January 17, 2008

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

Subject: PCE Groundwater Remedial Action Work Plan
461 McGraw Avenue, Livermore, California 94550
EIS Project # 717-3

Dear Mr. Wickham,

On behalf of Whitney Newland, Administrator of the Estate of the late Crandal Mackey, and Probate Court-authorized agent for Call Mac Transportation Company, Environmental Investigation Services Inc. (EIS) is submitting this workplan for additional Site Characterization and Remedial Action of the PCE contaminated groundwater at 461 McGraw Avenue, Livermore, California (the site) for your approval.

This work plan details procedures for installing four confirmation groundwater monitoring wells and four temporary borings on the subject property, collecting and analyzing soil and groundwater samples, and reporting of field and laboratory methods and findings. This work plan also details procedures for excavating and disposing of PCE-contaminated soil, confirmation soil sampling, sample handling, and sample analyses, pumping and treating PCE contaminated groundwater and discharging to the sanitary sewer.

BACKGROUND

The site is located northeast of the intersection of McGraw Avenue and Preston Road in Livermore, Alameda County, California. The nearest surface water is Arroyo Seco, located approximately ½ mile south of the site. Surface water in Arroyo Seco flows to the northwest. The site location is shown on Figure 1. Figure 2 depicts the site plan, including various features of concern. The site is currently vacant, but was formerly used by Call Mac Transportation Company as truck and trailer storage yard.

The site background has been discussed extensively in previous reports, so only background related to PCE groundwater characterization and remedial action will be discussed.
On August 30, 2007, EIS submitted *Site Investigation and Remedial Action Workplan to* address ACEH's request 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 EIS's *Site Investigation and Remedial Action Workplan*. In this letter ACEH's requested a historic review of the property, a well survey, and a workplan for a soil gas survey. 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 plan of loading dock soil, decommissioning of water supply well in excavation T-4, and the plan to install and sample three groundwater monitoring wells.

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 a Soil Gas Survey Workplan dated November 2, 2007 was prepared.

ACEH's November 8, 2007, letter was issued in response to this Soil Gas Survey *Workplan*. In this letter ACEH accepted the Soil Gas Survey workplan, with slight modifications to boring locations. The ACEH letter requested two of the soil gas borings be placed in approximate locations of former waste oil and polymer resin drums. The ACEH letter concluded with a request for submittal of the Site Investigation and Remedial Action Report by January 29, 2008. On January 14, 2008, EIS submitted *Further Site Investigation and Remedial Action Report, which is the first of two reports to be submitted by EIS in January 2008 to present investigation results.*

On November 5, 2007 monitoring wells MW-1 through MW-3 were installed at the locations shown on Figure 2. The monitoring well will be used to verify the success of recent remedial action on improving groundwater quality, groundwater flow direction, and groundwater flow gradient in the vicinity of the site. The groundwater sample collected from monitoring well MW-1 contained 10 micrograms per liter (µg/L) of tetrachloroethene (PCE). No TPH-g, TPH-d, BTEX compounds, or other VOCs were detected in the November 9, 2007 groundwater samples collected from monitoring wells MW-1, MW-2 and MW-3. The California Department of Health Services maximum contaminant level (MCL) for PCE is 5 µg/L. (Table 6) The monitoring wells were resampled on November 27, 2007, and results of the analysis revealed concentrations of PCE at 7.3 µg/L at MW-1.

Thirty six temporary soil borings and twenty four soil gas points were installed and soil, soil gas, and groundwater was sampled to attempt to characterize the PCE groundwater plume. The results of the PCE Groundwater Characterization are presented in the EIS, Inc. January 18, 2008 report. To summarize, the results of the PCE groundwater characterization investigation revealed a plume of PCE contaminated groundwater above the ACEH target level of 50 µg/L for PCE in groundwater. The highest concentrations detected were from boring sample B-30A at 1800 µg/L, B-26 at 1500 µg/L, B-36 at 600 µg/L, and B-11 at 530 µg/L. The groundwater sample results and soil gas results are presented in Tables 1 and 2, and PCE plume concentration contour maps, Figures 3 and 4. The vertical extent of PCE contamination was not defined at location B-26 as evidenced by discrete level sampling results. Three discrete-level samples were collected (B-30A, 30B and 30C). The deepest sample, B-30C, was collected at a depth of 25 feet bgs and contained 600 µg/L PCE. The vertical extent was defined at location B-11 where a deep sample collected from 32 feet bgs contained no detectable PCE.

The purpose of the proposed investigation and remedial action presented herein is to better define the vertical and lateral extent of contamination, and to remediate the most impacted area, to reduce overall PCE concentrations down to ACEH target level of 50 µg/L or less.

GROUNDWATER CHARACTERIZATION & REMEDIAL ACTION CONFIRMATION

Additional soil and groundwater characterization will be accomplished by the following tasks:

- Determine vertical extent of PCE contamination in soil and groundwater near boring B-26 by advancing four soil borings to depths of approximately 28 feet, 32 feet, 36 feet and 45 feet bgs to collect discrete-level groundwater samples at these depths. Continuously log soils and screen the soils with a PID. Collect soil samples for laboratory analysis from approximately 15 and 20 feet bgs with the exact depth to be determined in the field
- Install and sample monitoring wells MW-4, MW-5, and MW-6 to confirm groundwater analytical results from previous exploratory boring and sampling program.
- Measure groundwater elevations from monitoring wells MW-1, through MW-6 to confirm groundwater flow direction.
- Analyze soil and groundwater samples for VOCs.
- Prepare a field investigation report documenting field and laboratory methods, and results.

These tasks are further detailed as follows.

Vertical Characterization of PCE Contamination Near Boring B-26

EIS will use the site-specific health and safety plan (SSP) already prepared describing potential hazards at the site (including potential contaminants and their characteristics and health effects), personnel responsible for site safety, personal protective equipment, emergency phone numbers, and the location of the nearest hospital, etc.

To determine the vertical extent of PCE contamination in soil and groundwater near boring B-26 one 36 foot deep continuously-cored pilot boring will be drilled to define stratigraphy followed by advancing three discrete-level groundwater sampling probes to approximately 28, 32 and 36 feet bgs.

The pilot boring will be installed by a C-57 licensed contractor using dual-tube Geoprobe™ sampling equipment. Soil cores will be obtained from the borehole using a 4-foot long Geoprobe™ dual-tube sampler fitted with acetate liners. After each sample drive, the inner tube of the dual-tube system containing the acetate liner will be removed from the borehole, the acetate liner removed, and the sampler decontaminated by washing it using non-phosphate detergent and triple-rinsing it before fitting it with a new acetate liner. The sampler will then be inserted back into the borehole and hydraulically pushed through the next sample interval. The benefit of dual-core sampling technology is that the outer tube seals off the upper portion of the

boring as the hole is advanced, which allows for discrete-interval sampling with limited slough falling in from upper levels.

The soil encountered in the borehole will be logged using the Unified Soil Classification System (USCS) as a guide, and for relative moisture content, odor, and other observable characteristics. Soil encountered in the borehole will also be monitored for the presence of VOCs using a PID. EIS will retain at least two soil samples for laboratory analysis from approximately 15 and 20 feet bgs with the exact depth to be determined in the field.

Discrete-level groundwater samples will be collected using the dual- tube Geoprobe system. With this system the drive rods are pushed into the ground with a steel tip attached to inner rods that are locked in place until the desire depth is reached at which point the inners rods along with the steel tip are extracted. After the inner rods are removed temporary ¾"-diameter slotted PVC casing is inserted through the outer rods then the outer rods are pulled up approximately 3 feet to expose a section of the uncased borehole allowing water to enter. A grab groundwater sample will be collected by lowering a disposable bailer through the PVC casing. A new hole will be drilled for each sample depth. The grab groundwater samples will be collected in EPA-approved containers provided by the analytical laboratory. The water samples will be labeled, logged onto a chain-of-custody form, and transported on ice to a California-certified analytical laboratory.

The soil and groundwater samples collected from the borings will be analyzed for VOCs by EPA Method 8260B.

