November 2, 2007

Alameda County Environmental Health Services
Mr. Jerry Wickham
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject: **Soil Gas Survey Work Plan**
461 McGraw Avenue Livermore
California, 94550
EIS Project # 717-3B

Dear Mr. Wickham,

On behalf of Whitney Newland, Administrator of the Estate of Crandal Mackey, "deceased", Probate Court-authorized agent for Call Mac Transportation Company, Environmental Investigation Services Inc. (EIS) is submitting this soil gas survey workplan for your approval. This workplan was prepared to address the comments in Alameda County Environmental Health Services' (ACEH) letter regarding *Fuel Leak Case No. RO0000311 and Geotracker Global ID T0600102204, Call Mac Transportation, 461 McGraw Avenue, Livermore, CA 94550,* issued September 7, 2007.

The site is located northeast of the intersection of McGraw Avenue and Preston Avenue in Livermore, Alameda County, California. The nearest surface water is Arroyo Seco, located approximately ½ mile south of the site. Figure 1 shows the site location and vicinity and Figure 2 is a site map showing soil boring locations and other site details. The site is currently vacant, but was formerly used by Call Mac Transportation Company as truck and trailer storage yard.

BACKGROUND

On July 26, 2007, EIS issued *Soil Removal and Site Investigation Report, 461 McGraw Avenue, Livermore, California 94550*. This report includes a description of the background for site. ACEH's August 3, 2007, letter was issued in response to this report. In their letter, ACEH states that no additional investigation or soil removal is required for several locations, including the vicinity of the former pump island and underground storage tank (UST), the former lead-acid battery storage area, the surface stains attributed to Golden State Metals, Inc. (except for Area DO3, see Figure 2), three of the former aboveground storage tank areas (AST Areas T-1, T-2, and T-3, see Figure 2), and the water supply well in the northeast corner of the site.

The August 3, 2007, letter also included requests for additional work. ACEH requested remediation of the arsenic-impacted material of the building pad, explanation of the future use and/or disposal of

the loading dock, additional excavation in area DO3, proper abandonment of the well in excavation T-4, a historical review for the site, the installation and sampling of three monitoring wells, and a soil gas survey.

On August 30, 2007, EIS submitted *Site Investigation and Remedial Action Workplan* addressing all of the ACEH's requests for additional work except for the soil gas survey, as the design of the soil gas survey depends on the results of the historical review.

ACEH's September 7, 2007, letter was issued in response to this *Site Investigation and Remedial Action Workplan*. ACEH in their letter requested historic review of property, a well survey and workplan for soil gas survey be prepared. The ACEH concurred with the proposed excavation and disposal of arsenic-impacted soil from the building pad, excavation and disposal of soil from excavation DO3, reuse of loading dock soil, decommissioning of water supply well in T-4, monitoring well installations, and groundwater sampling.

EIS excavated and disposed of soil from the DO3 area and arsenic-impacted soil from the building pad area on October 29 and 30, 2007. The abandonment of the well in excavation T-4 has been completed, and the installation of the monitoring wells is in progress.

EIS conducted the historical review of the property and prepared a report describing the research sources and findings dated October 31, 2007. Based on the historic review of the property this soil gas survey workplan is prepared, describing tasks required to complete a soil gas survey.

WORK PLAN

Tasks specified in this work plan include coordinating field activities with the ACEH, locating underground utilities, installing soil borings, and collecting soil gas samples for laboratory analyses. For soil gas sampling, EIS proposes to install 4 soil gas borings to 5.0 feet below ground surface (bgs), with soil gas samples being collected from 4 feet bgs from each boring. Soil gas samples will be analyzed for volatile organic compounds. Upon completion of field activities and laboratory analyses, a report will be prepared. These tasks are described below.

Task 1: Underground Utility Location

Soil gas boring installation and abandonment will be coordinated with ACEH personnel. At least 48 hours prior to the start of drilling activities, EIS will mark the soil gas survey boring locations and notify Underground Service Alert.

Task 2: Soil Gas Probe Installation and Sampling

<u>Soil Gas Probe Installation</u>

Figure 3 shows the proposed soil gas boring locations. Based on request by Alameda County Health Services Agency, the soil gas boring locations were selected after reviewing the history of the property and to provide adequate coverage of the former areas where structures were located in the southern part of the site. As there were four main former structures, four soil gas locations were selected.

