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28 December 1992

Project No. P94

Summary Report
Tank Removal, Soil Remediation, and Soil and Groundwater Investigation Activities
3425 Ettie Street
Oakland CA

STID 3787

Dear Mr. Rogers:

Attached is our report summarizing tank removal, soil remediation, and soil and groundwater investigation activities at the subject property. The report was prepared pursuant to our 2 June 1992 proposal. The report has been prepared to support case closure review by the Alameda County Department of Environmental Health and San Francisco Bay Regional Water Quality Control Board.

We appreciate the opportunity to serve you. Please call us with any questions.

Sincerely,

STREAMBORN

Douglas W. Lovell, PE, CHMM
Geoenvironmental Engineer

Colette M. Shelby for

Kenneth Chiang, CHMM
Environmental Engineer

Attachment

cc: Susan Hugo/Alameda County Department of Environmental Health, Oakland CA
Richard Hiett/San Francisco Bay Regional Water Quality Control Board, Oakland CA

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Report

Tank Removal, Soil Remediation, and Soil and Groundwater Investigation Activities

3425 Ettie Street

Oakland CA

Prepared For:

Robert N. Stefan, as Executor of the Will of Henry M. Shirek, deceased

c/o Golden, Stefan, Ellenberg & Toby

Oakland CA


Expires 12/31/92

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28 December 1992



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## CONTENTS

# EXECUTIVE SUMMARY

This report summarizes underground tank removal, soil remediation, and soil and groundwater investigation activities at 3425 Ettie Street, Oakland CA (Figure 1). The report has been prepared to support case closure review by the Alameda County Department of Environmental Health and San Francisco Bay Regional Water Quality Control Board.

A chronology of events is presented in Table 1. From June - July 1989, three underground tanks were removed: 500-gallon gasoline, 2,000-gallon gasoline, and 5,000-gallon diesel (which had also stored gasoline). Figure 2 shows the location of the former tanks.

Observations by Roy F. Weston during tank removal were not suggestive of a significant release. Soil sampling and analysis following removal of the tanks (Table 2, Figure 3) revealed:

- Concentrations of total petroleum hydrocarbons as gasoline (TPH-G) up to 5,100 mg/kg beneath the 2,000 gallon tank.
- Concentrations of total petroleum hydrocarbons as diesel (TPH-D) up to 150 mg/kg and nondetectable concentrations of TPH-G beneath the 5,000-gallon tank.
- Concentration of 4 mg/kg TPH-G beneath the ~~250~~ 500 G-gallon tank.
- With the exception of one xylenes measurement of 1.9 mg/kg beneath the 2,000-gallon tank; concentrations of benzene, toluene, ethylbenzene, and xylenes (BTEX) and lead were either nondetect, nonelevated, or very low.

Elevated concentrations of TPH-G and TPH-D were also detected in samples of stockpiled material, indicating contamination may have originated from surface spills, overfill events, and/or piping releases; and not from holes in the tanks.

In August 1989, three wells (MW1, MW2, and MW3) and two soil borings (SB1 and SB2) were drilled. Well MW1 was located in the expected downgradient direction (west) with respect to the former 2,000-gallon tank. Soil samples collected during drilling (Table 3, Figure 3) revealed nondetectable concentrations of contaminants except for trace concentrations of toluene (±0.1 mg/kg) in two samples. In September 1989, monitoring wells MW1, MW2, and MW3 were developed. Groundwater was not monitored at that time.

In October 1989, 2-feet of soil (±20 cubic yards) were overexcavated from the base of the pit which had contained the 2,000-gallon tank. A composite soil sample was collected from the base of the overexcavated area which revealed:

- TPH-D = 100 mg/kg.
- Detectable but very low (less than 0.02 mg/kg) concentrations of toluene, ethylbenzene, and xylenes.
- Nondetectable concentrations of TPH-G, benzene, and organic lead.

? from the 2 ~~pits~~ not from the Samples base pit

The excavation was subsequently backfilled with concurrence from the Alameda County Department of Environmental Health (Appendix B). Soil stockpiled during removal of the tanks was disposed of offsite, along with soil that was overexcavated from beneath the former 2,000-gallon tank.

From April 1990 through March 1991, quarterly groundwater monitoring was conducted which revealed nondetectable concentrations of contaminants in each of the three wells (Table 5). Water elevation monitoring revealed an easterly gradient (Figure 4). This direction was away from the Bay and opposite the expected direction of groundwater gradient.

To monitor groundwater downgradient of the former 2,000-gallon tank, a fourth monitoring well (MW4) was installed in October 1991. The four monitoring wells were sampled in Fall 1991. MW1 and MW4 were sampled again in April 1992. These groundwater samples also revealed nondetectable concentrations of contaminants (Table 5).

We conclude that it is unlikely the observed contamination is currently impacting or will impact the beneficial use of local surface water and groundwater. Accordingly, we believe no further investigation or remediation is needed and we recommend case closure.

## INTRODUCTION

This report summarizes tank removal, soil remediation, and soil and groundwater investigations conducted at 3425 Ettie Street, Oakland CA. This report has been prepared to support case closure review by the Alameda County Department of Environmental Health and San Francisco Bay Regional Water Quality Control Board.

## BACKGROUND HISTORY OF THE CASE

Three underground tanks (500-gallon, 2,000-gallon, and 5,000-gallon) were formerly used at the property to store fuel. The locations of the former tanks are shown on Figure 2. The 500-gallon and 2,000-gallon tanks had reportedly stored gasoline while the 5,000-gallon tank had reportedly stored both gasoline and diesel.

Table 1 presents a chronology of the tank removal and subsequent activities.

On 27 June 1989, the 500-gallon and 2,000-gallon tanks were removed and on 7 July 1989, the 5,000-gallon tank was removed. Because of the proximity of the 5,000-gallon and 2,000-gallon tanks, a single excavation was formed by removal of the tanks. This excavation also encompassed the overlying pump island.

Tank removals were performed by Roy F. Weston (engineer), DECON (civil/sitework), Refineries Service (transportation and disposal of contained product and rinsate), Dillard Trucking (transportation), Erickson (transportation and disposal). Prior to site activities, a site safety plan and tank removal permit application were submitted to and approved by the Alameda County Department of Environmental Health (Weston 1989).

