Preliminary Site Assessment
Phase I Subsurface Investigation

Kawahara Nursery
16550 Ashland Avenue
San Lorenzo, California

July 28, 1993 BEI Job No. 93071

Prepared by:

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Client:

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Limitations

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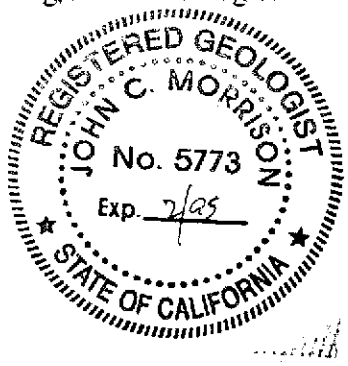
Laurie A. Buckman
Project Geologist

John Morrison
Registered Geologist



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Overview

On December 1, 1992, one steel 5,000-gallon diesel underground storage tank (UST) was removed from the Kawahara Nursery property located at 16550 Ashland Avenue, San Lorenzo, California, by Tank Protect Engineering of Northern California (TPE). Ms. Pamela Evans of the Alameda County Health Care Services Agency (ACHCSA) was on site during the excavation of the UST system and reported that the UST appeared to be in good condition with no visible evidence of holes. The UST removal is documented in TPE's *Underground Storage Tank Removal* report, dated December 12, 1993.

Approximately 40 cubic yards of soil were excavated during the removal of the UST system and stockpiled at the site in two stockpiles. Stockpile SP-1 contains soil from the southeastern portion of the excavation and stockpile SP-2 contains soil from the southwestern portion of the excavation. Kawahara Nursery plans to use this soil to partially backfill the UST excavation.

Following the removal of the UST and surrounding soil, verification soil samples were collected by Tank Protect Engineering at the interface of the wall and the base of the excavation. Characterization soil samples were also collected from each of the soil stockpiles. The collected soil samples were analyzed for Total Petroleum Hydrocarbons as diesel (TPH-d).

The soil sample collected from beneath the former UST fill pipe, contained 5,000 parts per million (ppm) TPH-d. The soil sample collected from the southwest wall of the excavation did not contain TPH-d concentrations above the analytical method reporting limit. The characterization soil sample collected from soil stockpile SP-1 following the removal of the UST contained 210 ppm TPH-d. The composite soil sample collected from stockpile SP-2 did not contain TPH-d concentrations above the analytical method reporting limit.

Blymyer Engineers completed a *Preliminary Site Assessment Phase I Subsurface Investigation Workplan*, dated May 12, 1993, for the subject property. On June 10, 1993, Blymyer Engineers supervised the installation of three groundwater monitoring wells (MW-1, MW-2, and MW-3)

at the site. Monitoring well MW-1 was installed approximately 15 feet southwest of the UST excavation, in the assumed downgradient direction, inferred from the local surface topography. Monitoring well MW-3 was installed along the northern boundary of the site, northwest of the UST excavation, and MW-2 was installed along the western property boundary, southwest of the UST excavation. Soil samples were collected from the monitoring wells during drilling at 5-foot intervals to a depth of approximately 20 feet below grade surface (bgs). One groundwater sample was collected from each monitoring well. Two soil samples and one groundwater sample from each monitoring well were analyzed for Total Petroleum Hydrocarbons as gasoline (TPH-g), TPH-d, and benzene, toluene, ethylbenzene, and total xylenes (BTEX).

Petroleum hydrocarbon contamination was detected in the soil sample collected from monitoring well MW-3 at 15 feet bgs. Minor concentrations of petroleum hydrocarbons were detected in the soil sample collected from monitoring well MW-2 at 5 feet bgs. None of the soil samples collected from monitoring well MW-1 contained petroleum hydrocarbon concentrations above the analytical method reporting limits.

The groundwater sample from monitoring well MW-3 contained 120,000 micrograms per liter (µg/L) of TPH-g, 170,000 µg/L of TPH-d, 4,600 µg/L of benzene, 8,400 µg/L of toluene, 2,100 µg/L of ethylbenzene, and 27,000 µg/L of total xylenes. Concentrations of TPH-d, TPH-g, and BTEX were not detected in concentrations above the analytical method reporting limits in the groundwater samples collected from monitoring wells MW-1 and MW-2.

Blymyer Engineers also collected four discrete soil samples from the stockpiled soil removed from the southeastern portion of the excavation, SP-1, and composited them into one sample. The results of the analysis of the composite soil sample did not indicate detectable concentrations of TPH-d.

An active groundwater well is located at the site, approximately 15 feet to the south of the location of monitoring well MW-3. The groundwater well was installed to 66 feet bgs with an unknown screened interval. The well is registered for on-site irrigation use.

The groundwater flow at the site during this investigation was to the northwest at an average gradient of 0.0003 feet per foot.

Based on the results of this investigation, Blymyer Engineers recommends:

- An agency record search be conducted to ascertain the presence of gasoline USTs and reported leaking USTs or spills at or near the site that may have impacted the site.
- A review of all information regarding the construction and pumping rates of the on-site water well be conducted to determine the radius of influence of the well on the local groundwater flow.
- A subsurface investigation be completed to determine the extent of soil and groundwater petroleum hydrocarbon impaction, including sampling of the on-site water well.
- The on-site water well be abandoned, if the screened interval cannot be determined, to prevent the migration of petroleum hydrocarbon contamination into lower stratigraphic units and water-bearing zones.
- A written request be submitted to and permission obtained from the ACHCSA prior to use of the stockpiled soil to backfill the excavation at the site.

1.0 Introduction

1.1 Background

On December 1, 1992, one steel 5,000-gallon diesel underground storage tank (UST) was removed from the property owned by Kawahara Nursery, located at 16550 Ashland Avenue, San Lorenzo, California, by Tank Protect Engineering of Northern California. Ms. Pamela Evans of the Alameda County Health Care Services Agency (ACHCSA) was on site during the excavation of the UST and indicated on the *Hazardous Materials Inspection Form* completed for the site that the UST appeared to be in good condition with no visible evidence of holes at the time of removal. The removed soil was stockpiled at the site in two distinct piles and a composite soil sample was collected from each pile. Verification soil samples were collected from the southeastern wall beneath the former UST fill port (SE) and the southwestern wall of the excavation (SW). No water was observed in the excavation during the removal of the UST.

Both of the soil stockpiles (SP-1 and SP-2) generated during the excavation of the UST are presently stored at the site at the locations shown on Figures 2 and 3. Kawahara Nursery plans to use the stockpiled soil to partially backfill the UST excavation.

The soil samples were analyzed by Trace Analysis Laboratory, Inc., a California-certified laboratory, for Total Petroleum Hydrocarbons as diesel (TPH-d). Soil sample SE collected from the southeastern wall of the excavation contained 5,000 parts per million (ppm) TPH-d and the composite soil sample collected from the soil removed from the southeastern excavation (SP-1) contained 210 ppm TPH-d.

The results of the UST closure were described in the *Underground Storage Tank Closure Report* completed by Tank Protect Engineering. A copy of this report was forwarded to the ACHCSA by Mr. Tom Kawahara. Following a review of the UST closure assessment results, the ACHCSA, in a letter to Kawahara Nursery, Inc., dated January 27, 1993, requested that a

Preliminary Subsurface Investigation be completed at the site to ascertain the extent of soil and groundwater petroleum hydrocarbon contamination.

This report presents a description of the investigation outlined in the *Preliminary Site Assessment Phase I Subsurface Investigation Workplan*, dated May 12, 1993, completed by Blymyer Engineers.

1.2 Site Conditions

Kawahara Nursery is located at 16550 Ashland Avenue, San Lorenzo, California (Figure 1) and operated by Kawahara Nursery, Inc. as a commercial landscaping nursery. The nursery consists of a small office building, warehouses, greenhouses, and equipment storage areas occupying approximately 2 acres of land in a primarily residential portion of northeastern San Lorenzo (Figure 2).

The UST excavation extends approximately 3 feet beneath the south side of a single story wood frame office building (Figure 3). At the time of the investigation the office building was not shored to prevent structural damage resulting from possible slumping of the excavation walls.

An active water well is located on the northern portion of the property. According to the *Bay Plain Groundwater Study-Well Inventory Report*, (Alameda County Water Flood Control and Water Conservation District, 1989) the water well was drilled to a depth of 66 feet below grade surface (bgs) and is used for on-site irrigation. The screened interval of the well was not determined in this investigation.

1.3 Scope of Work

The objective of the Preliminary Site Assessment was to determine if soil and groundwater outside of the diesel fuel UST excavation have been impacted by petroleum hydrocarbons. The scope of work included the following:

- Collection of a composite soil sample from the soil excavated from the southeastern portion of the excavation, beneath the former UST fill port
- Installation of three soil bores to approximately 20 feet bgs
- Collection of soil samples for possible laboratory analysis at 5-foot intervals from each bore and submittal of two samples per bore for laboratory analysis
- Installation of a 2-inch-diameter groundwater monitoring well in the inferred downgradient direction from the removed UST
- Installation of two 2-inch-diameter groundwater monitoring wells along the northwestern and southwestern property boundaries to establish a triangle for determination of groundwater flow direction and gradient
- Collection of one groundwater sample from each monitoring well for laboratory analysis
- Preparation of a report of the findings of the investigation

2.0 Environmental Setting

2.1 Regional Geology

The city of San Lorenzo is located on the eastern shore of San Francisco Bay, which is a north-south trending trough in the Coast Range Geomorphic Province of California. The trough was formed by a combination of warping and faulting, at either the end of the Pliocene epoch or during the early Pleistocene epoch. The San Francisco-Marin block was tilted toward the east, with the western edge rising to form the San Francisco and Marin Hills, and the eastern edge along the Hayward fault, at the western edge of the Berkeley Hills, to form the depression in which the bay now lies. In the Pleistocene, the trough was nearly filled with sediments, some of marine origin, and others derived from the surrounding hills. During the interglacial stages of the Pleistocene, the trough which became San Francisco Bay was flooded by the general rise in sea level due to the release of melt water from glaciers in other parts of the world (Goldman, 1967).

