R0321

aqua science engineers inc.

February 11, 2003

WORKPLAN
for a
SOIL AND GROUNDWATER REMEDIATION PROJECT
at
Former Chan's Shell Station
726 Harrison Street
Oakland, California

Submitted by:
AQUA SCIENCE ENGINEERS, INC.
208 W. El Pintado
Danville, CA 94526
(925) 820-9391

1.0 INTRODUCTION

This submittal outlines Aqua Science Engineers, Inc. (ASE's) workplan for overexcavation of petroleum-hydrocarbon laden soil in the vicinity of the former underground storage tanks at the former Chan's Shell Station located at 726 Harrison Street in Oakland, California (Figure 1). This workplan is intended to satisfy the requirements of the Alameda County Health Care Services Agency (ACHCSA) in their letter dated August 14, 2002 (Appendix A).

2.0 PROPOSED SCOPE OF WORK (SOW)

ASE has prepared the following scope of work (SOW) to eliminate the known volume of petroleum-hydrocarbon laden soil identified in numerous soil borings and monitoring wells drilled at the site (Figures 2 and 3). The target soil cleanup levels will be those that are presented in the "Application of Risk-Based Screening Levels (RBSLs) and Decision Making to Sites with Impacted Soil and Groundwater" document dated December 2001 prepared by the California Regional Water Quality Control Board, San Francisco Bay Region. The RBSLs for *residential usage* will be used for this project.

1) Obtain the necessary permits/approvals from the appropriate regulatory agencies.

2) Properly destroy monitoring well MW-1, air-sparging test well AS-1, extraction-test well EW-1, and vapor-extraction wells VE-1 and VE-2.

3) Perform a lead-based paint and asbestos containing material survey of the existing building on-site.

4) Obtain an access agreement from the owner of the neighboring property for the storage of overburden soil and groundwater holding/treatment units.

5) Using historical analytical soil data, profile the petroleum-hydrocarbon laden soil into a non-hazardous waste landfill.

6) Have a site-specific Health & Safety plan prepared by a certified industrial hygienist (CIH). The CIH will also be on site during critical field activities.

7) Demolish and dispose of the existing site building, pad and footings.

8) Install sheet-pile shoring to a depth of approximately 25-feet below ground surface (bgs).

9) Using an excavator, remove the clean overburden soil and stockpile this material on the neighboring property.

10) Using an excavator, remove the petroleum-hydrocarbon laden soil from the excavation and place it directly into trucks for off-site disposal.

11) Pump groundwater, as necessary, from the excavation to allow for soil removal to a depth of approximately 22-feet bgs. Store the removed groundwater within a portable tank located on the neighboring property. Treat the contaminated groundwater with activated carbon. Under permit by the EBMUD, dispose of the treated groundwater into the site's sanitary sewer system.

12) Collect a grab groundwater sample from the excavation once excavation activities are completed. Analyze the groundwater sample at a CAL-EPA certified environmental laboratory for total petroleum hydrocarbons as gasoline (TPH-G), benzene, toluene, ethylbenzene and total xylenes (collectively known as BTEX) and methyl tertiary butyl ether (MTBE) by EPA Method 8260. check if addn'l GW removal [illegible]

13) Place 1,020 pounds of Oxygen Releasing Compound (ORC) into the excavation. Mix the ORC into the groundwater.

14) Place a geotextile membrane at the bottom of the excavation. Backfill the excavation with imported drain rock to above the level of the groundwater.

15) Backfill and compact the excavation with the overburden, clean soil and imported material to within two feet of the ground surface. Perform compaction tests within the excavation to confirm 90% relative density.

16) Backfill and compact the excavation to 3 inches below grade with Class II subbase.

17) Resurface the excavation with 3 inches of asphalt to match surrounding conditions.

18) Demobilize from the site.

19) Prepare a report detailing the remedial activities.

3.0 DETAILS OF PROPOSED SOW

Details of the assessment are presented below.