## TANK REMOVAL OBSERVATIONS AND INITIAL SOIL SAMPLING

Dennis Byrne of the Alameda County Department of Environmental Health and Richardine Howard Roth of the Oakland Fire Department observed removal of the tanks and subsequent sampling. Observations during tank removal included:

- 500-gallon tank
  - Tank was located beneath the sidewalk.
  - Tank constructed of steel, age unknown.
  - No holes in tank or significant corrosion observed.

- A 1-foot thick concrete (hold-down) slab was encountered overlying the tank.
- Photographs by Roy F. Weston showed a ±1.5-inch fill pipe extending vertically from the tank to the ground surface. Other piping (vent, suction) was not observed.
- Photographs by Roy F. Weston showed the tank invert was approximately 6-feet below sidewalk elevation.

• *2,000-gallon tank*
- Tank was located beneath a paved area.
- Tank constructed of steel, age unknown.
- No holes in tank or piping, nor significant corrosion.
- Photographs by Roy F. Weston showed (1) a ±2-inch fill pipe extending vertically from the tank to the ground surface and (2) short suction and vent piping runs to the pump island. The photographs showed the pump island located almost directly above the tank.
- Photographs by Roy F. Weston showed the tank invert was approximately 7-feet below pavement elevation.

• 5,000-gallon tank
- Tank was located beneath a paved area.
- Tank constructed of steel, age unknown.
- No holes in tank or piping, nor significant corrosion.
- Photographs by Roy F. Weston showed short suction and vent piping runs to the pump island (which was located above the adjacent 2,000-gallon tank).

Due to the proximity of the 2,000- and 5,000-gallon tanks, a single (common) excavation was created during tank removal.

Observations by Roy F. Weston during tank removal were not suggestive of a significant release. Groundwater was not encountered in the excavations.

Two samples of soil were collected from beneath each end of the former 2,000-gallon and 5,000-gallon tanks (4 samples total). One soil sample was collected from beneath the north end of the former 500-gallon tank. Additionally, a composite sample was collected from each of three stockpiles of excavated soil (soil previously overlying the three tanks). Sample locations are shown on Figure 3.

Samples from beneath the tanks were collected from native soil, beneath the backfill interface. Stockpile samples were collected at random locations and depths and subsequently composited. Samples were submitted to Superior Analytical Laboratory, San Francisco CA for analysis.

Soil samples associated with the 500-gallon and 2,000-gallon gasoline tanks were analyzed for lead, TPH-G, and BTEX. Soil samples associated with the 5,000-gallon tank were analyzed for lead, TPH-D, TPH-G, and BTEX. Analytical results are summarized in Table 2 and Figure 3.

Analytical results indicated a release of gasoline from the former 2,000-gallon tank and a release of diesel from the former 5,000-gallon tank. Because stockpile samples contained concentrations similar to samples collected from beneath the tanks, we infer that surface spills or overfill events - not holes in the tanks - were the origin of the releases. Accordingly, short duration, limited volume releases likely occurred.

## SOIL REMEDIATION AND SOIL AND GROUNDWATER INVESTIGATION

### Initial Borings and Wells

From 25 through 29 August 1989, three wells (MW1, MW2, and MW3) and two borings (SB1 and SB2) were drilled. Locations are identified in Figure 2. Well MW1 was positioned in the expected downgradient direction with respect to the former 2,000-gallon tank (a westerly gradient was expected, toward San Francisco Bay). MW1, MW2, and MW3 were drilled to approximately 20-feet and completed as 4-inch diameter PVC wells. SB1 and SB2 were drilled to approximately 15-feet and backfilled with grout. Logs are presented in Appendix A.

During drilling, soil samples were collected every ±2.5-feet in SB1, SB2, and MW1 and every ±5-feet in MW2 and MW3. Five soil samples were selected (each) from MW1, SB1, and SB2 (15 samples total) for analysis of TPH-D, TPH-G, BTEX, and lead. MW2 and MW3 were installed as reference wells to provide groundwater gradient information; accordingly, soil samples collected during drilling of these wells were not analyzed for chemical constituents. Soil analytical results for borehole samples are presented in Table 3 and on Figure 3. Except for a single elevated lead measurement (333 mg/kg) in MW1 at a depth of 7.5- to 9-feet, soil concentrations were either nondetect, nonelevated, or very low. We believe the single elevated lead concentration is erroneous or anomalous and not indicative of contamination from the former tanks.

Monitoring Wells MW1, MW2, and MW3 were developed on 5 September 1989. Wells were developed by pumping and surging. Approximately 10 standing volumes were removed from each of MW2 and MW3 during development. Development of MW1 ceased after approximately 2 standing well volumes were removed because of slow recovery. The boring and well work was performed by Kvilhaug Drilling under the direction of Roy F. Weston.

### Soil Remediation

In October 1989, 2-feet of soil (±20 cubic yards) were overexcavated from the base of the pit which had contained the 2,000-gallon tank. Groundwater was not encountered during overexcavation activities. The overexcavated soil was disposed of offsite, along with soil stockpiled during removal of the tanks.

To check whether contaminated soil had been effectively removed, a composite soil sample (2 subsamples) was collected from the base of the overexcavated area (Figure 3). The sample was analyzed for TPH-D, TPH-G, BTEX, and organic lead. Analytical results (Table 4) revealed nondetectable, nonelevated, or very low concentrations of TPH-G, BTEX, and lead. TPH-D was measured at 100 mg/kg. Accounting for potential concentration averaging during compositing, the maximum concentration of TPH-D in either subsample was 200 mg/kg.

Overexcavation and confirmation sampling results were verbally presented to Dennis Byrne of the Alameda County Department of Environmental Health, who concurred with Roy F. Weston's recommendation to backfill the excavations (Appendix B).

## Excavation Backfill

The 500-gallon tank excavation was backfilled with imported sand and gravel and repaved with concrete on 12 July 1989. On 30 October 1989, the concrete was removed and additional backfill material was placed to correct observed settlement. The backfilled area was repaved again with concrete on 3 November 1989.

On 27 October 1989, the excavation formerly containing the 2,000-gallon and 5,000-gallon tanks was backfilled. Backfill materials consisted of imported sand and gravel. This excavation was repaved with asphalt on 2 November 1989.

