ALAMEDA COUNTY
**HEALTH CARE SERVICES**
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION (LOP)
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

April 21, 1999

Ms. Karen Langmaid
San Lorenzo Unified School District
15510 Usher Street
San Lorenzo, CA 94580

STID: 4233
Re: Workplan for investigations at Arroyo School, located at 15701 Lorenzo Avenue, San Lorenzo, CA

Dear Ms. Langmaid,

This office has reviewed AllCal Property Services, Inc.'s workplan, dated April 16, 1999, proposing further investigations for the above site. This workplan is acceptable to this office with the following additional requirements:

- It appears that the on-site monitoring wells were initially surveyed to an arbitrary on-site datum instead of to Mean Sea Level. These wells must be surveyed to Mean Sea Level to an accuracy of 0.01 foot, prior to determining groundwater gradient directions.
- Per the Regional Water Quality Control Board's (RWQCB) guidelines, a second groundwater sample must be collected from proposed boring SB-1G and placed on hold. If the first groundwater sample collected from this boring identifies MTBE using Method 8020, RWQCB recommends that the second sample be analyzed for MTBE using Method 8260 to verify the initial concentrations.

The workplan shall be implemented within 45 days of the date of this letter (i.e., by June 02, 1999), and a report documenting the work shall be submitted within 45 days after completing field activities. Any requests for extensions, or modifications of the required tasks, shall be submitted to this office in writing.

If you have any questions or comments, please contact me at (510) 567-6763.

Sincerely,

Juliet Shin
Hazardous Materials Specialist

Cc. John Mrakovich
AllCal Property Services, Inc
27973 High Country Drive
Hayward, CA 94542-2530

ALLCAL PROPERTY SERVICES, INC.
ENVIRONMENTAL INVESTIGATIONS

April 16, 1999



**WORK PLAN FOR A SOIL AND GROUNDWATER INVESTIGATION AND SAMPLING OF FOUR EXISTING WELLS**

Karen Langmaid
San Lorenzo Unified School District
15510 Usher Street
San Lorenzo, CA 94580

RE: Arroyo School, 15701 Lorenzo Avenue, San Lorenzo, CA, STID: 4233

Dear Ms. Langmaid:

Thank you for contracting with Allcal Property Services, Inc. (ALLCAL) to write this work plan for a soil and groundwater investigation and sampling of four existing wells at the above-referenced property. The investigation and sampling of existing wells has been requested by the Alameda County Health Care Services Agency (ACHCSA) in their October 21, 1998, letter (attached) to you (Client).

**Background**

The following background is summarized from the ACHCSA's October 21, 1998, letter.

In January 1991, one 45-gallon, gasoline, underground storage tank (UST) and one 6,000-gallon, diesel UST were removed from the site (see attached SITE PLAN for tank locations).

Soil samples collected from the gasoline UST excavation were analyzed for total petroleum hydrocarbons as gasoline and diesel (TPHG and TPHD, respectively) and total lead. None of these samples was analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX). Results of chemical analyses detected only low concentrations of lead.

Soil samples collected from the diesel UST excavation were analyzed for TPHD, total oil & grease (TOG), and BTEX. Results of chemical analyses detected TPHD and TOG at concentrations of up to 300 parts per million (ppm) and 2,000 ppm, respectively.

27973 HIGH COUNTRY DRIVE • HAYWARD, CA 94542-2530 • (510) 581-2320 • FAX (510) 581-8490

As an investigation of soil contamination detected in the excavation of the former diesel UST, 16 soil borings were drilled around the location of the former UST in January 1991. Soil borings 14 through 16 were converted into monitoring wells MW-1 through MW-3, respectively. Results of chemical analyses of soil samples from these borings detected TPHD and TOG at concentrations of up to 1,720 ppm and 5,685 ppm, respectively. Results of chemical analyses of groundwater samples from the wells detected TPHD at concentrations of up to 300 parts per billion (ppb).

Four additional soil borings were drilled in the area of the former diesel UST on August 10, 1992, and one of the borings was converted into groundwater monitoring well MW-4. Results of chemical analyses of soil samples from these borings detected TPHD and TOG at concentrations of up to 210 ppm and 975 ppm, respectively, and low concentrations of toluene, ethylbenzene, and xylenes.

Quarterly groundwater monitoring of the site's four wells was conducted regularly for TPHD, TOG, and BTEX until March 23, 1993. Results of chemical analyses detected low concentrations of TPHD in one or more wells, with the exception of the April, 14, 1992, event when no TPHD was detected in any of the wells. TOG and BTEX were never detected, with the exception that toluene was detected at low concentrations in one or more wells on July 15, 1991, and April 14, 1992.

Details of the above work and results of chemical analyses can be found in various reports by LW Environmental Services, Inc. (LW) on file at the ACHCSA's office.