The site is located approximately 2.5 miles east-northeast of San Leandro Bay, a part of San Francisco Bay, at an elevation of approximately 45 feet above mean sea level, near the eastern edge of the East Bay plain. The site is underlain by unconsolidated sediments, which were deposited mainly as marine sedimentary and volcanic rocks in a geosyncline that occupied this portion of California during the Jurrasic, Cretaceous, and Tertiary times. These deposits reached a thickness of about 10,000 feet. Toward the end of the Tertiary period a series of earth movements folded and faulted the deposits. These deposits are now found as a series or mix of mostly consolidated or highly compacted sandstone, shale, and chert, with some volcanic rocks, serpentines, and consolidated conglomerates. The water bearing properties of the bedrock are not well known. Groundwater has been found in some of the sandstone and conglomerate units and in joints and fractures in the other rock types. The sandstone and conglomerate units have low yields and the joint or fracture zones are difficult to locate. Because most of the deposits are of marine origin, some may contain saline water (Hickenbottom and Muir, 1988).

The site is located on Quaternary alluvium derived from the Franciscan rocks of the Oakland Hill located to the east (Dibblee, T.W. 1980, *Preliminary Geologic Map of the Hayward Quadrangle, Alameda and Contra Costa Counties, California*: United States Open File report 80-540, scale 1:24,000).

2.2 Water Well Survey

Five registered water wells are located within an approximate 1/2-mile radius of the site (Alameda County Flood Control and Water Conservation District, 1989). One documented water well is located on the northern portion of the site. The on-site water well is reported to be installed to a depth of 66 feet bgs, with an average depth to water of 9 feet bgs, and is used for on site irrigation. The reported depth to groundwater in the wells located within a 1/2 mile radius of the site ranges from 9 to 36 feet bgs.

2.3 Climate

The East Bay Plain exhibits a mediterranean climate, with winter rains and dry summers. Winter rains are from frontal storms generated in the North Pacific Ocean. Most rainfall occurs during the months of November through March. Average monthly rainfall is 6.47 inches in January and 0.06 inches in July. Average annual rainfall is 28.21 inches. Temperatures range from a monthly mean of 44.1 degrees Fahrenheit in January to 71.1 degrees Fahrenheit in July (U.S Department of Commerce, 1982). San Lorenzo, and all of California, just experienced an extremely wet winter after 6 years of drought. Consequently, groundwater levels are expected to be higher.

3.0 Data Collection

3.1 Soil Investigation

3.1.1 Soil Sample Collection

Three soil bores, MW-1, MW-2, and MW-3, were drilled at the locations shown on Figure 2 on June 10, 1993. The soil bores were drilled using a hollow-stem auger drill rig, to approximately 20 feet bgs. Soil samples were collected for laboratory analysis from the soil bores in accordance with the American Society for Testing Materials (ASTM) Method D-1586.

Soil samples were collected for lithologic description using a California split-spoon sampler driven into undisturbed soil at 5-foot intervals beginning at 5 feet bgs. Soil samples for possible laboratory analysis were collected with the split-spoon sampler fitted with three brass sample sleeves. Following retrieval of the sampling device, one of the three brass sample sleeves was removed from the sampler, capped with Teflon® sheets and plastic end caps, secured with adhesiveless silicon tape, labeled, and placed on ice for transportation to a California-certified laboratory following chain-of-custody procedures. All soil samples were field screened for volatile organic compounds using a photoionization detector (PID). The PID reading for each soil sample was recorded on the soil bore logs in Appendix A.

A lithologic description of each bore was completed according to the Unified Soil Classification System, ASTM Method D-2488, by a Blymyer Engineers geologist on-site to supervise the soil sampling and monitoring well installation. Appendix A contains soil bore logs depicting the soil lithology, PID readings, soil sample collection depths, the depth of encountered groundwater during drilling, and the depth of stabilized groundwater levels.

The hollow-stem augers used in the drilling process were steam cleaned prior to the commencement of drilling at the site and between each soil bore. All down-hole sampling equipment was decontaminated prior to the initial drilling and sampling and between each

subsequent sampling event to prevent cross contamination. The decontamination procedure consisted of a three-bucket wash of tap water and detergent, a tap water rinse, and a distilled water rinse.

3.1.2 Soil Sample Analytical Methods

Two soil samples from each soil bore were analyzed, one from approximately 5 feet bgs and one from the interval immediately above the first encountered water-bearing zone ranging from 11 to 15 feet bgs. The soil samples were submitted to Sequoia Analytical of Redwood City, California, for analysis for TPH-d and Total Petroleum Hydrocarbons as gasoline (TPH-g) by modified EPA Method 8015 and for benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8020. These analyses were in accordance with the requirements set forth by the ACHCSA in its letter to Kawahara Nursery, Inc., dated December 1, 1992, and in the *Leaking Underground Fuel Tank Manual*, LUFT Manual, and the *Tri-Regional Recommendations*. Chain-of-Custody procedures were followed for each sample and standard quality assurance and quality control procedures were followed at the laboratory.

3.2 Groundwater Investigation

3.2.1 Monitoring Well Installation

The three installed soil bores were converted to 2-inch-diameter groundwater monitoring wells. Two-inch-diameter PVC casing with 0.010-inch factory slots was set through the center of the hollow-stem augers from depths ranging from 9.5 to 9.8 feet bgs to depths ranging from 19.5 to 19.8 feet bgs. Solid PVC casing was set through the augers to complete the well from the top of the slotted casing to the ground surface. The annular space around the casing from the bottom of the bore to 2 feet above the slotted casing was filled with number 2/12 filter pack sand. A 1.5-foot-thick bentonite seal was placed in the annular space above the filter pack. The annular

space from the bentonite seal to 1 foot bgs was filled with neat cement grout and a traffic-bearing well vault was set in a concrete surface seal that extended from 1 feet bgs to the ground surface. The concrete surface seal was raised 1 inch above grade so surface water would drain away from the well. A locking cap was placed on the top of the PVC casing. All casing joints were flush threaded. Well construction diagrams are included on the bore logs in Appendix A. The Alameda County Flood Control and Water Conservation District Zone 7 Monitoring Well Permit is included as Appendix B.

The wells were developed by bailing and surging 48 hours after installation. Development and decontamination water was stored at the site in labeled, Department of Transportation (D.O.T.) approved, 55-gallon drums for later disposal by Kawahara Nursery, Inc.

3.2.2 Groundwater Sample Collection

The wells were allowed to equilibrate after development. On June 16, 1993, the depth to groundwater was measured in each well and the top of casing (TOC) elevations in each well were surveyed to a common datum prior to purging the wells. The wells were purged of approximately three well volumes of water and the temperature, conductivity, and pH of the purged groundwater were monitored to insure that these parameters were within 15 percent of the previous measurement prior to sampling. One groundwater sample was collected from each well using a clean Teflon® bailer. **A slight petroleum hydrocarbon sheen and odor were noted in the groundwater sample collected from monitoring well MW-3 during sampling.** The Well Purging and Sampling Data Sheets for each well are included as Appendix C.

Groundwater samples were not collected from the on-site water well.

The purge water was stored at the site in labeled, D.O.T.-approved, 55-gallon drums for later disposal by Kawahara Nursery, Inc.

3.2.3 Groundwater Sample Analytical Methods

The groundwater samples were submitted to Sequoia Analytical laboratory for analysis for TPH-d and TPH-g by modified EPA Method 8015 and BTEX by EPA Method 8020. Chain-of-Custody procedures were followed for each sample. Sequoia's standard quality assurance and quality control procedures were followed at the laboratory.

3.2.4 Groundwater Elevation Survey

The depth to groundwater in monitoring wells MW-1, MW-2, and MW-3 was measured from the TOC of the wells using an oil-water interface probe in well MW-3 and a water level indicator in wells MW-1 and MW-2, on June 16, 1993. Both of the groundwater level measurement devices are manufactured to be accurate to the nearest 0.01 feet. The measured depth to groundwater ranged from 10.46 feet bgs in monitoring well MW-3 to 10.7 feet bgs in monitoring well MW-1. The TOC elevations for each well were surveyed with a rod and level, referenced to a common datum. This allowed the determination of the elevation and gradient direction of the groundwater table at the site at the time the measurements were collected. Table I includes the TOC elevations, depth to water measurements, and water surface elevations used to determine the direction of groundwater flow.

Depth to groundwater measurements and TOC elevations were not collected from the on-site water well.

4.0 Data Interpretation

4.1 Site Geology

The general geology of the site, as described on the soil bore logs, consists of layers of clay and silty, sandy, clay with small, interbedded zones of poorly graded sandy, gravel. The first encountered water-bearing zone is under confined conditions in each of the soil bores situated in a zone of poorly graded gravel confined by silty, sandy, clay at depths ranging from 11 to 15 feet bgs in monitoring well MW-2 to 15 feet bgs in monitoring well MW-1. The stabilized groundwater level within the wells, following the installation of the monitoring wells, ranged from 10.07 feet bgs in monitoring well MW-1 to 10.46 feet bgs in monitoring well MW-3.

