

BLYMYER
ENGINEERS, INC.

20-291

SHD
4403

September 10, 2001
BEI Job No. 94015

Amir
REU New 9/17/01

Mr. Amir Gholami
Alameda County Health Care Services Agency
Environmental Protection Division
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

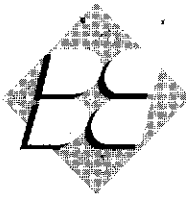
SEP 17 2001

**Subject: Remedial Action Plan
Kawahara Nursery
16550 Ashland Avenue
San Lorenzo, California
Site # 4403**

Dear Mr. Gholami:

As previously discussed in several telephone conversations, Kawahara Nursery has identified investigation of, and likely removal of, the suspect magnetic anomalies and any impacted soil above pre-defined concentration goals as the remedial option of choice at the subject site. It is currently surmised that the magnetic anomalies may be, or may have been related to, underground storage tank(s) (USTs). It is also possible that the magnetic anomalies are simply fill soils associated with excavations of unknown origins. This remedial action selection is based upon the apparent, relatively limited extent of petroleum hydrocarbon contamination in soil in the vicinity of the magnetic anomalies, and if related to a former fueling system, the likely abandonment of the system at a point in the past. Accompanying the investigation of the sources of the magnetic anomalies, removal of soil present above concentrations that produce an unacceptable human health risk will be undertaken. These remedial goals, or Site Specific Target Levels (SSTLs), are as yet undefined and will be defined by a health risk assessment prior to the remedial actions.

This letter address the Alameda County Health Care Services Agency (ACHCSA) request for a Remedial Action Plan (RAP) prior to commencement of the work pursuant to requirements of the California UST Cleanup Fund. This RAP outlines the procedures by which these actions will be accomplished.



1.0 Background

1.1 Previous Work

1.1.1 Underground Storage Tank Removal

On December 1, 1992, one steel 5,000-gallon underground storage tank (UST) was removed from the property owned by Kawahara Nursery, located at 16550 Ashland Avenue, San Lorenzo, California, (Figure 1). The UST, used to store diesel, was reported to be in good condition at the time of removal with no visible evidence of holes. However, soil samples collected from the UST excavation contained Total Petroleum Hydrocarbons (TPH) as diesel, suggesting that a release had occurred. The results of the UST closure were described in the *Underground Storage Tank Closure Report*, prepared by Tank Protect Engineering.

According to information obtained from Kawahara Nursery, a 1,000-gallon gasoline UST was previously located in the vicinity of the lath house on the north side of the property (Figure 2). The UST was reportedly removed from the site shortly after Kawahara Nursery occupied the property in 1954.

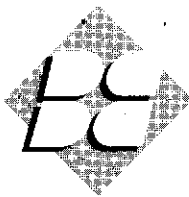
1.1.2 Phase I Site Investigation

In a letter dated January 27, 1993, the ACHCSA requested that a preliminary subsurface investigation be completed to ascertain the extent of soil and groundwater contamination at the site. On June 10, 1993, Blymyer Engineers supervised the installation of three groundwater monitoring wells (MW-1, MW-2, and MW-3) and one soil bore (SB-1). Minor concentrations of petroleum hydrocarbons were detected in the soil samples collected from soil bores MW-1 and MW-2, and higher concentrations were detected in the samples collected near the water-bearing zone in soil bore MW-3. The groundwater sample collected from monitoring well MW-3, located adjacent to an on-site irrigation well, contained TPH as gasoline and benzene, toluene, ethylbenzene, and xylenes (BTEX).

1.1.3 Phase II Site Investigation

In response to Blymyer Engineers' *Preliminary Site Assessment, Phase I Subsurface Investigation* report and *Subsurface Investigation Status Report*, the ACHCSA requested full delineation of the extent of petroleum hydrocarbons in groundwater at the site and in the soil adjacent to the diesel UST excavation. In 1994, Blymyer Engineers conducted a second phase of investigation at the site consisting of:

- A review of records at the ACHCSA and the Regional Water Quality Control Board to determine if any toxic chemical or fuel leaks reported within a ¼-mile radius may have impacted the site



- A review of historical aerial photographs
- Field tests to assess whether pumping of the on-site irrigation well would influence the shallow water-bearing zone
- A 16-point soil gas survey
- Installation of two additional groundwater monitoring wells (MW-4 and MW-5)
- Collection of groundwater samples from all five monitoring wells during the first three quarters of 1995

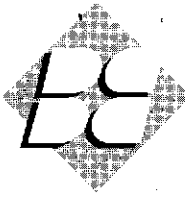
Results of the second phase of investigation were presented in Blymyer Engineers' *Subsurface Investigation Letter Report*, dated December 16, 1994, and in quarterly groundwater monitoring reports submitted in 1995.