All soil borings will be backfilled to grade with neat cement grout. All activities described in this workplan will be included in the final report along with other site activities within three weeks of receipt of laboratory results.

Monitoring Well Installation

Monitoring wells MW-4 through MW-6 will be installed at the locations shown on Figure 2. The monitoring wells will be used to characterize groundwater quality, groundwater flow direction, and groundwater flow gradient in the vicinity of the PCE groundwater plume. Prior to installing the proposed monitoring wells, EIS will submit well permit applications to the Zone 7 Water District.

The proposed new monitoring wells will be drilled using 8-inch diameter hollow-stem auger drilling equipment. During drilling, soil samples will be collected at 5-foot depth intervals using a split-spoon sampler fitted with clean brass liners. Soil samples recovered from the boreholes will be used to prepare boring/well logs. Soil samples selected for laboratory analysis will be preserved by sealing the ends of the brass liners with Teflon™ sheets and plastic end-caps. The samples will be labeled, logged onto chain-of-custody forms, and stored in an iced cooler pending transport to the laboratory.

The exploratory borings will be advanced through near-surface unsaturated materials, into the shallowest aquifer, extending to a total anticipated depth of 20 feet. The borings will be converted to monitoring wells by installing 2-inch diameter Schedule 40 polyvinyl chloride

(PVC) well casing and factory-slotted well screen with 0.010-inch slots. EIS anticipates placing well screen from 10 to 20 feet below ground surface; however, the actual screened interval will be based on conditions encountered in the field. A graded sand pack will be placed in the annular space adjacent to the well screen, extending at least 2 foot above the top of the screened interval, followed by a 2-foot (minimum) interval of hydrated bentonite and a neat cement seal extending to within 1 foot of the ground surface. A locking cap and traffic-rated vault box or steel surface monument will be installed to secure the wells.

All drill cuttings, purge water, and equipment decontamination rinsate water will be stored on site in sealed drums pending analysis and disposal. Upon completion of all other field activities, EIS will arrange for composite sampling, analysis, and disposal of drill cuttings from all borings, and purge water from the monitoring wells.

Well Development

Following well construction, the wells will be developed using surging and bailing techniques. Water column volumes will be calculated to determine the minimum volume of water to remove from each well. During purging, data will be collected on groundwater depth, pH, temperature, and specific conductivity. Wells will be purged until the minimum calculated water volume had been removed and until water quality parameters had stabilized. The stabilization criteria were at least three (3) consecutive readings within a 10% range for all parameters. Once purging is completed, final depth –to-water and total depth measurements will be taken before closing the well.

Well Survey

A California licensed surveyor will survey the relative positions and casing elevations of the wells using the US State Plane 1983 coordinate system and NAD 1983 datum.

Groundwater Sampling

After installation and development, EIS will sample monitoring wells MW-4 through MW-6. Prior to groundwater sampling, depths to groundwater and total monitoring well depths will be measured using the top of well casing (TOC) as a reference point. The monitoring wells will then be purged of a minimum of three casing volumes using new single-use disposable bailers. During purging, pH, electrical conductivity (EC), and temperature will be monitored to ensure that a representative sample is obtained. Following purging, groundwater samples will be collected and sealed within EPA-approved containers provided by the analytical laboratory. The groundwater samples will be labeled, logged onto a chain-of-custody form, and transported on ice to the analytical laboratory.

Laboratory Analyses

Selected soil samples and all groundwater samples will be submitted to McCampbell Analytical, of Pittsburgh, California for analysis VOCs using EPA Method 8260B. McCampbell Analytical is California certified for hazardous waste analysis.

REMEDIAL ACTION WORK PLAN

The goal of the proposed remedial action, which includes, excavating PCE contaminated soil and pumping and treating of contaminated groundwater is to remove, to the extent practical, site soil and groundwater containing PCE in excess of the ACEH target goal of 50 µg/L for PCE in groundwater. Because the site is currently vacant and undeveloped, and the lateral extent appears to be limited to within the site boundary, the proposed remedial methods will be the quickest and most cost-effective method for reducing chlorinated hydrocarbon mass at the site.

Remedial action proposed for the subject site will consist of the following tasks:

- Excavate two rectangular shaped areas approximately 51 feet by 32 feet and 38 feet deep by 22 feet in size to an estimated depth of 20 feet below ground surface (Figure 2). The extent of the excavation may be modified based on results of additional vertical characterization described above.
- Collect confirmation soil samples from the excavation sidewalls and bottom. Also, collect composite soil samples from the excavated soil stockpile to characterize excavated material for disposal.
- Transfer all samples, under chain of custody documentation, to a state-certified laboratory for analysis of VOCs.
- Load, transport, and dispose of PCE-impacted soil at an off-site facility.
- Backfill the excavation with clean fill.
- Pump and treat groundwater encountered inside both excavations.
- Excavation water will be stored in one or more aboveground tanks pending treatment using carbon vessels and permitted disposal to sanitary sewer.
- Prepare a report of the remedial action documenting field activities, laboratory analyses, soil disposal, and excavation backfill.

These tasks are further detailed below.

Soil Excavation

Macoy Resources Corp. (MRC) will perform the excavation portion of the project. Prior to soil excavation the work area will be delineated with white marking paint, and Underground Service Alert will be contacted for utility line location and marking. All site work will be performed in accordance with a site-specific health and safety plan (Attachment A).

Soil excavation will include two areas between B-11 and B-26 where the highest concentration of PCE in soil gas and groundwater were detected (Figure 3 & 4). The size of the excavations will be approximately 51 feet by 32 feet and 38 feet deep by 22 feet and both will be dug to a depth between 20 and 25 feet. The proposed excavation limits, shown on Figure 2, may be modified based on the results of the additional vertical characterization work scheduled. Excavated soil will be placed on plastic and will be covered with plastic to minimize the generation of VOC vapors and to protect the soil stockpile from inclement weather.

The excavation depth is planned to encounter shallow groundwater. MRC will be prepared to dewater the excavation, using a pump and treatment system. Excavation water will be stored in one or more aboveground tanks pending characterization and permitted disposal to the sanitary sewer.

Excavation and Stockpile Soil Sampling

After all or part of the soil excavation is completed, excavation sidewall and bottom soil samples will be collected. EIS anticipates collecting a minimum of twelve excavation sidewall and six excavation bottom samples. Additional soil samples may be collected, if requested by ACEH.

The excavation soil stockpile will be sampled to characterize the soil for off-site disposal. Stockpile soil samples will consist of 4:1 composite samples. The frequency of soil stockpile sample collection (e.g., 1 sample for every 250 cubic yards) will be designed to comply with disposal site characterization requirements.

Laboratory Analyses

Excavation and stockpile soil samples will be submitted to McCampbell Analytical, of Pittsburgh, California for analysis. McCampbell Analytical is California certified for hazardous waste analyses. All of the confirmation and stockpile soil samples will be analyzed for VOCs using modified EPA Method 8260.

Soil Disposal

EIS anticipates disposing excavated soil at the Altamont Landfill in Livermore, depending on soil sample analytical results. MRC will transport the excavated soil to the disposal site. Copies of non-hazardous waste manifests and soil weight tickets will be retained by EIS to document soil disposal.

Excavation Backfill

After achieving the remedial action goal - removing, to the extent practical, site soil containing VOCs in excess of applicable ESLs - the excavation will be backfilled with clean imported fill material and any material that tested clean.

REPORT

Following completion of soil excavation, excavation and soil stockpile sample analyses, soil disposal, and excavation backfill, EIS will prepare a report documenting the remedial action. The report will include a description of all work performed, a site map showing the excavated area and sampling locations, tabulation of soil analytical data (with sampling depths clearly indicated), laboratory analytical reports, and soil disposal documentation.

Following completion of monitoring well installations and soil and groundwater sample analyses, EIS will prepare a field investigation report. The report will included a description of all work performed, vicinity and site maps, boring/well logs, a groundwater elevation contour maps, tabulation of analytical and field data, laboratory analytical sheets, field data sheets, findings, conclusions, and recommendations.

SCHEDULE

EIS will begin implementing the work plan within five working days of approval by the ACCEH, weather permitting. We anticipate the field portion of this work plan to require one to two months. The technical report will be prepared and submitted within three weeks of completion of field activities.