Soil gas sampling will generally follow the January 28, 2003 "*Advisory – Active Soil Gas*

Investigations" jointly developed by the California Department of Toxic Substances Control and the California Regional Water Quality Control Board – Los Angeles Region. The proposed soil gas sample borings will be installed using a truck-mounted direct push/hollow-stem auger combination drill rig. The soil gas sample boreholes will be advanced with a 2-inch to 3-inch (outside diameter) sample tool. EIS will contract with a C-57 licensed drilling company to install the soil gas sample borings.

At each soil gas sample location, a 2-inch to 3-inch diameter borehole will be completed to about 5.0 feet below ground surface. Each soil gas sample location will then be completed as a "semi-permanent soil gas probe."

A soil gas probe, consisting of a 1.5-inch soft-plastic porous tip fitted onto a 7-foot length of polyethylene tubing, will be lowered through 1-inch PVC pipe to about 5 feet bgs. Fine sand is then poured through the PVC pipe and the PVC pipe is withdrawn until about 1 foot of sand is placed around the shallow soil gas probe, ideally from 5.0 to 4.0 feet bgs. Dry granular bentonite is then poured through the PVC pipe and the PVC pipe is withdrawn until about 1 foot of bentonite is placed in the borehole. The PVC pipe is then removed, bentonite chips are installed to the ground surface, and the shallow bentonite interval is carefully hydrated to seal the upper portion of the borehole. The semi-permanent soil gas probes will be allowed equilibrate for at least 30 minutes prior to soil gas sample collection.

Soil Gas Sampling

Soil gas samples will be collected using 100-milliliter (ml) glass syringes supplied by the analytical laboratory. A brass or stainless steel "tee" assembly with a two-way flow valve is attached to the soil gas probe tubing. A Tedlar bag is attached to the tee assembly opposite the soil gas probe tubing. A glass syringe is then attached to the remaining opening on the tee assembly. The two-way valve is turned to connect the probe tubing to the syringe and soil gas is drawn into the glass syringe at a rate of about 175 milliliters per minute (ml/min). The two-way valve is then turned to connect the syringe to the Tedlar bag and soil gas is then pushed into the Tedlar bag. This process is repeated until the soil gas probe is properly purged and the Tedlar bag is filled with a screening sample. The Tedlar bag soil gas samples will be screened using a photoionization detector to identify highly contaminated samples. The syringe is then filled, sealed using an integral valve, hand-delivered to the on-site mobile analytical laboratory, logged onto a chain-of-custody document, and analyzed.

Soil gas probe purge volumes will be calculated from the volume of the soil gas probe sand pack plus the volume of the 7-foot tubing lengths. A porosity of 40 percent is assumed for the sand pack volume. Purge volume calculations and field data sheets will be included in the soil gas sampling report.

Step Purge Test

A step purge test will be performed on the soil gas sample borehole located near SG-2 (Figure 3) to determine the optimal purge volume. Soil gas samples from the shallow soil gas probe will be collected after one, three, and seven purge volumes. Each soil gas sample is then analyzed and the optimal purge volume will be determined based on the highest concentration observed in the purge test soil gas samples.

Leak Testing

Isopropyl alcohol will be used as a leak check compound. Alcohol will be dripped onto gauze and the gauze will be placed around the surface bentonite seals of the semi-permanent soil gas probes and on the fittings associated with the soil gas sampling syringes. Isopropyl alcohol detected in soil gas samples will indicate the presence of leakage in the sample collection system. Leaks, if detected, will be repaired, and soil gas samples will be re-collected.

Borehole Abandonment

After sample collection and successful sample analyses, soil gas probe tubing will be removed and discarded. The bentonite seals will prevent surface contaminants from migrating down the boreholes.

Task 3: Soil Gas Sample Analyses

The soil gas samples will be analyzed on-site by Mobile Chem Labs, Inc., using their mobile laboratory. Mobile Chem Labs, Inc., is certified by the State of California for hazardous waste analysis. Each soil gas sample will be analyzed for volatile organic compounds using Environmental Protection Agency (EPA) Method 8260B. Soil gas samples will generally be analyzed within 30 minutes of sample collection. Analytical reports and chain-of-custody documentation for the soil gas samples will be included in the soil gas sampling report.