Soil stockpiled during tank removal was disposed of offsite, along with soil that was overexcavated from beneath the former 2,000-gallon tank.

## Initial Groundwater Monitoring

Four quarterly monitoring events were initially conducted by Hart-Crowser for wells MW1, MW2, and MW3. Groundwater samples were analyzed for TPH-D, TPH-G, and BTEX, with results below detection limits (Table 5).

Prior to groundwater sampling, each well was purged with a decontaminated PVC bailer. Approximately 3 to 5 static casing volumes of groundwater were removed from each well. On occasion, a well would be purged dry before removal of 3 static casing volumes. In these cases, groundwater was allowed to recharge to approximately 80 percent of its original level prior to sampling.

After purging, samples were collected in decontaminated Teflon bailers and transferred to sample containers. Samples for TPH-G and BTEX analyses employed 40-milliliter glass containers and samples for TPH-D analyses employed 1-liter amber glass containers. The samples were then placed on ice in a cooler and transferred under chain-of-custody to Superior Analytical, San Francisco CA the same day as collection.

For the first two monitoring events (2 March 1990 and 13 June 1990), groundwater was sampled without measuring static groundwater levels. As a result, the direction of groundwater gradient remained unconfirmed. In order to determine the direction of groundwater gradient, static water levels were measured while groundwater was sampled during the next two events (24 September 1990 and 19 January 1991) (Table 6 and Figure 4). The wells were surveyed in elevation using a site-specific datum (Elevation = 100.00 feet at the top of the casing of MW1). From these measurements, an easterly groundwater gradient was calculated. This direction was away from the Bay and opposite the expected direction of groundwater gradient.

## Additional Well

To monitor groundwater downgradient of the former 2,000-gallon tank release, a fourth well was installed by Hart-Crowser. MW4 was drilled on 14 October 1991 to a total depth of 25-feet and was completed as a 4-inch diameter PVC well. MW4 was positioned in Ettie Street, outside of the property boundary (Figure 2). The log for MW4 is included in Appendix A.

During drilling, soil samples were collected every ±5-feet. Staining and odor were not observed. A soil sample from MW4, collected at a depth of 20-feet, was analyzed for TPH-D, TPH-G, and BTEX, with results below detection limits (Table 4 and Figure 3). This sample was collected in a liner, placed on ice in a cooler, and transmitted under chain-of-custody to Superior Analytical, San Francisco the same day as collection.

Monitoring well MW4 was developed by Hart-Crowser on 25 October 1991. Development consisted of hand bailing and surging. Approximately 4 to 5 standing casing volumes were removed during development.

### Continued Groundwater Monitoring

Two water quality monitoring events were conducted by Hart-Crowser subsequent to installation of MW4:

- MW1, MW2, MW3, and MW4 were sampled in Fall 1991 (28 October 1991 and 21 November 1991 - two dates were required because a TPH-D sample was inadvertently not initially collected).
- MW1 and MW4 were sampled on 8 April 1992.

Groundwater was sampled and analyzed according to previously-described methods. Analytical results were below detection limits (Table 5).

An easterly groundwater gradient was measured during these events (Table 6, Figure 4).

## EXTENT OF SOIL AND GROUNDWATER CONTAMINATION

The results of soil analyses during removal of the three tanks, soil boring sample analyses, and confirmation sampling analysis (Tables 2 through 4 and Figure 3) indicate limited soil contamination. Soil sampling results during tank removals revealed the following:

- Nondetectable, nonelevated, or trace levels of contaminants were measured in the 500-gallon tank samples. When detected, concentrations were below normally-accepted action levels.
- Elevated concentrations of TPH-G (up to 5,100 mg/kg) and xylenes (up to 1.9 mg/kg) were measured in the 2,000-gallon tank samples. Trace concentrations of benzene, toluene, and ethylbenzene were also detected.
- Elevated concentrations of TPH-D (up to 310 mg/kg) were measured in the 5,000-gallon tanks. Trace concentrations of toluene and xylenes were also detected.

Following overexcavation of soil from beneath the former 2,000-gallon tank, a composite sample measured 100 mg/kg TPH-D, and trace concentrations of toluene (0.005 mg/kg), ethylbenzene (0.001 mg/kg), and xylenes (0.016 mg/kg). TPH-G and benzene were nondetectable and lead was nonelevated in this sample. These data indicate a limited vertical extent of soil contamination.

Soil samples analyzed from borings and monitoring wells generally revealed nondetectable concentrations of contaminants. These data indicate a limited horizontal extent of soil contamination. Toluene was measured at a nominal concentration of ±0.1 mg/kg in two samples. Lead was measured at a concentration of 299 mg/kg in one sample. The lead measurement is inconsistent with other lead data from the property and may represent an erroneous or anomalous measurement.

Results of groundwater monitoring (Table 5) indicate that groundwater at the property is not impacted by releases from the former tanks. This conclusion is based on a six rounds of monitoring over a period of approximately 2 years, with two of the rounds monitoring

groundwater in a downgradient direction with respect to the former 2,000-gallon tank. The groundwater data also support a limited extent of soil contamination.

## LOCAL AND REGIONAL HYDROGEOLOGY

3425 Ettie Street is located within the Oakland Upland and Alluvial Plain Groundwater Subarea (Zone 7 1990). The geologic unit exposed at the property and surrounding area is Pleistocene age older alluvium, with a thickness of 700 to 800 feet. Older alluvium consists of a heterogeneous mixture of poorly consolidated to unconsolidated clay, silt, sand, and gravel derived from successive coalescing alluvial fans originating from hills to the east and southeast. Beneath the property, the older alluvium is comprised of sand and gravel strata separated by layers of clay and silt. Groundwater occurs in older alluvium as reservoirs in permeable sand and gravel beds, confined between clay and silt beds.

Regionally, groundwater moves toward the west and southwest. Groundwater moves from (1) recharge areas located near the Hayward Fault toward (2) San Francisco Bay. Measurements in 1987 revealed groundwater in the older alluvium moved west at a gradient of approximately 0.1 to 0.2 (Zone 7 1990).

