012 ACEH letter requesting the additional investigation, the objective of this study is to assess the source of vinyl chloride detections within soil gas reported during previous investigations. We do not believe that the testing of these parameters will provide useful information for this intended purpose.

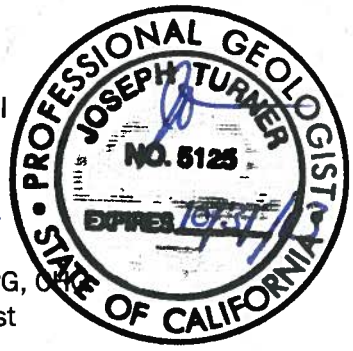
**ACEH Comment 4:** ***Groundwater Sampling.*** *It is not clear that the inability to collect a soil vapor sample at a depth of 20 feet bgs confirms the previous grab groundwater sampling results. Soil borings SB-1 through SB-3 were advanced to a depth of 35 feet bgs where groundwater rose up in the borings to depths as shallow as 10 feet bgs. The groundwater entering the borings is likely from a deeper zone and may not be representative of first encountered groundwater. We request that you include plans to determine where first encountered groundwater occurs and to collect groundwater samples at that depth.*

**Response:** The ability to collect a soil gas sample from 20 feet below ground surface indicates that the soils at this depth are not saturated, consistent with the information obtained by the previous investigator during soil boring advancement. However, based on the new equilibration time requirements of two hours for collection of soil gas samples, during installation of the initial soil gas probes we will also install temporary monitoring points at depths of 10 feet bgs and 20 feet bgs. If present, a water sample will be collected from the shallowest temporary well point that contains water following the procedures outlined in the Work Plan.

Should you have any questions, please do not hesitate to contact Mr. Joe Turner at (916) 853-5334.