TASK 1 OBTAIN NECESSARY PERMITS

ASE will obtain the following permits and/or prepare the following notifications to perform the scope of work detailed above:

ASE will apply for and obtain: (1) demolition, (2) excavation, (3) grading, (4) parking obstruction, (5) sewer lateral cap, and (6) traffic management permits from the City of Oakland. ASE will apply for and obtain a demolition permit from the Bay Area Air Quality Management District (BAAQMD). ASE will apply for and obtain a sewer discharge permit from the East Bay Municipal Utilities District (EBMUD). ASE will notify CAL OSHA of the shoring and excavation activities. ASE will also notify Underground Service Alert (USA) to have underground utility lines marked in the site vicinity.

TASK 2 WELL DESTRUCTION

ASE will apply for and obtain a well destruction permit from the Alameda County Public Works Agency (ACPWA). Monitoring well MW-1, air-sparging test well AS-1, extraction-test well EW-1 and vapor-extraction wells VE-1 and VE-2 will be destroyed by drilling around each well casing and removing the PVC casing, sandpack, cement sanitary seal and bentonite seal. Each boring will then be backfilled with neat cement placed by tremie pipe. All well materials will be stockpiled temporarily on site to be disposed of with the contaminated soil at a non-hazardous waste landfill.

TASK 3 PERFORM A LEAD-BASED PAINT AND ASBESTOS SURVEY OF THE BUILDING

ASE will subcontract a licensed survey company to collect and analyze samples of the on-site building materials to investigate for the presence of lead-based paint and asbestos containing materials (ACM). The data will be used by the demolition contractor to determine handling and disposal of the building materials.

TASK 4 OBTAIN ACCESS AGREEMENT

ASE will obtain permission from the adjacent property owner to use their property for the storage of the clean, overburden soil, temporary water holding tanks, and groundwater treatment units.

TASK 5 PROFILE THE CONTAMINATED SOIL INTO A NON-HAZARDOUS WASTE LANDFILL

Using the historical soil boring analytical data, ASE will profile the contaminated soil into a local non-hazardous waste landfill.

TASK 6 PREPARE A HEALTH AND SAFETY PLAN

ASE will subcontract a certified industrial hygienist (CIH) to prepare a site specific health and safety plan.

TASK 7 DEMOLISH THE ON-SITE BUILDING

The site will be secured by temporary fencing prior to the beginning of any construction activities. Using an excavator, the on-site building, its pad and footings will be demolished and hauled to a local disposal facility. Any issues related to lead-based paint and/or asbestos will be handled by a suitable subcontractor.

TASK 8 INSTALL SHEET PILE SHORING

In order to excavate to a depth of approximately 22-feet bgs near city streets at the site, the excavation will require shoring. A shoring plan will be prepared, signed by a licensed engineer, and submitted to the City of Oakland for their review and approval. Shoring will be installed by a shoring subcontractor at a rate set by the excavation contractor.

TASK 9 EXCAVATION OF OVERBURDEN SOIL

Using the historical soil boring analytical data, ASE has calculated the volume and determined the location of the clean overburden soil within the area to be overexcavated. ASE estimates that there exists approximately 670 cubic yards of clean soil on top of the contaminated soil. Using an excavator, this clean soil will be removed from the excavation and placed (a) directly onto the neighboring property, (b) on-site to be moved to the neighboring property at the end of the day, or (c) into a small dump truck for delivery to the neighboring property. The excavated soil will be screened for volatile compounds with an organic vapor meter (OVM). Each bucket will also be inspected by ASE personnel for staining, discoloration, or petroleum-hydrocarbon odors. Soil not suitable for re-use will be stockpiled temporarily on site, covered with plastic, and offhauled when the contaminated soil is reached. Prior to re-use, the stockpiled soil will be sampled and tested. See Task 15 for details.

TASK 10 EXCAVATE CONTAMINATED SOIL

Using the historical soil boring analytical data, ASE has calculated the volume and determined the location of the petroleum-hydrocarbon laden soil within the area to be overexcavated. ASE estimates that approximately 900 cubic yards of contaminated soil exist at depths ranging from 5-feet bgs to 22-feet bgs. This contaminated soil will be removed from the excavation and placed directly into trucks for off-site disposal at a non-hazardous waste landfill.