The major mechanism of groundwater recharge in the area is seepage from streams located near the Hayward Fault. Rain infiltration and subsurface inflow represent secondary recharge mechanisms. Two major components of groundwater discharge are (1) natural discharge including evapotranspiration, discharge to streams, underflow to San Francisco Bay, and spring discharge; and (2) artificial discharge through well pumping.

At 3425 Ettie Street, the soils encountered in the borings and wells consisted predominantly of mixtures of silt and clay, with various percentages of sand and gravel. Groundwater movement is likely limited by the fine-grained strata which underlie the property. Groundwater has historically been measured between 8- and 12-feet below ground surface (Table 6). Water levels within the wells may be subject to tidal influences from nearby San Francisco Bay.

The 4 onsite wells indicate an easterly direction of groundwater gradient (Figure 4), away from the Bay. This is opposite the expected gradient direction. Because monitoring wells were installed both east and west of the former 2,000-gallon tank, and because monitoring revealed nondetectable contaminant concentrations in both wells, the nature of the apparent discrepancy in gradient direction is immaterial.

Measurements in the 4 onsite wells indicate a gradient magnitude of 0.006 to 0.015 (Hart Crowser 1991b). Using an assumed hydraulic conductivity of $1 \times 10^{-4}$ centimeters per second and effective porosity of 0.4 for the onsite soils, we calculate a rate of groundwater movement (advection) = approximately 3 feet per year.

## BENEFICIAL USE OF LOCAL SURFACE WATER AND GROUNDWATER

Existing and potential beneficial uses of local surface water and groundwater are described in the Water Quality Control Plan (RWQCB 1986). The listed beneficial use of surface water consist of:

- Industrial Service Supply
- Industrial Process Water Supply
- Navigation
- Water Contact Recreation

- Non-Contact Water Recreation
- Ocean Commercial and Sport Fishing
- Wildlife Habitat
- Preservation of Rare and Endangered Species
- Fish Migration
- Fish Spawning
- Shellfish Harvesting
- Estuarine Habitat

The listed beneficial uses of groundwater consist of:

- Municipal Supply
- Industrial Process Water Supply
- Industrial Service Supply
- Agricultural Supply

Measurements during well purging and sampling revealed groundwater specific conductance varying between 1,200 µmhos/cm (MW3) to 3,900 µmhos/cm (MW1). The elevated specific conductance indicates groundwater beneath the property is unsuitable for many of the listed beneficial uses. Additional consideration of low well yields may further limit beneficial use. Irrespective of limits on beneficial use, our discussions with Dennis J. Byrne of the Alameda County Department of Environmental Health and Richard Hiett of the San Francisco Bay Regional Water Quality Control Board indicate an accurate designation of beneficial use is relatively unimportant for this property (because monitoring results demonstrate water is not impacted).

## REMEDIATION EFFECTIVENESS

Remediation was performed by overexcavating contaminated soil from beneath the former 2,000-gallon gasoline tank. Remediation effectiveness was assessed by soil sampling from beneath the overexcavated area. The results of this sampling revealed a reduction in TPH-G concentrations from (1) 560 mg/kg to 5,100 mg/kg before remediation to (2) nondetect after remediation. BTEX concentrations were very low before remediation and were even lower after overexcavation. These results indicate overexcavation was effective in removing gasoline-affected soil.

Because overexcavation was performed in a pit common with the former 5,000-gallon diesel tank, TPH-D was also analyzed in the post-overexcavation sample. A concentration of 100 mg/kg was measured, commensurate with the maximum measured concentration during removal of the 5,000-gallon tank. Integrating (1) an average TPH-D soil concentration of 100 mg/kg, (2) a hypothetical area of diesel-affected soil represented by 50-feet by 30-feet, and (3) a hypothetical vertical dimension of diesel-affected soil represented by 4-feet (base of excavation to groundwater table); we calculate the equivalent of 10-gallons of diesel fuel remain in soil at the property. The measured residual concentrations are below biotoxicity thresholds and naturally-occurring biodegradation will eventually mineralize the limited quantity of residual diesel.

## SUMMARY AND CONCLUSIONS

Tank removal, soil remediation, and soil and groundwater investigation data indicate the following:

- A clean closure was performed for the 500-gallon gasoline tank
- A gasoline release was associated with the former 2,000-gallon gasoline tank
- A diesel release was associated with the former 5,000-gallon diesel tank.
- Analytical data and observations during tank removal indicate the mechanism for release was most likely surface spills or overfill events, as opposed to holes in tanks or piping.
- A limited volume of soil was affected by releases.
- Gasoline-affected soil from beneath the former 2,000-gallon tank was effectively remediated by overexcavation. Approximately 20 cubic yards of soil were removed and disposed of offsite. Limited diesel-affected soil remains.
- Groundwater is not affected by the releases.

We conclude it unlikely the observed release is currently impacting or will impact the beneficial use of local surface water and groundwater. Accordingly, we believe no further investigation or remediation is needed and we recommend case closure.

