

**WORK PLAN
FOR
GROUNDWATER QUALITY INVESTIGATION
AT
ALBANY HILL MINI MART
ALBANY, CALIFORNIA**

*Proposed m/s look very close
to pit. Go to site to see
if there are other possible
locations. Get better idea of
extent of building footprint, etc.*

Prepared for:

Mr. Mohinder S. & Dr. Joginder Sikand
800 San Pablo Avenue
Albany, California 94706

June 28, 1999

ADVANCED ASSESSMENT AND REMEDIATION SERVICES



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ENVIRONMENTAL PROTECTION



ADVANCED ASSESSMENT AND REMEDiation SERVICES (AARS)

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June 28, 1999

Ms. Eva Chu
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway, 2nd Floor
Alameda, California 94502

**Subject: Submittal of Work Plan for Groundwater Quality Investigation
at Albany Hill Mini Mart, 800 San Pablo Avenue, Albany, California**

Dear Ms. Chu:

Enclosed is the work plan for a groundwater quality investigation at the above referred site. The investigation will be conducted in accordance with the guidelines and requirements of the Alameda County Department of Environmental Health (ACDEH) and the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB).

Please call me at (925) 363-1999 if you have any questions regarding this work plan.

Sincerely,

Advanced Assessment and Remediation Services

Tridib K. Guha, R.G., R.E.A.
Principal

cc: Mr. Mohinder S. Sikand, Albany Hill Mini Mart, Albany, California

TG/AHMNMRT.WP/Enclosure

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WORK PLAN
for
GROUNDWATER QUALITY INVESTIGATION
at
Albany Hill Mini Mart
800 San Pablo Avenue
Albany, California

1.0 INTRODUCTION

This work plan presents the scope of work to conduct a groundwater quality investigation at 800 San Pablo Avenue, Albany, California. The proposed scope of work is based on previous analytical results of soil and groundwater sampling conducted during tank removal. Analytical results of the soil samples from the tank cavities detected high concentrations of total petroleum hydrocarbons as gasoline (TPHg) as diesel (TPHd), benzene, toluene, ethylbenzene, xylenes (BTEX) and methyl tertiary butyl ether (MTBE). The proposed investigative work is designed to evaluate the extent of the subsurface contamination and whether hydrocarbon constituents have impacted the groundwater at the site.

2.0 PROJECT BACKGROUND

In March 1997, five underground fuel storage tanks (two 10,000 gallon gasoline tanks, one 6,000 gallon gasoline tank, one 2,000 gallon diesel tank, and one 750 gallon tank) were excavated and removed by Superior Underground Tank Services(SUTS). Soil samples were collected from excavations. Analytical results indicated that the TPHg and TPHd concentrations up to 3,800 mg/kg and 820 mg/kg respectively, were present in the soil. BTEX and MTBE constituents were also detected in soil samples. Analytical results of groundwater sample indicated elevated concentrations of TPHg, TPHd, BTEX and MTBE.

3.0 PROPOSED SCOPE OF WORK

The proposed site investigation will be conducted in accordance with the requirements and guidelines of ACDEH and California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB). AARS proposes:

Installation of three soil borings to 20 feet below ground surface (bgs), two borings downgradient to the former tank area. Convert these soil borings into groundwater monitoring wells (MW-1, MW-2 and MW-3). The locations of these monitoring wells are presented in Figure 1. Collect soil samples during drilling at every 5 feet intervals or at lithologic changes. Analyze selected soil samples (one sample per

boring) for total petroleum hydrocarbon as diesel (TPHd) as gasoline (TPHg) with BTEX/MTBE. The various tasks associated with this site investigation are discussed below.

Task 1: Project Preparation, Submit Work Plan and Acquire Necessary Permits

Information pertinent to the site will be reviewed and will include available literature, previous field work and other sources. A workplan will be prepared, including a health and safety plan, and will be submitted to the ACDEH, as well as to Albany Hill Mini Mart. All required permits will be obtained and field activities will be coordinated with the ACDEH. Site will be marked and Underground Service Alert will be notified prior to drilling of soil borings.

