February 3, 2000

Ms. eva chu
Alameda County Health Care Services Agency
Environmental Protection
1131 Harbor Bay Parkway
Alameda, CA 94502-6577

Re: Workplan for Groundwater Monitoring Well Installation, 1347 Park Street, Alameda, California

Dear Ms. chu:

ALLCAL Environmental (ALLCAL) is pleased to submit this workplan on behalf of Mr. Steve Simi (Client) for installing a groundwater monitoring well (MW-1) at the above referenced site. The Alameda County Health Care Services Agency (ACHCSA) required this workplan in a December 13, 1999, letter (attached).

BACKGROUND

A 1,500-gallon, heating oil, underground storage tank (UST) was removed from the site in November, 1995 (see attached SITE PLAN). On that date, soil samples collected from the sidewalls of the tank excavation, at a depth of about 11 feet, detected elevated diesel range hydrocarbons. A soil sample collected from the floor of the excavation, at a depth of about 14 feet, was non-detectable for hydrocarbons. In December, 1995, over-excavation was conducted, and a soil sample was collected from each sidewall at a depth of about 12 feet. Three of the four samples detected elevated diesel range hydrocarbons. The excavation was backfilled with clean imported fill material and re-surfaced to match the existing grade.

In September, 1998, GRIBI Associates conducted a soil and groundwater investigation to assess the extent of the contamination. Three borings (IB-1, IB-2, and IB-3) were hand-augered to depths ranging from 11.5 to 13 feet at locations southeast, west, and southwest of the former UST. Elevated petroleum hydrocarbons were detected in soil and groundwater samples collected from borings IB-1 and IB-2 (southeasterly and southwesterly of the former UST).

Based on results of the above soil and groundwater investigation, the ACHCSA has requested that a groundwater monitoring well be installed southeasterly of the former UST to further evaluate groundwater quality beneath the site.

27973 HIGH COUNTRY DRIVE • HAYWARD,CA 94542-2530 • (510)581-2320 • FAX (510) 581-8490
e-mail • mrakovich@worldnet.att.net

February 3, 2000

Ms. eva chu
Alameda County Health Care Services Agency
Environmental Protection
1131 Harbor Bay Parkway
Alameda, CA 94502-6577

Re: Workplan for Groundwater Monitoring Well Installation, 1347 Park Street, Alameda, California

Dear Ms. chu:

ALLCAL Environmental (ALLCAL) is pleased to submit this workplan on behalf of Mr. Steve Simi (Client) for installing a groundwater monitoring well (MW-1) at the above referenced site. The Alameda County Health Care Services Agency (ACHCSA) required this workplan in a December 13, 1999, letter (attached).

BACKGROUND

A 1,500-gallon, heating oil, underground storage tank (UST) was removed from the site in November, 1995 (see attached SITE PLAN). On that date, soil samples collected from the sidewalls of the tank excavation, at a depth of about 11 feet, detected elevated diesel range hydrocarbons. A soil sample collected from the floor of the excavation, at a depth of about 14 feet, was non-detectable for hydrocarbons. In December, 1995, over-excavation was conducted, and a soil sample was collected from each sidewall at a depth of about 12 feet. Three of the four samples detected elevated diesel range hydrocarbons. The excavation was backfilled with clean imported fill material and re-surfaced to match the existing grade.

In September, 1998, GRIBI Associates conducted a soil and groundwater investigation to assess the extent of the contamination. Three borings (IB-1, IB-2, and IB-3) were hand-augered to depths ranging from 11.5 to 13 feet at locations southeast, west, and southwest of the former UST. Elevated petroleum hydrocarbons were detected in soil and groundwater samples collected from borings IB-1 and IB-2 (southeasterly and southwesterly of the former UST).

Based on results of the above soil and groundwater investigation, the ACHCSA has requested that a groundwater monitoring well be installed southeasterly of the former UST to further evaluate groundwater quality beneath the site.