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Table 1
Chronology

| Date of Activity | Performed By | Reference | Description |
|---|---|---|---|
| Unknown | Unknown | None | 5,000-gallon gasoline tank installed. |
| Unknown | Unknown | None | 2,000-gallon gasoline tank installed. |
| Unknown | Unknown | None | 500-gallon gasoline tank installed. |
| 1 June 1989 | Roy F. Weston | Weston 1989 | Tank closure plan submitted to Alameda County. |
| 26-27 June 1989 | Roy F. Weston | Weston 1989 | 500-gallon and 2,000-gallon tanks removed and disposed of. Soil samples from the 500-gallon tank pit indicated very low concentrations of TPH-G and BTEX, with nonelevated concentration of lead. Soil samples from the 2,000 gallon tank pit indicated elevated concentrations of TPH-G (560 to 5,100 mg/kg) and xylenes (up to 1.9 mg//kg), with nondetectable, nonelevated, or very low concentrations of benzene, toluene, and lead. |
| 7 July 1989 | Roy F. Weston | Weston 1989 | 5,000-gallon tank removed and disposed. Because the 5,000-gallon tank was adjacent to the 2,000-gallon tank, excavation of the two tanks formed a single pit. Soil samples from beneath the 5,000 gallon tank indicated elevated concentration of TPH-D (up to 310 mg/kg) and nondetectable, nonelevated, or very low concentrations of BTEX and lead. |
| 12 July 1989 | Roy F. Weston | Weston 1989 | 500-gallon tank pit backfilled. |
| 25 thru 29 August 1989 | Roy F. Weston | Weston 1989 | 3 Wells (MW1, MW2, and MW3) and 2 soil borings (SB1 and SB2) were drilled. Wells were positioned west of the former 2,000-gallon tank. Soil samples revealed nondetectable, nonelevated, or very low contaminant concentrations except for a single lead (333 mg/kg) measurement. |
| 5 September 1989 | Roy F. Weston | Weston 1989 | Wells MW1, MW2, and MW3 were developed (wells were not yet sampled, depth to groundwater was not yet measured). |
| 17 October 1989 | Roy F. Weston | Weston 1989 | 2-feet soil (±20 cubic yards) overexcavated from beneath the former 2,000-gallon tank. Composite soil sample collected from beneath the overexcavated area which revealed TPH-D = 100 mg/kg and nondetectable, nonelevated, or very low concentrations of TPH-G, BTEX, and lead. |
| 27 October 1989 | Roy F. Weston | Weston 1989 | 2,000- and 5,000-gallon tank pit backfilled. |
| 2 November 1989 | Roy F. Weston | Weston 1989 | 2,000- and 5,000-gallon tank pit repaved. |
| 2 March 1990 | Hart Crowser | Hart Crowser 1990a | Groundwater monitoring of MW1, MW2, and MW3 revealed nondetectable contaminant concentrations. Depth to groundwater not measured. |
| 13 June 1990 | Hart Crowser | Hart Crowser 1990b | Groundwater monitoring of MW1, MW2, and MW3 revealed nondetectable contaminant concentrations. Depth to groundwater not measured. |
| 24 September 1990 | Hart Crowser | Hart Crowser 1990c | Groundwater monitoring of MW1, MW2, and MW3 revealed nondetectable contaminant concentrations. Water level measurements revealed easterly direction of groundwater gradient. |
| 19 January 1991 | Hart Crowser | Hart Crowser 1991a | Groundwater monitoring of MW1, MW2, and MW3 revealed nondetectable contaminant concentrations. Water level measurements revealed easterly direction of groundwater gradient. |
| 14 October 1991 | Hart Crowser | Hart Crowser 1991b | A new well (MW4) was installed ±20 feet to the east of the former 2,000-gallon tank, outside the property boundary. One soil sample, collected at a depth of 20 feet, was analyzed, revealing nondetectable contaminant concentrations. |
| 29 October and 21 November 1991 | Hart Crowser | Hart Crowser 1991b | Groundwater monitoring of MW1, MW2, MW3, and MW4 revealed nondetectable contaminant concentrations. Water level measurements revealed easterly direction of groundwater gradient. |
| 8 April 1992 | Hart Crowser | Hart Crowser 1992 | Groundwater monitoring of MW1 and MW4 revealed nondetectable contaminant concentrations. Water level measurements revealed easterly direction of groundwater gradient. |
| 28 April 1992 | ACDEH | ACDEH 1992 | Concurrence for no further work provided by ACDEH. Summary report requested by ACDEH. |

General Notes

(a) TPH-G = total petroleum hydrocarbons as gasoline.

(b) TPH-D = total petroleum hydrocarbons as diesel.

(c) BTEX = benzene, toluene, ethylbenzene, and xylenes.

(d) ACDEH = Alameda County Department of Environmental Health.

(e) References cited in Bibliography of report.

Table 2

Soil Analyses During Removal of the Tanks

| Sample Designation | Location | Date | Depth (feet) | Sample Type | TPH-G (mg/kg) | TPH-D (mg/kg) | Benzene (mg/kg) | Toluene (mg/kg) | Ethyl-benzene (mg/kg) | Xylenes (mg/kg) | Oil & Grease (mg/kg) | Lead (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BA-01-S001 | 500-Gallon Tank Stockpile | 27 June 1989 | Minimal | Composite | 3 | Not Measured | 0.003 | <0.003 | 0.004 | 0.007 | Not Measured | 5.6 |
| BA-01-001 | Beneath North End of Former 500-Gallon Tank | 27 June 1989 | Not Measured | Grab | 4 | Not Measured | 0.007 | 0.005 | 0.059 | 0.010 | Not Measured | 2.5 |
| BA-02-S001 | 2,000-Gallon Tank Stockpile | 27 June 1989 | Minimal | Composite | 1,900 | Not Measured | 0.010 | 0.057 | 0.020 | 0.290 | Not Measured | 17 |
| BA-02-001 | Beneath West End of Former 2,000-Gallon Tank | 27 June 1989 | Not Measured | Grab | 560 | Not Measured | <0.015 | 0.037 | 0.017 | 0.160 | Not Measured | <2.5 |
| BA-02-002 | Beneath East End of Former 2,000-Gallon Tank | 27 June 1989 | Not Measured | Grab | 5,100 | Not Measured | 0.079 | 0.200 | <0.030 | 1.90 | Not Measured | <2.5 |
| BA-03-S001 | 5,000-Gallon Tank Stockpile | 7 July 1989 | Minimal | Composite | <100 | 310 | <0.003 | <0.003 | <0.003 | 0.0042 | Not Measured | 25 |
| BA-03-001 | Beneath West End of Former 5,000-Gallon Tank | 7 July 1989 | Not Measured | Grab | <10 | 150 | <0.003 | 0.0034 | <0.003 | 0.0037 | 27 | 12 |
| BA-03-002 | Beneath East End of Former 5,000-Gallon Tank | 7 July 1989 | Not Measured | Grab | <10 | <10 | <0.003 | 0.0030 | <0.003 | <0.003 | 42 | 12 |

General Notes

(a) < denotes parameter below analytical detection limit.

(b) Samples collected by Roy F. Weston, Walnut Creek CA.

(c) Analyses performed by Superior Analytical, San Francisco CA.

(d) TPH-G = total petroleum hydrocarbons as gasoline.

(e) TPH-D = total petroleum hydrocarbons as diesel.