Please call us 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.

Allen J. Waldman, PG # 6323
Project Geologist

Attachments:

Table 1 – Groundwater Grab Sample Analytical Data
Table 2 – Soil Gas Analytical Data
Figure 1 – General Site Location Map
Figure 2 – Site Plan with Proposed Excavations, Monitoring Wells and Boring Locations
Figure 3 – PCE Groundwater Plume Concentration Contour Map
Figure 4 – PCE Soil Gas Plume Concentration Contour Map

Attachment A – Site Health and Safety Plan

ATTACHMENT A

SITE HEALTH AND SAFETY PLAN

Table 1 - Summary of Grab Groundwater Sample Analytical Results
461 McGraw Avenue, Livermore, California

Boring	Date	TPH-g	TPH-d	TPH-o	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	PCE	Trichlorofluoromethane	Chloroform	Acetone	Other VOCs	Other Oxygenates
B-7	11/26/2007	NA	NA	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	ND	ND
B-8	11/26/2007	NA	NA	NA	<0.5	<0.5	0.55	<0.5	<0.5	<0.5	<0.5	<0.5	<10	ND	ND
B-9	11/26/2007	NA	NA	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	ND	ND
B-10	11/26/2007	<50	84,b	<250	<0.5	<0.5	<0.5	<0.5	<0.5	**27**	<0.5	1.1	<10	ND	ND
B-11	11/26/2007	NA	NA	NA	<10	<10	<10	<10	<10	**530**	<10	<10	<200	ND	ND
B-12	11/26/2007	120,f	54,b	<250	<5.0	<5.0	<5.0	<5.0	<5.0	**230**	<5.0	<5.0	<100	ND	ND
B-13	11/26/2007	NA	NA	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.77	<0.5	20	ND	ND
B-14	11/26/2007	NA	NA	NA	<0.5	<0.5	<0.5	<0.5	<0.5	**26**	<0.5	<0.5	<10	ND	ND
B-15	12/6/2007	NA	NA	NA	<5.0	<5.0	<5.0	<5.0	<5.0	**140**	<5.0	<5.0	<100	ND	ND
B-16	12/6/2007	NA	NA	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	ND	ND
B-17	12/6/2007	NA	NA	NA	<0.5	<0.5	0.78	<0.5	<0.5	2.2	<0.5	0.60	<10	ND	ND
B-18	12/6/2007	NA	NA	NA	<0.5	<0.5	1.3	<0.5	<0.5	0.86	<0.5	3.5	<10	ND	ND
B-19	12/6/2007	NA	NA	NA	<10	<10	<10	<10	<10	**280**	<10	<10	<200	ND	ND
B-20	12/5/2007	NA	NA	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	ND	ND
B-21	12/6/2007	NA	NA	NA	<0.5	<0.5	1.7	<0.5	<0.5	<0.5	<0.5	<0.5	<10	ND	ND
B-22	12/6/2007	NA	NA	NA	<5.0	<5.0	<5.0	<5.0	<5.0	**170**	<5.0	<5.0	<100	ND	ND
B-23	12/6/2007	NA	NA	NA	<0.5	<0.5	1.4	<0.5	1.3	<0.5	0.98	<0.5	13	ND	ND
B-24	12/6/2007	NA	NA	NA	<0.5	<0.5	7.4	1.4	6.2	**5.8**	<0.5	<0.5	<10	ND	ND
B-25	12/6/2007	NA	NA	NA	<0.5	<0.5	1.2	<0.5	0.52	**28**	<0.5	<0.5	<10	ND	ND
B-26	12/6/2007	NA	NA	NA	<50	<50	<50	<50	<50	**1500**	<50	<50	<1000	ND	ND
B-27	12/6/2007	NA	NA	NA	<0.5	<0.5	0.88	<0.5	<0.5	<0.5	<0.5	<0.5	<10	ND	ND
B-28	12/6/2007	NA	NA	NA	<0.5	<0.5	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<10	ND	ND
B-29	12/18/2007	NA	NA	NA	<0.5	<0.5	<0.5	<0.5	<0.5	1.9	<0.5	<0.5	150	ND	ND
B-30A@15'	12/18/2007	NA	NA	NA	<50	<50	<50	<50	<50	**1800**	<50	<50	<1000	ND	ND
B-30B@20'	12/18/2007	NA	NA	NA	<25	<25	<25	<25	<25	**810**	<25	<25	<500	ND	ND
B-30C@25'	12/18/2007	NA	NA	NA	<17	<17	<17	<17	<17	**600**	<17	<17	<330	ND	ND
B-31	12/18/2007	NA	NA	NA	<5.0	<5.0	<5.0	<5.0	<5.0	**190**	<5.0	<5.0	<100	ND	ND
B-32	12/18/2007	NA	NA	NA	<0.5	<0.5	<0.5	<0.5	<0.5	**11**	<0.5	<0.5	110	ND	ND
B-33	12/18/2007	NA	NA	NA	<0.5	<0.5	<0.5	<0.5	<0.5	**7.1**	<0.5	<0.5	70	ND	ND
B-34	12/18/2007	NA	NA	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	ND	ND
B-35	12/18/2007	NA	NA	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	ND	ND
B-36	12/18/2007	NA	NA	NA	<12	<12	<12	<12	<12	**600**	<12	<12	<250	ND	ND
CDHS MCL		--	--	--	5[(a)]	1	150	300	1,750	5	--	70	--	--	--
Drinking Water ESLs		210	210	210	13	1.0	150	300	1,800	5	--	70	6300	--	--

Notes:

Data are reported in micrograms per liter (μg/L)
TPH-g = Total Petroleum Hydrocarbons as gasoline
TPH-d = Total Petroleum Hydrocarbons as diesel
BTEX = Benzene, Toluene, Ethylbenzene, Xylenes
VOCs = Volatile Organic Compounds
MTBE = Methyl tert-Butyl Ether
PCE = Tetrachloroethene
TPH-o = Total Petroleum Hydrocarbons as Motor Oil
-- = Not Established
ND = Not Detected
NA = Not analyzed

(a) = This is the secondary MCL for MTBE, which is based on qualitative factors such as taste and odor. The primary MCL for MTBE, the value that has been determined to be protective of human health, is 13 micrograms per liter.

Drinking Water ESLs = Regional Water Quality Control Board's Environmental Screening Levels for drinking water. (Nov 2007)
CDHS MCL = California Department of Health Services' Maximum Contaminant Level for Drinking Water, CCR, Title 22, 2005

Method 8260B for VOCs

Bold = results which are greater than the CDHS MCL

Table 2 - Summary of Soil Gas Sample Analytical Results
461 McGraw Ave, Livermore, California