27973 HIGH COUNTRY DRIVE • HAYWARD,CA 94542-2530 • (510)581-2320 • FAX (510) 581-8490
e-mail • mrakovich@worldnet.att.net

PROPOSED SCOPE OF WORK

ALLCAL proposes the following scope of work:

- Obtain a well installation permit from the Alameda County Public Works Agency (ACPWA).
- Obtain an excavation permit and parking control signs from the City of Alameda.
- Mark the location of the monitoring well with white paint, notify Underground Service Alert (USA), and give the ACHCSA 48 hours' notice prior to installing the well.
- Install a small diameter (1 inch) groundwater monitoring well (MW-1) immediately adjacent to former boring IB-1. The depth of the proposed well is estimated to be 22 feet below grade.
- Continuously collect soil samples from about 12 feet below grade to the total depth of the proposed well for construction of a boring log and for design of the well.
- During construction of the well and before setting the well's seal, develop the well.
- After a minimum of 48 hours, purge and sample groundwater from the well.
- Analyze the groundwater sample for total petroleum hydrocarbons as gasoline, diesel, and motor oil (TPHG, TPHD, and TPHMO); benzene, toluene, ethylbenzene, and xylenes (BTEX); methyl tertiary butyl ether (MTBE); and polynuclear aromatic hydrocarbons (PNAs).
- Prepare a report.

Details of the proposed scope of work are presented below.

Pre-drilling Activities:

Before commencing drilling activities, ALLCAL will: (1) obtain a well installation permit from the ACPWA and an excavation permit with parking control signs from the City of Alameda, (2) visit the site to mark the proposed groundwater monitoring well location and contact USA, and (3) give 48 hours' notice to the ACHCSA.

Well Location:

In their December 13, 1999, letter (attached), the ACHCSA requested that well MW-1 be installed

near former boring IB-1 (see attached SITE PLAN). The well's location is proposed to be in the parking lane of Park Street, one or two feet southwesterly of former boring IB-1.

Soil Boring Procedure:

Because of the high vehicular and pedestrian traffic at the project site (downtown Alameda), ALLCAL recommends the installation of a 1-inch diameter groundwater monitoring well. This size well can be installed by a small drill rig that will minimally impact all types of traffic and parking. Also, for future sampling events, the sampling time of the well will be significantly less than the standard 2-inch diameter well, because of low purge volume. This will, again, result in minimal impact to traffic and parking.

An additional benefit to the installation of a 1-inch diameter well is that a minimum volume of solid and liquid wastes is generated for disposal, which is a cost savings to the Client.

The well will be installed by a State of California, licensed, water well driller (C-57 Water Well Driller contractor's license). The first five feet of the boring will be drilled by using a 5-inch diameter hand-auger. This size hole will provide the annular thickness of sanitary seal required by the California Department of Water Resources. The remainder of the boring will be drilled using 2-inch diameter, direct push, Geoprobe drill casing. Based on a depth to groundwater of about 12 feet, the boring is proposed to be drilled to a total depth of about 22 feet. Since GRIBI Associates has logged the soil profile in boring IB-1 to the depth of 13 feet, ALLCAL proposes to log the soil profile for well MW-1 from the depth of 12 to 22 feet. This interval of the boring will be sampled continuously as core into a 1.5-inch I.D., polyethylene terephthalate glycol (PETG) liner in 2- and/or 4-foot depth intervals. The liner is contained within the 2.0-inch diameter drill casing. The drill casing and enclosed PETG liner, will be hydraulically driven by drill rods in 2- and/or 4-foot depth intervals to the total depth of the boring. To minimize the potential for cross-contamination, the casing's drill shoe will be cleaned with Alconox detergent and rinsed with distilled water prior to beginning the boring and between sampling events.

After driving each interval, the drill casing and enclosed liner will be retrieved, and the soil core will be examined for apparent contamination and construction of a soil boring log. The soil will be logged according to the Unified Soil Classification System, and a boring log will be prepared by a California Registered Geologist.

