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August 8, 2016
Project No. SCS539.2
Geotracker Global ID T10000006756
ACEH Fuel Leak Case: RO0003170

1607 2nd Avenue, LLC
Mr. Harry T. Tung
4096 Piedmont Avenue, #150
Oakland, CA 94611

RECEIVED
By Alameda County Environmental Health 2:33 pm, Aug 16, 2016

Reference: Former Heating Oil Tank Site
1607 2nd Avenue
Oakland, Alameda County, California

Subject: Perjury Statement for Work Plan for Vapor Intrusion to Indoor Air Evaluation

To Alameda County Environmental Health:

PERJURY STATEMENT

I declare, under penalty of perjury, that I have read the below-referenced document and the information and/or recommendations contained in this document is true and correct to the best of my knowledge.

- SCHUTZE & Associates, Inc., August 8, 2016, *Work Plan for Vapor Intrusion to Indoor Air Evaluation, Former Heating Oil Tank Site, 1607 2nd Avenue, Oakland, California*, Project No. SCS539.2

Signed,

RP Signature

Harry T Tung

RP Printed Name

8/9/2016

Date



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August 8, 2016
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1607 2nd Avenue, LLC
Attn: Mr. Harry T. Tung
4096 Piedmont Avenue, #150
Oakland, CA 94611

Alameda County Environmental Health
Attn: Mr. Keith Nowell, PG, CHG
1131 Harbor Bay Parkway
Alameda, CA 94502

Reference: Former Heating Oil Tank Site
1607 2nd Avenue
Oakland, Alameda County, California

Subject: Work Plan for Vapor Intrusion to Indoor Air Evaluation

Dear Mr. Tung and Mr. Nowell:

SCHUTZE & Associates, Inc. is pleased to present this Work Plan for the above-mentioned property (subject site) in response to a directive received from Alameda County Environmental Health (ACEH) dated June 6, 2016.¹

The ACEH has reviewed the following report prepared by SCHUTZE & Associates, Inc. for the subject site:

- *Soil and Groundwater Investigation Report and Evaluation for Low-Threat Underground Storage Tank Case Closure, Former Heating Oil Tank Site, 1607 2nd Avenue, Oakland, Alameda County, California, March 9, 2016.*

Following an evaluation to determine if the site was eligible for closure under the State Water Resources Control Board (SWRCB) Low Threat Underground Storage Tank Closure Policy (LTCP), the ACEH determined that the site “fails to meet the LTCP Media-Specific Criteria for Vapor Intrusion to Indoor Air.”

This document has been prepared in response to the ACEH’s request for a Work Plan for the site to address: (1) collection of soil vapor samples, (2) contingency sampling of

¹ ACEH, *Work Plan Request, Fuel Leak Case No. RO0003170 and GeoTracker Global ID T10000006756, Second Avenue UST, 1607 2nd Avenue, Oakland, CA 94606, June 6, 2016*

indoor air; and (3) evaluation of sampling results to determine if the site satisfies the LTCP Media-Specific Criteria for Vapor Intrusion to Indoor Air.

The scope of work proposed in this document will be supervised by a California Professional Geologist (P.G.) and conducted under ACEH oversight. Documents pertaining to this work will be uploaded to the ACEH ftp site and the SWRCB GeoTracker website.

A. BACKGROUND

A.1 Site Description

The subject site consists of an occupied apartment building on the northern corner of the intersection of 2nd Avenue and East 16th Street in Oakland, California. An underground storage tank (UST) containing heating oil was formerly located beneath the sidewalk approximately 3.5 ft southwest of the current on-site apartment building. The approximate location of the former tank is shown on the attached Figure 1.

A.2 Tank Removal (2014)

The approximately 1,500-gallon UST was removed by Golden Gate Tank Removal, Inc. (GGTR) in 2014. The tank was found to be in poor condition with visible holes.

Nearly 22 tons of impacted soil from the excavation were disposed of at the Keller Canyon Landfill Facility. According to the GGTR UST Closure Report, "The analytical results from the State Certified Laboratory following the tank removal and remedial activities were non-detect to insignificant and acceptable by the Oakland Fire Department (OFD); therefore, GGTR recommended no further action at the site."²

An Underground Storage Tank Unauthorized Release Report was submitted on November 19, 2014, as required by the OFD due to the holes observed in the tank. The subject site property was designated as a LUST³ Cleanup Site (GeoTracker Global ID T10000006756) with the ACEH as the lead agency for the site (Fuel Leak Case No. RO0003170).