Task 4: Prepare Report

After completion of all tasks, a report will be presented describing these activities and documenting field and analytical data. The report will include:

- A site map with soil gas sample locations.
- A summary table of soil gas analytical data, in micrograms per liter.
- Copies of field logs.
- Analytical reports and chain-of-custody documentation.
- Discussion of findings and recommendations

SCHEDULE

Soil gas sampling is scheduled for the second week of November 2007. Soil gas sampling will be delayed in the event of a significant rain event (e.g., ½-inch or greater) within 24-hours of scheduled sampling.

Upon receipt of the approved workplan and permit, EIS will be prepared to initiate the field activities described in this workplan. We anticipate the field portion of this work plan to require one week. Normal laboratory turn-around is seven working days. The technical report will be prepared and submitted along with the other site activities within three weeks of receipt of the laboratory results.

Please call Peter Littman at 408-871-1470 if you have any questions regarding the proposed work plan and schedule.

Sincerely,

Environmental Investigation Services, Inc.

Panindhar R. Krishnamraju, Ph.D.
Hydrogeologist

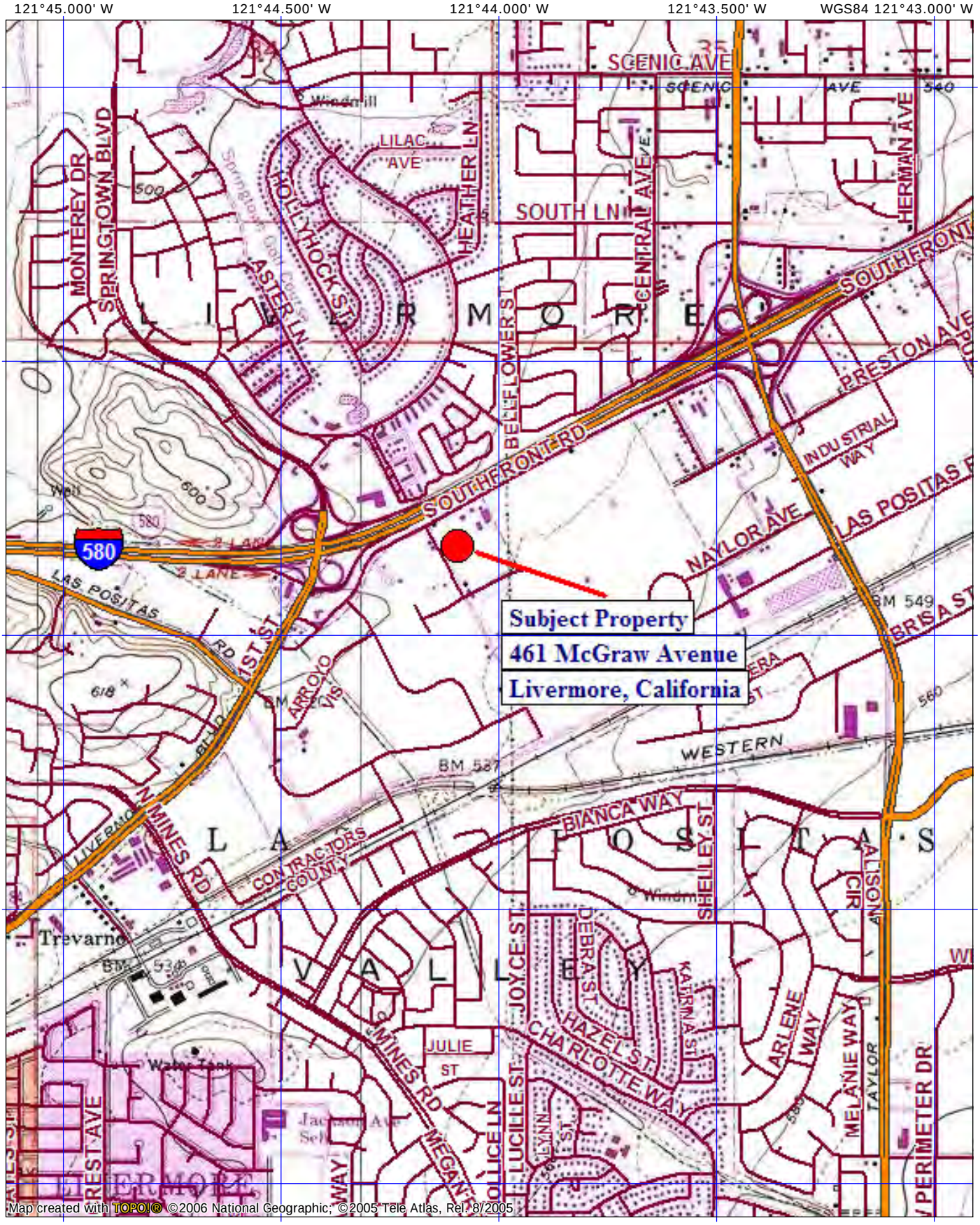
PROFESSIONAL GEOLOGIST
ALLEN J. WALDMAN
Exp. 10/09
No. 6323
STATE OF CALIFORNIA