Drill cuttings and rinsate will be contained in 5-gallon pails and stored at a location to be specified by the Client. The pails will be labeled to show contents, date stored, suspected contaminant, date of removal, company name, contact person, and telephone number. Security and proper disposal of the cuttings and rinsate is the Client's responsibility. After characterization by chemical analysis, ALLCAL can provide recommendations and, upon request, assist in disposal of the cuttings and rinsate in an appropriate manner as an additional work item.

Attached Appendices A and B document ALLCAL's protocols relative to drilling and soil sampling

procedures, and waste handling and decontamination procedures, respectively.

Soil Sample Selection for Chemical Analyses:

Because vadose zone soil sampling was conducted in former boring IB-1, ALLCAL proposes that no soil samples be collected for chemical analyses.

Proposed Well Installation and Development Procedures:

Based on an estimated depth of about 12 feet to groundwater, the exploratory boring for well MW-1 is proposed to be drilled to a total depth of about 22 feet. The boring will be converted into a groundwater monitoring well by installing 1-inch diameter, flush-threaded, schedule 40, polyvinyl chloride casing and 0.010-inch machine-slotted screen. The exact depth of the boring and screen length will be determined by the geologic profile, depth of groundwater, and whether the groundwater is confined or unconfined. If groundwater is unconfined, the screen is proposed to extend about 5 feet above and about 10 feet below the water table surface. The length of screen below the water table surface may be less than 10 feet if an aquiclude/aquitard is encountered. If groundwater is confined, the screen length will extend from the upper contact of the aquifer to a maximum depth of 10 feet. If the aquifer is less than 10 feet thick, the screen length will equal the thickness of the aquifer. A sand pack of No. 2/12 filter sand will be placed in the annular space from the bottom of the boring to a maximum of 2 feet above the top of the screened interval. After development of the well (see below), approximately 1 foot of bentonite will be placed above the sand pack followed by a neat cement slurry seal. A traffic-rated, bolt-locked, vault box will be set in concrete to protect the well. A water-tight locking well cap with lock will be installed on each well casing.

Attached Appendix C documents ALLCAL's protocol relative to groundwater monitoring well construction procedures.

Because of the high pedestrian and vehicular traffic and required parking control, ALLCAL proposes to develop the well during its construction, but before placement of the bentonite seal. The well will be developed by removing water with a peristaltic pump and/or by bailing with a PVC bailer with intervening periods of surging, with a surge block, until the well is free of sand, silt, and turbidity or no further improvement is apparent.

Development water will be stored in 5-gallon pails at a location specified by the Client. The pails will be labeled to show contents, date filled, suspected contaminant, company name, contact person, and telephone number. Security and proper disposal of the water and pails is the Client's responsibility. After the water is characterized by chemical analysis, ALLCAL can provide recommendations and assist the Client in proper disposal of the water and pails as an additional work item.

Attached Appendix D documents ALLCAL's protocol relative to groundwater monitoring well development procedures.

Proposed Groundwater Sampling Procedure:

After a minimum of 48 hours after well development, ALLCAL will obtain parking control signs from the City of Alameda, post the signs, and sample the well.

Prior to sampling, the depth to groundwater will be measured and recorded, and the well will be purged a minimum of 3 wetted well volumes with a dedicated polyethylene bailer. Temperature, pH, and electrical conductivity will be monitored, and purging will continue until they are stabilized. After purging is completed, a water sample will be collected and preserved in appropriate size, laboratory- provided glass containers. The containers 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 California Department of Health Services certified McCampbell Analytical Inc. laboratory, located in Pacheco, California, accompanied by chain-of-custody documentation.

Attached Appendix E documents ALLCAL's protocol relative to groundwater monitoring well sampling procedures. Attached Appendices F and G document ALLCAL's protocols relative to sample handling and quality assurance and quality control procedures.