**ACHCSA Request for Additional Information**

In an August 10, 1992, letter (attached) to the Client, the ACHCSA requested additional work and information prior to considering site closure. The requested work consists of three parts. (1) Drill a soil boring immediately downgradient of the former gasoline UST excavation (see attached SITE PLAN) for the collection of one soil and one "grab" groundwater sample for chemical analysis. The soil sample is requested to be analyzed for TPHG and BTEX, and the groundwater sample is requested to be analyzed for TPHG, BTEX, and methyl tertiary butyl ether (MTBE). (2) Drill a soil boring adjacent to former soil boring SB-2 (see attached SITE PLAN ) for collection of soil samples at 5 and 10 feet below grade and for chemical analysis for TPHD and polynuclear aromatics (PNAs). (3) Sample the four existing groundwater monitoring wells and analyze the samples for TPHG, TPHD, BTEX, and MTBE.

## PROPOSED SCOPE OF WORK

The following scope of work is proposed for collection of the above additional information:

- Submit this work plan to the Client and the ACHCSA for their comment and approval.

- Sample the four existing groundwater monitoring wells and analyze the samples for TPHG, TPHD, BTEX, and MTBE. Measure depth to groundwater in each well and

determine groundwater gradient (direction of groundwater flow). The measured groundwater gradient will be used for selecting the location of a soil boring requested at the former gasoline UST.

- Obtain a soil boring permit from the Alameda County Public Works Agency (ACPWA), mark the locations of the proposed soil boring adjacent to former boring SB-2 and the proposed boring downgradient of the former gasoline tank, subcontract an underground utility locator to "clear" each boring location of underground utilities, and notify Underground Service Alert (USA).

- Drill two soil borings. Drill one boring adjacent to former boring SB-2 to a depth of about 10 feet and drill a second boring downgradient of the location of the former gasoline tank.

- Collect soil samples at depths of about 5 and 10 feet below grade in the soil boring adjacent to former boring SB-2 and analyze the samples for TPHD and PNAs. Collect one soil sample and a "grab" groundwater sample from the boring downgradient of the former gasoline tank; analyze the soil sample for TPHG and BTEX, and analyze the groundwater sample for TPHG, BTEX, and MTBE.

- Seal the borings with neat Portland cement.

- Prepare a report.

Details of the proposed scope of work are presented below.

**Sample Four Existing Groundwater Monitoring Wells**

ALLCAL proposes that the first task of the above scope of work consist of sampling the four existing wells and determining direction of groundwater flow. This is proposed because a review of seven of LW's gradient maps, ranging in date from January, 1991, through May, 1993, found that the north direction indicated on each map was in error by almost 180 degrees; subsequently, the direction of reported groundwater flow is not accurate. Also, the actual horizontal scale, as measured from map to map, was variable and, beginning with the December, 1992, map, the location of well MW-3 changed significantly from earlier maps.

An accurate base map and groundwater flow direction are important in selecting a downgradient location for the boring requested in the area of the former gasoline tank and in determining the direction of groundwater flow in the area of the former diesel UST.

Before sampling, depth-to-water will be measured to the nearest .05 foot in each well from the top-of-casing using an electronic water level meter, and each well will be checked for floating product using a dedicated disposable polyethylene bailer. If floating product is present, the thickness of

product in the bailer will be measured and recorded to the nearest .05 inch.

Sampling will be conducted by purging each well a minimum of 3 wetted well volumes with a dedicated polyethylene bailer. (Since a dedicated bailer will be used for each well, no decontamination will be necessary between sampling events.) Temperature, pH, and electrical conductivity will be monitored and purging will continue until they are stabilized. After purging is completed, water samples will be collected in laboratory-provided, 40-milliliter, sterilized, glass vials and 1-liter, amber bottles having Teflon-lined screw caps and no head space. The bottles will be immediately sealed and labeled to include: date, time, sample location, project number, and sampler name. The samples will be immediately stored in an iced-cooler for transport to a California Department of Health Services certified laboratory accompanied by chain-of-custody documentation.

Attachments A, B, C, and D document ALLCAL's protocols relative to monitoring well sampling procedures, sample handling procedures, waste handling and decontamination procedures, and quality assurance and quality control procedures, respectively.

Purge water will be stored on site in a labeled 55-gallon drum.

The water samples will be analyzed for TPHG, TPHD, BTEX, and MTBE. Additionally, a trip blank sample will be analyzed for TPHG and BTEX.

**Drill Soil Borings**

*Pre-field Activities*:

Prior to drilling soil borings, ALLCAL will: (1) obtain a soil boring permit from the ACPWA, (2) visit the site to mark the locations of the two proposed soil borings, (3) subcontract an underground utility locator to "clear" each location of underground utilities and notify USA, (4) subcontract a "direct push" driller having a C57 license to drill the soil borings, and (5) give 48 hours' notice to the ACHCSA prior to drilling the borings.

*Locations of Soil Borings*:

ALLCAL proposes to drill two soil borings (SB-2A and SB-1G) at the approximate locations shown in the attached SITE PLAN. At the request of the ACHCSA, boring SB-2A will be drilled adjacent to former boring SB-2 in the area of the former 6,000-gallon diesel tank, and boring SB-1G will be drilled at a location immediately downgradient of the former 45-gallon gasoline tank. Boring SB-1G is tentatively located based on groundwater flow direction determined by LW; this location may be changed based on groundwater flow direction to be determined by ALLCAL ( see above - **Sample Four Existing Groundwater Monitoring Wells**).