4.2 Discussion of Soil Sample Analytical Results

The soil sample analytical results indicated a concentration of TPH-d of 1.9 milligrams per kilogram (mg/kg) in the soil sample collected from monitoring well MW-2 at 5 feet bgs and 25 mg/kg in the composite soil sample collected from the stockpile soil removed from the southeastern portion of the UST excavation. The soil sample collected from monitoring well MW-3 at 15 feet bgs contained 0.20 mg/kg benzene, 0.98 mg/kg toluene, 0.68 mg/kg ethylbenzene, and 4 mg/kg total xylenes. Concentrations of TPH-g, TPH-d, and BTEX were not detected above analytical method reporting limits in the other soil samples analyzed. The soil sample analytical results are summarized in Table II and the laboratory analytical report is included as Appendix E.

4.3 Discussion of Groundwater Sample Analytical Results

Analysis of the groundwater sample collected from monitoring well MW-3 indicated 120,000 micrograms per liter (µg/L) of TPH-g, 170,000 µg/L of TPH-d, 4,600 µg/L of benzene, 8,400

µg/L of toluene, 2,100 µg/L of ethylbenzene, and 27,000 µg/L of total xylenes. Concentrations of TPH-g, TPH-d, and BTEX were not detected above the analytical method reporting limits in the groundwater samples analyzed from monitoring wells MW-1 and MW-2. The groundwater analytical results are summarized in Table III and the laboratory report is included in Appendix E.

4.4 Groundwater Gradient

Figure 4 depicts the groundwater flow direction and average gradient at the site. The June 16, 1993, groundwater flow direction was to the northwest at an average gradient of 0.003 feet per foot.

The possible impact of the on-site water well and pumping system on the local groundwater elevation, flow direction, and average gradient was not ascertained in this investigation.

5.0 Summary and Conclusions

- The site is an operating landscaping nursery occupying approximately 2 acres of property located in a primarily residential area of northeastern San Lorenzo, California.

- The site stratigraphy consists of layers of clay, sandy, silty, clays with interbedded layers of poorly graded sandy gravel. The first encountered water-bearing zone was situated to a layer of poorly graded gravel confined by silty, sandy, clay formations at depths ranging from 11 to 15 feet bgs.

- Groundwater at the site was measured to the northwest at an average gradient of 0.003 feet per foot on June 16, 1993. However, the effects of an on-site water well and pumping system on the local groundwater elevation, flow direction, and gradient have not been ascertained.

- The soil sample collected and analyzed from monitoring well MW-3 at 15 feet bgs contained 0.20 mg/kg of benzene, 0.98 mg/kg of toluene, 0.68 mg/kg of ethylbenzene, and 4 mg/kg of total xylenes.

- The soil sample analyzed from monitoring well MW-2 at 5 feet bgs contained 1.9 mg/kg of TPH-d.

- The soil sample collected from the stockpiled soil removed from the southeastern portion of the UST excavation (in the vicinity of the former UST fill port) contained 25 mg/kg of TPH-d.

- The groundwater sample collected from monitoring well MW-3 contained 120,000 µg/L of TPH-g, 170,000 µg/L of TPH-d, 4,600 µg/L of benzene, 8,400 µg/L of toluene, 2,100 µg/L of ethylbenzene, and 27,000 µg/L of total xylenes.

6.0 Recommendations

Based on the results of this investigation, Blymyer Engineers recommends:

- An agency record search be conducted to ascertain the presence of gasoline USTs and reported leaking USTs or spills at or near the site that may have impacted the site.
- A review of all information regarding the construction and pumping rates of the on-site water well be conducted to determine the radius of influence of the well on the local groundwater flow.
- A subsurface investigation be completed to determine the extent of soil and groundwater petroleum hydrocarbon impaction, including sampling of the on-site water well.
- The on-site water well be abandoned, if the screened interval cannot be determined, to prevent the migration of petroleum hydrocarbon contamination into lower stratigraphic units and groundwater bearing zones.
- A written request be submitted to and permission obtained from the ACHCSA prior to use of the stockpile soil to backfill the excavation at the site.

A copy of this report should be forwarded to each of the following:

Ms. Juliet Shin
Hazardous Materials Specialist
Department of Environmental Health
Alameda County Health Care Services Agency
80 Swan Way, Room 200
Oakland, California 94621

Mr. Richard Hiett
San Francisco Bay Regional Water Quality Control Board
2101 Webster Street
Oakland, California 94612

7.0 References

Alameda County Flood Control and Water Conservation District, October 3, 1989, *East Bay Plain Well Location Base Map*: *Hayward Quadrangle.*

California Regional Water Quality Control Boards, San Francisco Bay, North Coast, and Central Valley Regions, August 10, 1990, *Tri-Regional Board Staff Recommendations for Preliminary Evaluation of Underground Tank Sites*: San Francisco, California Regional Water Quality Control Board, 21 p.

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State of California Leaking Underground Fuel Tank Task Force, May 1988, *Leaking Underground Fuel Tank (LUFT) Manual*: Sacramento, California, State Water Resources Control Board, 161 p.

Underground Storage Tank Closure Report, December 12, 1993, Tank Protect Engineering of Northern California.

U.S Department of Commerce, 1982, *Monthly Normals of Temperature, Precipitation, and Heating and Cooling Degree Days 1951-80, California*: Asheville, North Carolina, National Oceanic and Atmospheric Administration, Environmental Data and Information Service, National Climatic Center, 36 p.

Table II, Summary of Soil Sample Analytical Results
BEI Job No. 93071, Kawahara Nursery, Inc.
16550 Ashland Avenue, San Lorenzo, CA

Sample ID/ feet bgs	TPH as Gasoline (mg/kg)	TPH as Diesel (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)
	Modified EPA Method 8015		EPA Method 8020			
MW-1 5'	<1	<1	<0.005	<0.005	<0.005	<0.005
MW-1 16'	<1	<1	<0.005	<0.005	<0.005	<0.005
MW-2 5'	<1	1.9	<0.005	<0.005	<0.005	<0.005
MW-2 11.5'	<1	<1	<0.005	<0.005	<0.005	<0.005
MW-3 6'	<1	<1	<0.005	<0.005	<0.005	<0.005
MW-3 15'	<1	<1	0.20	0.98	0.68	4
SP-1	N/A	25	<0.005	<0.005	<0.005	<0.005

Notes:

TPH	=	Total Petroleum Hydrocarbons
mg/kg	=	milligrams per kilogram
<	=	less then the analytical method reporting limit
SP	=	Stockpiled soil sample
N/A	=	not analyzed
bgs	=	below grade surface

Table III, Summary of Groundwater Analytical Results
BEI Job No. 9307I, Kawahara Nursery, Inc.
16550 Ashland Avenue, San Lorenzo, CA

Sample ID/ feet bgs	TPH as Gasoline (µg/L)	TPH as Diesel (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
	Modified EPA Method 8015		EPA Method 8020			
MW-1	<50	<50	<0.5	<0.5	<0.5	<0.5
MW-2	<50	<50	<0.5	<0.5	<0.5	<0.5
MW-3	120,000	170,000	4,600	8,400	2,100	27,000

Notes:

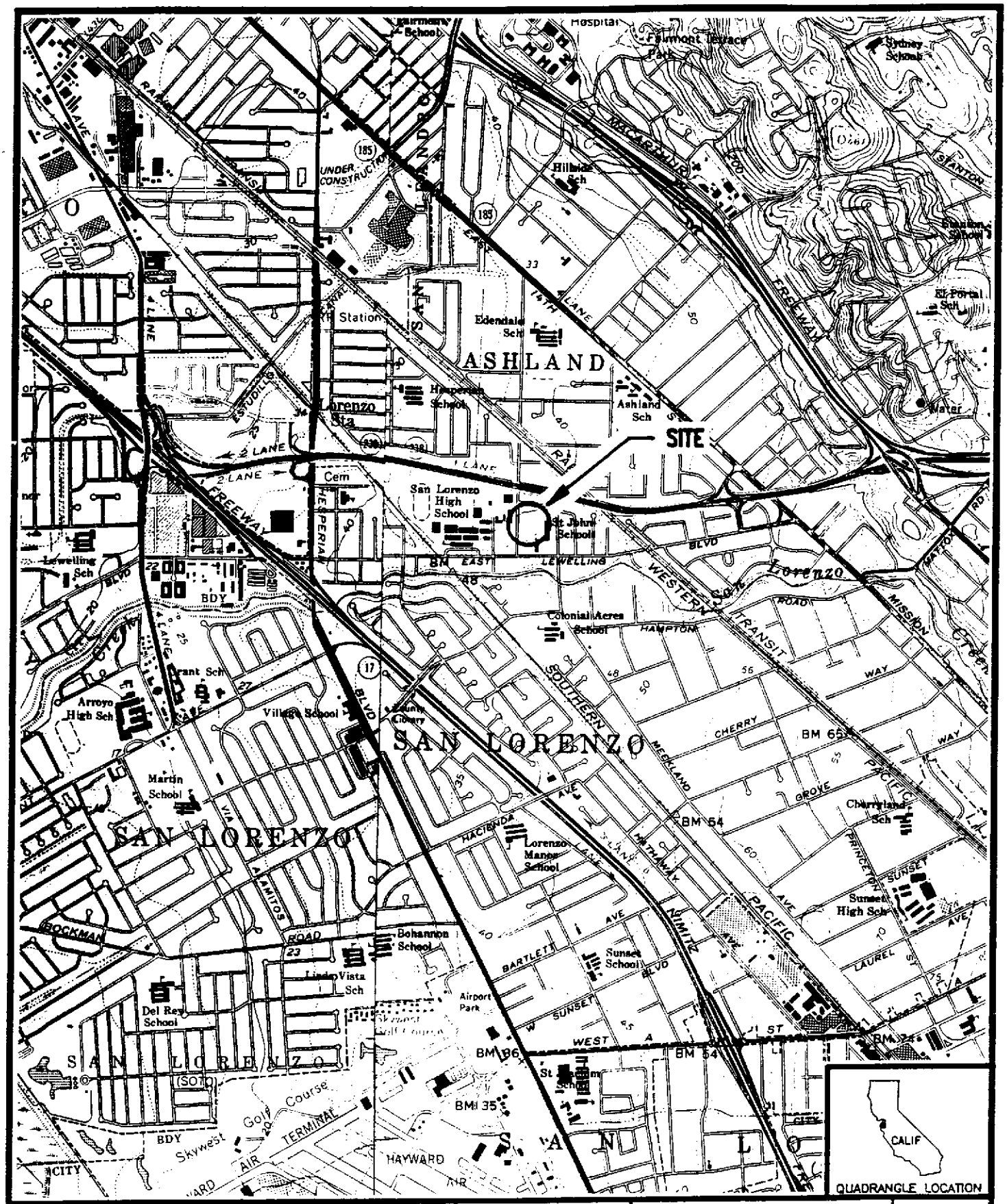
TPH = Total Petroleum Hydrocarbons
µg/L = micrograms per liter
< = less than the analytical reporting limit
bgs = below grade surface