Task 2: Drill Soil Borings; Install three Monitoring Wells

Three soil borings (MW-1, MW-2 and MW-3) will be drilled to 20 feet bgs by using a truck mounted CME 55 or 75 drilling rig with 8-inch-diameter, hollow-stem augers, following the standard procedures and requirements of the ACDEH. Soil samples will be obtained with a split-spoon sampler lined with clean sampling sleeves. Soil samples will be collected at every 5 feet or at any lithologic changes, starting at 5 feet bgs. Soil borings will be logged lithologically using the Unified Soil Classification System (USCS) and soil samples will be screened in the field using a portable combustible gas indicator. The samples recovered for chemical analysis will be sealed with teflon tape and plastic caps and placed immediately into a cooler with ice and transported to a certified laboratory under chain-of-custody.

All three soil borings will be converted into groundwater monitoring wells. The groundwater monitoring wells will be constructed of clean, 2-inch diameter, flush threaded, schedule 40 PVC blank casing which will be extended from grade level to a depth estimated at the highest anticipated water level, and 2-inch-diameter screened casing with 0.010-inch perforations, extending to a depth of at least 10 feet into the water table. The annular space surrounding the screened portion will be backfilled with No. 2 Monterey sand (filter pack) to approximately 2 feet above the top of the screened section. A bentonite annular seal (approximately 1 foot thick) will be placed above the filter pack. The remaining annulus will be grouted with neat cement to the surface. A monument well box will be installed slightly above grade to minimize infiltration of surface waters. Locking watertight well caps will be installed to ensure the integrity of the well (Appendix A).

All drill cuttings will be stored at the site for proper disposal.

Task 3: Develop, Sample and Survey Monitoring Wells

Prior to sampling, the water level of the well will be recorded, and the presence of free product or sheen will be observed. The well will be properly developed prior to purging and sampling.

During purging, pH, temperature, and conductivity readings will be recorded. As these readings stabilize, indicating that the groundwater is representative of the water in the aquifer, the water samples will be collected in appropriate clean glassware. The samples will be placed in an iced cooler and transported to a California-certified laboratory.

To calculate the hydraulic gradient and groundwater flow direction of the shallow aquifer, the wells will be surveyed from a permanent reference mark at the top of the casing, to 0.01 foot accuracy in reference to mean sea level.

The removed water will be transferred to 55-gallon drums, labeled and stored at the site for proper disposal.

Task 4: Analyze Soil Samples

Soil samples will be transported to Priority Environmental Labs in Milpitas, a California-certified laboratory for analysis following proper chain of custody procedures. A minimum of 1 soil sample (capillary zone) from each boring will be analyzed for total petroleum hydrocarbons as gasoline (TPHg), using EPA Method 5030/8015M; benzene, toluene, ethylbenzene and xylenes (BTEX) using EPA Method 8020; Methyl Tertiary Butyl Ether (MTBE) using EPA Method 8020; total petroleum hydrocarbons as diesel (TPHd), using EPA Method 3510/8015M. The detection limits for both TPHd and TPHg is 1.0 milligram per kilogram (mg/kg) and the detection limits for BTEX/MTBE are 0.005 mg/kg.

Soil w/ highest TPHd, also analyze for PNAAs

Task 5: Analyze Water samples

Groundwater samples collected from the monitoring wells will be analyzed for TPHg, using EPA Method 5030/8015M; BTEX, using EPA Method 8020; MTBE, using EPA Method 8020; TPHd, using EPA Method 3510/8015M. The detection limits for TPHd and TPHg is 50 microgram per liter ($\mu\text{g/L}$) and the detection limits for BTEX/MTBE are 0.5 $\mu\text{g/L}$.