Sample	Depth	Date	2-Butanone (MEK)	2-Hexanone	Acetone	Benzene	Chloroform	Ethylbenzene	4-Ethyl Toluene	Isopropanol	Hexane	Methylene Chloride	PCE	Toluene	TCE	Trichloroflouromethane	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Total Xylenes	Carbon Disulfide	Styrene
SG-5	4'	12/14/2007	72	<2.0	12000	25	<2.4	120	<2.5	<16	<3.5	<3.6	130	12000	<2.7	3.6	<2.5	<2.5	590	<1.6	24
SG-6	4'	12/14/2007	40	<2.0	8900	15	<2.4	150	<2.5	<16	<3.5	<3.6	100	18000	<2.7	34	<2.5	<2.5	610	<1.6	19
SG-7B	4'	12/15/2007	<1.5	<2.0	140	5.8	<2.4	<1.7	<2.5	<16	<3.5	<3.6	73	14	<2.7	250	<2.5	<2.5	12.5	2.7	<2.1
SG-8	4'	12/14/2007	11	2.9	52	19	<2.4	4.2	<2.5	17	<3.5	<3.6	45	18	<2.7	17	<2.5	<2.5	15.5	<1.6	<2.1
SG-9	4'	12/15/2007	6.1	<2.0	150	1.9	<2.4	<1.7	<2.5	4300	<3.5	<3.6	**3100**	6.9	<2.7	58	<2.5	<2.5	18.8	5.2	<2.1
SG-9	8'	12/14/2007	13	3.7	58	14	<2.4	<1.7	<2.5	<16	<3.5	<3.6	**40000**	12	17	220	<2.5	<2.5	10.5	2.3	<2.1
SG-10	4'	12/14/2007	7.5	<2.0	23	3.5	<2.4	<1.7	<2.5	<16	<3.5	<3.6	**4600**	2.5	21	330	4.0	<2.5	11.7	<1.6	<2.1
SG-11	4'	12/14/2007	<1.5	<2.0	71	3.3	<2.4	<1.7	<2.5	420	30	<3.6	<3.4	16	<2.7	<2.5	<2.5	<2.5	9.2	<1.6	<2.1
SG-12	4'	12/14/2007	<1.5	<2.0	11	1.7	<2.4	<1.7	<2.5	<16	<3.5	34	<3.4	3.5	<2.7	<2.5	<2.5	<2.5	5.2	<1.6	<2.1
SG-13	4'	12/14/2007	7.8	<2.0	28	9.3	<2.4	<1.7	<2.5	<16	<3.5	<3.6	**4300**	7.0	<2.7	1100	2.6	<2.5	5.7	<1.6	<2.1
SG-14	4'	12/15/2007	160	<2.0	190	<1.6	30	<1.7	<2.5	<16	37	140	**1300**	15	<2.7	23	<2.5	<2.5	20	9.5	<2.1
SG-14	8'	12/15/2007	220	<2.0	920	49	220	<1.7	<2.5	<16	350	<3.6	**4400**	74	<2.7	<2.5	<2.5	<2.5	56	73	26
SG-15	4'	12/14/2007	10	<2.0	56	4.1	<2.4	<1.7	<2.5	<16	<3.5	<3.6	59	8.0	<2.7	290	<2.5	<2.5	7.2	4.2	<2.1
SG-16	4'	12/15/2007	<1.5	<2.0	83	3.3	<2.4	<1.7	<2.5	<16	<3.5	<3.6	110	9.7	<2.7	14	<2.5	<2.5	10.7	5.8	<2.1
SG-17	4'	12/15/2007	<1.5	<2.0	36	<1.6	<2.4	<1.7	<2.5	<16	<3.5	<3.6	120	5.5	<2.7	3.4	<2.5	<2.5	<2.2	<1.6	<2.1
SG-18	4'	12/14/2007	<1.5	<2.0	55	3.1	<2.4	<1.7	<2.5	<16	<3.5	<3.6	16	8.4	<2.7	76	<2.5	<2.5	7.1	<1.6	<2.1
SG-19	4'	12/15/2007	4.0	<2.0	87	2.6	<2.4	<1.7	<2.5	<16	<3.5	<3.6	59	8.9	<2.7	10	<2.5	<2.5	8.3	4.8	<2.1
SG-20	4'	12/14/2007	<1.5	<2.0	32	2.3	<2.4	<1.7	<2.5	<16	<3.5	<3.6	190	3.3	<2.7	84	<2.5	<2.5	4.7	<1.6	<2.1
SG-21	4'	12/14/2007	7.5	<2.0	180	<1.6	<2.4	<1.7	<2.5	35	<3.5	<3.6	**4100**	150	<2.7	260	<2.5	<2.5	7.3	<1.6	<2.1
SG-22	4'	12/15/2007	<1.5	<2.0	86	2.8	<2.4	<1.7	6.3	<16	<3.5	<3.6	**24000**	9.4	12	500	8.7	2.7	15.8	15	<2.1
SG-23	4'	12/15/2007	6.8	<2.0	72	3.3	<2.4	<1.7	<2.5	<16	<3.5	<3.6	330	12	<2.7	350	<2.5	<2.5	11.3	8.0	<2.1
SG-24	4'	12/15/2007	<1.5	<2.0	55	7.8	<2.4	<1.7	5.2	<16	56	<3.6	250	28	<2.7	270	6.5	<2.5	15.6	28	<2.1
CHHSL Shallow Soil Gas Screening Levels:			--	--	--	36.2	--	--	--	--	--	--	180	135,000	--	--	--	--	315,000	--	--
RWQCB Shallow Soil Gas Screening Levels:			--	--	660,000	84	460	210,000	--	--	--	5,200	410	63,000	1200	--	--	--	21,000	--	190,000

Notes: -- Not Established **Bold =** results which are greater than the Nov 2007 RWQCB Soil Gas Screening Levels (Residential Land Use)

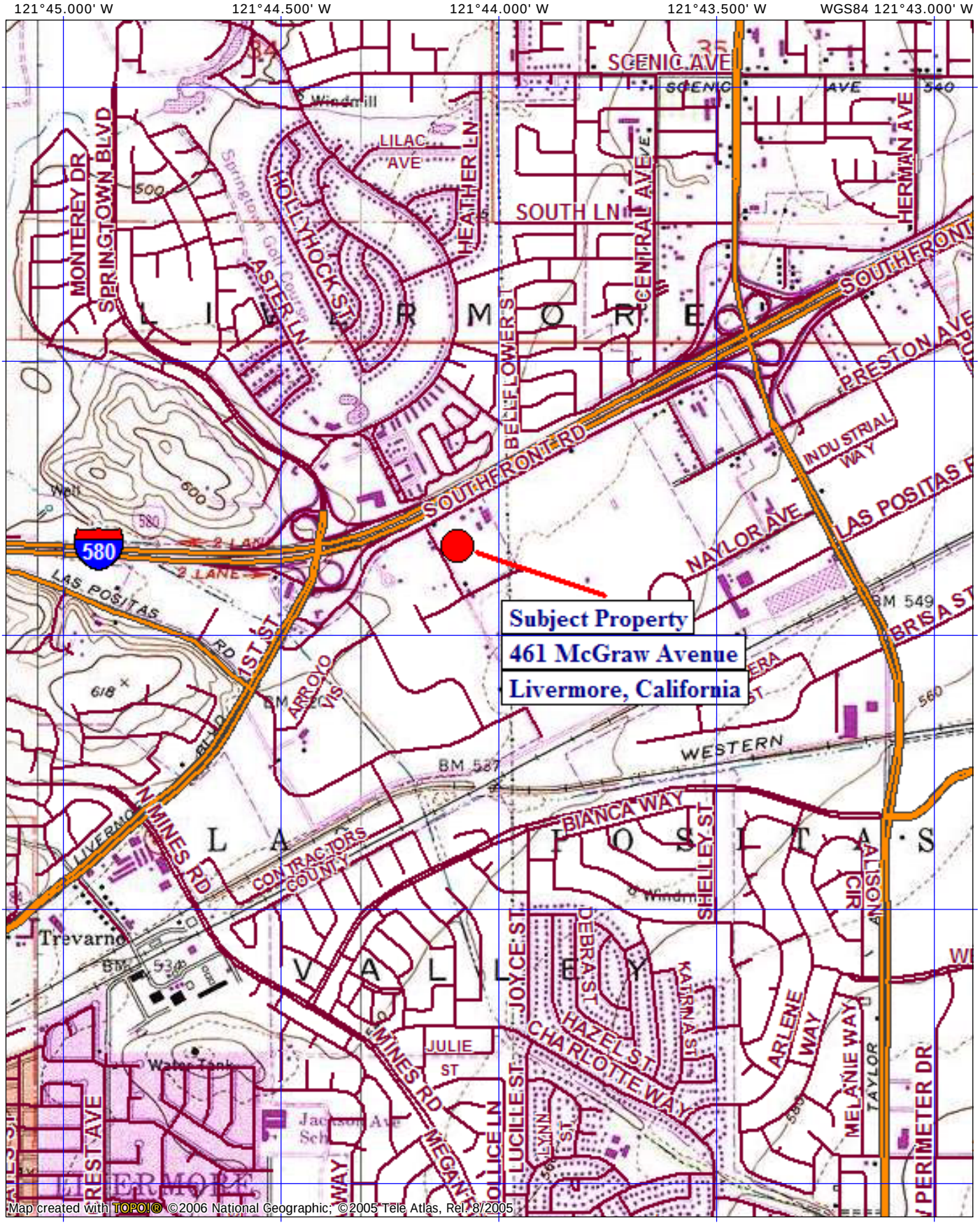
Data and Shallow Soil Gas Screening Levels are reported in micrograms per liter (ug/m3)