Table I, Groundwater Elevation Measurements
BEI Job No. 93071, Kawahara Nursery, Inc.
16550 Ashland Avenue, San Lorenzo, CA

Sample ID	Date	TOC Elevation (feet)	Depth to Water (feet)	Water Surface Elevation (feet)
MW-1	6/16/93	100	10.7	89.3
MW-2	6/16/93	99.27	10.24	89.03
MW-3	6/16/93	99.52	10.46	89.06

Notes:

TOC = Top of casing



BLYMYER ENGINEERS, INC.

BEI DWG NO: 93071CVR

DATE: 6/30/93

0 2000' 4000'

SCALE IN FEET

SITE LOCATION MAP

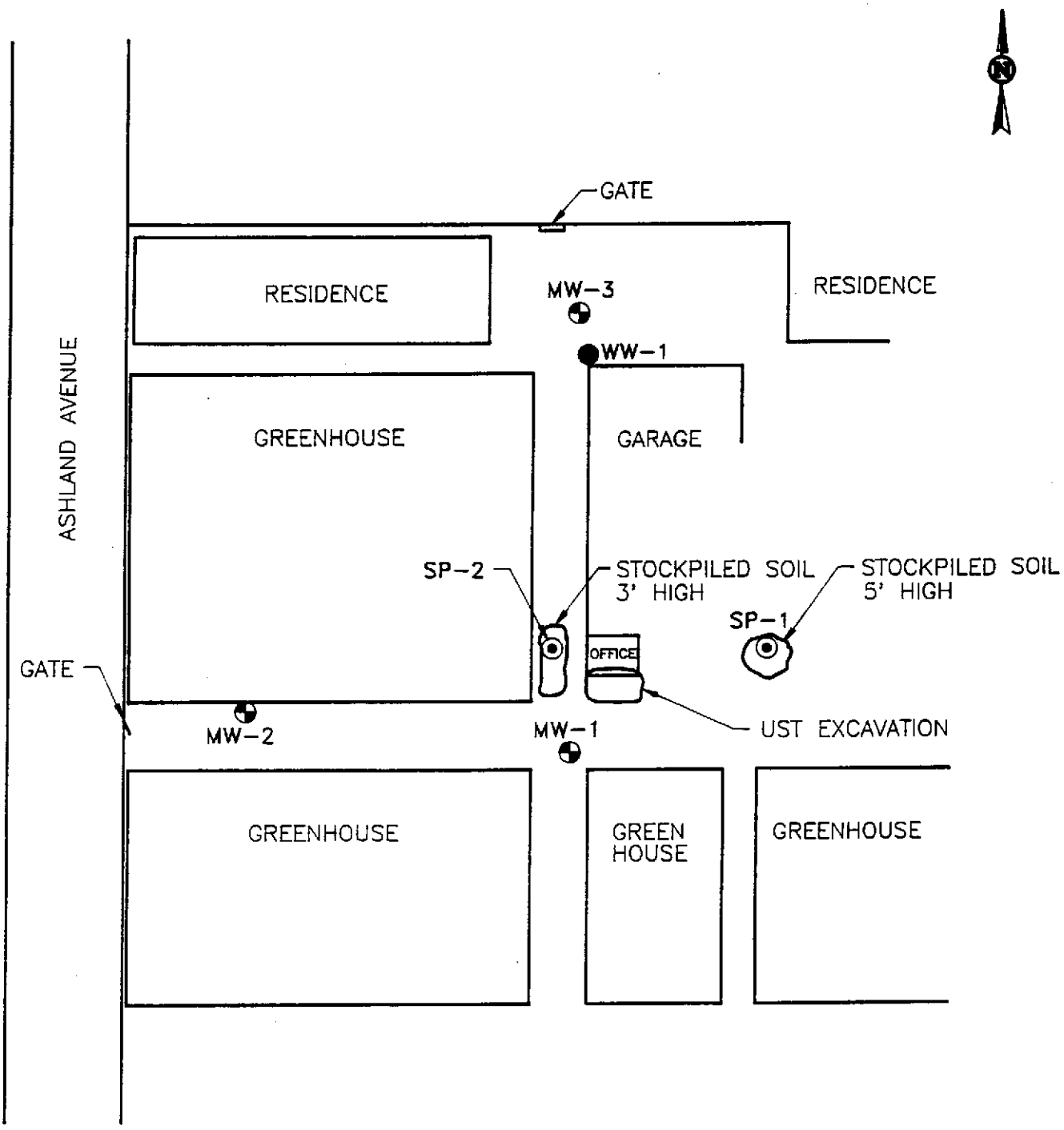
KAWAHARA NURSERY

16550 ASHLAND AVE.

SAN LORENZO, CA.

FIGURE 1

93071CVR/6-30-93/GW



LEGEND

◒ = MONITORING WELL
◉ = SOIL SAMPLE LOCATION
● = WATER WELL
UST = UNDERGROUND STORAGE TANK

BLYMYER ENGINEERS, INC. (BEI)

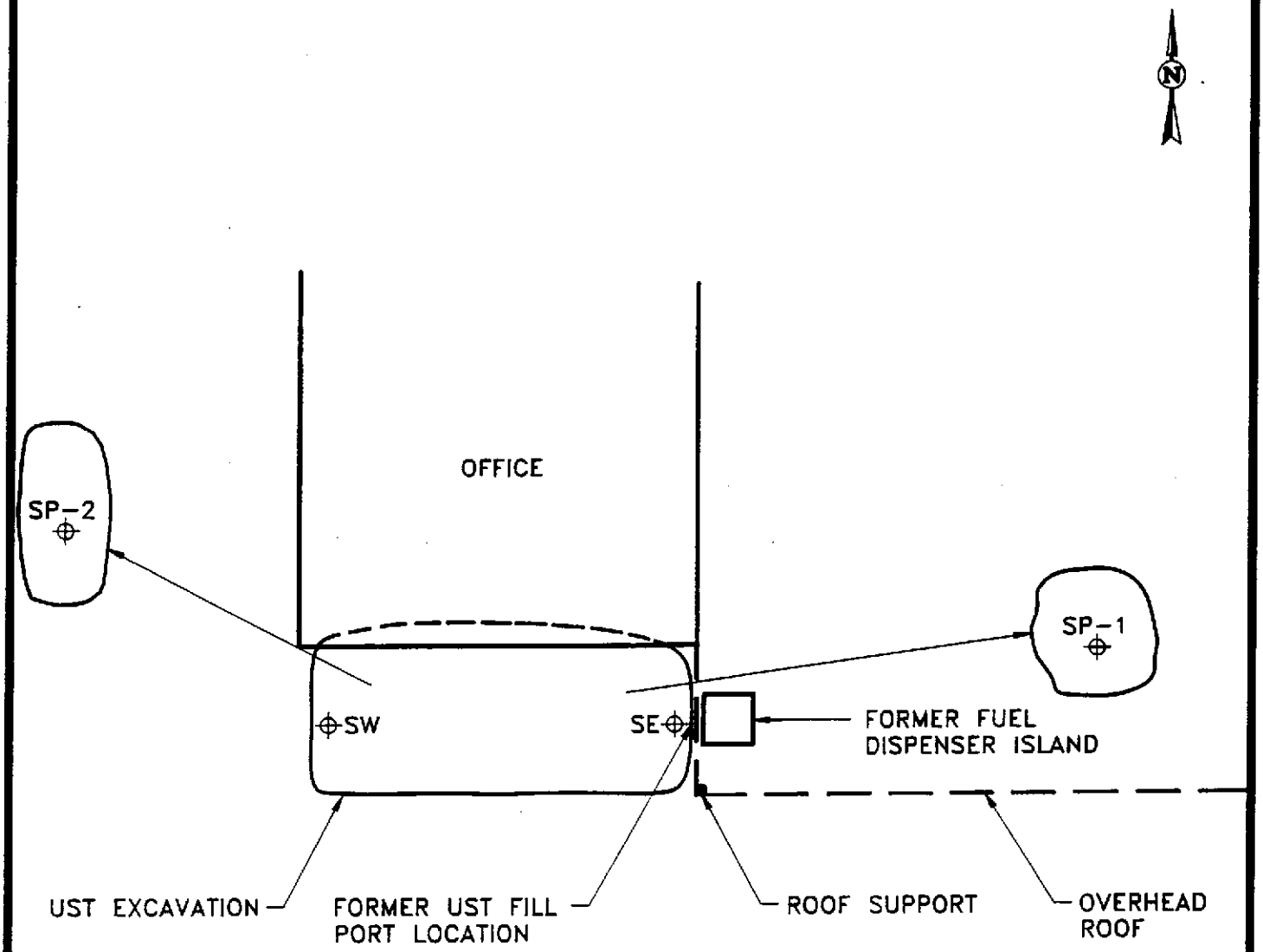
BEI DWG NO: 93071SK1
DATE: 7/23/93

0 50' 100'
SCALE: 1" = 50'

SITE PLAN
KAWAHARA NURSERY
16550 ASHLAND AVE.
SAN LORENZO, CA.