GW w/ highest TPHd, also analyze for PNAAs

Task 6: Analyze Data and Laboratory Results and Prepare Report

Upon completion of the sample analysis and background research, a detailed evaluation of results and available information will be conducted to assess the extent and nature of groundwater contamination. This will include:

- Interpretation of geologic and hydrogeologic information.
- Description of field and analytical procedures.
- Tabulation of soil and groundwater analytical results.
- A report presenting the findings of the investigation including conclusions and recommendations, will be prepared for submission to the ACDEH.

4.0 SITE SAFETY PLAN

All field procedures and activities related to the conduct of the site investigation will be in accordance with the site specific safety plan has been developed in compliance with applicable requirements of the California Department of Health Services (DHS) and the Federal and State Occupational Health and Safety Administration (OSHA and Cal-OSHA). The site safety plan is presented in APPENDIX B.

5.0. PROPOSED SCHEDULE OF ACTIVITIES

The proposed schedule includes completion of the following items:

<u>Items</u>	<u>Cumulative Days</u>
1. Work plan and health and safety plan	5
2. Receipt of the soil borings/monitoring well permit from the ACPW	10
3. Field work and sample collection	25
4. Chemical analyses	35
5. Data analyses, integration and interpretation	50
6. Report preparation	60

This schedule may be subject to revision depending on timely receipt of work plan approval and approval of boring/well permit to complete the site investigation. Any changes to the schedule will be communicated in advance to the appropriate agencies and parties involved.

6.0 PROPERTY OWNER AND CONSULTANT

Property owner: Mr. Mohinder S. & Dr. Joginder Sikand
Albany Hill Mini Mart
800 San Pablo Avenue
Albany, California 94706

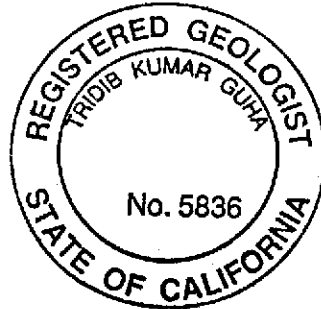
Contact: Mr. Mohinder Sikand (510) 526-8170