No potential upgradient sources of contamination were identified during the review of the local regulatory agency records and aerial photographs. On the basis of the limited field tests, pumping of the irrigation well did not have a significant influence on shallow groundwater beneath the site. Furthermore, petroleum hydrocarbons were not detected in the groundwater samples collected from the irrigation well, which is apparently screened from 45 to 60 feet below ground surface (bgs).

Slightly elevated concentrations of petroleum hydrocarbons were detected in the soil gas samples collected from the northeastern corner of the barn and near the northernmost lath house. Groundwater samples from MW-3, located between the lath house and the barn, contained up to 120,000 micrograms per liter ($\mu\text{g/L}$) TPH as gasoline, 4,800 $\mu\text{g/L}$ of benzene, 8,400 $\mu\text{g/L}$ of toluene, 3,000 $\mu\text{g/L}$ of ethylbenzene, and 27,000 $\mu\text{g/L}$ of total xylenes. The presence of TPH as gasoline in groundwater samples from MW-3 suggested that there was another source of petroleum hydrocarbons at the site, in addition to the diesel UST that was removed in 1992.

TPH as diesel was detected in the MW-5 groundwater sample only during the March 1995 sampling event. TPH as gasoline, TPH as diesel, and BTEX were not detected in groundwater samples collected from monitoring wells MW-1, MW-2, or MW-4. The direction of groundwater flow in September 1995 was estimated to be northwest with an average gradient of 0.004 feet/foot.

On the basis of the *Subsurface Investigation Letter Report* and quarterly groundwater monitoring reports, the ACHCSA requested (in a letter dated May 31, 1995) that Kawahara Nursery conduct additional work at the site. Specifically, they requested submittal of a workplan to identify the source and extent of contamination in soil and groundwater in the vicinity of monitoring well MW-3.



On June 3, 1997, Blymyer Engineers submitted the *Workplan for Additional Site Characterization and Site Risk Classification* (Workplan) to the ACHCSA. In a letter dated June 6, 1997, the ACHCSA requested that several additional tasks be included in the Workplan. On June 12, 1997, Blymyer Engineers submitted the *Revised Workplan for Additional Site Characterization* (Revised Workplan), which addressed the additional ACHCSA requirements.

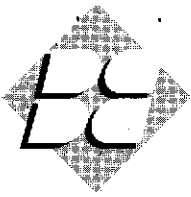
The Revised Workplan included the following tasks:

- Resume quarterly groundwater monitoring and sampling of MW-3, MW-4, and MW-5
- Generate a geophysical survey in an attempt to locate the gasoline UST or its former basin in the vicinity of the lath house on the north side of the site
- Perform an additional investigation in the vicinity of the former gasoline UST by advancing approximately 6 direct-push soil bores
- Decommission monitoring wells MW-1 and MW-2, as approved by the ACHCSA
- Analyze soil and groundwater samples to evaluate the potential for natural attenuation (aerobic and anaerobic biodegradation)
- Determine if the site can be classified in the "low risk groundwater" category as defined by the San Francisco Bay Regional Water Quality Control Board (SFRWQCB)
- If appropriate, evaluate the risk to human health and the environment

On March 4, 1999, Blymyer Engineers resumed quarterly groundwater monitoring and sampling of MW-3, MW-4, and MW-5, and submitted the *Quarterly Groundwater Monitoring Report, First Quarter 1999 (January through March)*, dated April 13, 1999.