Purge water will be stored in 5-gallon pails at a location specified by the Client. The pails will be labeled to show contents, date filled, suspected contaminant, company name, contact person, and telephone number. Security and proper disposal of the water and pails is the Client's responsibility. After the water is characterized by chemical analysis, ALLCAL can provide recommendations and assist the Client in proper disposal of the water and pails as an additional work item.

Proposed Chemical Analyses for Groundwater:

The water sample from well MW-1 and a trip blank sample are proposed to be analyzed for TPHG, BTEX, and MTBE by EPA Method GCFID(5030)/modified 8015, EPA Method 8020, and EPA Method 8020, respectively. Additionally, the water sample is proposed to be analyzed for TPHD and TPHMO by EPA Method GCFIF(3550)/modified 80154 and PNAs by EPA Method 8270.

Report: Silica gel cleanup prior to analysis

The information collected, analytical results, and ALLCAL's conclusions and recommendations will be summarized in a report. The report will describe the work performed and include: copies of all required permits, a detailed site plan showing location of the installed monitoring well, a graphic boring log, a graphic well construction detail, and a copy of the certified analytical report and chain-of-custody.

Site Safety Plan:

A Site Safety Plan for conducting work under this workplan is attached.

Time Schedule:

The projected time schedule for implementation of the activities described in this workplan is presented below. The schedule reflects a relatively problem-free program. However, delays in the workplan 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.

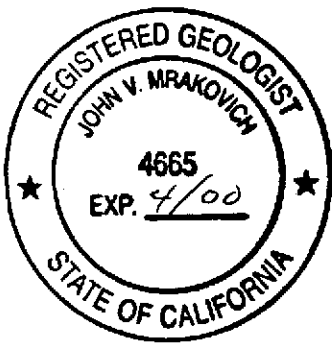
Week 1:	Workplan submitted for Regulator Approval.
Week 2:	Regulator approval received. Drilling and city permits obtained, driller contracted, and USA notified.
Week 3:	Monitoring well MW-1 installed, well sampled, and groundwater sample submitted for chemical analyses.
Week 4:	Water chemical analyses received.
Week 5:	Report submitted to client.

If you have any questions regarding the above scope of work, please contact me at (510) 581-2320.

Sincerely,

John V. Mrakovich, Ph.D.
Registered Geologist Number 4665

cc: Steve Simi
COCHRAN & CELLI INC.
3330 Broadway
Oakland, CA 94611



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

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway
Alameda, CA 94502-6577
(510) 567-6700
(510) 337-9432

StID 5511

December 13, 1999

Mr. James Russi
428 Yorkshire Road
Alameda, CA 94501

Mr. Steve Simi
Cochran and Celli
3330 Broadway
Oakland, CA 94611

RE: Permanent Groundwater Monitoring Well for 1347 Park Street, Alameda, CA

Dear Messrs. Russi and Simi:

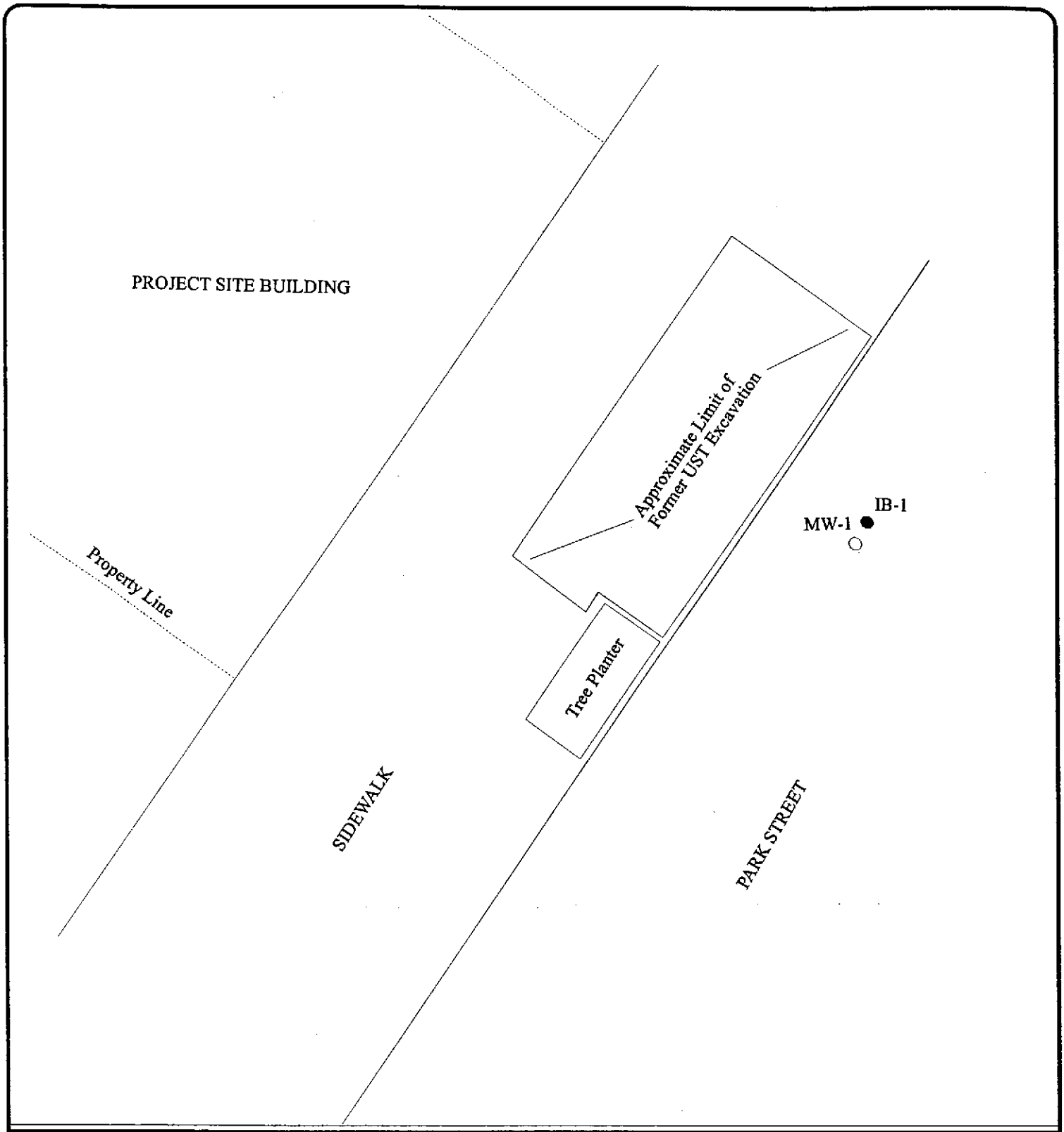
I have completed review of Gribi Associates' November 1998 report titled *Report of Soil and Groundwater Investigation* prepared for the above referenced site. The report summarized investigations conducted in September 1998 that included the drilling and sampling of three temporary soil borings (IB-1 through IB-3) immediately adjacent to the former heating oil underground storage tank (UST). The purpose of the investigation was to assess the extent of soil and groundwater contamination due to the release from the former heating oil UST.

Elevated petroleum hydrocarbon constituents were noted in soil and groundwater from boreholes IB-1 and IB-3. At this time, site closure is not recommended for the site. Rather, a permanent groundwater monitoring well should be installed near former boring IB-1 to further evaluate groundwater quality beneath the site. A workplan for this next phase of investigation is due within 60 days of the date of this letter, or **by February 14, 2000.**

If you have any questions, I can be reached at (510) 567-6762.

eva chu
Hazardous Materials Specialist

simi-4



Legend

IB-1
● Name and Location of Soil Boring by GRIBI

MW-1
○ Proposed Name and Location of Groundwater Monitoring Well

0 5
Approximate Scale (ft)

N

ALLCAL ENVIRONMENTAL

SITE PLAN

PROPOSED LOCATION OF GROUNDWATER MONITORING WELL

1347 PARK STREET
ALAMEDA, CA

ATTACHMENT A

DRILLING AND SOIL SAMPLING PROCEDURES

Undisturbed soil samples will be recovered from soil without introducing liquids into the borings. Soil samples as core or cutting will be taken continuously from ground surface to termination depth, or through the aquifer zone of interest for lithologic logging.