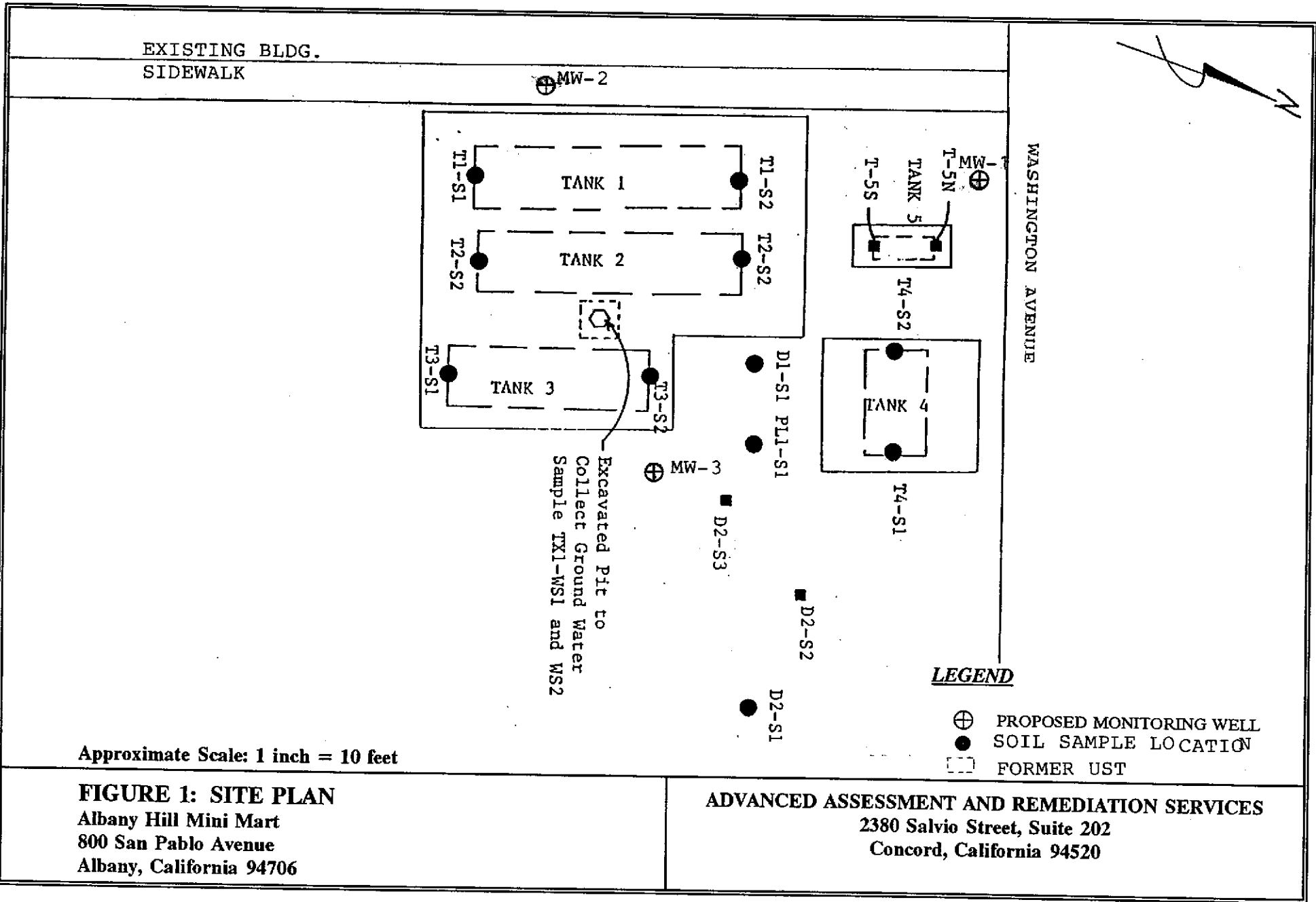
Consultant: Advanced Assessment and Remediation Services
2380 Salvio Street, Suite 202
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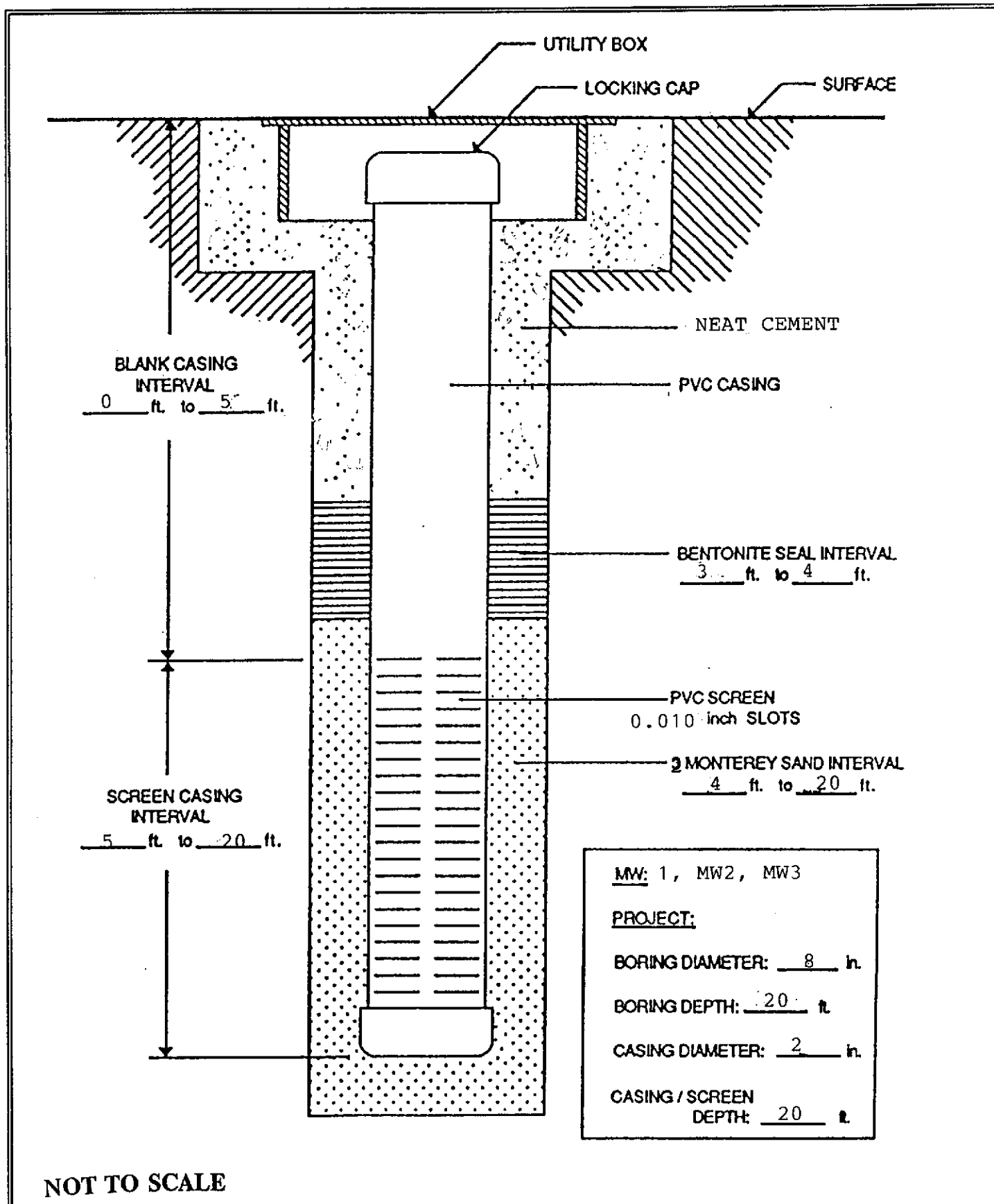
Contact: Tridib Guha (925) 363-1999