At the request of the ACHCSA, soil borings SB-2A and SB-1G will be drilled to depths of 10 feet and groundwater, respectively.

*Soil and Groundwater Assessment Methodology*:

The following discussion proposes soil boring and soil and groundwater sampling procedures. See Attachments B, C, and D for ALLCAL's sample handling procedures, waste handling and decontamination procedures, and quality assurance and quality control procedures.

(1) Soil Boring and Soil and Groundwater Sampling Procedures

The soil borings are proposed to be drilled with the Geoprobe System, small diameter (about 2-inch) drill casing, direct-push technology. Soil samples will be continuously collected as core into a polyethylene terephthalate glycol (PETG) liner in 3- or 4-foot depth intervals. The liner is contained within the 2-inch drill casing. The drill casing and enclosed PETG liner, will be hydraulically driven by drill rods in 3- or 4-foot depth intervals to the total depth of each boring. After driving each 3- or 4-foot interval, the drill casing and enclosed liner will be retrieved and the soil core will be examined for apparent contamination (inspected visually for discoloration and sniffed for odor) and construction of lithologic logs.

At the request of the ACHCSA, soil samples will be collected from the boring of SB-2A at the depths of 5 and 10 feet for chemical analyses, and one soil and one "grab" groundwater sample will be collected from the boring of SB-1G for chemical analyses. The depth of the soil sample collected from the boring of SB-1G will depend on the presence or absence of apparent contamination in the soil core. If apparent contamination is present by the above inspections, a soil sample will be collected where the contamination appears the greatest. If no apparent contamination is apparent, a soil sample will be collected at the depth of about 10 feet or immediately above groundwater if groundwater is encountered before the depth of 10 feet.

To minimize the potential for cross-contamination, the drill casing will be cleaned with trisodium phosphate or Alconox type detergent and rinsed with clean tap water between sampling events and prior to beginning each boring.

After encountering groundwater in boring SB-1G, a "grab" groundwater sample will be collected by using a Geoprobe, stainless-steel, discrete water sampler. "Grab" samples are obtained by using an expendable drive point to drive the sampler to the sampling depth, then an internal screen is exposed to allow water to enter the sampler. Water will be collected from the sampler with a stainless-steel bailer. If water is slow to enter the sampler, the sampler may be retrieved and polyvinyl chloride screen and casing may be installed to see if the boring will fill with groundwater within a reasonable time period of the work day.

After all soil and groundwater samples are collected, each boring will be sealed to grade with neat Portland Cement Type I/II.

Boring logs will be prepared for each soil boring. The soil will be logged according to the Unified Soil Classification System by a California Registered Geologist.

Drill cuttings and rinsate will be stored on site in labeled, 5-gallon pails. The labels will show contents, date stored, suspected contaminant, expected date of removal, company name, contact person, and telephone number. Maintenance and security of the pails and their contents are the Client's responsibility. After the soil and groundwater samples are characterized by chemical analysis, ALLCAL, at the Client's request, can assist in properly disposing of the pails and their contents at an additional cost.

(2) Sample Handling Methods

Soil samples collected for chemical analyses will be preserved in their PETG liners with no head space. The ends of the liners will be covered with aluminum foil or Teflon sheeting followed by plastic end-caps.

"Grab" groundwater samples will be stored with no head space in laboratory-provided, 40-milliliter, HCL-preserved VOAs having Teflon-lined plastic caps.

Both soil and groundwater samples will be labeled to show site name, project number, date, time, sample name, depth collected, and sampler name; and stored in an iced-cooler.

(3) Chemical Analyses

The soil samples collected from the boring of SB-2A will be analyzed for TPHD and PNAs.

The soil sample from the boring SB-1G will be analyzed for TPHG and BTEX, and the "grab" groundwater sample will be analyzed for TPHG, BTEX, and MTBE.

All samples will be delivered under chain-of-custody to a California Department of Health Services certified laboratory for chemical analysis. Analysis for TPHD and PNA will be by EPA Methods GCFID 5030/8015 and 8270, respectively. Analysis for TPHG, BTEX, and MTBE will be by EPA Methods GCFID 5030/8015, 8020, and 8020, respectively.

**Report**

ALLCAL will document the work conducted and analytical results in a report. The report will include: copies of all permits required to conduct the work, a site plan showing location of the soil borings, graphic boring logs, results of chemical analyses, copies of certified analytical reports with chains-of-custody, a groundwater gradient map, and copies of well purging field records.

The report will be certified by a California Registered Geologist.

## SITE HEALTH AND SAFETY PLAN

A Site Health and Safety Plan for conducting work under this work plan is attached.

**TIME SCHEDULE**

The projected time schedule for implementation of the activities described in this work plan is presented below. The schedule reflects a relatively problem-free program. However, delays in the work plan review, permitting, or laboratory analyses could lengthen the project schedule. Access difficulties, adverse weather, and regulator review could also delay the proposed time schedule. ALLCAL will make every effort to adhere to the project schedule.