In June 1999, prior to implementation of the Revised Workplan, Mr. Amir Gholami of the ACHCSA requested (June 2, 1999) the addition of the following tasks to the above scope of work (see Blymyer Engineers' *Proposed Soil Bore Locations*, dated June 21, 1999):

- Drill two additional soil bores on the west side and east side of monitoring well MW-3
- Drill additional soil bores around the perimeter of the former diesel UST and in the vicinity of geophysical anomalies
- Collect soil samples at 5-foot intervals and collect one grab groundwater sample from each soil bore



1.1.4 Additional Subsurface Investigation

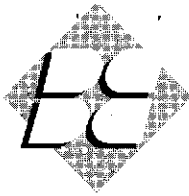
On September 2, 1999, Blymyer Engineers submitted the *Results of Additional Subsurface Investigation and Quarterly Groundwater Monitoring, Second Quarter 1999*. This report presented the results the geophysical survey, additional soil bore sampling, well decommissioning, and groundwater monitoring for the second quarter, 1999. In addition to decommissioning monitoring wells MW-1 and MW-2, as approved by the ACHCSA, the following conclusions were made:

- The direction of groundwater flow is toward the northwest
- On the basis of the geophysical survey, buried metal objects appear to be present in two locations near the west end of the lath house (Figure 3)
- Soil and grab groundwater samples collected from SB-4 and SB-5, located downgradient of one magnetic anomaly, contained very high concentrations of petroleum hydrocarbons
- A petroleum sheen was observed on SB-4 and SB-5 water samples, and free product was observed in the soil samples
- Groundwater samples from MW-3, located between the barn and the northernmost lath house, contained significant concentrations of TPH as gasoline and benzene
- The soil samples and grab groundwater sample collected downgradient of the former diesel UST (removed in 1992) indicated that this area is not a significant source of groundwater contamination

On the basis of the investigation, it appears that there may be free product present in soil and groundwater in the vicinity of the lath house (downgradient of one magnetic anomaly). The site could not, therefore, be classified as "low risk groundwater".

Furthermore, the concentrations of benzene were compared to the Tier 1 table of Risk-Based Screening Levels (RBSLs) as described in the ASTM E 1739-95 *Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites* (RBCA). A California-modified toxicity and exposure table was used. Benzene concentrations in groundwater samples from SB-4, SB-5, and MW-3 exceed the target levels for an exposure pathway of groundwater volatilization to indoor residential air. Because there is a residence immediately downgradient of the apparent gasoline source, closure of this site could not be recommended on the basis of a low risk to human health.

Blymyer Engineers has recommended that a Tier 2 RBCA evaluation be generated to evaluate SSTLs for both soil and groundwater. When the SSTLs are generated, the remaining petroleum hydrocarbon sources will be removed from the site, using the SSTLs as cleanup goals.



Blymyer Engineers has been retained to conduct a **Tier 2 RBCA evaluation** of the site and submitted the *Health Risk Assessment Workplan*, dated January 20, 2000, to the ACHCSA. The workplan was approved by the ACHCSA in a December 14, 2000 letter.

The ACHCSA has recently (letter dated May 10, 2001) agreed to a reduction in the groundwater sampling interval from quarterly to semi-annually (twice a year) due to the relative stability of the groundwater plume. **Semi-annual sampling will occur in months that have historically demonstrated worst-case concentrations in groundwater.**

2.0 Remedial Action Plan

The following RAP has been selected to address the environmental concerns at the site. Two magnetic anomalies will be investigated by excavation. **Associated soil impacted above pre-defined remedial action goals, and any associated piping or other contaminated material, will be removed by a licensed contractor.** Photographs of the excavations will be included in a final report.

2.1 Health and Safety Plan

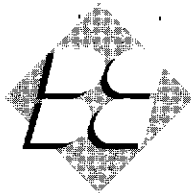
A health and safety plan will be generated that conforms with the requirements of 29 CFR 1910.120(b)(4), and will only cover employees that will be on-site to provide oversight of the exploratory excavations and oversight of the remedial operations.

The UST removal contractor will be required to prepare a site-specific health and safety plan for the work. The health and safety plan will also be required to conform with the requirements of 29 CFR 1910.120(b)(4) and any applicable state or local regulations and guidelines. The contractor will be responsible for the health and safety of all persons in the work zones designated in their health and safety plan. Their health and safety plan will include provisions for the following tasks:

- Removal, transportation, and disposal of the presumed metallic material generated as the result of investigation of the magnetic anomalies
- Excavation and stockpiling of petroleum-contaminated soil
- Loading, transportation, and disposal of petroleum-contaminated soil

2.2 Selected Remediation Technology

The results of the subsurface investigations indicate that petroleum contamination should be found in close proximity to the magnetic anomalies, in particular the southern magnetic anomaly. During the uncovering of these anomalies any impacted soil would be expected to be largely limited to likely backfill material and native soil surrounding the backfill.