Tridib K. Guha, R.G.







NOT TO SCALE

PROPOSED WELL CONSTRUCTION DIAGRAM

Advanced Assessment and
Remediation Services
2380 Salvio Street, Suite 202
Concord, California 94520

SITE SAFETY PLAN
Albany Hill Mini Mart
800 San Pablo Avenue
Albany, California

INTRODUCTION

This site safety plan has been prepared pursuant to requirements of Alameda County Department of Environmental Health (ACDEH). This plan has been prepared in conformance with the Advanced Assessment and Remediation Services (AARS) Health and Safety Program. It addresses those activities associated with site characterization and will be implemented during all site investigations and field related activities. Compliance with this Site Safety Plan (SSP) is required of all AARS personnel, subcontractors, and third parties who enter the site. The requirements and parameters identified in this SSP will be subject to modification as warranted by existing site conditions or as work progresses. However, no changes will be made without the prior approval of the Project Safety Officer.

PROJECT SAFETY OFFICER

The Project Safety Officer has overall responsibility for the development, coordination, and implementation of the SSP and its conformance with the AARS Health and Safety Program. The Project Safety Officer will also be responsible for field implementation of the SSP. This will include communicating the site-specific requirements to all site personnel and third parties, and assuring compliance with the AARS Health and Safety Program.

AARS PERSONNEL AND SUBCONTRACTORS

All AARS personnel and Subcontractors will be responsible for reading, understanding, signing, and complying with these SSP requirements.

BACKGROUND

In March 1997, five underground fuel storage tanks (two 10,000 gallon gasoline tanks, one 6,000 gallon gasoline tank, one 2,000 gallon diesel tank, and one 750 gallon tank) were excavated and removed by Superior Underground Tank Services(SUTS). Soil samples were collected from excavations. Analytical results indicated that the TPHg and TPHd concentrations up to 3,800 mg/kg and 820 mg/kg respectively, were present in the soil. BTEX and MTBE constituents were also detected in soil samples. Analytical results of groundwater sample indicated elevated concentrations of TPHg, TPHd, BTEX and MTBE.