Table 3

Soil Results from Borings

| Sample Designation | Location | Date | Depth (feet) | Sample Type | Staining or Odor | TPH-G (mg/kg) | TPH-D (mg/kg) | Benzene (mg/kg) | Toluene (mg/kg) | Ethyl-benzene (mg/kg) | Xylenes (mg/kg) | Lead (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW1 5-6 1/2 | MW1 | 25 August 1989 | 5.0 - 6.5 | Grab (liner) | Not reported | <24 | <24 | <0.067 | <0.067 | <0.067 | <0.067 | 10.6 |
| MW1 7 1/2-9 | MW1 | 25 August 1989 | 7.5 - 9.0 | Grab (liner) | Not reported | <22 | <22 | <0.062 | 0.098 | <0.062 | <0.062 | 333 |
| MW1 10-11 1/2 | MW1 | 25 August 1989 | 10 - 11.5 | Grab (liner) | Not reported | <21 | <21 | <0.059 | <0.059 | <0.059 | <0.059 | 6.6 |
| MW1 12 1/2-14 | MW1 | 25 August 1989 | 12.5 - 14 | Grab (liner) | Not reported | <21 | <21 | <0.060 | <0.060 | <0.060 | <0.060 | 6.3 |
| MW1 15-16 1/2 | MW1 | 25 August 1989 | 15 - 16.5 | Grab (liner) | Not reported | <22 | <22 | <0.062 | <0.062 | <0.062 | <0.062 | 7.4 |
| SB1-5 | SB1 | 28 August 1989 | 5.0 | Grab (liner) | Not reported | <24 | <24 | <0.067 | 0.107 | <0.067 | <0.067 | 9.7 |
| SB1-7 1/2 | SB1 | 28 August 1989 | 7.5 | Grab (liner) | Not reported | <22 | <22 | <0.062 | <0.062 | <0.062 | <0.062 | 8.9 |
| SB1-10 | SB1 | 28 August 1989 | 10 | Grab (liner) | Not reported | <21 | <21 | <0.060 | <0.060 | <0.060 | <0.060 | 16.1 |
| SB1-12 1/2 | SB1 | 28 August 1989 | 12.5 | Grab (liner) | Not reported | <22 | <22 | <0.061 | <0.061 | <0.061 | <0.061 | 6.2 |
| SB1-15 | SB1 | 28 August 1989 | 15 | Grab (liner) | Not reported | <23 | <23 | <0.063 | <0.063 | <0.063 | <0.063 | 6.9 |
| SB2 5-6 1/2 | SB2 | 25 August 1989 | 5.0 - 6.5 | Grab (liner) | Not reported | <24 | <24 | <0.066 | <0.066 | <0.066 | <0.066 | 13.5 |
| SB2 7 1/2-9 | SB2 | 25 August 1989 | 7.5 - 9.0 | Grab (liner) | Not reported | <21 | <21 | <0.059 | <0.059 | <0.059 | <0.059 | 5.7 |
| SB2 10-11 1/2 | SB2 | 25 August 1989 | 10 - 11.5 | Grab (liner) | Not reported | <23 | <23 | <0.063 | <0.063 | <0.063 | <0.063 | 8.1 |
| SB2 12 1/2-14 | SB2 | 25 August 1989 | 12.5 - 14 | Grab (liner) | Not reported | <23 | <23 | <0.063 | <0.063 | <0.063 | <0.063 | 8.5 |
| SB2 15-16 1/2 | SB2 | 25 August 1989 | 15 - 16.5 | Grab (liner) | Not reported | <24 | <24 | <0.068 | <0.068 | <0.068 | <0.068 | 8.6 |
| SB4-20 | MW4 | 14 October 1991 | 20 | Grab (liner) | None | <1 | <10 | <0.003 | <0.003 | <0.003 | <0.003 | Not measured |

General Notes

(a) < denotes parameter below analytical detection limit.

(b) Samples from MW1, SB1, and SB2 collected by Roy F. Weston, Walnut Creek CA. Sample from MW4 collected by Hart Crowser, San Francisco CA.

(c) Analyses for MW1, SB1, and SB2 performed by Roy F. Weston, Stockton CA. Analyses for MW4 performed by Superior Analytical, San Francisco CA.

(d) TPH-G = total petroleum hydrocarbons as gasoline.

(e) TPH-D = total petroleum hydrocarbons as diesel.

Table 4

Confirmation Soil Analyses

| Sample Designation | Location | Date | Depth (feet) | Sample Type | TPH-G (mg/kg) | TPH-D (mg/kg) | Benzene (mg/kg) | Toluene (mg/kg) | Ethyl-benzene (mg/kg) | Xylenes (mg/kg) | Lead (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BA-02-S002 | Base of Overexcavated Area (beneath former 2,000-Gallon tank) | 17 October 1989 | Not Reported | Composite | <10 | 100 | <0.003 | 0.005 | 0.001 | 0.016 | <1 (Organic Lead) |

General Notes

(a) < denotes parameter below analytical detection limit.

(b) Samples collected by Roy F. Weston, Walnut Creek CA.

(c) Analyses performed by Superior Analytical, San Francisco CA.

(d) TPH-G = total petroleum hydrocarbons as gasoline.

(e) TPH-D = total petroleum hydrocarbons as diesel.

Table 5

Groundwater Analyses

| Sample Date | Well | Sample Type | TPH-G (µg/L) | TPH-D (µg/L) | Benzene (µg/L) | Toluene (µg/L) | Ethyl-benzene (µg/L) | Xylenes (µg/L) |
|---|---|---|---|---|---|---|---|---|
| 2 March 1990 | MW1 | Grab | <1 | <50 | <0.3 | <0.3 | <0.3 | <0.3 |
| | MW2 | Grab | <1 | <50 | <0.3 | <0.3 | <0.3 | <0.3 |
| | MW3 | Grab | <1 | <50 | <0.3 | <0.3 | <0.3 | <0.3 |
| 13 June 1990 | MW1 | Grab | <50 | <50 | <0.3 | <0.3 | <0.3 | <0.3 |
| | MW2 | Grab | <50 | <50 | <0.3 | <0.3 | <0.3 | <0.3 |
| | MW3 | Grab | <50 | <50 | <0.3 | <0.3 | <0.3 | <0.3 |
| 24 September 1990 | MW1 | Grab | <50 | <1 | <0.3 | <0.3 | <0.3 | <0.3 |
| | MW2 | Grab | <50 | <1 | <0.3 | <0.3 | <0.3 | <0.3 |
| | MW3 | Grab | <50 | <1 | <0.3 | <0.3 | <0.3 | <0.3 |
| 19 January 1991 | MW1 | Grab | <50 | <50 | <0.3 | <0.3 | <0.3 | <0.3 |
| | MW2 | Grab | <50 | <50 | <0.3 | <0.3 | <0.3 | <0.3 |
| | MW3 | Grab | <50 | <50 | <0.3 | <0.3 | <0.3 | <0.3 |
| 28 October 1991 and 21 November 1991 | MW1 | Grab | <50 | <50 | <0.3 | <0.3 | <0.3 | <0.3 |
| | MW2 | Grab | <50 | <50 | <0.3 | <0.3 | <0.3 | <0.3 |
| | MW3 | Grab | <50 | <50 | <0.3 | <0.3 | <0.3 | <0.3 |
| | MW4 | Grab | <50 | <50 | <0.3 | <0.3 | <0.3 | <0.3 |
| 8 April 1992 | MW1 | Grab | <50 | <50 | <0.3 | <0.3 | <0.3 | <0.3 |
| | MW4 | Grab | <50 | <50 | <0.3 | <0.3 | <0.3 | <0.3 |