TASK 11 PUMP GROUNDWATER FROM THE EXCAVATION

Groundwater that infiltrates into the open excavation will be pumped out and stored within a temporary holding tank. This water will then be filtered and treated on site with two activated carbon vessels plumbed in series. The actual mass of activated carbon will be determined once flow rates are observed. The treated water will then be pumped to a second holding tank where it will be sampled. The groundwater samples will be contained in 40-ml volatile organic analysis (VOA) vials, preserved with hydrochloric acid, and sealed without headspace. The samples will then be labeled with the site location, sample designation, date and time the samples were collected, and the initials of the person collecting the samples, placed in protective foam sleeves, and cooled in an ice chest with wet ice for transport to a state-certified analytical laboratory under chain-of-custody. The samples will be tested for TPH-G, BTEX and MTBE by EPA

Method 8260. Once analytical data confirms the water is free of petroleum hydrocarbons, it will be pumped to the sanitary sewer system on site.

TASK 12 COLLECT AND ANALYZE AN EXCAVATION GROUNDWATER SAMPLE

After excavation activities are completed, a grab groundwater sample will be collected from the groundwater within the pit using a new, disposable bailer. The groundwater samples will be contained in 40-ml volatile organic analysis (VOA) vials, preserved with hydrochloric acid, and sealed without headspace. The samples will then be labeled with the site location, sample designation, date and time the samples were collected, and the initials of the person collecting the samples, placed in protective foam sleeves, and cooled in an ice chest with wet ice for transport to a state-certified analytical laboratory under chain-of-custody. The samples will be tested for TPH-G, BTEX and MTBE by EPA Method 8260.

TASK 13 ORC PLACEMENT

Regenesis, Inc. of San Clemente, CA, the manufacturers of ORC, was subcontracted by ASE to determine the proper amount of ORC to treat the contaminated groundwater at the site. Historical groundwater analytical data was used to determine the proper mass of ORC necessary for the site. Regenesis determined that 1,020 pounds of ORC would be required to treat the contaminated groundwater. This 1,020 pounds of ORC will be placed into the excavation and mixed with the groundwater using the excavator bucket.

TASK 14 BACKFILL THE EXCAVATION TO ABOVE THE WATER LINE.

A geotextile membrane will be placed into the bottom of the excavation and will be covered entirely by drain rock. The imported drain rock will be placed into the excavation until the groundwater is no longer visible. Shoring components will be removed as the backfilling operation continues to the surface.

TASK 15 BACKFILL AND COMPACT THE EXCAVATION

Prior to re-use of the overburden soil, ASE will collect one soil sample per 50 cubic yards and have each sample analyzed by a state certified laboratory for TPH-G, BTEX and MTBE by EPA Method 8260. All soil containing concentrations below the residential RBSLs will be re-used as backfill material. The excavation will be backfilled with the stockpiled,

overburden soil and imported soil to approximately 2-feet bgs. The material will be placed into the excavation in lifts, and compacted using conventional compaction equipment. As necessary, each lift will be tested for relative density by a subcontracted testing company. Compaction will continue until each lift of backfill is certified to be at or above 90% relative density. Shoring components will be removed as the backfilling operation continues to the surface.

TASK 16 BACKFILL FOR RESURFACING

The excavation will be backfilled with the imported Class II subbase material to approximately 3-inches bgs. The material will be placed into the excavation in lifts, and compacted using conventional compaction equipment. As necessary, each lift will be tested for relative density by a subcontracted testing company. Compaction will continue until each lift of backfill is certified to be at or above 90% relative density.

TASK 17 RESURFACE THE EXCAVATION

The excavation will be resurfaced with 3-inches of asphalt to match the existing surrounding conditions.

TASK 18 DE-MOBILIZE FROM THE SITE.

All equipment, tanks, carbon vessels, shoring components, construction debris and temporary fencing will be removed from the site upon completion of all field activities.

TASK 19 PREPARE A FINAL REPORT OF REMEDIAL ACTIVITIES

ASE will submit a report detailing the remedial activities upon completion of all the field activities. The report will include copies of all weight tags and manifests for the offhauled soil, analytical reports, and details regarding the remedial activities.