FIGURE 2

93071SK1/7-23-93/GW

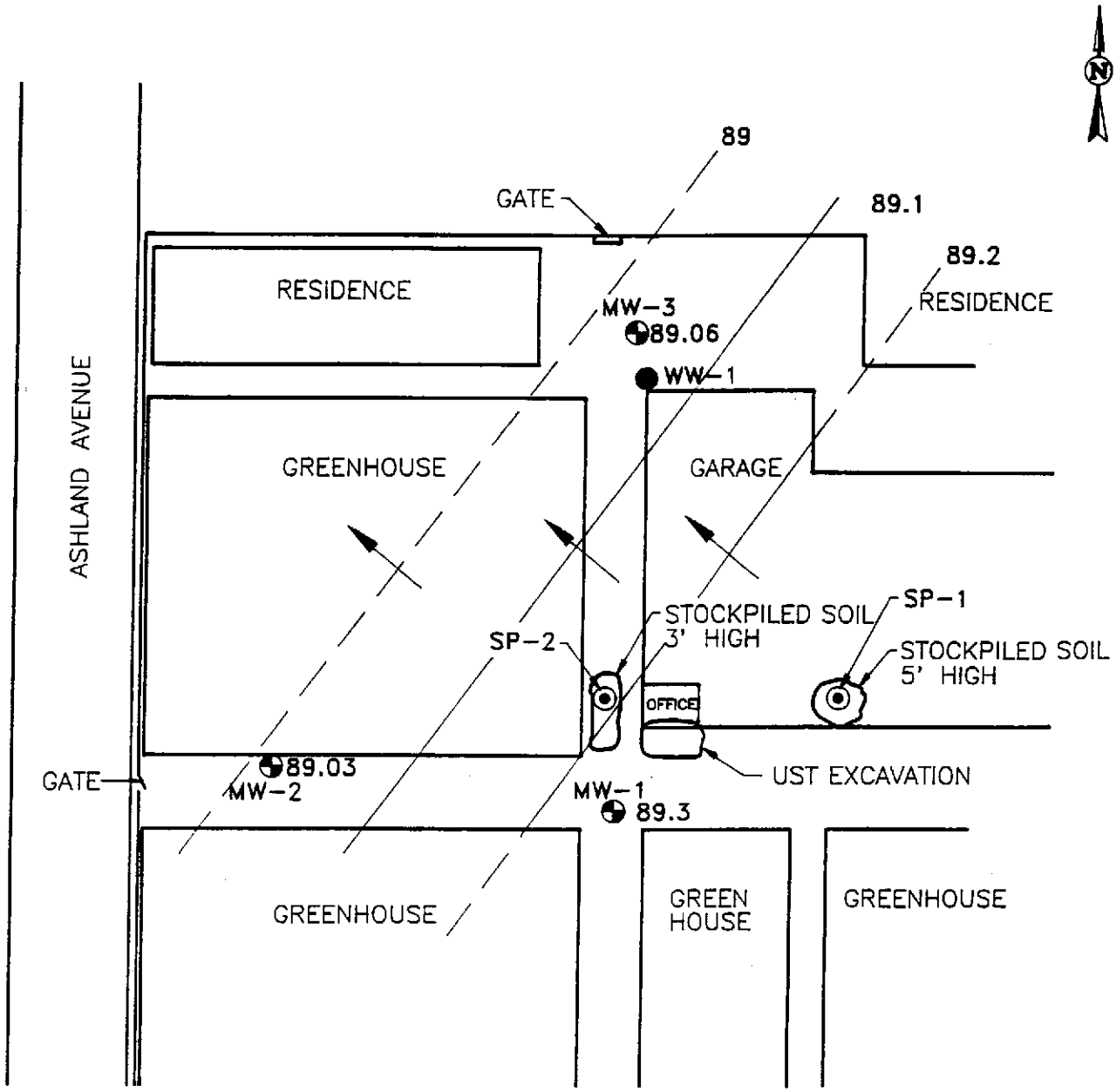


LEGEND

⊕ = SOIL SAMPLE LOCATION
UST = UNDERGROUND STORAGE TANK

BLYMYER ENGINEERS, INC. (BEI)	0 10' 20' SCALE: 1" = 10'	DETAILED MAP OF UST EXCAVATION AREA KAWAHARA NURSERY SAN LORENZO, CA	FIGURE 3
BEI DWG NO: 93071F13 / DATE: 7/23/93			

93071F13/7-23-93/GW



AVERAGE FLOW GRADIENT 0.0003 FEET/FOOT

LEGEND

- = MONITORING WELL
- = SOIL SAMPLE LOCATION
- = WATER WELL
- = GROUNDWATER FLOW DIRECTION (CONTOUR INTERVAL = 0.1 FEET)

UST = UNDERGROUND STORAAGE TANK

BLYMYER ENGINEERS, INC.

BEI DWG NO: 93071SK2

DATE: 7/23/93

0 50' 100'

SCALE: 1" = 50'

GROUNDWATER GRADIENT MAP

KAWAHARA NURSERY
16550 ASHLAND AVE.
SAN LORENZO, CA.

FIGURE 4

93071SK2/7-23-93/GW

BLYMER ENGINEERS, INC. BEI

Job #: 93071
Log of Bore No.: MW-1
Client: Kawahara Nursery
Site: San Leandro, CA
Driller: Ted Trevor
Drilling Contractor: Gregg Drilling
Logged by: L. Buckman

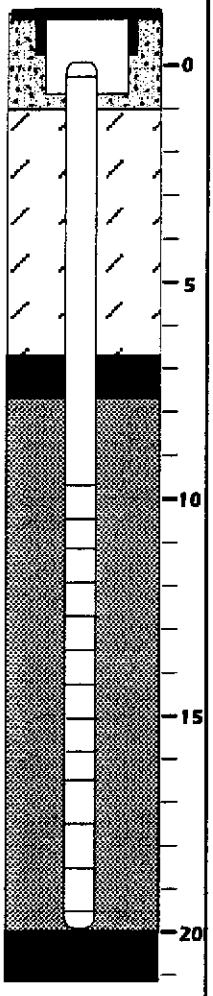
Date Drilled: 6/10/93
Drilling Equipment: Hollow Stem Auger
Bore diameter: 6 inches
Total depth: 19.8 feet
Initial water level: ▽15 feet
Stabilized water level: ▼10.7 feet

Well Completion

Completion Depth:

Size/Type	Depth (feet) From	To
Surface Completion: Flush Mount w/locking cap		
Blank Casing: 2" Diam./PVC	1.0	9.8
Slotted Casing: 0.02" Slot 2" Diam./PVC	9.8	19.8
Filter Pack: Silica Sand	7.8	19.8
Seal: Hydrated Bentonite	6.0	7.8
Annular Seal: Cement Grout	1.0	6.0
Bottom Seal: Cement Grout	19.8	21.0

Depth (Ft.)	Blows/6 In.	P.I.D. (ppm)	Samples	DESCRIPTION	Unified Soil Clasification	Graphic Log	Water Depth
0				0-1.0' Gravel fill	F		
		0		1.0-6.0' Clay, silty, sandy, brown - black, moist.			
		0			CL		
5				6.0-7.0' Gravel, sandy, poorly graded, tan, dry.	GP		
		0		7.0-12' Clay, silty, sandy, tan, dry.			10.07 ▼
10					CL		
				12-13' Clay, plastic, grey, dry.			
				13-15' Clay, silty, tan, moist.			
		0					15.0 ▽
15				15-16' Gravel, sandy, poorly graded, wet, no odor.	GP		
				16-19.8' Clay, silty, tan, moist.	CL		
		0					
20				End of bore 19.8 feet			
25							
30							



BLYMYER ENGINEERS, INC. BEI

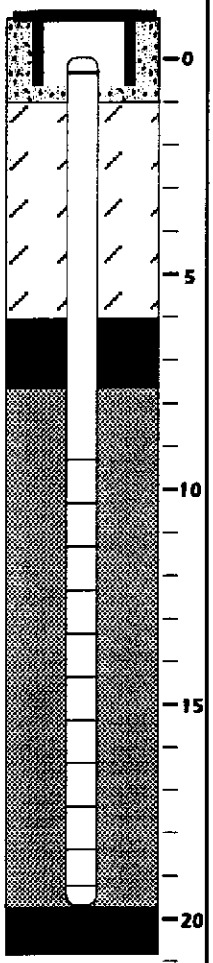
Job #: 93071
Log of Bore No.: MW-2
Client: Kawahara Nursery
Site: San Leandro, CA
Driller: Ted Trevor
Drilling Contractor: Gregg Drilling
Logged by: Laurie Buckman

Date Drilled: 6/10/93
Drilling Equipment: Hollow Stem Auger
Bore diameter: 6"
Total depth: 19.7 feet
Initial water level: ▽ 12 feet
Stabilized water level: ▼ 10.24 feet