Based on available data, Kawahara Nursery has selected to investigate the anomalies and any associated material including piping, and over-excavate and properly dispose of gasoline-impacted soil that contains concentrations above goals to be defined by a health risk analysis.

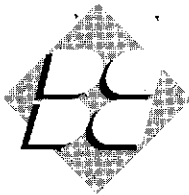
2.3 Analytical Methods and Sampling Plan

Soil samples will be collected to verify the removal of soil with concentrations above pre-defined goals. Soil samples will be analyzed for TPH as gasoline by EPA Method 8015 and BTEX and MTBE by EPA Method 8020. The four soil samples with the highest concentration of TPH as gasoline will also be analyzed for total lead by EPA Method 7421. The soil sample with the highest concentration of TPH as gasoline will be further analyzed for Fuel Additives (RWQCB Oxygenate List) by EPA Method 8260. All soil samples will be collected in accordance with standard industry practices.

For the purposes of generating a request for proposal (RFP) for excavation services, it will be assumed that a 550-gallon UST is located at the northern anomaly location, and that a 1,000-gallon UST is located at the southern anomaly location. This is based upon the surveyed length of each magnetic anomaly, and the knowledge of a previously abandoned 1,000-gallon UST in the vicinity of the lath house. Additionally the two concrete pads in the vicinity of the two anomalies will be investigated by excavation. The pads may have been associated with fuel dispensing systems, and product piping may extend towards either of the two magnetic anomalies. Demolition of the western section of the lath house will also be assumed to be required for RFP purposes.

Excavation bottom samples will be collected unless groundwater is first encountered. A minimum of two bottom samples will be collected at each magnetic anomaly if groundwater is not first encountered. An estimated minimum of four excavation sidewall soil samples will be collected from native soil at each anomaly location. In areas of over-excavation, one soil sample will be collected for every 20 feet of excavation sidewall length. Soil samples will also be collected from underneath any fuel product lines, one sample for each 20 feet of length. Soil samples will additionally be collected at the direction of regulatory authority and at any location that visually exhibits evidence of petroleum contamination where contaminated soil will not be excavated such as in close proximity to utilities (south of the southern anomaly) or structures (west of SB-4 and SB-5).

Soil from each sampling location in the excavations will be collected with an excavator bucket. Prior to sampling, a small amount of soil from the excavator bucket will be placed in an unused, resealable plastic bag for headspace analysis. Each plastic bag will be immediately sealed and left in the sun or inside a warm environment for approximately 15 minutes to allow for the volatilization of any organic vapors in the soil into the headspace. After the specified time elapses, the probe of a Photoionization Detector, which will be calibrated daily to an isobutylene gas standard, will be quickly inserted into the resealable bag and the maximum detected organic vapor reading will be noted.



Soil samples for laboratory analysis will be collected by scraping away the first 3 inches of overlying soil in the excavator bucket. The soil sample will then be collected from this location by using a nitrile-gloved hand and a decontaminated trowel, or by directly pushing the brass liner into the soil in the excavator bucket. Each soil sample will be placed into brass liners, covered with Teflon® sheets, and sealed with adhesiveless silicon tape. The soil samples will be labeled, placed in an ice-chilled cooler, and shipped with proper chain-of-custody documentation to a certified analytical laboratory.

2.4 Materials Handling

Impacted soil will be stored on site in temporary stockpiles pending disposal characterization and disposal acceptance. The stockpiles will be placed over and under heavy plastic sheeting to control volatile organics and dust emission from the stockpile. Depending on the results of the stockpile characterization, disposal options will be evaluated (thermal, landfill, etc.) for cost effectiveness and long term liability. Disposal of the sources of the magnetic anomalies (i.e. UST, product piping, or debris) will be to appropriate locations, with proper documentation, depending on the items found.

The resulting excavations will be backfilled with a clean, imported fill (pea gravel, sand, etc.) to bring the excavations to one foot below grade. Because the excavations are not in a paved area, the upper one foot will be capped with Class II base rock and compacted to a relative density of 90%.