Very truly yours,

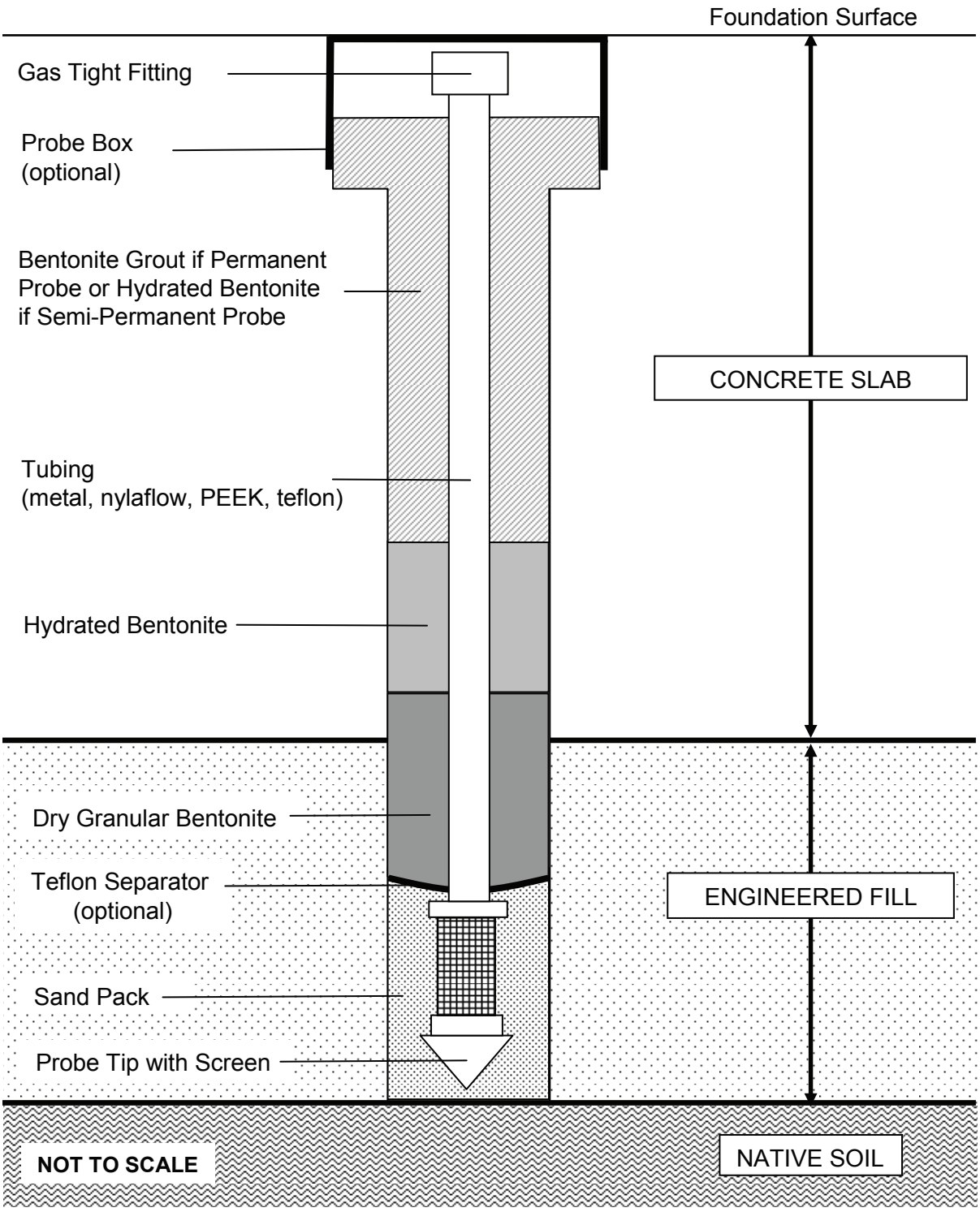
**Brown and Caldwell**




Joseph B. Turner, PG, CHG
Chief Hydrogeologist

cc: Project File

Attachment




P:\42000\142782 - WM Livermore Hauling Inv\Work Plan\Graphics

| DATE | PROJECT | SITE | |
|---|---|---|---|
| 8-13-12 | 142782 | WM Livermore Hauling, Livermore, California | Figure 1 |
| Brown AND Caldwell | | TITLE: Schematic Subslab Sampling Probe | |

# Soil Gas Sampling – PRT System Operation

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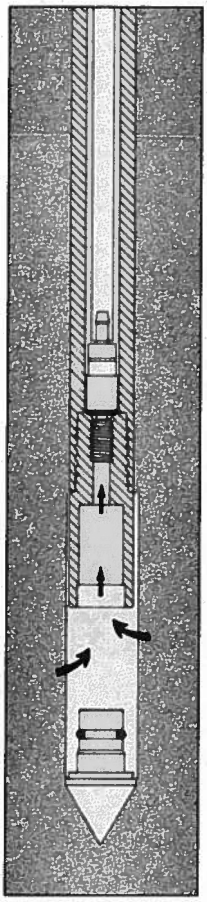


**Soil Gas Sampling using the Post-Run Tubing (PRT) System.**

# Soil Gas Sampling — PRT System Operation

## Basics

Using the Post-Run Tubing System, one can drive probe rods to the desired sampling depth, then insert and seal an internal tubing for soil gas sampling. The usual Geoprobe probe rods and driving accessories and the following tools are required:

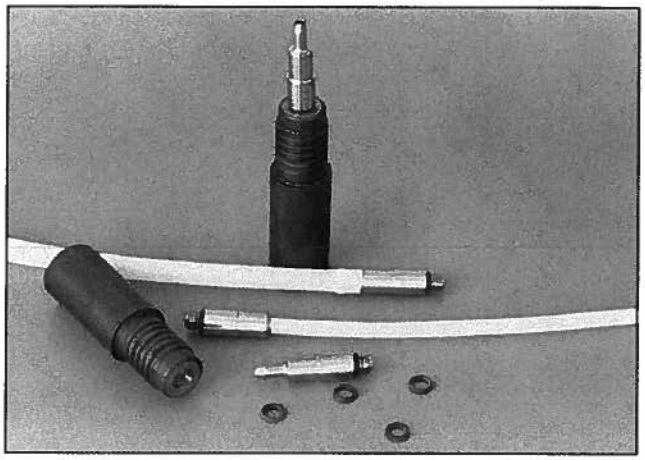
- PRT Expendable Point Holder
- PRT Adapter
- Selected PRT Tubing