HAZARD SUMMARY

Major potential hazards to personal safety at the site include:

A. Physical Injury

Exposure to this type of injury can occur while working around heavy equipment during the different field operations; e.g., drilling and associated work. If the surface is wet slip, trip and fall can cause injury. Additionally, exposure to physical injury on this site is increased by the fact this work will be conducted at the sidewalk of a highway, where there will be frequent vehicular traffic.

B. Explosion and Fire

Petroleum products are highly flammable. Liquid petroleum product readily vaporizes from standing pools or saturated soil. Ignition sources of any kind; e.g., engines, impact sparking, and heat or arc from inappropriate equipment or instrumentation pose a major explosion and fire hazard.

C. Inhalation, Ingestion, or Absorption of toxic vapors, liquids, or dusts associated with petroleum hydrocarbons, and organic chemicals

Gasoline vapors in high concentrations (>300 parts per million (ppm)) can cause eye, nose, and throat irritation, headaches, dizziness, and anesthesia. Skin contact and/or absorption of gasoline may result in irritation and dermatitis. Contact with specific toxic petroleum hydrocarbon and organic chemicals substances such as the following volatile organic compounds (VOC): benzene, toluene, ethylbenzene, and xylenes (BTEX) may seriously affect an individuals health. Benzene is a suspected human carcinogen and along with toluene and xylenes can cause damage to the liver, kidneys, and central nervous system. Ethylbenzene is also known to be a skin irritant in both vapor and liquid forms.

D. Electrical Shock or Electrocutation

Electrical power lines are known to be in the vicinity of both drilling and hand augering operations.

E. Hearing Damage

Noise from the drilling will be both constant and extensive.

F. Sun Burn and Heat Stress

Due to time of the year, heat stress is not expected.

HAZARD ASSESSMENT

Consistent efforts will be made throughout the project to evaluate the chemical and physical hazards described above. Explosion, fire, and VOC exposure hazards will be evaluated through an air monitoring program. Electrical shock, hearing damage, physical damage, and heat stress will be minimized through a hazard reduction program.

AIR MONITORING PROGRAM

A. Fire and Explosion

A direct-reading portable GasTech combustible gas indicator (CGI) (calibrated to hexane) or a photo ionization detector (PID), which measures VOC concentrations in ppm or as a percentage of the lower explosive limit (LEL), will be used to evaluate the possible formation of flammable atmospheres around the work area. Continuous measurements will be obtained at the top of each borehole throughout the temporary well/monitoring well installation and soil boring operations.

B. Exposure to VOC's

Airborne concentrations of VOC's will be monitored with the CGI described above, and/or a PID. Measurements will be obtained from the top of each borehole and all soil samples.

HAZARD REDUCTION PROGRAM/ENGINEERING CONTROLS

Access to work areas will be limited by the Project Safety Officer to essential personnel.

Drill cuttings and soil will be stored on site on a plastic liner. The stored soils will be removed from the site at the earliest opportunity by the responsible party. Underground utilities will be identified through Underground Service Alert prior to operation, and power lines and pipelines will be shut down, locked-out and tagged, as appropriate.

A. Flammable Atmospheres

In the event that combustible gas indicator readings anywhere on the site exceed 10% of the LEL of gasoline (11,000 ppm), work will be suspended, monitoring will be continued as necessary to isolate the area of concern, and some or all of the following environmental controls will be implemented as appropriate:

1. Borings or wells emitting excessive VOC concentrations will be ventilated, capped, or shut in as necessary.
2. Drilling equipment will be bonded and grounded during all operations to control ignition sources.

B. Airborne Toxic Chemicals

Workers will be required to wear half-face air purifying respirators with organic vapor cartridges under the following circumstances:

1. If the worker is continuously exposed throughout the day to VOC vapors that exceed the permissible exposure level (time weighted average) (PEL-TWA) for gasoline (300 ppm), or
2. If the worker is exposed at any time to VOC vapors that exceed the permissible exposure level (short term exposure limit) (PEL-STEL) for gasoline (500 ppm).