A.3 Soil and Groundwater Investigation (2016)

SCHUTZE & Associates, Inc. completed a Soil and Groundwater Investigation at the subject site in February 2016. The purpose of the work was to further delineate the horizontal and vertical extent of potential hydrocarbon contamination in the soil and groundwater beneath the subject site, with the goal of achieving low-threat case closure for the site.

The investigation was conducted according to the following work plan, approved by the

² Golden Gate Tank Removal, Inc., *Underground Storage Tank Closure Report, 1607 2nd Avenue, Oakland, CA 94606*, December 11, 2014

³ Leaking underground storage tank

ACEH⁴ on September 25, 2015:

- *Work Plan for Subsurface Investigation, Apartment Building and Former Heating Oil Tank Site, 1607 2nd Avenue, Oakland, Alameda County, California, dated August 27, 2015.*

Based on the analytical results from the investigation, SCHUTZE & Associates concluded that the former on-site UST had not significantly impacted groundwater.

A narrow soil zone of TPH-ho⁵ contamination was detected between the former UST pit and the foundation of the building. TPH-ho was detected in boring B3 at 7.5 feet below ground surface (ft bgs) at a concentration of 1,500 milligrams per kilogram (mg/kg). Due to the limited extent of the TPH-ho contamination in soil at the site, SCHUTZE & Associates, Inc. recommended no further investigations at the subject site related to soil contamination.

Request for Work Plan

Following review of SCHUTZE & Associates, Inc.'s Soil and Groundwater Investigation Report, the ACEH requested a Work Plan for the subject site to address: (1) collection of soil vapor samples, (2) contingency sampling of indoor air; and (3) evaluation of sampling results to determine if the site satisfies the LTCP Media-Specific Criteria for Vapor Intrusion to Indoor Air.

B. SUBSURFACE CONDITIONS

B.1 Geology / Soils

The area of Oakland surrounding Lake Merritt is underlain by Pleistocene marine terrace deposits, dune sands (Merritt Sand) and artificial fill that have been laid down over estuarine mud (Bay Mud). The thickness of the Pleistocene sediments is estimated to be to approximately 50 ft bgs. During the February 2016 subsurface investigation, the majority of soils observed between 0.5 and 22 ft bgs (maximum boring depth) consisted of moist, stiff sands, silts and clays.

B.2 Surface Waters / Groundwater

Lake Merritt is located approximately 320 ft northwest and down-gradient from the former on-site UST location. Based on the location of Lake Merritt to the northwest and the general site topography, groundwater is expected to flow to the northwest.

During the February 2016 subsurface investigation, groundwater was encountered between 12 and 21 ft bgs. Groundwater likely occurs in gravelly and sandy horizons, sometimes in confined conditions. The potentiometric water level was approximately 11.5 ft bgs.

⁴ Alameda County Environmental Health, *Work Plan Authorization; Fuel Leak Case No. RO0003170 and GeoTracker Global ID T10000006756, Second Avenue UST, 1607 2nd Avenue, Oakland, CA 95606, September 25, 2015*

⁵ Total petroleum hydrocarbons as diesel and heating oil

C. PROPOSED SCOPE OF WORK

C.1 Soil Vapor Sampling

SCHUTZE & Associates, Inc. proposes the following scope of work based on the results of the February 2016 subsurface investigation and the requirements of the ACEH.

1. Obtain utility clearance by Underground Services Alert for the proposed boring locations. A map with the proposed soil vapor sampling locations/depths is included in this work plan as Figure 1.
2. Prepare and implement a Health and Safety Plan (H&SP) prior to conducting field activities.
3. Determine the depth of the foundation of the on-site building and, unless in the saturated zone, collect a soil vapor sample from 5 ft below the base of the foundation (recovery of the soil vapor sample may be collected from adjacent to the building).

Based on preliminary information from the property owner, the utility room, which was the likely location of the former heating oil-fired boiler, is located approximately 15 ft east of the former UST location, in the center of the on-site building. The floor of the utility room is a concrete slab and is approximately 1 to 2 ft below the sidewalk level at the former UST location.

Based on these site conditions, SCHUTZE & Associates, Inc. proposes advancing a soil boring in the utility room to a depth of 5 ft below the concrete slab and collecting a soil vapor sample (SV-1-5 ft) at this depth.

In addition, SCHUTZE & Associates, Inc. proposes installing a sub-slab sampler in the concrete floor of the utility room and collecting a sub-slab soil vapor sample (SV-1-3 inches) approximately 3 inches below the slab.