Borings will be drilled by hydraulically pushing 2-inch O. D. Geoprobe drill casing in 4-foot depth intervals. Soil samples will be collected in a 4-foot long by 1.75-inch O. D. PETG liner contained in the drill casing. Soil samples collected for chemical analyses will be cut from the PETG liner. The samples will be of sufficient volume to perform the analyses which may be required, including replicate analyses. The PETG liner will be cut using a clean knife or saw blade. The ends of the liner will be covered with a thin sheet of Teflon tape or aluminum foil beneath plastic end caps. The samples will be stored on ice at a temperature of 4 degrees Celsius. In the Alameda County Water District, the samples will be stored on dry ice.

Soil from all borings will be described in detail using the Unified Soil Classification System and will be logged by a geologist, civil engineer, or engineering geologist who is registered or certified by the State of California and is experienced in the use of the Unified Soil Classification System. All wet zones above the free water zone will be noted and logged.

Sediment traps will be used when unconsolidated sand and gravel fall from the sampler during retrieval.

Drill cuttings will be stored on site in 55-gallon drums, 5-gallon pails, or covered with plastic sheeting. Analytical results will be submitted immediately to the Client for determination of appropriate disposal procedures. The soil borings not completed as wells will be backfilled with a cement grout.

ATTACHMENT B

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 type 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 C

GROUNDWATER MONITORING WELL CONSTRUCTION PROCEDURES

Casing Diameter: The minimum diameter of well casings will be 1 inch (nominal).

Borehole Diameter: The diameter of the borehole will be a minimum of 2 inches and a maximum of 12 inches greater than the diameter of the well casing.

Willow (Unconfined Zone) Wells: When groundwater is encountered or known to be within 45 feet of the ground surface, the borehole will be advanced through the aquifer to an underlying competent aquitard. The competency of the aquitard may be tested by sampling 5 feet into the underlying aquitard and backfilling the excess hole with either bentonite pellets or neat cement placed by tremie pipe method. An aquitard found to be less than 5 feet thick, may be assumed to represent a local lens. The screened interval will begin a minimum of 5 feet above the saturated zone and extend the full thickness of the aquifer or no more than 20 feet into the saturated zone, whichever is reached first. The well screen will not extend into the aquitard, nor will the screened interval exceed 25 feet in length.

Deep (Confined Zone) Wells: Any monitoring well to be screened below an upper aquifer will be installed as a double-cased well. A steel conductor casing will be placed through the upper water-bearing zone to prevent aquifer cross-contamination.

The conductor casing will be installed in the following manner: A large diameter borehole (typically 18 inches) will be drilled until it is determined that the first competent aquitard has been reached. A low carbon steel conductor casing will be placed in the borehole to the depth drilled. Centralizers will be used to center the casing in the borehole. The annular space between the conductor casing and the formation will be cement-grouted from bottom to top by tremie pipe method. The grout will be allowed to set for a minimum of 72 hours.

Drilling may continue inside the conductor casing, with a drill bit of smaller diameter than the conductor casing. If additional known aquifers are to be fully penetrated, the procedure can be repeated with successively smaller diameter conductor casings.

The bottom of the well screen in a confined aquifer will be determined by presence or lack of a competent (5 foot) aquitard as described above. The screened interval in a confined zone will extend across the entire saturated zone of the aquifer or up to a length of 20 feet, which ever is less. The screened zone and filter pack will not cross-connect to another aquifer.

Casing Materials: Well casing will be constructed of materials that have the least potential for affecting the quality of the water sample. The most suitable material for a particular installation will depend upon the parameters to be monitored. Acceptable materials include PVC, stainless steel, or

low carbon steel.