## Preparation

1. Clean all parts prior to use. Install O-rings on the PRT Expendable Point Holder and the PRT adapter.
2. Inspect the probe rods and clear them of all obstructions.
3. TEST FIT the adapter with the PRT fitting on the expendable point holder to assure that the threads are compatible and fit together smoothly.

   **NOTE:** PRT fittings are left-hand threaded.
4. Push the adapter into the end of the selected tubing. Tape may be used on the outside of the adapter and tubing to prevent the tubing from spinning freely around the adapter during connection – especially when using Teflon tubing **(Figure 1)**.

   **REMEMBER: The sample will not contact the outside of the tubing or adapter.**



**PRT SYSTEM PARTS**
**PRT Expendable Point Holder, PRT Adapters, Tubing, and O-rings.**

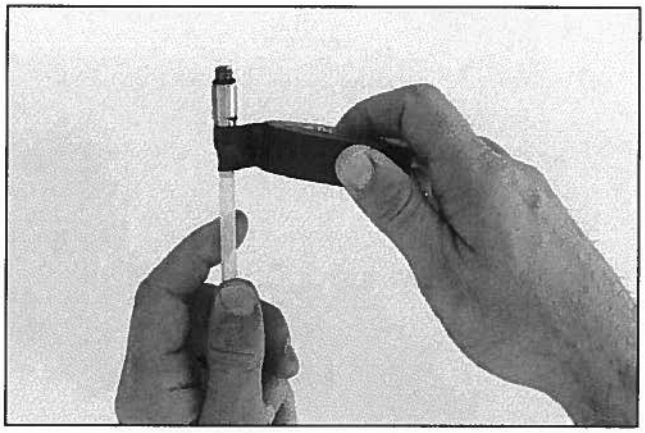


**Figure 1. Securing adapter to tubing with tape. NOTE: Tape does not contact soil gas sample.**

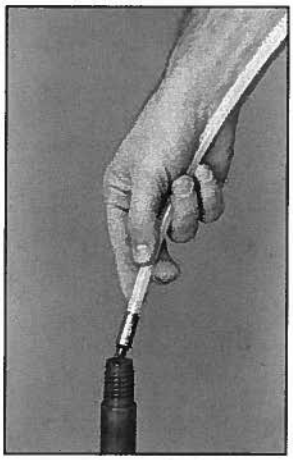


**Figure 2. Insertion of tubing and PRT adapter.**

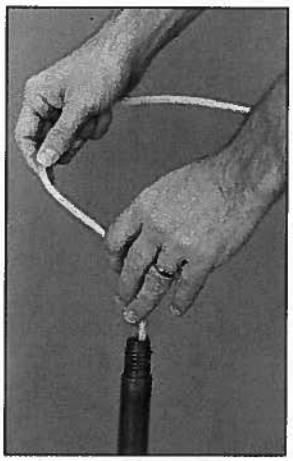
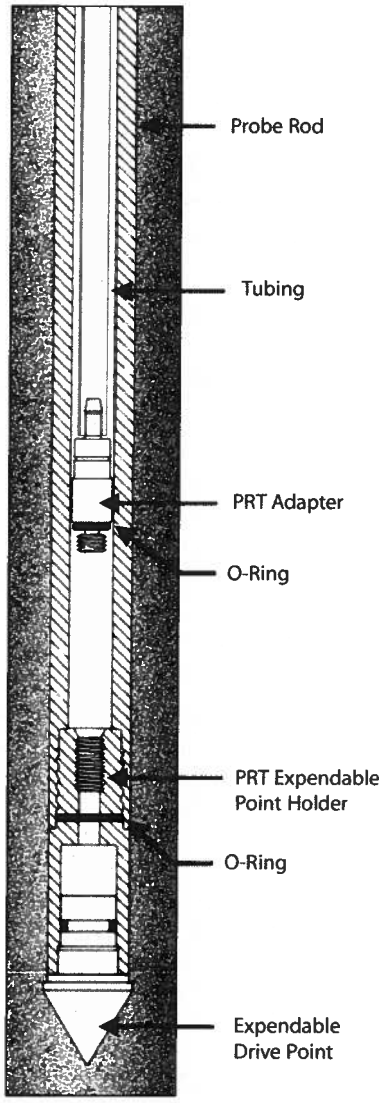