4. Collect a soil vapor sample exterior to the on-site building, from the interval just above the black-stained, odiferous soil layer identified in the B-3 soil bore log at 7.0 to 7.5 ft bgs.

This soil contamination, observed between the building foundation and the former UST pit (TPH-ho was detected at 1,500 mg/kg at 7.5 ft bgs) was likely the location of the former product pipe that delivered fuel from the tank to the boiler.

SCHUTZE & Associates, Inc. proposes advancing a soil boring to a depth of 5 ft bgs directly next to the previous B-3 boring and collecting a soil vapor sample (SV-2-5 ft) at this depth.

5. Collect soil vapor samples in accordance with the July 2015 *Advisory – Active Soil Gas Investigations* (California Environmental Protection Agency [Cal/EPA], Department of Toxic Substances Control [DTSC] and Regional Water Quality Control Boards of Los Angeles [LARWQCB] and San Francisco [SFRWQCB]).

Soil vapor samples will be collected from the soil borings in six-liter SUMMA

canisters provided by McCampbell Analytical, Inc. (CDPH ELAP⁶ #1644). The SUMMA canisters are supplied with a negative pressure, meaning the pressure inside the canister is less than the atmospheric pressure outside the canister. When the regulators are opened, soil vapor is drawn into the canister as long as the pressure inside the canister is negative. In order to collect the sample, a porous tip is attached to a rigid tube, which is then inserted into the boring at the desired sampling depth. Coarse sand is then poured into the boring to surround the tip with a porous media. Subsequently, bentonite clay is placed in layers into the boring and water is poured onto each bentonite layer to seal the drill hole and prevent vapor intrusion from above. The tube is connected to a stainless steel sample train, with a purge canister at the distant connection and the sample canister on the closer connection. Five-micron in-line filters are used to prevent particulate matter from entering the canisters and to increase canister fill times. Vacuum gauges are used to measure the initial vacuum of the canister before sampling and the final vacuum upon completion. A second in-line vacuum gauge is used to measure the pressure differential.

The regulators will be closed on the SUMMAs subsequent to collecting each sample and the brass caps replaced on the intakes of the canisters. The canisters will be placed into the original shipping containers to be delivered to McCampbell Analytical, Inc. using chain-of-custody procedures.

Helium will be used as a tracer. A helium shroud will be provided by McCampbell Analytical, Inc. (see Appendix A).

6. Analyze the soil vapor samples for volatile VOCs⁷ by EPA⁸ Test Method TO-15, with naphthalene confirmation by Test Method TO-17. Request additional analyses for oxygen and carbon dioxide to provide an indication of aerobic/anaerobic conditions.
7. Submit a Soil Vapor Sampling Report to the ACEH. SCHUTZE & Associates, Inc. will include in the report an evaluation of the soil vapor sampling results in relation to (1) whether the site satisfies the LTCP Media-Specific Criteria for Vapor Intrusion to Indoor Air and (2) whether an indoor air survey should be conducted at the on-site building.

C.2 Indoor Air Sampling

Indoor air sampling will be conducted on a contingency basis following completion of the required soil vapor sampling and review of the soil vapor results by SCHUTZE & Associates, Inc. and the ACEH. The indoor air survey, if required, will be conducted in accordance with the following Cal/EPA guidance document: *Final – Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air* (October 2011).

The indoor air sampling scope of work will be as follows:

⁶ California Department of Public Health Environmental Laboratory Accreditation Program

⁷ Volatile organic compounds

⁸ U.S. Environmental Protection Agency

1. Select the final sampling locations for the indoor air survey based on completion and evaluation of the Cal/EPA-DTSC Building Survey Form. Building conditions that may affect the sampling results (such as an operating HVAC⁹ system) will be noted on the Survey Form. Samplers will be situated in the breathing zone, approximately 3 to 5 feet off the ground. Preliminary proposed sampling locations (IA-1, IA-2 and IA-Ambient) are shown on the attached Figure 1.

The proposed sampling duration is eight hours. Ambient air will be sampled concurrent with the indoor air sampling. The ambient sample is collected so that concentrations of compounds potentially existing in indoor air can be compared to concentrations of compounds potentially existing in outdoor air.

2. Collect two 8-hour indoor air samples using individually certified evacuated 6-liter stainless-steel SUMMA canisters and flow regulators provided by McCampbell Analytical, Inc. Collect one 8-hour outdoor ambient air sample placed upwind of the building (as determined by the prevailing wind direction on the sampling day). Weather conditions, temperature and wind direction at the time of sampling will be recorded.