4.0 SCHEDULE

ASE will begin work on this project immediately upon approval of this workplan from the ACHCSA, pre-approval of the costs from the Underground Storage Tank Cleanup Fund (USTCF) and obtaining the required permits and access agreements. A workplan for the installation of monitoring wells to replace those that were destroyed during this

project will be issued separately after the remedial activities are completed.

Should you have any questions or comments, please call us at (925) 820-9391.

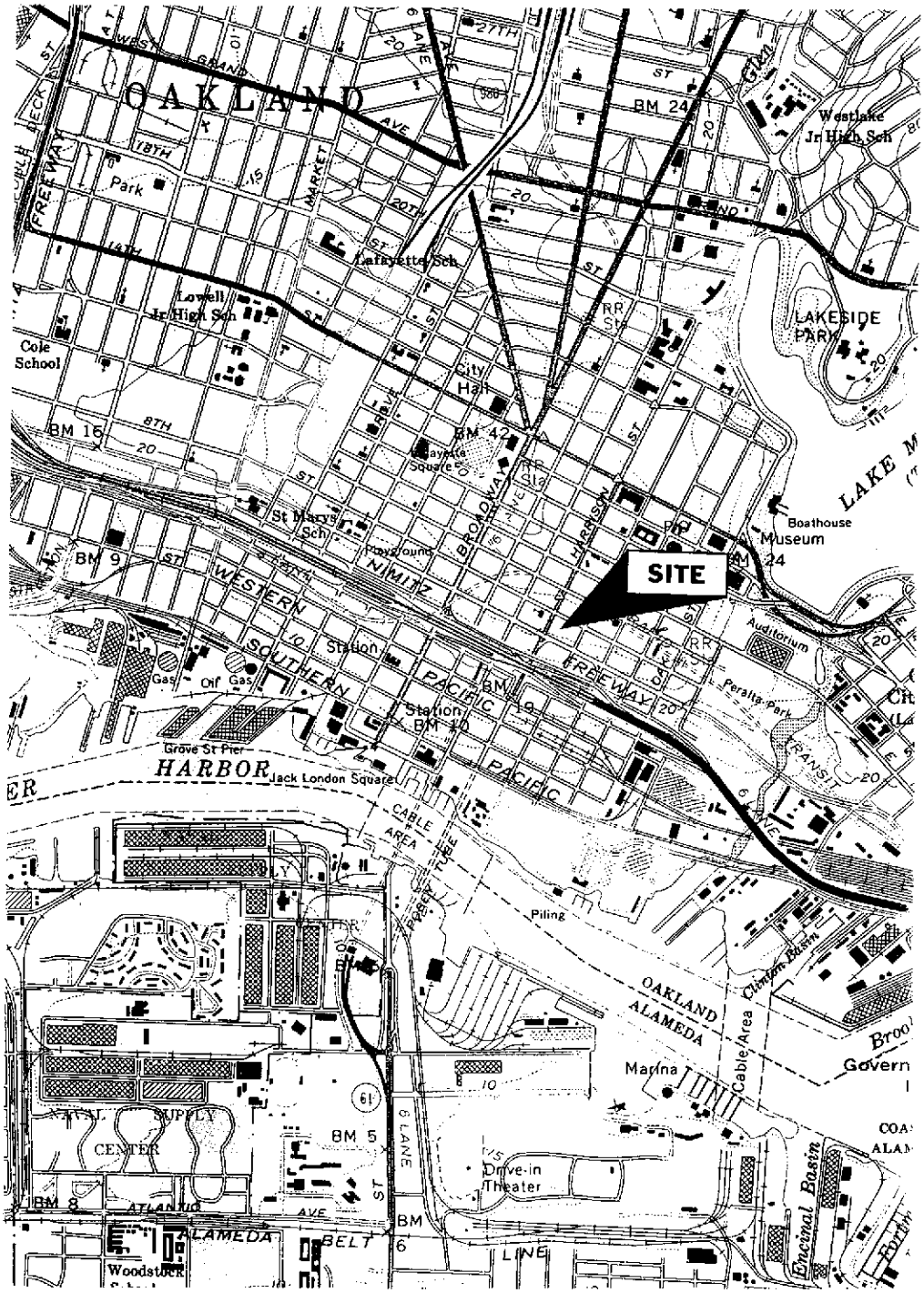
Respectfully submitted,

AQUA SCIENCE ENGINEERS, INC.