Casing Joints: Joints will be connected by flush threaded couplers. Organic bonding compounds and solvents will not be used on joints.

Well Screen Slots: Well screen will be factory slotted. The size of the slots will be selected to allow sufficient groundwater flow to the well for sampling, minimize the passage of formation materials into the well, and ensure sufficient structural integrity to prevent the collapse of the intake structure.

Casing Bottom Plug: The bottom of the well casing will be permanently plugged, either by flush threaded screw-on or friction cap. Friction caps will be secured with stainless steel set screws. No organic solvents or cements will be applied.

Filter Pack Material: Filter envelope materials will be durable, water worn, and washed clean of silt, dirt, and foreign matter. Sand-size particles will be screened silica sand. Particles will be well rounded and graded to an appropriate size for retention of aquifer materials.

Bentonite Seal Material: Bentonite will be pure and free of additives that may effect groundwater quality. Bentonite will be hydrated with clean water.

Grout Seal Material: Cement grout will consist of a proper mixture if Type 1/11 Portland cement, hydrated with clean water. Up to 3% bentonite may be added to the mixture to control shrinkage.

Decontamination: All downhole tools, well casings, casing fittings, screens, and all other components that are installed in the well will be thoroughly cleaned immediately before starting each well installation. When available, each component will be cleaned with a high temperature, high pressure washer for a minimum of five minutes. When a washer is not available, components will be cleaned with water and detergent or tri-sodium phosphate, rinsed in clean water, than rinsed in distilled water.

Soil and water sampling equipment and material used to construct the wells will not donate to, capture, mask, nor alter the chemical composition of the soil and groundwater.

Drilling Methods: Acceptable drilling methods include solid and hollow-stem auger, percussion, direct circulation mud and air rotary, and reverse rotary. The best alternative is that which minimizes the introduction of foreign materials or fluids. If drilling fluid is employed, drilling fluid additives will be limited to inorganic and non-hazardous compounds. Compressed air introduced to the borehole will be adequately filtered to remove oil and particulates.

Casing Installation: The casing will be set under tension to ensure straightness. Centralizers will be used where necessary to prevent curvature or stress to the casing.

Sand Pack Installation: The sand pack will be installed so as to avoid bridging and the creation of void spaces. The tremie pipe method will be used where installation conditions or local regulations require. Drilling mud, when used, will be thinned prior to pack placement. The sand pack will cover the entire screened interval and rise a minimum of two feet above the highest perforation.

Bentonite Seal Placement: The bentonite seal will be placed by a method that prevents bridging. Bentonite pellets can be placed by free fall if proper sinking through annular water can be assured. Bentonite slurry will be placed by the tremie pipe method from the bottom upward. The bentonite seal should not be less than 1 foot in thickness above the sand pack.

Grout Seal Placement: The cement grout mixture will be hydrated with clean water and thoroughly mixed prior to placement. If substantial groundwater exists in the bore hole, the grout will be placed by tremie pipe method from the bottom upward. In a dry borehole, the grout may be surface poured. Grout will be placed in one continuous lift and will extend to the surface or to the well vault if the wellhead is completed below grade. A minimum of 5 feet of grout seal will be installed, unless impractical due to the willow nature of the well.

Surface Completion: The wellhead will be protected from fluid entry, accidental damage, unauthorized access, and vandalism. A watertight cap will be installed on the well casing. Access to the casing will be controlled by a keyed lock.

Wellheads completed below grade will be completed in a concrete and/or steel vault, installed to drain surface runoff away from the vault.

Well Identification: Each well will be identified by well number, owner, and type of installation. Construction data, including depth, hole and casing diameter, and screened interval will be noted.

ATTACHMENT D

GROUNDWATER MONITORING WELL DEVELOPMENT PROCEDURES

INTRODUCTION

Newly installed groundwater monitoring wells will be developed to restore natural hydraulic conductivity of the formation, remove sediments from well casing and filter pack, stabilize the filter pack and aquifer material, and promote turbidity-free groundwater samples.