Only certified clean sampling devices will be used for the air sampling. Precautions will be taken to avoid sample interference, such as fueling vehicles prior to sampling or using permanent marking pens in the field. A trip blank will be used to ensure that there are no laboratory or canister cleaning issues that could affect the results of the study (the trip blank will only be analyzed if suspect analytical results are received). Once the samples are collected, they will be stored according to the method protocol and delivered to the laboratory as soon as possible. Samples will not exceed recommended holding times prior to being processed by the laboratory. Laboratory procedures for sample access and chain-of-custody will be followed.

3. Analyze the air samples for volatile VOCs by EPA Test Method TO-15, with naphthalene confirmation by Test Method TO-17 (naphthalene analyses will only be requested if this compound is detected during the prior soil vapor sampling).
4. Submit an Indoor Air Survey Report to the ACEH. SCHUTZE & Associates, Inc. will include in the report an evaluation of the indoor air sampling results in relation to whether the site satisfies the LTCP Media-Specific Criteria for Vapor Intrusion to Indoor Air.

⁹ Heating, ventilation and air conditioning

D. PERJURY STATEMENT

I declare, under penalty of perjury, that the information and/or recommendations contained in this document is true and correct to the best of my knowledge.

We are prepared to commence work immediately upon approval of the Work Plan by our client and the ACEH.

We look forward to working with you on this project.

Cordially,

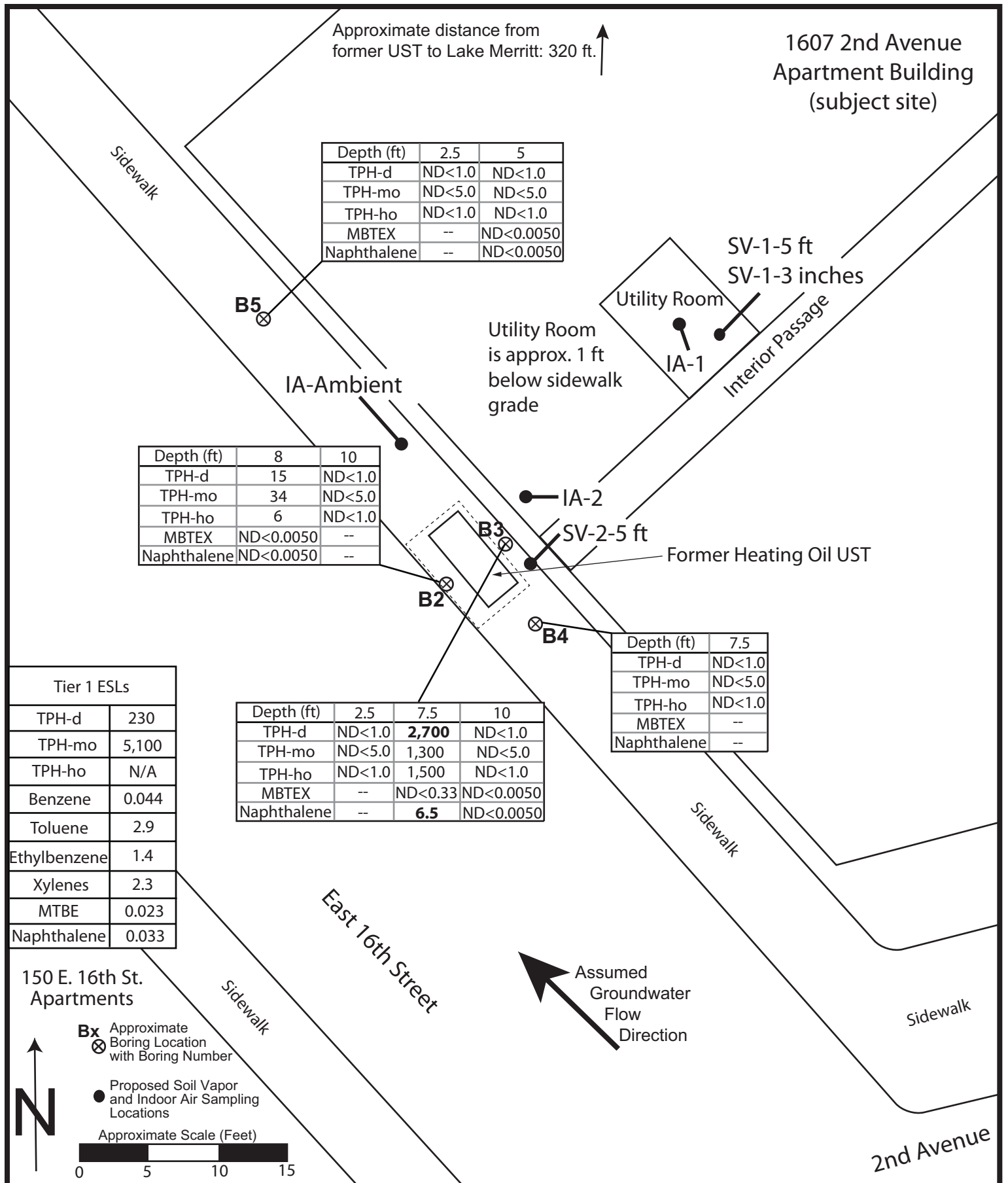
SCHUTZE & ASSOCIATES, INC.