Well Completion

Completion Depth: Size/Type	Depth (feet) From	To
Surface Completion: Flush Mount w/locking cap		
Blank Casing: 2" Diam./PVC	1.0	9.7
Slotted Casing: 0.02" Slot 2" Diam./PVC	9.7	19.7
Filter Pack: Silica Sand	7.7	19.7
Seal: Hydrated Bentonite	6.0	7.7
Annular Seal: Cement Grout	1.0	6.0
Bottom Seal: Cement Grout	19.7	21.0

Depth (Ft.)	Blows/6 In.	P.I.D. (ppm)	Samples	DESCRIPTION	Unified Soil Classification	Graphic Log	Water Depth
0				0.0-1.0' Gravel fill	F		
		0		1.0-4.0' Clay, silty-sandy, tan-black, dry.	CL		
5		0		4.0-5.0' Gravel, sandy, poorly graded, tan, dry.	GP		
				5.0-7.0' Sand, poorly graded, tan, iron stained, moist.	SP		
				7.0-8.0' Gravel, sandy, poorly graded, tan.	GP		
10		0		8.0-11.0' Clay, silty-sandy, tan, dry.	CL		10.24 ▼
				11.0-12.0' Sand, poorly graded, tan, iron stained, wet.	SP		12.0 ▽
15		0		12.0-19.7' Clay, plastic, grey.	CL		
20		0		Bottom of bore 19.7 feet			
25							
30							



BLYMYER ENGINEERS, INC. (BEI)

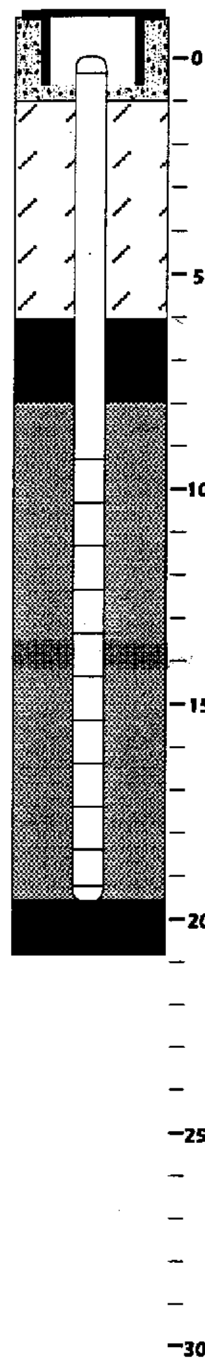
Job #: 93071
Log of Bore No. [redacted]
Client: Kawahara Nursery
Site: San Leandro, CA
Driller: Ted Trevor
Drilling Contractor: Gregg Drilling
Logged by: Laurie Buckman

Date Drilled: 6/10/93
Drilling Equipment: Hollow Stem Auger
Bore diameter: 6"
Total depth: 19.5 feet
Initial water level: ▽ 13 feet
Stabilized water level: ▼ 10.46 feet

Well Completion

Completion Depth: Size/Type	Depth (feet) From	To
Surface Completion: Flush Mount w/locking cap		
Blank Casing: 2" Diam./PVC	1.0	9.5
Slotted Casing: 0.02" Slot 2" Diam./PVC	9.5	19.5
Filter Pack: Silica Sand	8.0	19.5
Seal: Hydrated Bentonite	6.0	8.0
Annular Seal: Cement Grout	1.0	6.0
Bottom Seal:	19.5	21.0

Depth (Ft.)	Blows/6 In.	P.I.D. (ppm)	Samples	DESCRIPTION	Unified Soil Classification	Water Depth
0				0.0-1.0' Gravel fill		
		0		1.0-6.0' Clay, silty, brown-black, moist.	CL	
5		0	■	6.0-7.0' Gravel, sandy, tan, poorly graded, dry.	GP	
				7.0-10.0' Clay, silty, sandy, brown, dry.	CL	
10		0		10.0-13.0' Clay, plastic, tan-grey, dry.		10.46 ▼
		2,300	■	13.0-15.0' Gravel, silty-sandy, tan, wet, strong hydrocarbon odor	GP	13.0 ▽
15		1,900		15.0-17.0' Clay, plastic, tan, moist.	CL	
		2,100		17.0-19.5' Clay, silty, tan, moist		
20				Bottom of bore 19.5 feet		
25						
30						



ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94588 VOICE (510) 484-2600
FAX (510) 462-3914

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT Kawahara Nursery
1655 Ashland Ave, San Lorenzo, CA

CLIENT
Name San Kawahara Nursery
Address 1655 Ashland Ave Voice
City San Lorenzo Zip 94580

APPLICANT
Name Laurie Buckhan c/o Blymyer Engineers Fax
Address 1829 Clement Ave Voice 521-3773
City Alameda Zip 94501

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection		General	
Water Supply		Contamination	X
Monitoring	X	Well Destruction	

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other Sampling
Municipal ___ Irrigation ___

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger X
Cable ___ Other ___

DRILLER'S LICENSE NO. 485165

WELL PROJECTS
Drill Hole Diameter ___ in. Maximum
Casing Diameter 2 in. Depth 35 ft.
Surface Seal Depth ___ ft. Number 3

GEOTECHNICAL PROJECTS
Number of Borings ___ Maximum
Hole Diameter ___ in. Depth ___ ft.

ESTIMATED STARTING DATE 6/7/93
ESTIMATED COMPLETION DATE 6/7/93

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE [signature] Date 5/27/93

FOR OFFICE USE

PERMIT NUMBER 93293
LOCATION NUMBER

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well Projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

(B.) WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 27 May 93
Wyman Hong

Well Purging and Sampling Data

Date	6/26/93	Project Number	93071	Project Name	Kawahara
Well Number	MW-1	Boring Diameter	N/A	Casing Diameter	2"

Column of Liquid in Well		Volume to be Removed	
Depth to product	N/A	Gallons per foot of casing	= 0.17 gal/ft.
Depth to water	10.70 ft.	Column of water	x 8.80 ft.
Total depth of well	19.50 ft.	Volume of casing	= 1.5 gal.
Column of water	8.80 ft.	No. of volumes to remove	x 3
		Total volume to remove	= 4.5 gal.

Method of measuring liquid	Oil/water interface probe
Method of purging well	Teflon bailer
Method of decontamination	Alconox and distilled water

Physical appearance of water (clarity, color, particulates, odor)	
Initial	Slightly silty, tan color, no odor
During	Very silty, brown color, no odor
Final	Very silty, brown color, no odor

Field Analysis	Initial	During		Final
Time	09:05	09:10	09:15	09:20
Temperature (F)	65.5	63.0	62.3	62.1
Conductivity (us/cm)	1300	1270	1250	1210
Ph	9.10	8.57	8.40	8.25
Method of measurement	Hydac meter			
Total volume purged	4.5 gals.			
Comments				

Sample Number	Amount of Sample
MW-1	3-40ml VOA w/HCl
	2-1l amber botles

Signed/Sampler	[signature]	Date	6/16/93
Signed/Reviewer	[signature]	Date	7/16/93

Well Purging and Sampling Data

Date	6/16/93	Project Number	93071	Project Name	Kawahara
Well Number	MW-2	Boring Diameter	N/A	Casing Diameter	2"

Column of Liquid in Well	
Depth to product	N/A
Depth to water	10.24
Total depth of well	19.33 ft.
Column of water	9.09 ft.

Volume to be Removed	
Gallons per foot of casing	= 0.17 gal/ft.
Column of water	x 9.09 ft.
Volume of casing	= 1.5 gal.
No. of volumes to remove	x 3
Total volume to remove	= 4.5 gal.

Method of measuring liquid	Oil/water interface probe
Method of purging well	Teflon bailer
Method of decontamination	Alconox and distilled water

Physical appearance of water (clarity, color, particulates, odor)	
Initial	Clear, no odor
During	Very silty, brown color, no odor
Final	Very silty, brown color, no odor

Field Analysis	Initial	During		Final
Time	10:10	10:15	10:20	10:25
Temperature (F)	64.3	63.3	63.4	63.3
Conductivity (us/cm)	1120	1290	1260	1240
Ph	8.37	8.12	8.05	7.99
Method of measurement	Hydac meter			
Total volume purged	4.5 gals.			
Comments				

Sample Number	Amount of Sample
MW-2	3-40ml VOA w/HCl
	2-1l amber bottles

Signed/Sampler	Stephen W Moore	Date	6/16/93
Signed/Reviewer	[signature]	Date	7/16/93

Well Purging and Sampling Data

Date	6/16/93	Project Number	93071	Project Name	Kawahara
Well Number	MW-3	Boring Diameter	N/A	Casing Diameter	2"

Column of Liquid in Well	
Depth to product	N/A
Depth to water	10.46 ft.
Total depth of well	19.25 ft.
Column of water	8.79 ft.

Volume to be Removed	
Gallons per foot of casing	= 0.17 gal/ft.
Column of water	x 8.79 ft.
Volume of casing	= 1.5 gal.
No. of volumes to remove	x 3
Total volume to remove	= 4.5 gal.

Method of measuring liquid	Oil/water interface probe
Method of purging well	Disposable poly bailer
Method of decontamination	Alconox and distilled water

Physical appearance of water (clarity, color, particulates, odor)	
Initial	Slightly silty, tan color, strong aged gasoline odor
During	Very silty, brown color, strong aged gasoline odor
Final	Very silty, brown color, strong aged gasoline odor

Field Analysis	Initial	During		Final
Time	11:25	11:30	11:35	11:40
Temperature (F)	65.4	64.4	64.6	64.1
Conductivity (us/cm)	1490	1480	1540	1400
Ph	8.01	7.80	7.67	76.9
Method of measurement	Hydac meter			
Total volume purged	4.5 gal.			
Comments	Sheen in pruge bucket. Strong odor of aged gasoline.			