David Allen, R.E.A.
Senior Project Manager

Robert E. Kitay, R.G., R.E.A.
Senior Geologist

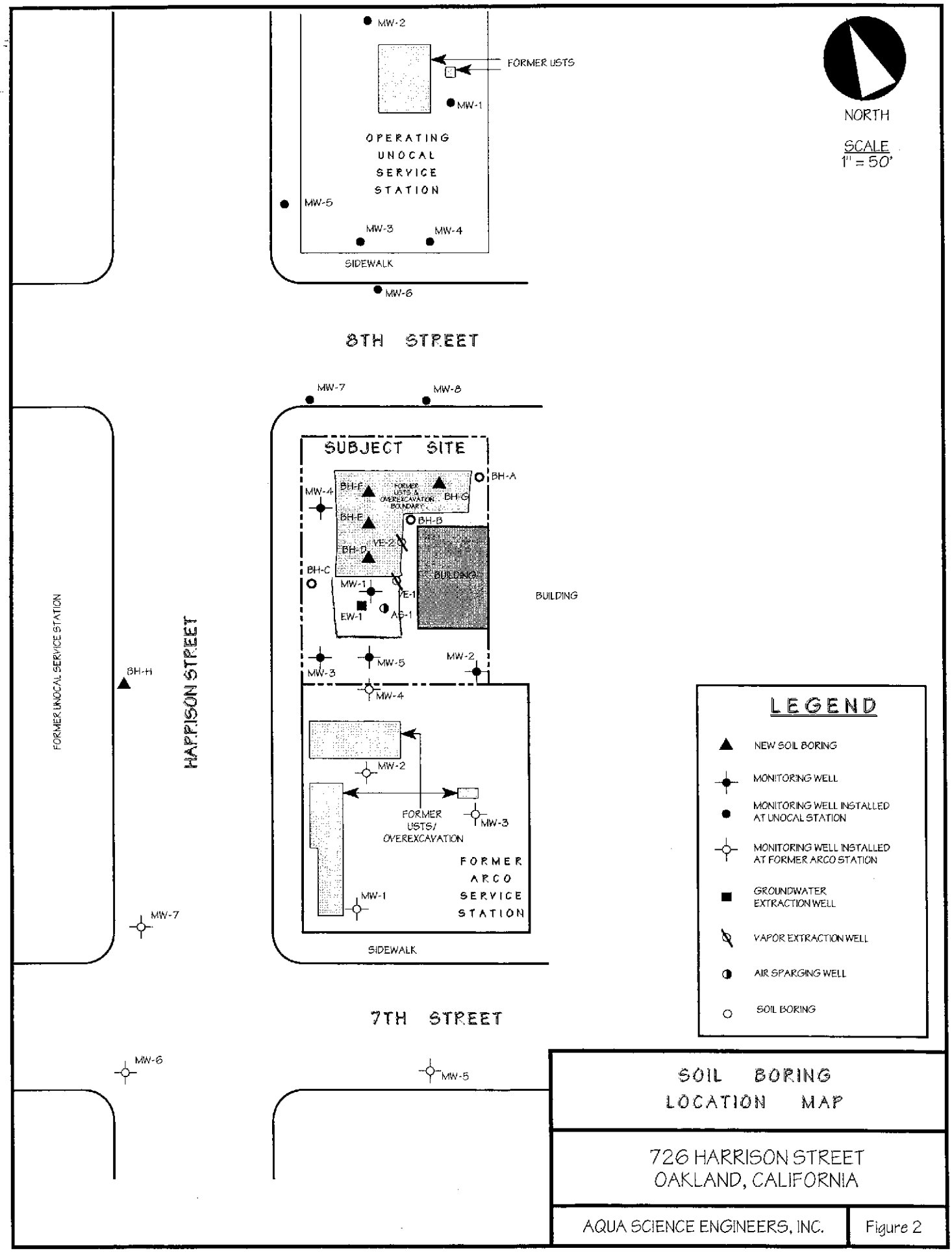
Cc: Mr. Kin Chan, property owner
Mr. Barney Chan, ACHCSA
Mr. Sunil Ramdass, UST Cleanup Fund