Jan H. Schutze, P.G., M.Sc.
President

Attachments: Figure 1 – Proposed Soil Vapor and Indoor Air Sampling Locations
Appendix A – Helium Shroud for Soil Gas Sampling

Figure 1



Proposed Soil Vapor and Indoor Air Sampling Locations
1607 2nd Avenue
Oakland, Alameda County, California

Helium Shroud for Soil Gas Sampling

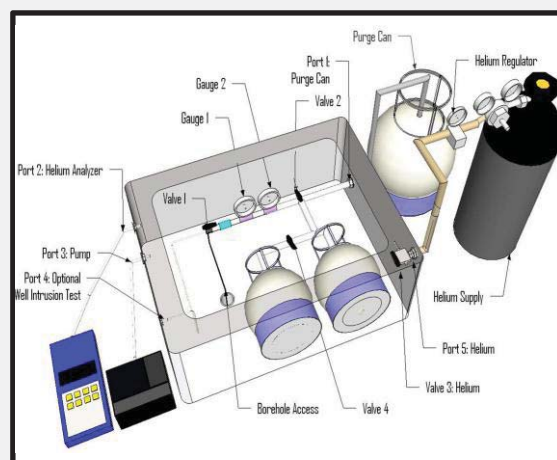
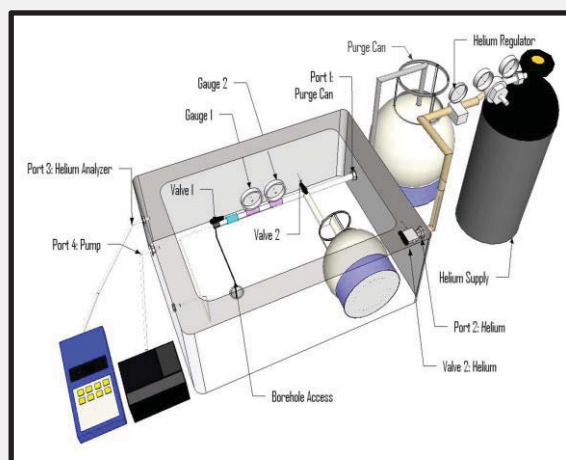


McC Campbell Analytical, Inc.

"When Quality Counts"

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MAI Newsletter August, 2011



McC Campbell's Helium Shroud for Soil Gas Sampling has the following capabilities:

- Borehole seal integrity. Surface air intrusion can be checked in real-time, so that sampling can be aborted if desired.
- Shroud can be used with MAI supplied purge can, user-supplied vacuum pump or a manual syringe.
- Shut-in-test for leak free manifold verification.
- Quantitative measurement of Helium content within shroud, which combined with lab analysis of Helium content in the sample can, allows quantitative evaluation of a leak with the DTSC < 5% criteria.
- MAI supplies Chromatography grade Helium (99.995%)
- Rota meter and vacuum gauges allow assessment of DTSC defined low permeability soils and provide the needed flow/ vacuum measurements required for compliant sampling.
- The special design of MAI's sampling manifolds offer the option for split sampling upon request. Simultaneous duplicate TO15, sequential TO15 followed by TO17 sorbent tube (ST), or simultaneous sampling of a borehole at 2 different depths.
- Sample technician friendly. Allows flood or trickle/maintenance helium input. Allows visual monitoring of shroud helium content.
- Lightweight, compact and easy to move from borehole to borehole.

Be sure to check out our **He Shroud Demonstration** video at: <http://www.mccampbell.com>