Sample Number	Amount of Sample
MW-3	3-40ml VOA w/HCL
	2-1l amber bottles

Signed/Sampler	Stephen W. Moore	Date	6/16/93
Signed/Reviewer	[signature]	Date	7/16/93

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Blymyer	Client Project ID:	93071	Sampled: May 12, 1993
1829 Clement Street	Sample Matrix:	Soil, SP-1A	Received: May 13, 1993
Alameda, CA 94501-1396	Analysis Method:	EPA 5030/8020	Reported: May 27, 1993
Attention: Steve Moore	First Sample #:	3E50001	

BTEX DISTINCTION

Analyte	Reporting Limit mg/kg	Sample I.D. 3E50001
Benzene	0.0050	N.D.
Toluene	0.0050	N.D.
Ethyl Benzene	0.0050	N.D.
Total Xylenes	0.0050	N.D.

Quality Control Data

Report Limit Multiplication Factor:	1.0
Date Analyzed:	5/17/93
Instrument Identification:	GCHP-1
Surrogate Recovery, %: (QC Limits = 70-130%)	102

Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Andrea Fulcher
Project Manager

SEQUOIA ANALYTICAL
680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Blymyer	Client Project ID:	93071	Sampled: May 12, 1993
1829 Clement Street	Sample Matrix:	Soil, SP-1A	Received: May 13, 1993
Alameda, CA 94501-1396	Analysis Method:	EPA 3550/8015	Reported: May 27, 1993
Attention: Steve Moore	First Sample #:	3E50001	

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit mg/kg	Sample I.D. 3E50001
Extractable Hydrocarbons	1.0	25
Chromatogram Pattern:		Weathered Diesel

Quality Control Data

Report Limit Multiplication Factor:	5.0
Date Extracted:	5/14/93
Date Analyzed:	5/17/93
Instrument Identification:	GCHP-5

Extractable Hydrocarbons are quantitated against a fresh diesel standard.
Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

SEQUOIA ANALYTICAL

Andrea J. Fulcher

Andrea Fulcher
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Blymyer	Client Project ID:	009-3071	Sampled: May 12, 1993
1829 Clement Street	Sample Descript:	SP-1A	Received: May 13, 1993
Alameda, CA 94501-1396			Analyzed: 5/13,14,25/93
Attention: Steve Moore	Lab Number:	3E50001	Reported: May 27, 1993

CORROSIVITY, IGNITABILITY, AND REACTIVITY

Analyte	Detection Limit	Sample Results
Corrosivity:		
pH	N.A.	7.5
Ignitability:		
Flashpoint (Pensky-Martens), °C	25	> 100 °C
Reactivity:		
Sulfide, mg/kg	13	N.D.
Cyanide, mg/kg	0.50	N.D.
Reaction with water	N.A.	Negative

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Andrea Fulcher
Project Manager

SEQUOIA ANALYTICAL
680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Blymyer
1829 Clement Street
Alameda, CA 94501-1396
Attention: Steve Moore

Client Project ID: 93071
Matrix: Soil
QC Sample Group: 3E50001

Reported: May 27, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes	Diesel	R-Sulfide	Cyanide
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015	EPA 9030	EPA 9010
Analyst:	A. Maralit	A. Maralit	A. Maralit	A. Maralit	C. Lee	K. Follett	P. Savva
Conc. Spiked:	0.20	0.20	0.20	0.20	15	10	3.4
Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LCS Batch#:	GBLK051793	GBLK051793	GBLK051793	GBLK051793	DBLK051493	LCS051493	LCS051493
Date Prepared:	5/17/93	5/17/93	5/17/93	5/17/93	5/14/93	5/14/93	5/14/93
Date Analyzed:	5/17/93	5/17/93	5/17/93	5/17/93	5/14/93	5/14/93	5/14/93
Instrument I.D.#:	GCHP-1	GCHP-1	GCHP-1	GCHP-1	GCHP-5	NA	NA
LCS % Recovery:	95	95	100	95	65	91	113
Control Limits:	60-140	60-140	60-140	60-140	50-150	80-120	80-120
MS/MSD Batch #:	G3E36706	G3E36706	G3E36706	G3E36706	D3E50001	3E45701	3E44601
Date Prepared:	5/17/93	5/17/93	5/17/93	5/17/93	5/14/93	5/13/93	5/28/01
Date Analyzed:	5/17/93	5/17/93	5/17/93	5/17/93	5/14/93	5/13/93	5/14/93
Instrument I.D.#:	GCHP-1	GCHP-1	GCHP-1	GCHP-1	GCHP-5	NA	NA
Matrix Spike % Recovery:	85	95	105	100	0.0	98	89
Matrix Spike Duplicate % Recovery:	85	90	105	100	6.7	94	99
Relative % Difference:	0.0	0.0	0.0	0.0	200	4.2	11

SEQUOIA ANALYTICAL

Andrea Fulcher
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

BLYMYER ENGINEERS, INC.
1829 Clement Avenue
Alameda, CA 94501 (415) 521-3773

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

JOB # 93071 | PROJECT NAME/LOCATION: Kawahara / San Lorenzo, CA | TURNAROUND TIME: STAT DAY(S)

SAMPLERS (SIGNATURE): Steph C Moore

REMARKS:

DATE	TIME	COMP	GRAB	SAMPLE NAME/LOCATION	# OF CONTAINERS	TPH AS GASOLINE + BTXE (MOD EPA 8015/8020)	TPH AS DIESEL (MOD EPA 8015)	VOC (EPA 624/8240)	SEMI-VOC (EPA 625/8270)	TRPH (EPA 418.1)	BTXE (EPA 8020/602)	RCE 9305500	HOLD
~~5/12/93~~	~~14:45~~	~~X~~		~~SP-2A (outside)~~	~~1~~		~~X~~						
5/12/93	15:00	X		SP-1A (inside)	1	~~X~~	X				X	X	

REQUESTED BY:

RESULTS AND INVOICE TO:

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
Steph C Moore	5/13/93 0830	Erin Vonnel	Erin Vonnel	5-13-93 1210	
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE / TIME	REMARKS:	
		Kami Arnold	5/13/93 8:30		

WHITE: Accompany Sample YELLOW: BEI, After Lab Signs PINK: Original Sampler

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Blymyer Engineers	Client Project ID:	93071	Sampled: Jun 10, 1993
1829 Clement Street	Sample Matrix:	Soil	Received: Jun 11, 1993
Alameda, CA 94501-1396	Analysis Method:	EPA 3550/8015	Reported: Jun 25, 1993
Attention: Laurie Buckman	First Sample #:	3F66301	

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit mg/kg	Sample I.D. 3F66301 MW-1 5'	Sample I.D. 3F66302 MW-1 16'	Sample I.D. 3F66303 MW-2 5'	Sample I.D. 3F66304 MW-2 11.5'	Sample I.D. 3F66305 MW-3 6'	Sample I.D. 3F66306 MW-3 15'
Extractable Hydrocarbons	1.0	N.D.	N.D.	1.9	N.D.	N.D.	35
Chromatogram Pattern:		--	--	Non-Diesel Mix >C16	--	--	Non-Diesel Mix >C13

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0	1.0
Date Extracted:	6/17/93	6/17/93	6/17/93	6/17/93	6/17/93	6/17/93
Date Analyzed:	6/18/93	6/18/93	6/18/93	6/18/93	6/18/93	6/18/93
Instrument Identification:	GCHP-5	GCHP-5	GCHP-5	GCHP-5	GCHP-5	GCHP-5

Extractable Hydrocarbons are quantitated against a fresh diesel standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Andrea Fulcher
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Blymyer Engineers	Client Project ID:	93071	Sampled: Jun 10, 1993
1829 Clement Street	Sample Matrix:	Soil	Received: Jun 11, 1993
Alameda, CA 94501-1396	Analysis Method:	EPA 5030/8015/8020	Reported: Jun 25, 1993
Attention: Laurie Buckman	First Sample #:	3F66301	

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit mg/kg	Sample I.D. 3F66301 MW-1 5'	Sample I.D. 3F66302 MW-1 16'	Sample I.D. 6F66303 MW-2 5'	Sample I.D. 3F66304 MW-2 11.5'	Sample I.D. 3F66305 MW-3 6'	Sample I.D. 3F6606 MW-3 15'
Purgeable Hydrocarbons	1.0	N.D.	N.D.	N.D.	N.D.	N.D.	38
Benzene	0.0050	N.D.	N.D.	N.D.	N.D.	N.D.	0.20
Toluene	0.0050	N.D.	N.D.	N.D.	N.D.	N.D.	0.98
Ethyl Benzene	0.0050	N.D.	N.D.	N.D.	N.D.	N.D.	0.68
Total Xylenes	0.0050	N.D.	N.D.	N.D.	N.D.	N.D.	4.0
Chromatogram Pattern:		--	--	--	--	--	Gas

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0	25
Date Analyzed:	6/15/93	6/15/93	6/15/93	6/15/93	6/15/93	6/16/93
Instrument Identification:	GCHP-1	GCHP-1	GCHP-1	GCHP-1	GCHP-1	GCHP-17
Surrogate Recovery, %: (QC Limits = 70-130%)	112	115	129	111	101	84

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Andrea Fulcher
Project Manager