Similar precautions will be taken with regard to other toxic chemicals such as BTEX components. If VOC vapors exceed 1,000 ppm, full-face air purifying respirators with organic vapor canisters will be worn.

C. Physical Contact with Contaminated Soil and Ground Water

Workers who must come in direct contact with contaminated soil or ground water for sampling purposes, will be required to wear protective gloves and/or necessary protective clothing to prevent skin contact.

D. Physical Hazards

Accidents will be prevented by personal protective equipment, engineering controls, and the exercise of reasonable caution during work activities. Traffic control will be performed for entire duration of drilling operation on the sidewalk.

E. Noise Exposures

All workers entering high-noise areas will be required to wear hearing protection (ear plugs or muffs).

H. Heat Stress

Workers will be provided beverages, shaded rest areas, and breaks, as needed, to prevent heat stress.

GENERAL MEASURES AND PROCEDURES

SAFETY INSPECTIONS

Walk-through safety inspections of the work area will be conducted daily before the start of work and as conditions change. The results of these surveys will be communicated to the work crews during

regularly scheduled "tailgate safety" meetings. The safety procedures and the day's planned operations will be discussed at these sessions.

PERSONAL PROTECTIVE EQUIPMENT

Field personnel involved in the site investigation will be required to be prepared with the following personal protective equipment:

- * Hard hats
- * Half-face air purifying respirators with organic vapor cartridges and dust/mist filters
- * Safety glasses with side-shields, or splash goggles
- * Tyvek coveralls and other suitable work clothing
- * Chemical-resistant gloves
- * Steel-toe boots or boot covers
- * Hearing protectors or ear plugs

EMERGENCY RESPONSE

The Project Safety Officer will have controlling authority during an emergency. In the event that this person is not available, the Alternate Safety Officer (driller) will be in charge. Emergency response organizations and contacts are listed at the end of this plan.

GENERAL SAFETY REQUIREMENTS

The following requirements will also be observed:

1. The Project Safety Officer has the authority to correct unsafe site conditions. All accidents, injuries, and potentially unsafe working conditions shall be reported to the Project Safety Officer immediately.
2. Eating, smoking, and drinking will be allowed only in designated offsite areas. Site personnel will wash their hands and faces thoroughly prior to eating or drinking.
3. Respirators will be cleaned, sanitized, inspected, and maintained by workers after each use.
4. Fire extinguisher will be onsite for use on equipment or small fires only.
5. An adequately stocked first aid kit will be onsite at all times during work activities.

All practical engineering and geological information, experience, and accepted practices will be employed as necessary to control any and all aspects of site safety while carrying out the proposed site investigation work.

LIST OF KEY PERSONNEL

Project Safety Officer: Tridib Guha, AARS (925) 363-1999
Alternate Safety Officer: Driller, CAL-NEV GEOEXPLORATION, Inc. (916) 853-0858
Client Contact: Mr. Mr. Mohinder S. Sikand (510) 526-8170

EMERGENCY TELEPHONE NUMBERS

. 911 Police, Fire and Ambulance
. (510) 525-3212 Carlson Convalescent Hospital, 3230 Carlson Blvd., El Cerrito, CA
. 1-800-258-6492 Hazardous Waste Hotline (California DHS)
. 1-800-342-9293 Poison Control Hotline

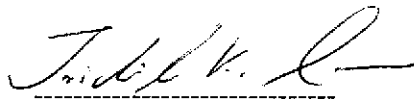
HOSPITAL ADDRESS AND ROUTE

Location and Directions:

Carlson Convalescent Hospital Emergency Room is located at 3230 Carlson Blvd., El Cerrito at the intersection of San Diego Street.

From the site go north on San Pablo Avenue. Turn left on Central Avenue, immediate left on Carlson Blvd. and left on San Diego Street.

This site safety plan is prepared by:



Tridib K. Guha
Project Safety Officer