Allen J. Waldman, PG#6323
Project Geologist

Attachments:

Figure 1 – Site Location Map
Figure 2 – Site Map
Figure 3 – Proposed Soil Gas Sample Location Map

Figure 1 : Site Location Map

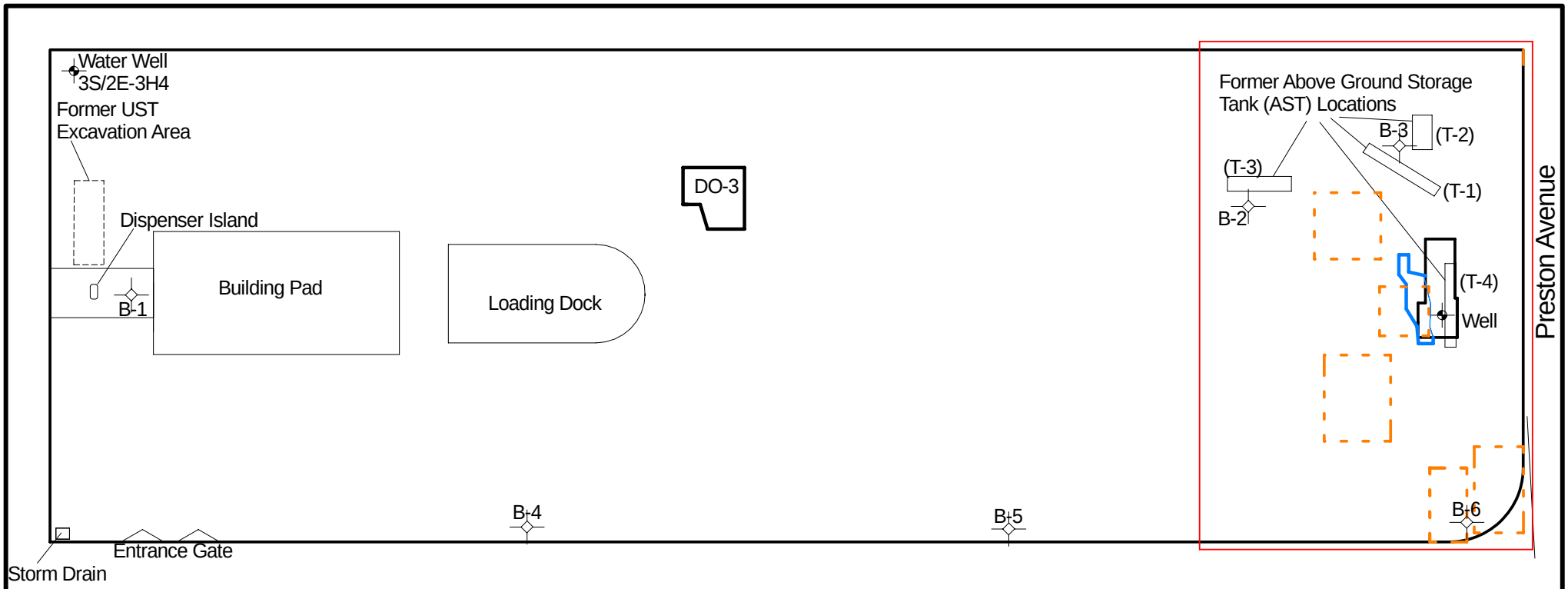


NATIONAL GEOGRAPHIC

0.0 0.1 0.2 0.3 0.4 0.5 0.6 miles
0.0 0.5 km

TN MN 15°

11/02/07



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Scale:
1" = 60'
0 60

LEGEND

- See Detail Map with Proposed Soil Gas Locations in Figure 3
- Water Well
- B-4 Previous Soil Boring
- Former Farm Structures
- Debris Excavation Area