Wells may be developed by bailing, mechanical pumping, air lift pumping, surging, swabbing, or an effective combination of methods. Wells will be developed until the water is free of sand, silt, and turbidity or no further improvement is achieved.

In some cases where low permeability materials are involved or the drilling mud used fails to respond to cleanup, initial development pumping may immediately dewater the well casing and thereby inhibit development. When this occurs, clean, potable grade water may be introduced into the well, followed by surging of the introduced waters with a surge block. This operation will be followed by pumping. The procedure may be repeated as required to establish full development.

METHODOLOGY

Seal Stabilization: Cement and bentonite annular seals will set and cure not less then 24 hours prior to well development.

Decontamination: All well development tools and equipment will be thoroughly cleaned immediately before starting each well installation. When available, each component will be cleaned with a high temperature, high pressure washer for a minimum of five minutes. When a washer is not available, components will be cleaned with clean water, then rinsed with distilled water.

Development equipment will not donate to, capture, mask, nor alter the chemical composition of the soils and groundwater.

Introduction of Water: Initial development of wells in low permeability materials may dewater the casing and filter pack. When this occurs, clean, potable water will be introduced into the well to enhance development.

Bailing: Development will begin by bailing to remove heavy sediments from the well casing. Care will be taken to not damage the well bottom cap during lowering of the bailer.

Surging: Care will be exercised when using a surge block to avoid damaging the well screen and casing. When surging wells screened in coarse (sand/gravelly) aquifers, the rate of surge block lifting

will be slow and constant. When surging wells screened in fine (silty) aquifers, more vigorous lifting may be required. Between surging episodes, wells will be bailed to remove accumulated sediments.

Pumping: Development pumping rates will be less than the recharge rate of the well in order to avoid de-watering.

Discharged Water Containment and Disposal: All water and sediment generated by well development will be stored in 55-gallon steel drums. Development water will be temporarily contained on site, pending sampling and laboratory analysis. All hazardous development water will be transported off site by a licensed transporter to a hazardous waste disposal or treatment facility. No hazardous development water will be released to the environment.

ATTACHMENT E

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 polyethylene bailer. Prior to sampling, sampling equipment will be thoroughly decontaminated to prevent introduction of contaminants into the well and to avoid cross-contamination. Monitoring wells will be sampled after three to five wetted casing volumes of groundwater have been evacuated and after the ALLCAL sampling team leader determines that water representative of the formation is being obtained. The well will be purged until conductivity has been stabilized (three consecutive conductivity reading within 15% of one another). If the well is emptied before four to ten 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 II) 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 or C
Depth to Water	Feet/Tenths
Volume of Water Discharged	Liters

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

ATTACHMENT F

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. Water samples will be cooled with crushed ice.

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 or PETG liners will be preserved by covering the ends with Teflon tape and capping with plastic end-caps. The tubes and liners 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 G

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 de-ionized 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: **1347 Park Street**
Alameda, California

Plan Prepared by: **John Mrakovich** Date: **2/3/00**

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: **ACHCSA-eva chu** **(510) 567-6762**

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:

Petroleum Hydrocarbons

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

Corrosive ( ) Ignitable ( ) 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/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 borehole, automobile traffic.

Measures to minimize the effects of the additional hazards are:

Protect work area with barricades, caution tape, and/or traffic cones and signs.

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 earlier work indicates concentrations of hazardous vapors are not likely. If vapors are detected, work will cease until they are dispersed.

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.
Steve Simi	Client (510) 588-2013
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

Nearby Hospital: **ALAMEDA HOSPITAL**
2070 CLINTON AVENUE
ALAMEDA, CA

Telephone: 510. 523.4357

Directions: **From project site, go southwesterly on Park Street to Clinton Ave., turn right (northwesterly) on Clinton Ave. and go to hospital on left hand side of road.**