General Notes

(a) < denotes parameter below analytical detection limit.

(b) Samples collected by Hart Crowser, San Francisco CA.

(c) Analyses performed by Superior Analytical, San Francisco CA.

(d) TPH-G = total petroleum hydrocarbons as gasoline.

(e) TPH-D = total petroleum hydrocarbons as diesel.

Table 6

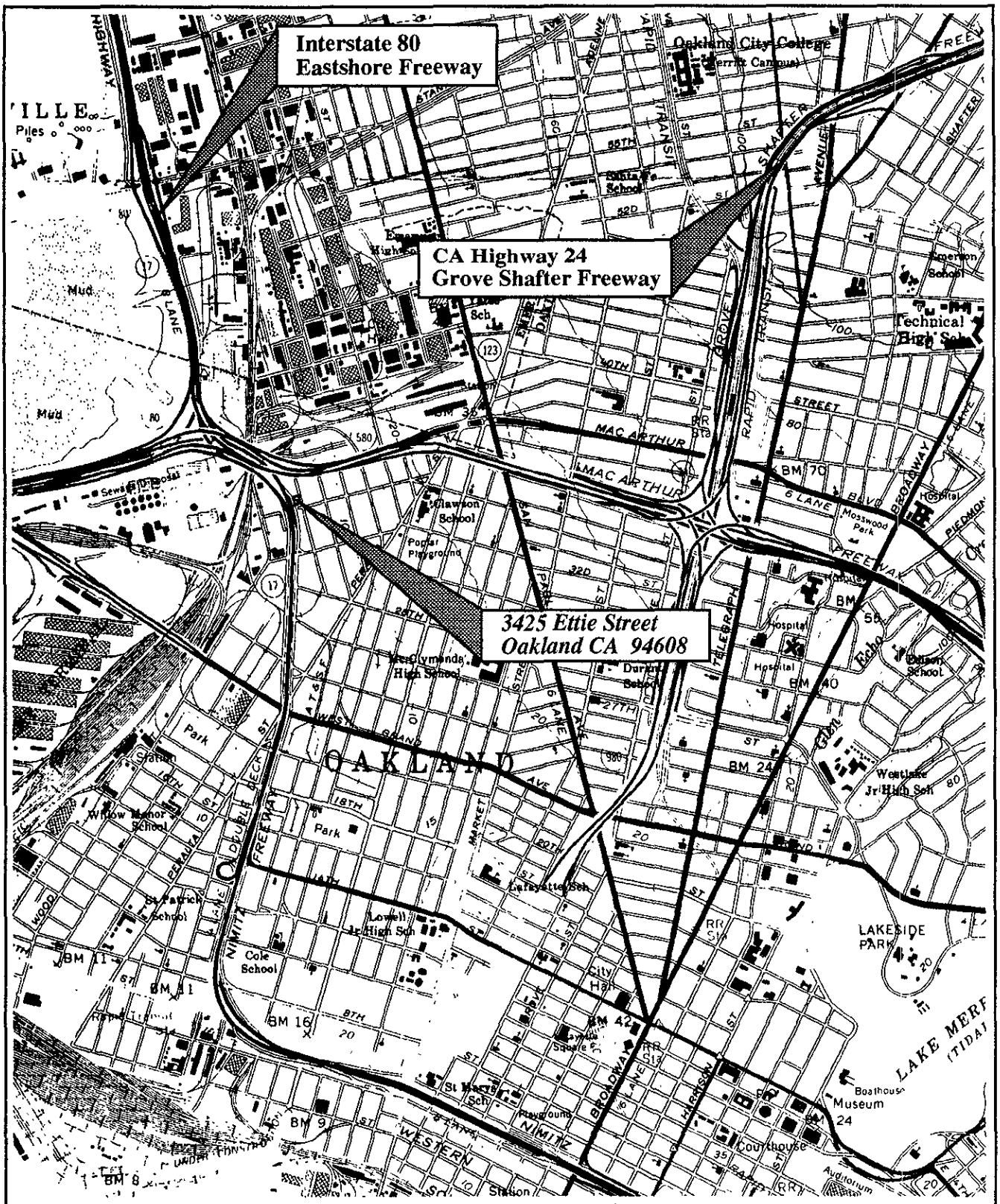
Groundwater Elevation Measurements

| Measured by | Parameter or Date | MW1 | | MW2 | | MW3 | | MW4 | |
|---|---|---|---|---|---|---|---|---|---|
| | | Measuring Point = Top of Casing, Elevation = 100.00 feet (arbitrary datum) | | Measuring Point = Top of Casing, Elevation = 100.30 feet (relative to MW1) | | Measuring Point = Top of Casing, Elevation = 100.08 feet (relative to MW1) | | Measuring Point = Top of Casing, Elevation = 98.38 feet (relative to MW1) | |
| | | Depth | Elevation | Depth | Elevation | Depth | Elevation | Depth | Elevation |
| Roy F. Weston (MW1, MW2, and MW3) and Hart Crowser (MW4) | Intercepted Interval | 5.0 to 20.0 | 95.0 to 80.0 | 4.0 to 20.5 | 96.3 to 79.8 | 5.0 to 20.1 | 95.1 to 80.0 | 3.5 to 23.5 | 94.9 to 74.9 |
| Hart Crowser | 24 September 1990 | 12.25 | 87.75 | 12.04 | 88.26 | 12.16 | 87.92 | Well Not Yet Installed | Well Not Yet Installed |
| Hart Crowser | 19 January 1991 | 11.88 | 88.12 | 11.83 | 88.47 | 11.91 | 88.17 | Well Not Yet Installed | Well Not Yet Installed |