Week 1: ALLCAL submits work plan to ACHCSA for approval and permits to the ACPWA and the City of Oakland for soil borings. Work plan approved; soil boring permits received; and drilling company subcontracted.

Week 2: ALLCAL drills the soil borings and submits groundwater samples for chemical analyses.

Week 3: Chemical analyses are received.

Week 5: ALLCAL submits a report to Client and ACHCSA.

If you have any questions, please call me at (510) 581-2320.

Sincerely,

John V. Mrakovich, Ph.D.
Registered Geologist No. 4665

ALAMEDA COUNTY
**HEALTH CARE SERVICES**
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
(510) 337-9335 (FAX)

October 21, 1998

Karen Langmaid
San Lorenzo Unified School District
15510 Usher Street
San Lorenzo, CA 94580

Re: Required investigations at Arroyo School, located at 15701 Lorenzo Avenue, San Lorenzo, CA
STID: 4233

Dear Ms. Langmaid,

In January 1991, one 45-gallon gasoline underground storage tank (UST) and one 6,000-gallon diesel UST were removed from the above site. The diesel UST was noted to be rusted and corroded with a ¼-inch leaking seam at the time of removal. The bottom of the diesel UST was measured to be ~10-feet below ground surface (bgs). Three soil samples were collected from the bottom of the diesel excavation at roughly 10- to 11-feet bgs. Six soil samples were collected from stockpiled soil resulting from the excavation. All of these soil samples were analyzed for Total Petroleum Hydrocarbons as diesel (TPHD), Total Oil & Grease (TOG), and benzene, toluene, ethylbenzene, and total xylenes (BTEX). Analyses of these soil samples identified up to 300 parts per million (ppm) TPHD and 2,000ppm TOG from the bottom of the diesel UST excavation pit.

The 45-gallon UST was noted to be rusted without any holes. The tank bottom was measured to be at roughly 2.5-feet bgs. Two soil samples were collected from the tank backfill at approximately 2.5- to 3.5-feet bgs, and two additional soil samples were collected from below the tank backfill from roughly 4- to 5-feet bgs. All four soil samples were analyzed for Total Petroleum Hydrocarbons as gasoline (TPHG), TPHD, and Total Lead. None of the samples were analyzed for BTEX. Low levels of lead were identified below threshold limits and no TPHG or TPHD were identified above detection limits.

In response to the contamination identified at the former diesel UST excavation, 16 borings (Borings 1 through 16) were emplaced around this location in January 1991 to further define the extent of soil contamination. Boring 1 was drilled down to 20.5 feet bgs and encountered groundwater at 17-feet bgs. Borings 2 through 13 were drilled down to 15.5-feet bgs. Three of the borings (Borings 14 through 16) were converted into monitoring wells (MW-1 through MW-3), whose borings were extended down to 25-feet bgs. These wells were screened from 15- to 25-feet bgs. Soil samples were collected from all 16 borings at varying depths down to 20-feet bgs and analyzed for TPHD, BTEX, and TOG. Analyses results identified up to 5,685ppm TOG, 1,720ppm TPHD, and low levels of toluene, ethylbenzene, and total xylenes. Groundwater samples collected from the three monitoring wells were analyzed for TPHD, BTEX, and TOG, and analyses results identified up to 300 parts per billion (ppb) TPHD.

On August 10, 1992, four borings (B14, B15, B16, and MW4) were drilled at the site, and MW4 was converted into a fourth monitoring well. Soil samples were collected from all four borings and analyzed for TPHD, BTEX, and TOG. Analyses of these soil samples identified up to 210ppm TPHD, 975ppm TOG, and low levels of toluene, ethylbenzene, and total xylenes.

Quarterly groundwater monitoring of the site's monitoring wells was conducted regularly up until March 23, 1993. Low levels of TPHD were still being identified from all four of the site's monitoring wells when quarterly groundwater monitoring of these wells were discontinued.

On February 28, 1995, this office sent the San Lorenzo Unified School District a letter requesting that groundwater monitoring continue for these wells. To date, it appears that no further groundwater sampling was conducted.

Although the last groundwater sampling event in March 1993 only identified low levels of TPHD in the wells, this office is requesting that the following additional information be collected and submitted to this office prior to our considering this site for closure:

- Soil samples from the gasoline UST excavation were never analyzed for BTEX constituents, which are the most toxic constituents in gasoline. Additionally, no groundwater samples were collected from this area to confirm that there were no releases from this former tank into groundwater. This office is requesting that a temporary boring be placed immediately downgradient of the former gasoline tank pit so that one soil sample and one groundwater sample can be collected. The soil sample shall be analyzed for TPHG and BTEX, and the groundwater sample shall be analyzed for TPHG, BTEX, and Methyl Tertiary Butyl Ether (MTBE). Per Senate Bill 521 (1997), all sites with petroleum UST leaks are required to analyze for MTBE prior to closure of the site. MTBE was used as an oxygenate in gasoline since the late 1970's.
- One additional temporary boring shall be placed in the area where the highest levels of TPHD-contaminated soil were identified, i.e., near Boring 2, and soil samples shall be collected from 5- and 10-feet bgs and analyzed for TPHD and Polynuclear Aromatics (PNAs) using Method 8270. PNAs, such as napthalene, are the most toxic components of diesel, and this analysis is essential for determining whether the residual diesel concentrations in the soil will pose any future volatilization threats to occupants of the site.
- An additional round of groundwater samples shall be collected from the four existing monitoring wells on the site and groundwater samples shall be analyzed for TPHG, TPHD, BTEX, and MTBE.