Environmental Investigation Services, Inc.
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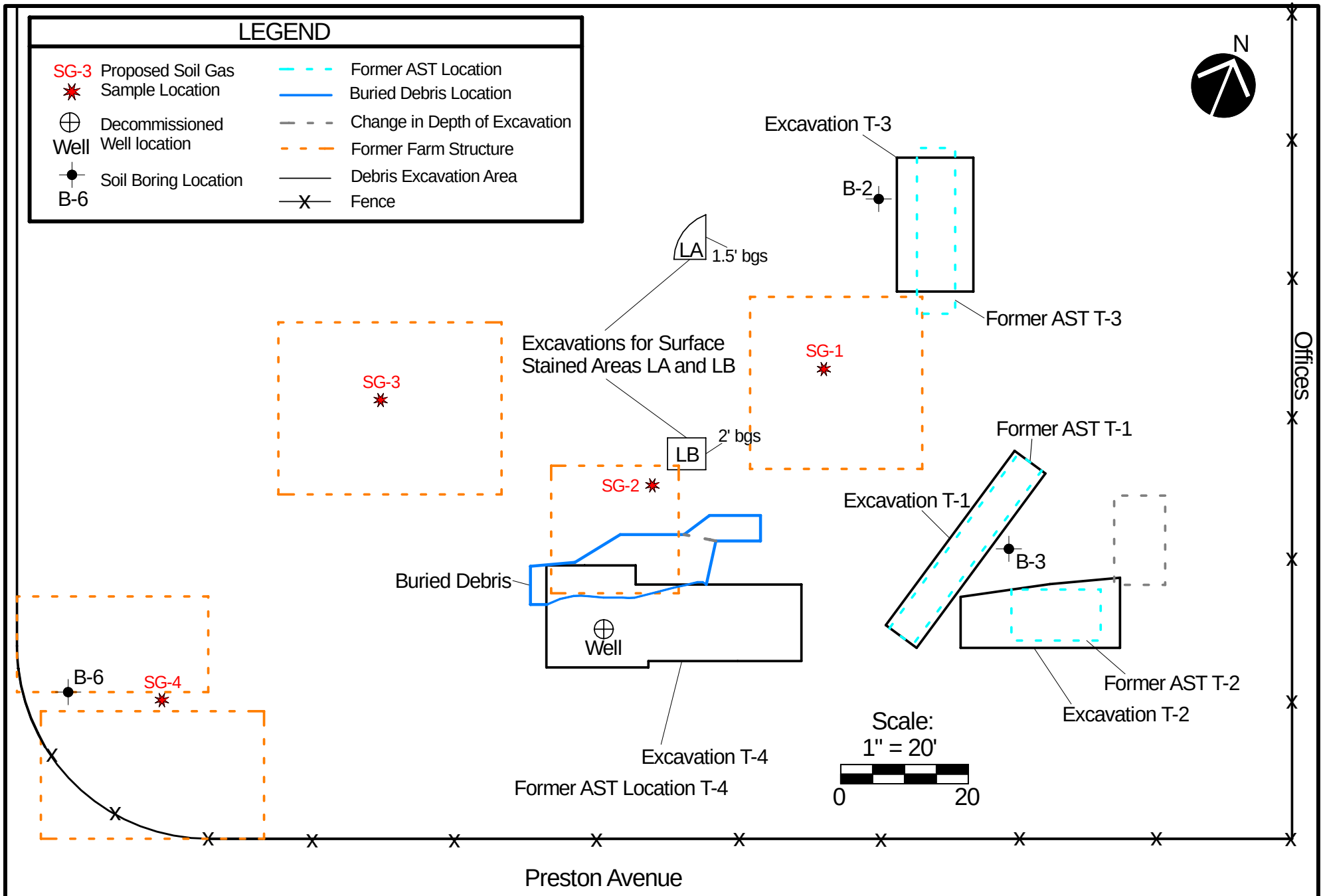
Project Number 717-3B

November 6, 2007

Figure 2

Site Plan
461 McGraw Avenue
Livermore, California



Environmental Investigation Services, Inc. 170 Knowles Drive, Suite 212, Los Gatos, California 95032 Phone: (408) 871-1470 Fax: (408) 871-1520	Project Number 717-3B November 2, 2007	Figure 3 Proposed Soil Gas Location Map 461 McGraw Avenue Livermore, California