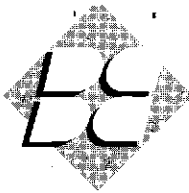
3.0 Reporting and Schedule

3.1 Final Report

A final report will be prepared for submission to the ACHCSA which will document all work performed, including summaries of data, and conclusions and recommendations for further work, if required.

3.2 Schedule

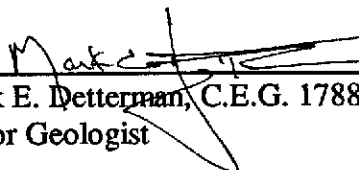
Competitive bids will be obtained for the investigation and excavation of the magnetic anomalies upon receipt of approval of this RAP and the health risk analysis. It is anticipated that generation of the request for proposal and subsequent bid review will require approximately 6 weeks. Subsequent acceptance by Kawahara Nursery will require approximately 2 weeks. Investigation and excavation of the anomalies can be anticipated to be completed within approximately 8 weeks of selection of the excavation contractor. Generation of the final report will require approximately 6 weeks. Progress reports are not anticipated to be required unless unforeseen circumstances are encountered that prevent Kawahara Nursery from meeting this schedule.

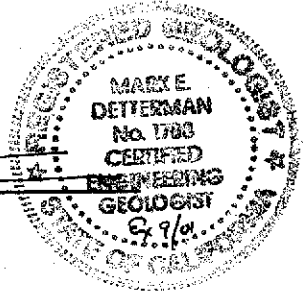


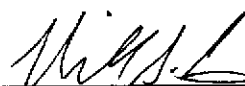
Mr. Amir Gholami
September 10, 2001
Page 9

If you should have any questions, please call Mark Detterman at (510) 521-3773.

Sincerely,

By: 
Mark E. Detterman, C.E.G. 1788
Senior Geologist



And: 
Michael S. Lewis
Vice President, Technical Services

Enclosures: Figure 1: Site Location Map
Figure 2: Site Plan
Figure 3: Soil Bore Locations (Vicinity of the Lath House)

c. Mr. John Kawahara, Kawahara Nursery

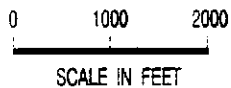


UNITED STATES GEOLOGICAL SURVEY 7.5' QUADS, "SAN LEANDRO, CA" AND "HAYWARD, CA" BOTH ED. 1959, PHOTOREVISED 1960.



BLYMYER
ENGINEERS, INC.