- **A work plan addressing the above work shall be submitted to this office within 45 days of the date of this letter (i.e., by December 2, 1998). Field work must commence within 45 days after approval of the workplan. A report documenting the additional sample collection alongside the former gasoline UST, as well as sampling of the existing monitoring wells, shall be submitted to this office within 45 days after completing field activities.**
- This office needs information on where the former gasoline UST was located in reference to the former diesel UST. Please submit one site plan showing the locations of both of these USTs.

Additional sampling is required to determine whether the contaminant plume has stabilized or is attenuating prior to considering this site for closure. If the contaminant plume has not stabilized, continued investigations may be needed to determine whether this plume will pose any future threats to potential sensitive receptors such as occupants of the site. Additionally, San Lorenzo Creek is located approximately 1,300 feet downgradient of the site and several irrigation wells and one EBMUD municipal well is located 1,000- to 1,400-feet downgradient of the site.

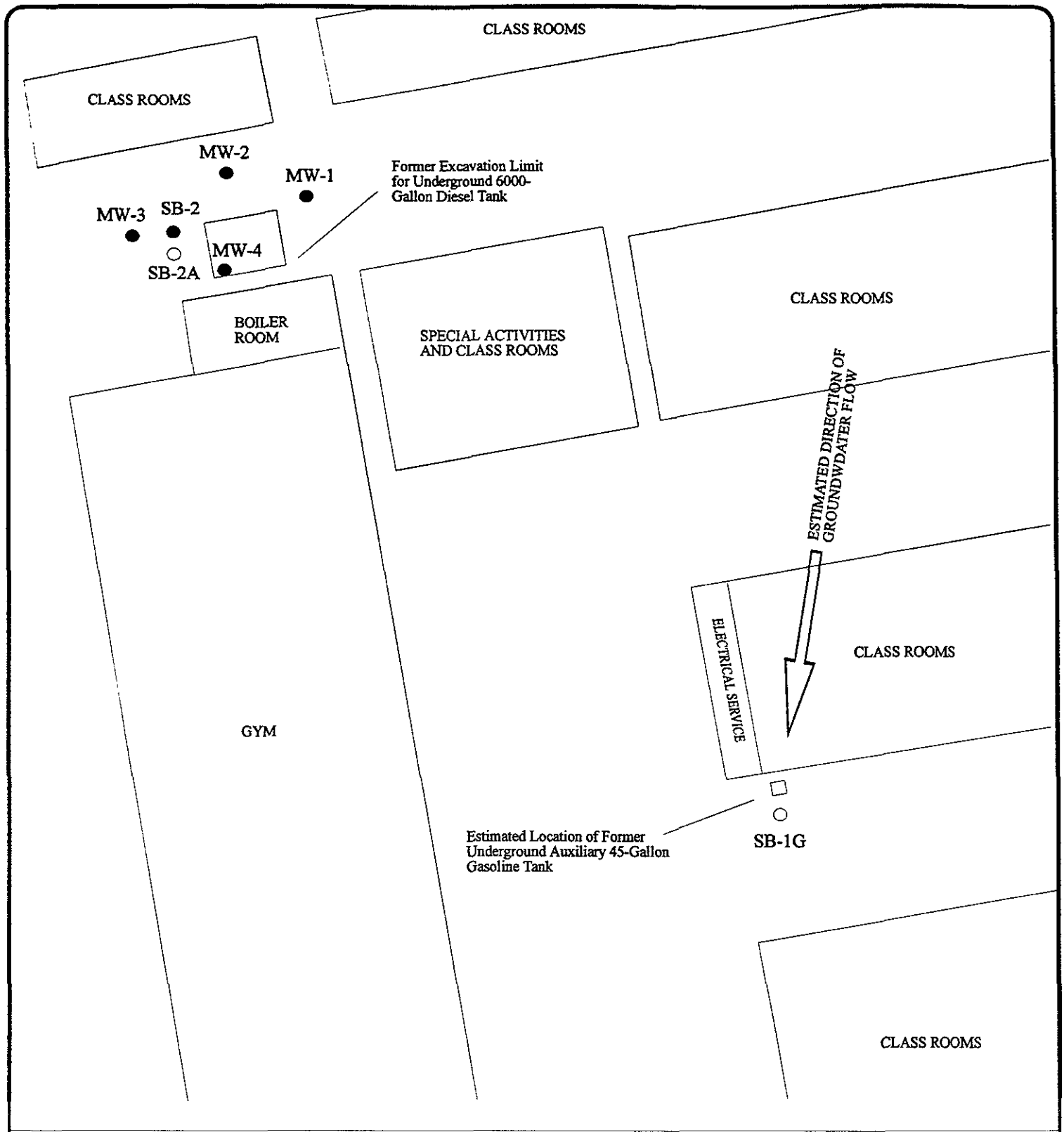
The State Water Resources Control Board manages an Underground Storage Tank Cleanup Fund (Fund) to help eligible Responsible Parties to obtain reimbursement for costs of investigating and remediating releases from petroleum underground storage tanks. You are encouraged to apply. To obtain an Application Package, contact the Fund at the following:

State Water Resources Control Board
Division of Clean Water Programs
UST Cleanup Fund
P.O. Box 944212
Sacramento, CA 944212
Telephone: (916) 227-4307

If you have any questions or comments, please contact me at (510) 567-6763.

Sincerely,

Juliet Shin
Hazardous Materials Specialist




## Legend

MW-1/SB-2

● Name and Location of Groundwater Monitoring Well/Soil Boring

SB-2A

Proposed Name and Location of Soil Boring

0 50

Approximate Scale (ft)

N

ALLCAL **PROPERTY SERVICES**

# SITE PLAN

ARROYO SCHOOL
15701 LORENZO AVENUE
SAN LORENZO, CA 94577

## ATTACHMENT A

## GROUNDWATER SAMPLING PROCEDURES

Groundwater monitoring wells will not be sampled until at least 48 hours after well development. Groundwater samples will be obtained using either a bladder pump, clear Teflon bailer, or disposable polyethylene bailer. Prior to sampling, sampling equipment will be thoroughly decontaminated to prevent introduction of contaminants into the well, or a factory sealed, dedicated, disposable bailer will be used minimize the potential for cross-contamination. Monitoring wells will be sampled after three to five wetted casing volumes of groundwater have been evacuated and after the ALLCAL sampler determines that water representative of the formation is being obtained. The well will be purged until conductivity, temperature, and pH have been stabilized (three consecutive conductivity reading within 15% of one another). If the well is emptied before three to five well volumes are removed, the sample shall be taken when the water level in the well recovers to 80% of its initial water level or better.

ALLCAL will also measure the thickness of any floating product in the monitoring wells using a probe or clear Teflon bailer. The floating product will be measured after well development but prior to the collection of groundwater samples. If floating product is present in the well, ALLCAL will recommend to the client that product removal be commenced immediately and reported to the appropriate regulatory agency.

Unless specifically waived or changed by the local, prevailing regulatory agency, water samples shall be handled and preserved according to the latest EPA methods as described in the Federal Register (Volume 44, No.233, Page 69544, Table ll) for the type of analysis to be performed.

MEASUREMENTS

Purged Water Parameter: During purging, discharged water will be measured for the following parameters.

| Parameter | Units of Measurement |
|---|---|
| pH | Units |
| Electrical conductivity | Umhos |
| Temperature | Degrees F |
| Depth to Water | Feet/Tenths/Hundredth |
| Volume of Water Discharged | Gallons |

Documentation: All parameter measurements shall be documented in writing on ALLCAL development logs.

## ATTACHMENT B

## SAMPLE HANDLING PROCEDURES

Soil and groundwater samples will be packaged carefully to avoid breakage or contamination and will be delivered to the laboratory in an iced-cooler. Sample bottle/sleeve lids will not be mixed. All sample lids will stay with the original containers.

Samples will be stored in iced-coolers to maintain custody, control temperature, and prevent breakage during transportation to the laboratory. Ice, blue ice, or dry ice will be used to cool samples during transport to the laboratory.

Each sample will be identified by affixing a label on the container(s). This label will contain the site identification, sample identification number, date and time of sample collection, and the collector's initials.

Soil samples collected in brass or stainless-steel tubes will be preserved by covering the ends with Teflon tape and capping with plastic end-caps. The tubes will be labeled, sealed in quart-size bags, and placed in an iced-cooler for transport to the laboratory.

All groundwater sample containers will be precleaned and will be obtained from a State Department of Health Services certified analytical laboratory.

A chain-of-custody form will be completed for all samples and accompany the sample cooler to the laboratory. All sample transfers will be documented in the chain-of-custody. All field personnel are personally responsible for sample collection and the care and custody of collected samples until the samples are transferred or properly dispatched.

The custody record will be completed by the field technician or professional who has been designated as being responsible for sample shipment to the appropriate laboratory. The custody record will include the following information: site identification, name of person collecting the sample(s), date and time sample(s) were collected, type of sampling conducted (composite/grab), location of sampling station, number and type of containers used, and signature of the person relinquishing samples to another person with the date and time of transfer noted.