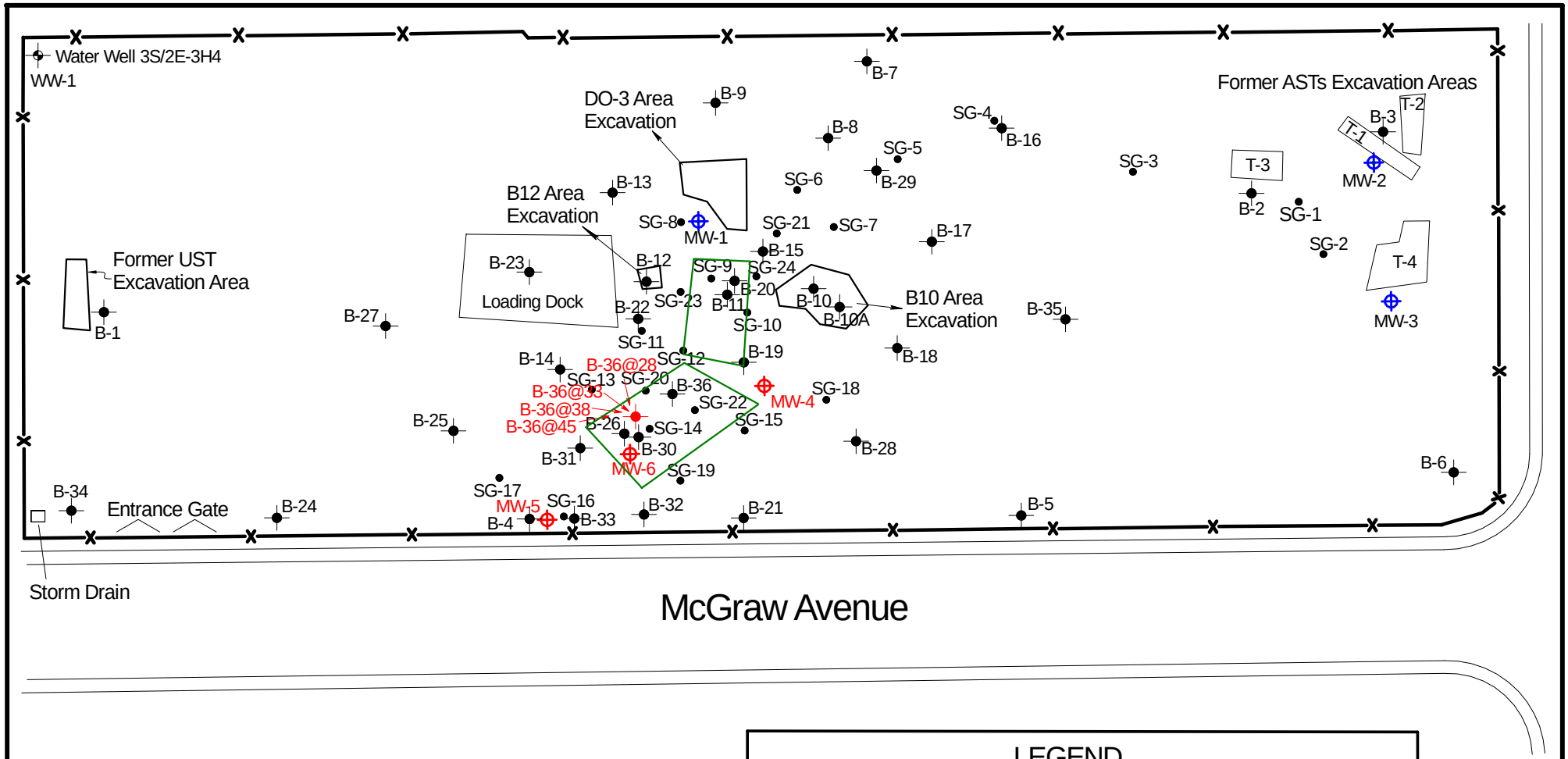
CHHSL Soil Gas Screening Levels are based on soil gas data collected less than 1.5 meters (5 feet) below a building foundation or the ground surface. Intended for evaluation of potential indoor-air impacts for Residential Land Use. (2005)

RWQCB ESL Soil Gas Screening Levels are based on soil gas data collected less than 3.0 meters (10 feet) below a building foundation or ground surface. Intended for evaluation of potential indoor-air impacts for Residential Land Use. (Nov 2007)

TCE = Trichloroethene PCE = Tetrachloroethene EPA Method TO-15 for Toxic Organics in Air

Figure 1 : Site Location Map





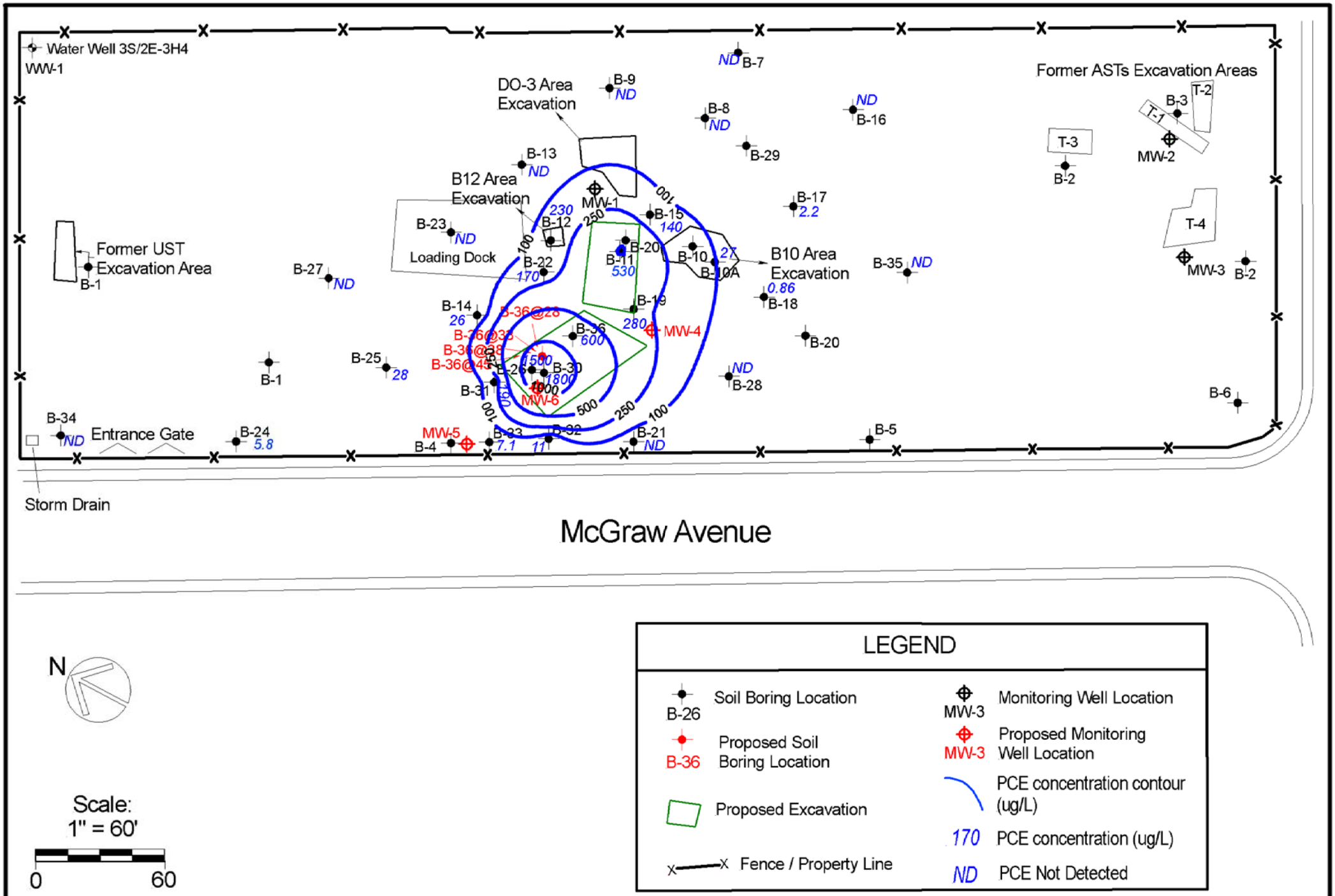
Environmental Investigation Services, Inc.
170 Knowles Drive, Suite 212, Los Gatos, California 95032
Phone: (408) 871-1470 Fax: (408) 871-1520