BEI JOB NO. 94015 DATE 4-9-99



SITE LOCATION MAP

KAWAHARA NURSERY
16550 ASHLAND AVE.
SAN LORENZO, CA

FIGURE

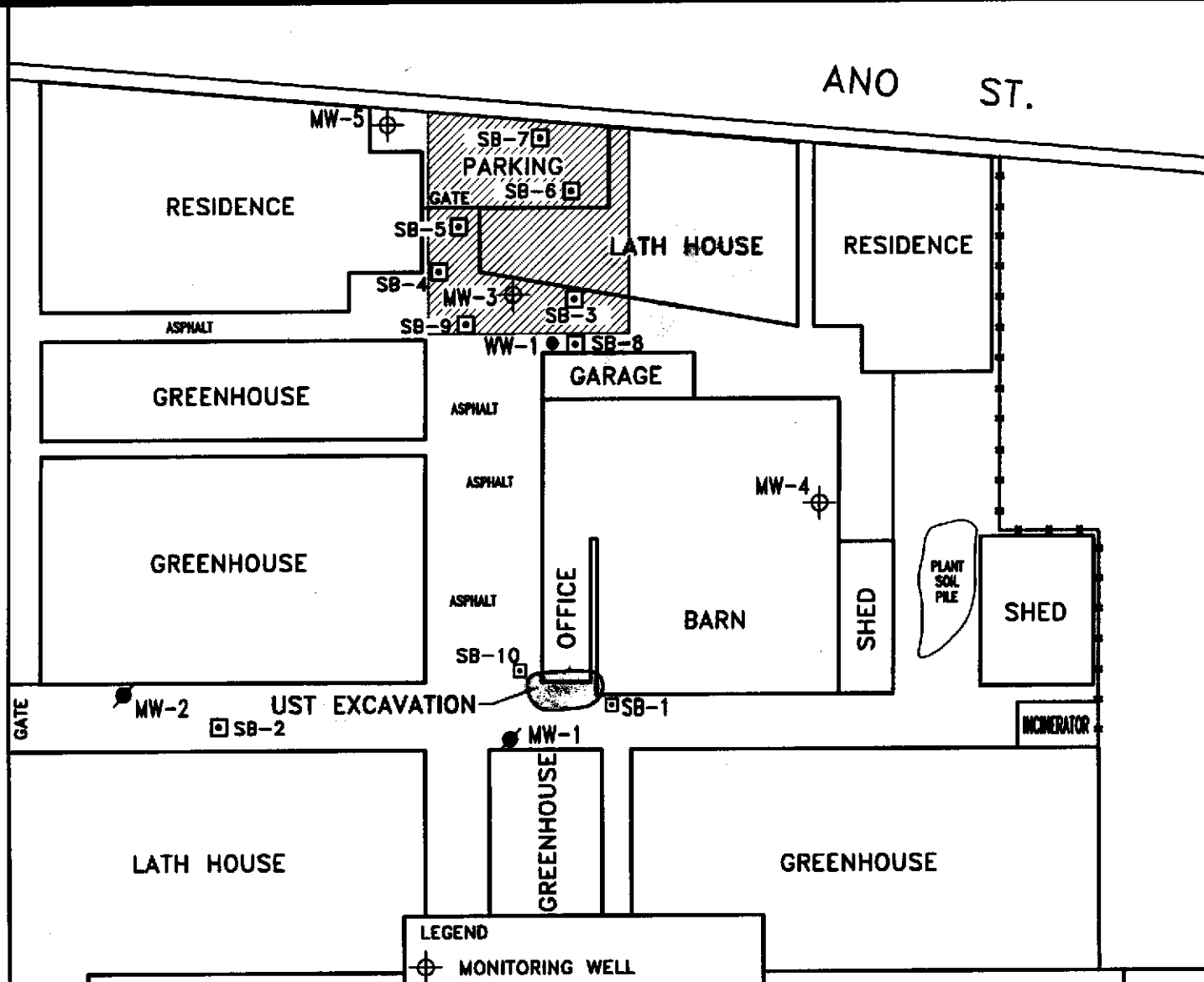
1

THE USE OF THESE DRAWINGS AND SPECIFICATIONS SHALL BE RESTRICTED TO THE ORIGINAL USE FOR WHICH THEY WERE PREPARED. REUSE, REPRODUCTION, OR PUBLICATION, IN WHOLE OR IN PART, IS PROHIBITED WITHOUT THE WRITTEN CONSENT OF BLYMYER ENGINEERS, INC.



ASHLAND AVENUE

ANO ST.



0 25 50
SCALE IN FEET

BLYMYER ENGINEERS, INC.

BEI JOB NO. 94015	DATE 1-21-00
----------------------	-----------------

LEGEND

- ⊕ MONITORING WELL
- ⊙ ABANDONED MONITORING WELL
- WATER WELL
- UST UNDERGROUND STORAGE TANK
- SOIL BORE
- ▨ APPROXIMATE AREA OF GEOPHYSICAL SURVEY

SITE PLAN
KAWAHARA NURSERY
SAN LORENZO, CA

FIGURE
2

THE USE OF THESE DRAWINGS AND SPECIFICATIONS SHALL BE RESTRICTED TO THE ORIGINAL USE FOR WHICH THEY WERE PREPARED. REUSE, REPRODUCTION, OR PUBLICATION, IN WHOLE OR IN PART, IS PROHIBITED WITHOUT THE WRITTEN CONSENT OF BLYMYER ENGINEERS, INC.



ANO ST.

SIDEWALK

MW-5

PAD

SB-7

SB-6

RESIDENCE

LATH HOUSE
(OVERHEAD STRUCTURE)

SB-5

SB-4

PAD

SB-3

MW-3

SB-8

SB-9

LEGEND

⊕ MONITORING WELL

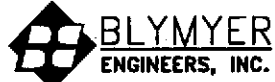
□ SOIL BORE

--- UNDERGROUND UTILITY

— FENCE

⊘ MAGNETIC ANOMALY

0 10 20
SCALE IN FEET



BEI JOB NO.
94015

DATE
8-23-99

SOIL BORE LOCATIONS
(VICINITY OF THE LATH HOUSE)
KAWAHARA NURSERY
SAN LORENZO, CA

FIGURE
3