## ATTACHMENT C

## WASTE HANDLING AND DECONTAMINATION PROCEDURES

Decontamination: Any drilling, sampling, or field equipment that comes into contact with soil or groundwater will be decontaminated prior to its use at the site and after each incident of contact with the soil or groundwater being investigated. Decontamination is essential to obtain samples that are representative of environmental conditions and to accurately characterize the extent of soil and groundwater contamination. Hollow-stem auger flights, the drill bit, and all other soil boring devices will be steam-cleaned between the drilling of each boring.

All sample equipment, including the split-spoon sampler and brass or stainless-steel tubes, will be cleaned by washing with trisodium phosphate or Alconox detergent, followed by rinsing with tap water. Where required by specific regulatory guidelines, a nonphosphate detergent will be used.

Waste Handling: Waste materials generated during site characterization activities will be handled and stored as hazardous waste and will be stored on site in appropriately labeled containers. Waste materials anticipated include: excavated soil, drill cuttings, development and purge water, water generated during aquifer testing, water generated during decontamination, and used personnel protection equipment such as gloves and Tyvek. The site owner will be responsible for providing the storage containers and will be responsible for the disposal of the waste materials. Drill cuttings from individual borings will be stored separately in drums or covered by plastic sheeting, and the appropriate disposal procedure will be determined by the site owner following receipt of the soil sample analytical results. Storage containers will be labeled to show material stored, known or suspected contaminant, date stored, expected removal date, company name, contact, and telephone number.

# ATTACHMENT D

## QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

The overall objectives of the field sampling program include generation of reliable data that will support development of a remedial action plan. Sample quality will be checked by the use of proper sampling, handling, and testing methods. Additional sample quality control methods may include the use of background samples, equipment rinsate samples, and trip and field blanks. Chain-of-custody forms, use of a qualified laboratory, acceptable detection limits, and proper sample preservation and holding times also provide assurance of accurate analytical data.

A quality assurance and quality control (QA/QC) program may be conducted in the field to ensure that all samples collected and field measurements taken are representative of actual field and environmental conditions and that data obtained are accurate and reproducible. These activities and laboratory QA/QC procedures are described below.

Field Samples: Additional samples may be taken in the field to evaluate both sampling and analytical methods. Three basic categories of QA/QC samples that may be collected are trip blanks, field blanks, and duplicate samples.

Trip blanks are a check for cross-contamination during sample collection, shipment, and laboratory analysis. They are water samples that remain with the collected samples during transportation and are analyzed along with the field samples to check for residual contamination. Analytically confirmed organic-free water will be used for organic parameters and deionized water for metal parameters. Blanks will be prepared by the laboratory supplying the sample containers. The blanks will be numbered, packaged, and sealed in the same manner as the other samples. One trip blank will be used for each sample set of less than 20 samples. At least 5% blanks will be used for sets greater than 20 samples. The trip blank is not to be opened by either the sample collectors or the handlers.

The field blank is a water sample that is taken into the field and is opened and exposed at the sampling point to detect contamination from air exposure. The water sample is poured into appropriate containers to simulate actual sampling conditions. Contamination due to air exposure can vary considerably from site to site.

The laboratory will not be informed about the presence of trip and field blanks, and false identifying numbers will be put on the labels.

Duplicate samples are identical sample pairs (collected in the same place and at the same time), placed in identical containers. For soils, adjacent sample liners will be analyzed. For the purpose of data reporting, one is arbitrarily designated the sample, and the other is designated as a duplicate sample. Both sets of results are reported to give an indication of the precision of sampling and analytical methods.

The laboratory's precision will be assessed without the laboratory's knowledge by labeling one of the duplicates with false identifying information. Data quality will be evaluated on the basis of the duplicate results.

Laboratory QA/QC: Execution of a strict QA/QC program is an essential ingredient in high-quality analytical results. By using accredited laboratory techniques and analytical procedures, estimates of the experimental values can be very close to the actual value of the environmental sample. The experimental value is monitored for its precision and accuracy by performing QC tests designed to measure the amount of random and systematic errors and to signal when correction of these errors is needed.

The QA/QC program describes methods for performing QC tests. These methods involve analyzing method blanks, calibration standards, check standards (both independent and the United States Environmental Protection Agency-certified standards), duplicates, replicates, and sample spikes. Internal QC also requires adherence to written methods, procedural documentation, and the observance of good laboratory practices.

# SITE HEALTH AND SAFETY PLAN

Site: **Arroyo School**
**15701 Lorenzo Avenue**
**San Lorenzo, CA 94580**

Plan Prepared by: **John Mrakovich** Date: **4/15/98**

## 1.0 KEY PERSONNEL AND RESPONSIBILITIES

| | | |
|---|---|---|
| Project Manager: | **John Mrakovich** | **(510) 582-2320** |
| Site Safety Manager: | **John Mrakovich** | |
| Alternate Site Safety Manager: | **N/A** | |
| Field Team Members: | **N/A** | |

Agency Reps: **Alameda County Environmental Health Services (510) 567-6700**

## 2.0 JOB HAZARD ANALYSIS

### 2.1 OVERALL HAZARD EVALUATION

Hazard Level: High ( ) Moderate ( ) Low (X) Unknown ()
Hazard Type: Liquid (X) Solid (X) Sludge ( ) Vapor/Gas (X)

Known or suspected hazardous materials present on site:

**Gasoline and Diesel Chemicals.**

Characteristics of hazardous materials included above (complete for each chemical presents):

Corrosive ( ) Ignitable (X ) Toxic (X) Reactive ( ) Volatile (X) Radioactive ( )
Biological Agent ( )

Exposure Routes: Inhalation (X ) Ingestion (X) Contact (X)

### 2.2 JOB-SPECIFIC HAZARDS

For each labor category specify the possible hazards based on information available (eg., Task-driller, Hazards-trauma from drill rig accidents, etc.). For each hazard, indicate steps to be taken to minimize the hazard.