Project Number 717-3

January 17, 2008

Figure 2

Proposed Excavations, Monitoring Wells, and Borings
461 McGraw Avenue
Livermore, California



Environmental Investigation Services, Inc.
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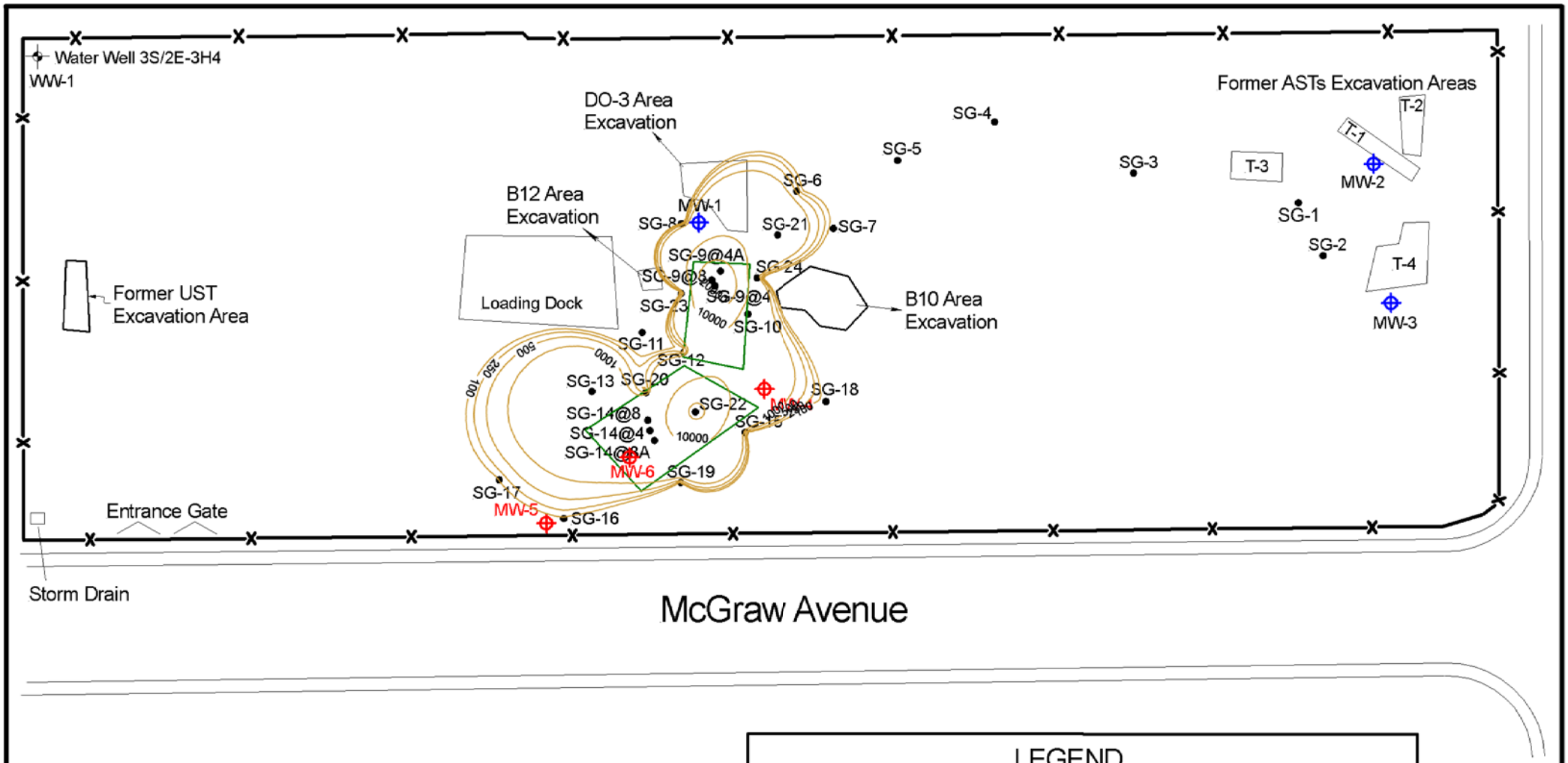
Project Number 717-3

January 17, 2008

Figure 3

Groundwater PCE Countour Map
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 717-3 January 17, 2008	Figure 4 — Soil Gas PCE Concentration Map 461 McGraw Avenue Livermore, California

SITE HEALTH & SAFETY PLAN

CONTENTS

SITE HEALTH & SAFETY PLAN
ENVIRONMENTAL INVESTIGATION SERVICES, INC.

PROJECT NAME: Call Mac Transportation Company
LOCATION: 461 McGraw Avenue, Livermore, CA.
DATE: 5/18/07
TASK: Site Investigation and Remedial Action

PROJECT MANAGER: Peter Littman
PROJECT SAFETY OFFICER: Jennifer Morris
SITE SAFETY OFFICER (SSO): Jennifer Morris

NEAREST HOSPITAL:	Valley Care Medical Center Phone: 911 Address: 5555 Las Positas Blvd, Pleasanton, CA
NEAREST FIRE DEPARTMENT:	Livermore-Pleasanton Fire Department 3560 Nevada Street, Pleasanton, 94566 Phone: 911 or (925) 454-2361
HAZARDOUS MATERIALS SPILL/ CLEAN-UP CONTRACTOR:	MACOY Resource Corp. Phone: (805) 227-1090 Cell (805) 391-3013 Address: P.O. Box 3980 Paso Robles, California 93447
U. S. ALERT SERVICE NUMBER:	(800) 642-2444
NEAREST PG&E OFFICE:	Livermore, CA 24-hr Emergency Phone: (800) 743-5000 Address: Livermore, California

NEAREST TELEPHONE LOCATION: Macoy Resources Cell and EIS Cell Phone

LOCATION OF SITE "CLEAN AREA": as per SSO: See Map.

LOCATION OF PERSONNEL DECON: STATION: as per SSO: See Map.

The following pages contain guidelines for on-site procedures to minimize risks to personnel at the job site, as well as information regarding basic first aid in the event of injury, among other points.

A pre-project Safety Meeting to familiarize all field personnel the potential hazards associated with the job shall be held at the start of each day's activities. Pre-project Safety Meeting held by:

X _____ Date: _____

X _____ Date: _____

X _____ Date: _____

X _____ Date: _____

We, the undersigned, have read the Site Safety Plan and understand the potential hazards on-site. We will follow the guidelines set forth in order to decrease the likelihood of personal or public injury.

X _____ Title: _____ Date: _____

X _____ Title: _____ Date: _____

X _____ Title: _____ Date: _____

X _____ Title: _____ Date: _____

X _____ Title: _____ Date: _____

X _____ Title: _____ Date: _____

X _____ Title: _____ Date: _____

X _____ Title: _____ Date: _____

SITE HEALTH & SAFETY PLAN
ENVIRONMENTAL INVESTIGATION SERVICES, INC.

I. HEALTH AND SAFETY PROGRAM OVERVIEW

A. In order to promote health and safety awareness, the position of Site Safety Officer (SSO) is rotated among employees for each project site.

B. It is the responsibility of the designated SSO to implement the Site Safety Plan (SSP) and to hold a pre-project safety meeting.

II. FACILITY BACKGROUND

A. Site History

The site is located northeast of the intersection of McGraw Avenue and Preston Road in Livermore, Alameda County, California. The nearest surface water is Arroyo Seco, located approximately ½ mile south of the site and flow to the northwest. The site location is shown on Figure 1. The attached Figure depicts the site layout and features of concern. The site is currently vacant, but was formerly used by Call Mac Transportation as a truck storage and salvage yard. A site plan is shown in Figure 2.