SITE LOCATION MAP

FORMER CHAN'S SHELL STATION
726 HARRISION STREET
OAKLAND, CALIFORNIA

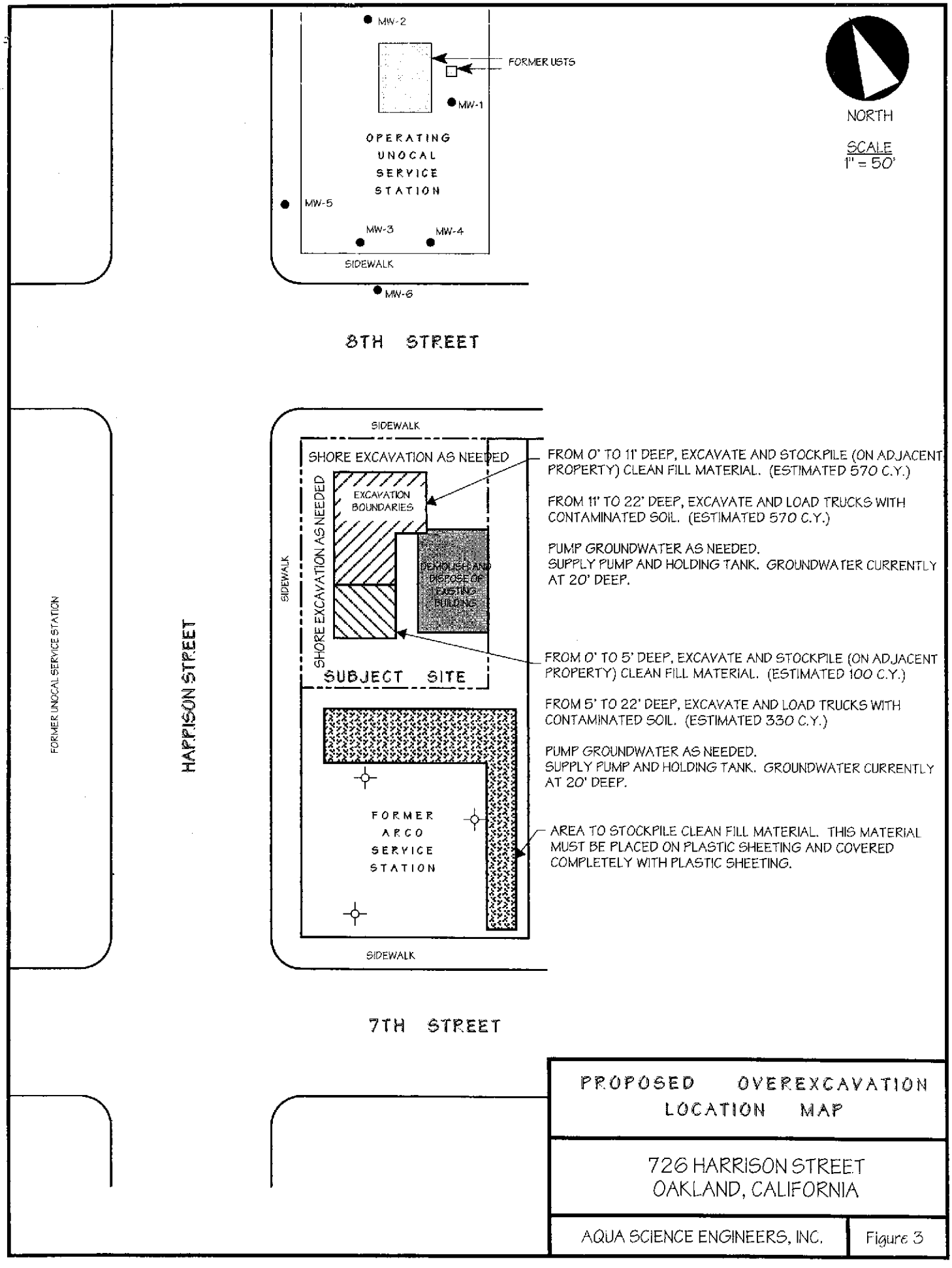
Aqua Science Engineers | Figure 1



SOIL BORING LOCATION MAP

726 HARRISON STREET
OAKLAND, CALIFORNIA

AQUA SCIENCE ENGINEERS, INC. | Figure 2



PROPOSED OVEREXCAVATION LOCATION MAP

726 HARRISON STREET
OAKLAND, CALIFORNIA

AQUA SCIENCE ENGINEERS, INC. | Figure 3

Appendix A

ACHCSA Letter Dated August 14, 2002

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

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

August 14, 2002

Mr. and Mrs. Kin Chan
4328 Edgewood Ave.
Oakland, CA 94602

Dear Mr. and Mrs. Chan:

Subject: Fuel Leak Case No. RO0000321, 726 Harrison St., Oakland, CA 94607

Alameda County Environmental Health, Local Oversight Program (LOP), has received and reviewed the August 7, 2002 Report of Additional Soil and Groundwater Assessment and Remediation Recommendations for the referenced site, prepared by Aqua Science Engineers, ASE. We have the following technical comments and technical report request for you to address.

Technical Comments

1. Significant residual petroleum contamination in soil and groundwater was found within the former underground storage tank pit, particularly in boring BH-E. This is evidence that not much, if any, excavation was done below the original tank pit depth of 11' after tank removals. Although not all the soil samples within the pit showed equally elevated contamination, soil excavation appears to be the only technical and economically feasible remediation approach for this site. Prior air sparge and groundwater pump tests did not indicate these to be viable remediation approaches. Our office, therefore, concurs with the ASE recommendation for additional excavation at this site. They also recommend adding oxygen releasing compound (ORC) to the tank pit floor to oxygenate groundwater. ASE also states that the existing building should be taken down to facilitate the excavation.