Driller/Helper/Geologist-Trauma from drilling rig accidents- wear hard hat, gloves, steel-toed boots.

The following additional hazards are expected on site (i.e., snake infested area, extreme heat, etc.):

**Temporary open boreholes.**

Measures to minimize the effects of the additional hazards are:

**Protect with barricades, caution tape, or traffic cones when unattended.**

3.0 MONITORING PLAN

3.1 (a) Air Monitoring Plan

Action levels for implementation of air monitoring. Action levels should be based on published data available on contaminants of concern. Action levels should be set by persons experienced in industrial hygiene.

| Level (i.e., .5 ppm) | Action Taken (i.e., commence perimeter monitoring) |
|---|---|
| **5 ppm** | **Stop work and monitor until air level drops below 5 ppm.** |

(b) Air Monitoring Equipment

Outline the specific equipment to be used, calibration method, frequency of monitoring, locations to be monitored, and analysis of samples (if applicable).

If air monitoring is not to be implemented for this site, explain why:

**Air monitoring will not be conducted because excessive vapors are not expected based on past work by LW.**

3.2 Personnel Monitoring (Include hierarchy of responsibilities decision making on the site)

**N/A**

4.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

Equipment used by employees for the site tasks and operations being conducted. Be Specific (eg., hard hat, impact resistance goggles, other protective gloves, etc.).

Hard hat, protective gloves (when necessary), steel-toed boots.

## 5.0 SITE CONTROL AND SECURITY MEASURES

The following general work zone security guidelines should be implemented:

- Work zone shall be delineated with traffic cones.
- Boreholes shall be delineated with traffic cones when drilling and sampling activities are not actually taking place.
- Visitors will not be allowed to enter the work zone unless they have attended a project safety briefing.

## 6.0 DECONTAMINATION PROCEDURE

List the procedures and specific steps to be taken to decontaminate equipment and PPE.

**Wash equipment with a trisodium phosphate or Alconox solution and rinse with clean potable water.**

## 7.0 TRAINING REQUIREMENTS

Prior to mobilization at the job site, employees will attend a safety briefing. The briefing will include the nature of the wastes and the site, donning personal protection equipment, decontamination procedures and emergency procedures.

## 8.0 MEDICAL SURVEILLANCE REQUIREMENTS

If any task requires a very high personnel protection level (OSHA Level A or B), personnel shall provide assurances that they have received a physical examination and they are fit to do the task. Also personnel will be instructed to look for any symptom of heat stress, heat stroke, heat exhaustion or any other unusual symptom. If there is any report of that kind it will be immediately followed through, and appropriate action will be taken.

## 9.0 STANDARD OPERATION PROCEDURES

Allcal Property Services, Inc. (ALLCAL) is responsible for the safety of its employees on site. Each contractor shall provide all the equipment necessary to meet safe operation practices and procedures for their personnel on site and be responsible for their safety.

A "Three Warning" system is utilized to enforce compliance with Health and Safety procedures practices which will be implemented at the site for worker safety:

- Eating, drinking, chewing gum or tobacco, and smoking will be allowed only in designated areas.

- Wash facilities will be utilized by workers in the work areas before eating, drinking, or use of the toilet facilities.
- Containers will be labeled identifying them as waste, debris, or contaminated clothing.
- All drilling work will comply with regulatory agency requirements.
- All site personnel will be required to wear hard hats and advised to take adequate measures for self protection.
- Any other action which is determined to be unsafe by the site safety officer will be taken.

## 10.0 CONFINED SPACE ENTRY PROCEDURES

No one is allowed to enter any confined space operation without proper safety measures. Specifically in case of an excavated tank pit no one should enter at any time.

## 11.0 EMERGENCY RESPONSE PLAN

Relevant phone numbers:

| Person | Title/Phone No. |
|---|---|
| Karen Langmaid | SLUSD (510) 317-4834 |
| John Mrakovich | Project Manager (510) 581-2320 |
| Fire | 911 |
| Police | 911 |
| Ambulance | 911 |

## HEALTH AND SAFETY COMPLIANCE STATEMENT

I have received and read a copy of the project Health and Safety Plan.

I understand that I am required to have read the aforementioned document and have received proper training under the Occupational Safety and Health Act (29 CFR, Part 1910.120) prior to conducting site activities at the site.

_____ _____

Signature Date

_____ _____

Signature Date