According to Applied Remedial Technologies' (ART's) *Proposed Work Plan to Conduct Soil Removal and Confirmation Sampling of the Impacted Soils at the Former Diesel UST Dispenser Island, Below the Former Above Ground Storage Tanks, and at the Recent Diesel Spill Areas, 461 McGraw Avenue, Livermore, California, 94550,* issued to Alameda County Environmental Health Services (ACEH) April 2, 2007, an underground storage tank (UST) was removed from the site in 1995. A visual inspection of the UST after it had been removed revealed that it was generally in good condition, with no visible holes. No hydrocarbon odor or staining was reported in the former UST pit, and the three soil samples collected from the tank pit contained no detectable petroleum hydrocarbons. Both the field observations and the soil sample analytical results (soil samples S-1 through S-3) reported that no petroleum hydrocarbons were detected. In addition, one water sample was collected from the excavation from approximately 13 to 14 feet below ground surface (bgs). There were no detectable concentrations of any of the constituents analyzed.

One soil sample was collected below the dispenser island (S-4), and was found to contain 17,000 milligrams per kilograms (mg/kg) total petroleum hydrocarbons as diesel (TPH-d). This sample was collected from an area of obvious over-spillage. No benzene, toluene, ethylbenzene or xylenes (collectively BTEX) was detected.

According to information gathered during the development of this workplan, there are three ASTs (T-1 through T-3) located at the site. AST (T-1) appears to have been moved from another location (T-4) on the site. ART submitted *Work Plan to Remove the Three Remaining Storage Tanks, 461 McGraw Avenue, Livermore, California 94550* to the Livermore-Pleasanton Fire Department (LPFD) on April 2, 2007 outlining procedures for decommissioning and disposing of the ASTs and their contents, and for sampling the soil beneath the ASTs. According to the workplan ART submitted to ACEH, the Department of Toxic Substances Control (DTSC) has conducted soil sampling activities below two of the

existing ASTs. The soil analytical data show that the ASTs have impacted the soil below them, and excavation will be necessary in the area.

There are also a total of 34 small areas where petroleum hydrocarbon staining has been noted. There are also 7 larger areas of petroleum hydrocarbon staining that were the results of unauthorized releases during Golden State Metal's crushing of vehicles at the site.

On July 26, 2007, EIS issued *Soil Removal and Site Investigation Report, 461 McGraw Avenue, Livermore, California 94550*, which described excavation activities, sampling activities, and well repair activities at the site.

ACEH issued a letter in response to this report on August 3, 2007. In their letter, ACEH states that no additional investigation or soil removal 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. The proposed work for this site addresses all of ACEH's comments except the request for a soil gas survey, which will be planned at a later date.

B. Chemical Constituents of Concern. The following chemicals are likely to be present on site: benzene, toluene, ethylbenzene, and xylenes (BTEX)

C. Scope of Work

The Site Remediation and Investigation Activities will consist of the following tasks:

- Conduct an historical review of the property and prepare a report describing research sources and findings.
- Excavate and dispose of approximately 300 tons of arsenic-impacted soil from the building pad (Figure 3). Collect ten confirmation soil samples from the base of the excavation to be analyzed for arsenic using United States Environmental Protection Agency (EPA) Method 6010B.
- Excavate and dispose of approximately 90 tons of soil from Excavation DO3. Collect four confirmation soil samples from the base of the excavation and two confirmation soil samples from the sidewalls of the excavation. All samples will be analyzed for total petroleum hydrocarbons as gasoline (TPH-g), as diesel (TPH-d), and as oil (TPH-o) using EPA Method 8015B, and for methyl tert-butyl ether (MTBE), and benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Method 8021B.

- Collect one four-point composite soil sample for waste profiling of the stockpiled soil and debris removed from Excavation E4. The sample will be analyzed for Title 22 Metals using EPA Method 6010B, TPH-o and TPH-d using EPA Method 8015M, and volatile organic compounds (VOCs) using EPA Method 8260B.
- Dispose of the soil and debris stockpile from Excavation E4, and dispose of portions of the loading dock where debris is intermixed with the soil. Any loading dock soil observed to be free of debris will be used to backfill open excavations onsite.
- Install and develop three monitoring wells: one near Excavation T-4, one near boring B-3, and one near Excavation DO3. Have the wells located by a professional land surveyor. Conduct two groundwater sampling events with a four-week interval between the events. Groundwater samples will be analyzed for TPH-g, TPH-d, and TPH-o using Method 8015B; for MTBE and BTEX using Method 8021B; and for Title 22 Metals using Method 6010B.
- Determine the total depth of the well in Excavation T-4, and decommission it according to Zone 7 Water District.
- Prepare a report describing all site activities, field methods, field observations, laboratory analyses, analytical results, conclusions, and recommendations.

III. SITE CHARACTERIZATION / JOB HAZARD ANALYSIS

A. Physical Hazards

1. Operation of Heavy Equipment
   a. Backhooe or Excavator
   b. Geoprobe Truck

2. Electrical Shock
   a. Overhead Wires 10 feet clearance
   b. Faulty electric wiring on equipment
   c. Faulty electric service to equipment

3. High Traffic Areas
   a. Traffic barricades for work areas and traffic control if necessary

4. Drilling
   a. Encountering underground utilities

5. Hearing Loss
   a. Engine-driven equipment
   b. Impact tools

6. Hazardous Chemical Exposure:
   a. Soils and/or soil gas vapors may contain an assortment of residual BTEX. Chemicals are moderately toxic and highly flammable, causing explosive concentrations in air over a range of 0.8% to 6% by volume.

7. Chemical List: Residual gasoline is present onsite. Consult NIOSH Pocket Guide to Chemical Hazards for other information.

a. Benzene
(1) Routes of entry
(a) Inhalation
(b) Ingestion
(c) Dermal contact
(d) Absorption
(2) Acute Symptoms
(a) Fatigue
(b) Eye, nose and skin irritation
(c) Giddiness
(d) Headache
(e) Nausea
(f) Staggered walk
(g) Anorexia
(h) Dermatitis
(i) Bone marrow depression
(j) Abdominal pain

b. Toluene
(1) Routes of entry
(a) Inhalation
(b) Ingestion
(c) Dermal contact
(d) Absorption
(2) Acute symptoms
(a) Fatigue
(b) Weakness
(c) Confusion
(d) Euphoria
(e) Dizziness
(f) Headache
(g) Dilated pupils
(h) Muscle fatigue
(i) Lacrimation
(j) Insomnia
(k) Paresthesia
(l) Dermatitis
(m) Photophobia

c. Ethylbenzene
(1) Routes of entry
(a) Inhalation
(b) Ingestion
(c) Dermal contact
(2) Acute symptoms
(a) Eye and skin irritations
(b) Headache
(c) Dermatitis

(d) Narcosis
(e) Coma

d. Xylenes (ortho/meta/para isomers)

(1) Routes of entry

(a) Inhalation
(b) Ingestion
(c) Dermal contact
(d) Absorption

(2) Acute Symptoms

(a) Eyes, nose, throat and skin irritation
(b) Drowsiness
(c) Dizziness
(d) Excitement
(e) Incoherence
(f) Staggered walk
(g) Nausea
(h) Vomiting
(i) Abdominal pain
(j) Dermatitis

IV. TRAINING

A. Potential Hazards - All personnel working at the site are made aware of all potential on-site hazards prior to the beginning of field work.

B. Safe Work Practices - All personnel at the site are advised of safe work practices and hazard avoidance.

C. SSP - All personnel, including subcontractors of EIS and all visitors to the site work areas, are to read the SSP and sign an acknowledgment indicating that they have reviewed and understand its contents.

D. OSHA - All EIS Macoy resource Corporation and the Geoprobe Drilling Company field personnel have completed a minimum of 40-hour OSHA training and are updated annually with an 8-hour refresher course.