2. Groundwater contamination does not appear to have migrated down-gradient across Harrison St. as evidenced by the lack of contamination found in boring BH-H.

Technical Report Request

Please submit a formal work plan for the above-mentioned work within 45 days or no later than September 16, 2002. The work plan should minimally include such items as:

- An estimate of the proposed amount of soil excavation
- A description of soil storage, characterization for reuse and disposal
- A discussion of soil cleanup levels
- Proposal for groundwater disposal and treatment
- Proposal for replacement wells after excavation is performed

You may contact me at (510) 567-6765 if you have any questions.

Sincerely,

Barney M. Chan

Barney M. Chan
Hazardous Materials Specialist

C: B. Chan, files
Mr. R. Kitay, ASE, 208 W. Pinnado Rd., Danville, CA 94526
Ms. S. Chan-Barba, 242 California Ave., San Leandro, CA 94526
Mr. Bo Gin, 288 11th St., Oakland, CA 94607
Mr. R. Scheele, Cambria Environmental, 1144 65th St., Suite B, Oakland, CA 94608
Excwp726Harrison

Post-it® Fax Note 7671	Date 2/7/03	# of pages ▶ 1
To D. Allen	From BCHAN	
Co./Dept. ASE	Co. ACEH	
Phone #	Phone # 510-567-6765	
Fax # 925-837-4853	Fax #	

aqua science engineers inc.

FAX BEING SENT BY:

AQUA SCIENCE ENGINEERS, INC.
208 W. El Pintado
Danville, CA 94526
Phone (925) 820-9391
Fax (925) 837-4853

DATE: 2/11/03

TO: Barney Chan

FROM: Dave Allen

# of pages including this cover sheet 15

Message:

Original to follow by mail. ASAP, please review this and prepare an approval letter... we are trying to get a Pre-Approval Request into the UST CF very soon.

Thanks,
Dave