**Figure 3. Engaging threads by rotating tubing.**

# Soil Gas Sampling — PRT System Operation




**A cross section of probe rods driven to depth and then retracted to allow for soil gas sampling. The PRT adapter and tubing are now fed through the rods and rotated to form a vacuum-tight connection at the point holder. The result is a continuous run of tubing from the sample level to the surface.**

### Probing

Drive the PRT tip configuration into the ground. Connect probe rods as necessary to reach the desired depth. After depth has been reached, disengage the expendable point by pulling up on the probe rods. Remove the pull cap from the top probe rod, and position the Geoprobe unit to allow room to work.

### Connection

1. Insert the adapter end of the tubing down the inside diameter of the probe rods **(Figure 2)**.

2. Feed the tubing down the rod bore until it hits bottom on the expendable point holder. Allow about 2 ft. (610 mm) of tubing to extend out of the hole before cutting it.

3. Grasp the excess tubing and apply some downward pressure while turning it in a counterclockwise motion to engage the adapter threads with the expendable point holder **(Figure 3)**.

4. Pull up lightly on the tubing to test engagement of the threads. (Failure of adapter to thread could mean that intrusion of soil may have occurred during driving of probe rods or disengagement of drive point.)

# Soil Gas Sampling — PRT System Operation

### Sampling

1. Connect the outer end of the tubing to the Silicone Tubing Adapter and vacuum hose (or other sampling apparatus).

2. Follow the appropriate sampling procedure for collecting a soil gas sample **(Figure 1)**.

### Removal

1. After collecting a sample, disconnect the tubing from the vacuum hose or sampling system.

2. Pull up firmly on the tubing until it releases from the adapter at the bottom of the hole. (Taped tubing requires a stronger pull.)

3. Remove the tubing from the probe rods. Dispose of polyethylene tubing or decontaminate Teflon tubing as protocol dictates.

4. Retrieve the probe rods from the ground and recover the expendable point holder with the attached PRT adapter.

5. Inspect the O-ring at the base of the PRT adapter to verify that proper sealing was achieved during sampling. The O-ring should be compressed. This seal can be tested by capping the open end of the point holder applying vacuum to the PRT adapter.

6. Prepare for the next sample.

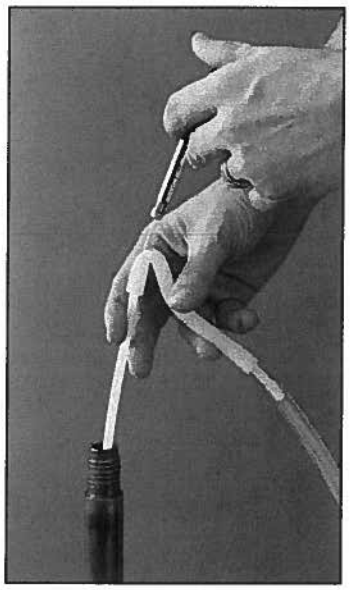


**Figure 1. Taking a soil gas sample for direct injection into a GC with the PRT system.**