V. PERSONAL PROTECTIVE EQUIPMENT

A. Level "D" protection for field crew installing soil borings and soil sampling:

1. Chemically resistant steel-toed boots
2. Hard hat
3. Safety glasses - Eye protection must be worn whenever the potential for flying debris and or chemical splash is present.
4. Hearing protection
5. Leather gloves
6. Denim or equivalent long pants
7. Button up shirt

VI. HEALTH SURVEILLANCE

A. Health surveillance will be on an individual and on a "buddy system" basis.

B. All personnel are advised to pay particular attention for the symptoms of chemical exposure outlined in Appendix A.

VII. EXPOSURE MONITORING PLAN

At the direction of the site safety officer exposure monitoring shall consist of:

A. Direct observation for excessive fumes, dust or vapor clouds, or excessively noxious odors; or

B. Direct reading instruments:
(Equipment use depends on site-specific conditions).
photo-ionization detector (PID), or a field gas chromatograph

VIII. SITE CONTROL

A. Work Zones - Areas will be designated after utility location survey and site reconnaissance with Macoy Resources Corp personnel and placed on site map and will be indicated in pre-field meeting.

1. Exclusion Zone

a. Where work is performed, with all proper safety equipment, and employing safe work practices.

b. Public is excluded.

c. Area is barricaded with barricades, cones and/or caution tape.

d. Cones placed to guide public away from work area.

2. Contamination Reduction Zone

a. Located outside the exclusion zone.

b. Place where personnel and/or equipment are decontaminated in the event of contact with hazardous chemicals, from either the soil, water and/or air (vapors).

3. Support Zone

a. Clean zone or Support zone is located outside Contamination Reduction Zone.

b. Contains all job related support equipment and/or services.

B. Location of Nearest Communication Equipment

1. Cell phones on all responsible workers.
2. All persons in the various zones will have remote communication equipment if necessary.

C. Location of Nearest Medical Assistance

1. On-site map shows nearest hospital. See Page 1 for address and telephone number.

D. On-site Communication

1. All personnel on-site will be made aware of common hand signals.

E. Engineering Controls

1. Site Map

a. Indicates work locations.

IX. DECONTAMINATION

A. Material Handling

1. All sampling equipment will be clean prior to use
2. Contaminated equipment will be taken off-site only after decontamination.
3. Disposal of wash and rinse water will be in compliance with all applicable regulations.

B. Personal Hygiene

1. No smoking, eating, or drinking will take place in the exclusion zone or in the contamination reduction zone.
2. A designated break area may be established off-site. However, if smoking or open flames are permitted, any such facility must be established a minimum of at least 100 feet upwind of any of any vapor source and shall be tested for flammable gases and vapor at the start of work and prior to scheduled break periods each day.
3. Personnel must wash all exposed skin areas with soap and water in the decontamination area before departing the site or going on break.

X. STANDARD OPERATING PROCEDURES

A. Pre-project safety meeting prior to working.
B. Sampling equipment calibrated before use.
C. Respirator fit test (if required).
D. Site work performed.
E. Decontamination protocol followed.

XI. CONTINGENCY PLAN / EMERGENCY PROCEDURES

A. Personal Exposure (First Aid)

1. In the event that exposure symptoms are manifested, the victim will be taken up-wind and off-site. Seek qualified medical attention immediately.
2. Consult NIOSH Pocket Guide to Chemical Hazards prior to rendering first aid. Wash skin with soap and water immediately.
3. Inhalation - Move to fresh air and administer immediate artificial respiration if required.
4. Ingestion - Do not induce vomiting. If conscious, give water or milk to drink. Seek qualified medical attention immediately.
5. Eyes - Flush with water for at least 20 minutes while holding eyes open. Seek qualified medical attention immediately.

B. Personal Injury- (Supervisors and field employees are trained in First Aid and CPR).

1. Provide basic first aid procedures as required; note time and circumstances of injuries. Follow these emergency action procedures:
    a. Survey the scene.
        (1) Is it safe to assist victim(s).
    b. Conduct a Primary Survey
        (1) Check for unresponsiveness and Airway, Breathing, and Circulation.

c. Phone 911 for ambulance if necessary.
d. Conduct a Secondary Survey.
(1) Interview victim
(2) Check vital signs
(2) Head to toe exam
e. Transport to nearest medical facility as appropriate. Notify SSO. See directions and map in Appendix B for the nearest hospital emergency room.

C. Fire and Explosion Potential
1. Evacuate the area immediately and conduct a head count of all personnel. Notify fire department. Do not attempt to fight the fire. A fire extinguisher will be present on-site for immediate response by on OSHA certified person.

XII. LIST OF APPROPRIATE REFERENCE LITERATURE

A. Title 29 CFR 1910 - OSHA General Industry Standard
B. Title 29 CFR 1926 - OSHA Construction Standard
C. Title 49 CFR 171-173 - DOT Regulations

APPENDIX A.
A. Potential Hazards
1. Exposure to Hazardous Chemicals
a. Hazardous / Toxic Materials
(1) Possible that the presence of BTEX in the shallow soil and groundwater exists.
b. Hazard Assessment
(1) Moderately toxic chemicals through inhalation, ingestion, absorption and skin contact, but possess good warning properties.
(2) Highly flammable and explosive when vapor concentrations range from 0.8 to 6% by volume.

2. Chemical Listing
a. Benzene
(1) Permissible exposure limit (PEL) = 10 ppm with a ceiling of 50 ppm for 10 minutes. (NIOSH)
(2) Action Level = 0.05 ppm
(3) Immediately Dangerous to Life or Health (IDLH) at 3,000 parts per million
(a) Carcinogenic
(4) Physical Properties
(a) Vapor pressure = 75 mm mercury
(b) Lower explosion limit (LEL) = 1.3%
(c) Upper explosion limit (UEL) = 7.9%
(d) Class 1B flammable liquid
(5) Target Organs
(a) Central Nervous System (CNA)

(b) Skin
(c) Blood
(d) Eyes
(e) Respiratory system
(f) Bone marrow

b. **Toluene**

(1) Permissible exposure limit (PEL) = 200 ppm with a maximum exposure of 500 ppm for 10 minute peak.
(2) Action Level = 50 ppm
(3) Immediately Dangerous to Life or Health (IDLH) at 2,000 parts per million
(4) Physical Properties
(a) Vapor pressure = 22 mm mercury
(b) Lower explosion limit (LEL) = 1.2%
(c) Upper explosion limit (UEL) = 7.1%
(d) Class 1B flammable liquid
(5) Target Organs
(a) Central Nervous System (CNA)
(b) Skin
(c) Liver
(d) Kidneys

c. **Ethylbenzene**

(1) Permissible exposure limit (PEL) = 100 ppm
(2) Action Level = 50 ppm
(3) Immediately Dangerous to Life or Health (IDLH) at 2,000 parts per million
(4) Physical Properties
(a) Vapor pressure = 10 mm mercury
(b) Lower explosion limit (LEL) = 1.0%
(c) Upper explosion limit (UEL) =6.7%
(d) Class 1B flammable liquid
(5) Target Organs
(a) Central Nervous System (CNA)
(b) Skin
(c) Upper respiratory system
(d) Eyes

d. **Xylenes (ortho/meta/para isomers)**

(1) Permissible exposure limit (PEL) = 100 ppm with maximum exposure of 200 ppm for 10 minutes.
(2) Action Level = 50 ppm
(3) Immediately Dangerous to Life or Health (IDLH) at 1,000 parts per million
(4) Physical Properties
(a) Vapor pressure = 7/9/9 mm mercury
(b) Lower explosion limit (LEL) = 1/1.0/1.1%
(c) Upper explosion limit (UEL) = 7/7/7%
(d) Class 1B flammable liquid - o xylene
(e) Class 1C flammable liquid - m,p xylenes
(5) Target Organs

(a) Central nervous system
(b) Eyes
(c) Liver
(d) Kidneys
(e) Skin
(f) Blood
(g) Gastro-intestinal tract

First Aid: 1. Get medical assistance for all cases of overexposure. Eyes: flush thoroughly with water. Skin: wash with soap and water. Inhalation: remove to fresh air. Ingestion: if conscious, induce vomiting.