SEQUOIA ANALYTICAL

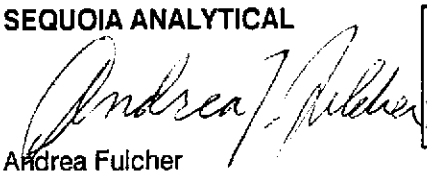
680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Blymyer Engineers	Client Project ID: 93071	
1829 Clement Street	Matrix: Soil	
Alameda, CA 94501-1396		
Attention: Laurie Buckman	QC Sample Group: 3F66301-06	Reported: Jun 25, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes	Diesel
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015
Analyst:	E. Cunanan	E. Cunanan	E. Cunanan	E. Cunanan	C. Lee
Conc. Spiked:	0.20	0.20	0.20	0.60	15
Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LCS Batch#:	GBLK061593	GBLK061593	GBLK061593	GBLK061593	DBLK061693
Date Prepared:	6/15/93	6/15/93	6/15/93	6/15/93	6/16/93
Date Analyzed:	6/15/93	6/15/93	6/15/93	6/15/93	6/16/93
Instrument I.D.#:	GCHP-18	GCHP-18	GCHP-18	GCHP-18	GCHP-5
LCS % Recovery:	95	95	95	93	80
Control Limits:	60-140	60-140	60-140	60-140	50-150
MS/MSD Batch #:	G3F43404	G3F43404	G3F43404	G3F43404	D3F56705
Date Prepared:	6/15/93	6/15/93	6/15/93	6/15/93	6/16/93
Date Analyzed:	6/15/93	6/15/93	6/15/93	6/15/93	6/16/93
Instrument I.D.#:	GCHP-18	GCHP-18	GCHP-18	GCHP-18	GCHP-5
Matrix Spike % Recovery:	85	85	90	87	62
Matrix Spike Duplicate % Recovery:	85	90	90	90	62
Relative % Difference:	0.0	5.7	0.0	3.4	0.0

SEQUOIA ANALYTICAL



Andrea Fulcher
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

BLYMYER
ENGINEERS, INC.
1829 Clement Avenue
Alameda, CA 94501 (510) 521-3773 FAX (510) 865-2594

CHAIN OF CUSTODY RECORD

JOB # 93071

PROJECT NAME/LOCATION: Kawahara Nursery, San Lorenzo

TURNAROUND TIME: 10 DAY(S)

SAMPLERS (SIGNATURE): L. Buckman

DATE	TIME	COMP	GRAB	SAMPLE NAME/LOCATION	# OF CONTAINERS	TPH AS GASOLINE + BTXE (MOD EPA 8015/8020)	TPH AS DIESEL (MOD EPA 8015)	VOC (EPA 624/8240)	SEMI-VOC (EPA 625/8270)	TRPH (EPA 418.1)	BTXE (EPA 8020/602)	HOLD	REMARKS
6/10/93				MW-1 5'	1	X	X						9306666301
				MW-1 16'	1	X	X						02
				MW-2 5'	1	X	X						03
				MW-2 11.5'	1	X	X						04
				MW-3 6'	1	X	X						05
				MW-3 15'	1	X	X						06

REQUESTED BY: L. Buckman

RESULTS AND INVOICE TO: Blymyer Engineers, Inc.

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
L. Buckman	6/1/93 2:10	BLMyers
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)
BLMyers	6/1/93 1450	Steve Lee

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
DATE / TIME	REMARKS:	
6/11/93 4:00		

WHITE: Accompany Sample YELLOW: BEI, After Lab Signs PINK: Original Sampler

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Blymyer Engineers	Client Project ID:	93071	Sampled: Jun 16, 1993
1829 Clement Street	Sample Matrix:	Water	Received: Jun 17, 1993
Alameda, CA 94501-1396	Analysis Method:	EPA 5030/8015/8020	Reported: Jun 30, 1993
Attention: Laurie Buckman	First Sample #:	3F87701	

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 3F87701 MW-1	Sample I.D. 3F87702 MW-2	Sample I.D. 3F87703 MW-3
Purgeable Hydrocarbons	50	N.D.	N.D.	120,000
Benzene	0.50	N.D.	N.D.	4,600
Toluene	0.50	N.D.	N.D.	8,400
Ethyl Benzene	0.50	N.D.	N.D.	2,100
Total Xylenes	0.50	N.D.	N.D.	27,000
Chromatogram Pattern:		--	--	Gas

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	200
Date Analyzed:	6/24/93	6/24/93	6/26/93
Instrument Identification:	GCHP-17	GCHP-17	GCHP-2
Surrogate Recovery, %: (QC Limits = 70-130%)	90	83	113

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Andrea Fulcher
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Blymyer Engineers	Client Project ID:	93071	Sampled: Jun 16, 1993
1829 Clement Street	Sample Matrix:	Water	Received: Jun 17, 1993
Alameda, CA 94501-1396	Analysis Method:	EPA 3510/3520/8015	Reported: Jun 30, 1993
Attention: Laurie Buckman	First Sample #:	3F87701	

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 3F87701 MW-1	Sample I.D. 3F87702 MW-2	Sample I.D. 3F87703 MW-3
Extractable Hydrocarbons	50	N.D.	N.D.	170,000
Chromatogram Pattern:		--	--	Non-Diesel Mix <C13

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	200
Date Extracted:	6/22/93	6/22/93	6/22/93
Date Analyzed:	6/24/93	6/24/93	6/24/93
Instrument Identification:	GCHP-5	GCHP-5	GCHP-5

Extractable Hydrocarbons are quantitated against a fresh diesel standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Andrea Fulcher
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Blymyer Engineers	Client Project ID: 93071	
1829 Clement Street	Matrix: Water	
Alameda, CA 94501-1396		
Attention: Laurie Buckman	QC Sample Group: 3F87701-03	Reported: Jun 30, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	M. Nipp	M. Nipp	M. Nipp	M. Nipp
Conc. Spiked:	10	10	10	10
Units:	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	GBLK062493	GBLK062493	GBLK062493	GBLK062493
Date Prepared:	6/24/93	6/24/93	6/24/93	6/24/93
Date Analyzed:	6/24/93	6/24/93	6/24/93	6/24/93
Instrument I.D.#:	GCHP-17	GCHP-17	GCHP-17	GCHP-17
LCS % Recovery:	85	84	83	83
Control Limits:	80-120	80-120	80-120	80-120
MS/MSD Batch #:	G3FA4703	G3FA4703	G3FA4703	G3FA4703
Date Prepared:	6/24/93	6/24/93	6/24/93	6/24/93
Date Analyzed:	6/24/93	6/24/93	6/24/93	6/24/93
Instrument I.D.#:	GCHP-17	GCHP-17	GCHP-17	GCHP-17
Matrix Spike % Recovery:	100	100	100	100
Matrix Spike Duplicate % Recovery:	89	89	89	90
Relative % Difference:	12	12	12	11

SEQUOIA ANALYTICAL

Andrea Fulcher
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Blymyer Engineers	Client Project ID: 93071	
1829 Clement Street	Matrix: Water	
Alameda, CA 94501-1396		
Attention: Laurie Buckman	QC Sample Group: 3F87701-03	Reported: Jun 30, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes	Diesel
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015
Analyst:	A. Miraftab	A. Miraftab	A. Miraftab	A. Miraftab	C. Lee
Conc. Spiked:	10	10	10	10	300
Units:	µg/L	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	GBLK062693	GBLK062693	GBLK062693	GBLK062693	DBLK062293
Date Prepared:	6/26/93	6/26/93	6/26/93	6/26/93	6/22/93
Date Analyzed:	6/26/93	6/26/93	6/26/93	6/26/93	6/23/93
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2	GCHP-5
LCS % Recovery:	100	93	94	90	73
Control Limits:	80-120	80-120	80-120	80-120	50-150
MS/MSD Batch #:	G3FA2901	G3FA2901	G3FA2901	G3FA2901	D3F87505
Date Prepared:	6/26/93	6/26/93	6/26/93	6/26/93	6/22/93
Date Analyzed:	6/26/93	6/26/93	6/26/93	6/26/93	6/23/93
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2	GCHP-5
Matrix Spike % Recovery:	100	93	94	90	97
Matrix Spike Duplicate % Recovery:	88	95	94	93	95
Relative % Difference:	13	2.1	0.0	3.3	2.1

SEQUOIA ANALYTICAL

Andrea Fulcher
Project Manager

Please Note:
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BLYMYER ENGINEERS, INC.
1829 Clement Avenue
Alameda, CA 94501 (510) 521-3773 FAX (510) 865-2594

CHAIN OF CUSTODY RECORD

JOB # 93071

PROJECT NAME/LOCATION Kawahara Nursery / San Lorenzo, CA

SAMPLERS (SIGNATURE) Steph W Moore

TURNAROUND TIME: Standard DAY(S)

REMARKS:

DATE	TIME	COMP	GRAB	SAMPLE NAME/LOCATION	# OF CONTAINERS	TPH AS GASOLINE + BTXE (MOD EPA 8015/8020)	TPH AS DIESEL (MOD EPA 8015)	VOC (EPA 624/8240)	SEMI-VOC (EPA 625/8270)	TRPH (EPA 418.1)	BTXE (EPA 8020/602)	HOLD	REMARKS
6/16/93	0835		X	BB-1	5							X	9306877-01 AE
6/16/93	0945		X	MW-1	5	X	X						02
6/16/93	1040		X	MW-2	5	X	X						03
6/16/93	1200		X	MW-3	5	X	X						04

REQUESTED BY: Laurie Buckman

RESULTS AND INVOICE TO: Blymyer Engineers, Inc

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
Steph W Moore	6/17/93 0900	
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)
	6/17/93 1330	

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	6/17/93 1106	
DATE / TIME	REMARKS:	
6/17/93 13:30		

WHITE: Accompany Sample YELLOW: BEI, After Lab Signs PINK: Original Sampler