| Hart Crowser | 28 October 1991 | 10.79 | 89.21 | 9.72 | 90.58 | 11.98 | 88.10 | 10.74 | 87.64 |
| Hart Crowser | 21 November 1991 | 11.35 | 88.65 | 11.26 | 89.04 | Not Measured | Not Measured | 10.66 | 87.72 |
| Hart Crowser | 13 December 1991 | 11.97 | 88.03 | 11.92 | 88.38 | 11.92 | 88.16 | 11.12 | 87.26 |
| Hart Crowser | 8 April 1992 | 8.06 | 91.94 | 8.11 | 92.19 | 8.54 | 91.54 | 8.17 | 90.21 |
| Hart Crowser | Total Depth | 20.5 | 79.50 | 21.00 | 79.3 | 20.50 | 79.58 | 23.50 | 74.88 |

General Notes

(a) Elevations relative to an arbitrary datum of 100.00 feet (established at MW1).

(b) Measurements in units of feet.




Basemap Reference: U.S. Geological Survey, 7.5 Minute Quadrangle, Oakland West CA, 1959 (Photorevised 1980)

0 0.5 1.0

Approximate Scale in Miles

0 5,000

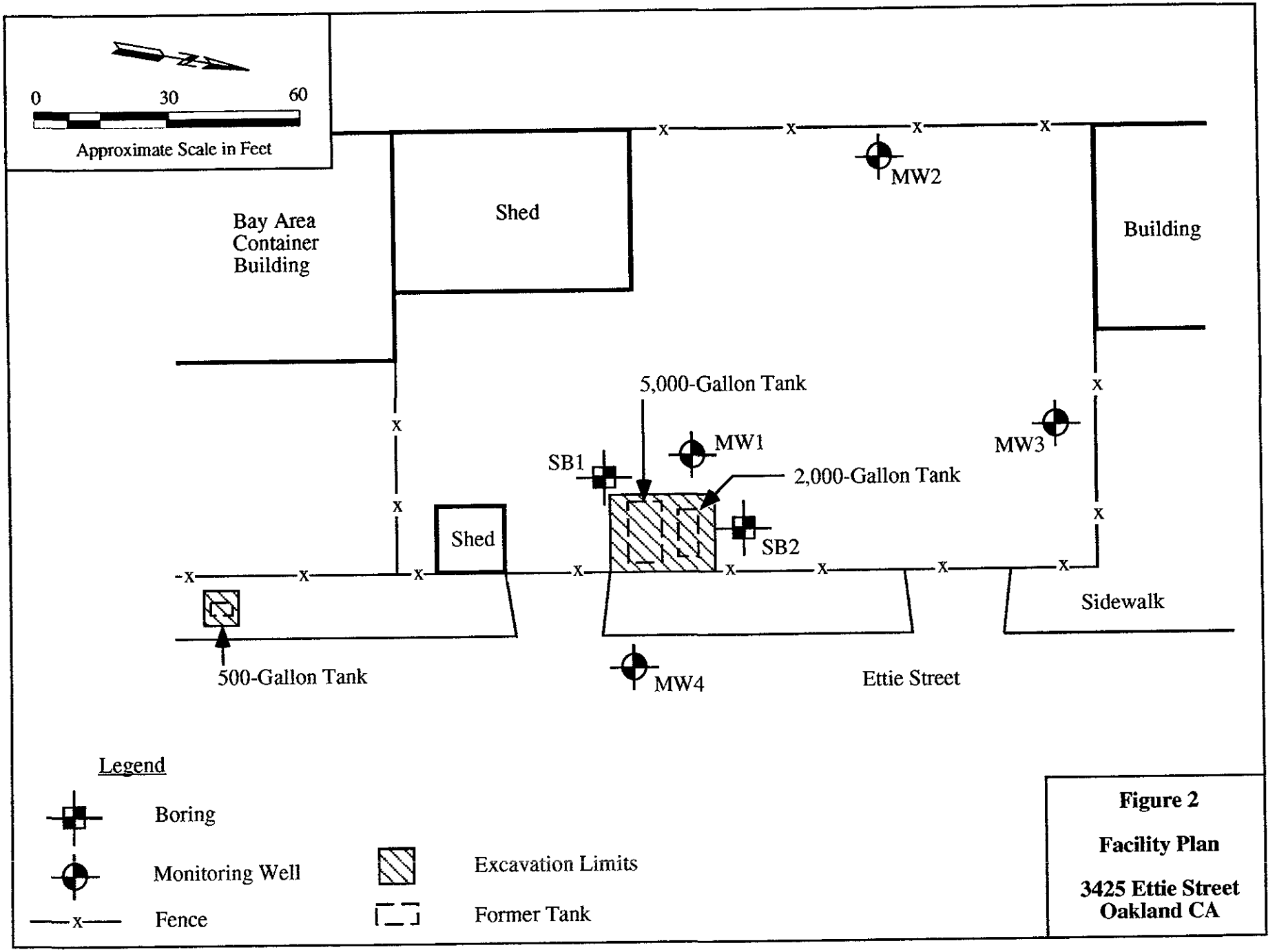
Approximate Scale in Feet

**Figure 1**

**Location Map**

**3425 Ettie Street Oakland CA**

STREAMBORN


0
30
60
Approximate Scale in Feet
Bay Area
Container
Building
Shed
MW2
Building
5,000-Gallon Tank
MW1
SB1
2,000-Gallon Tank
MW3
Shed
SB2
Sidewalk
500-Gallon Tank
MW4
Ettie Street
Legend
Boring
Monitoring Well
Fence
Excavation Limits
Former Tank
Figure 2
Facility Plan
3425 Ettie Street
Oakland CA

STREAMBORN

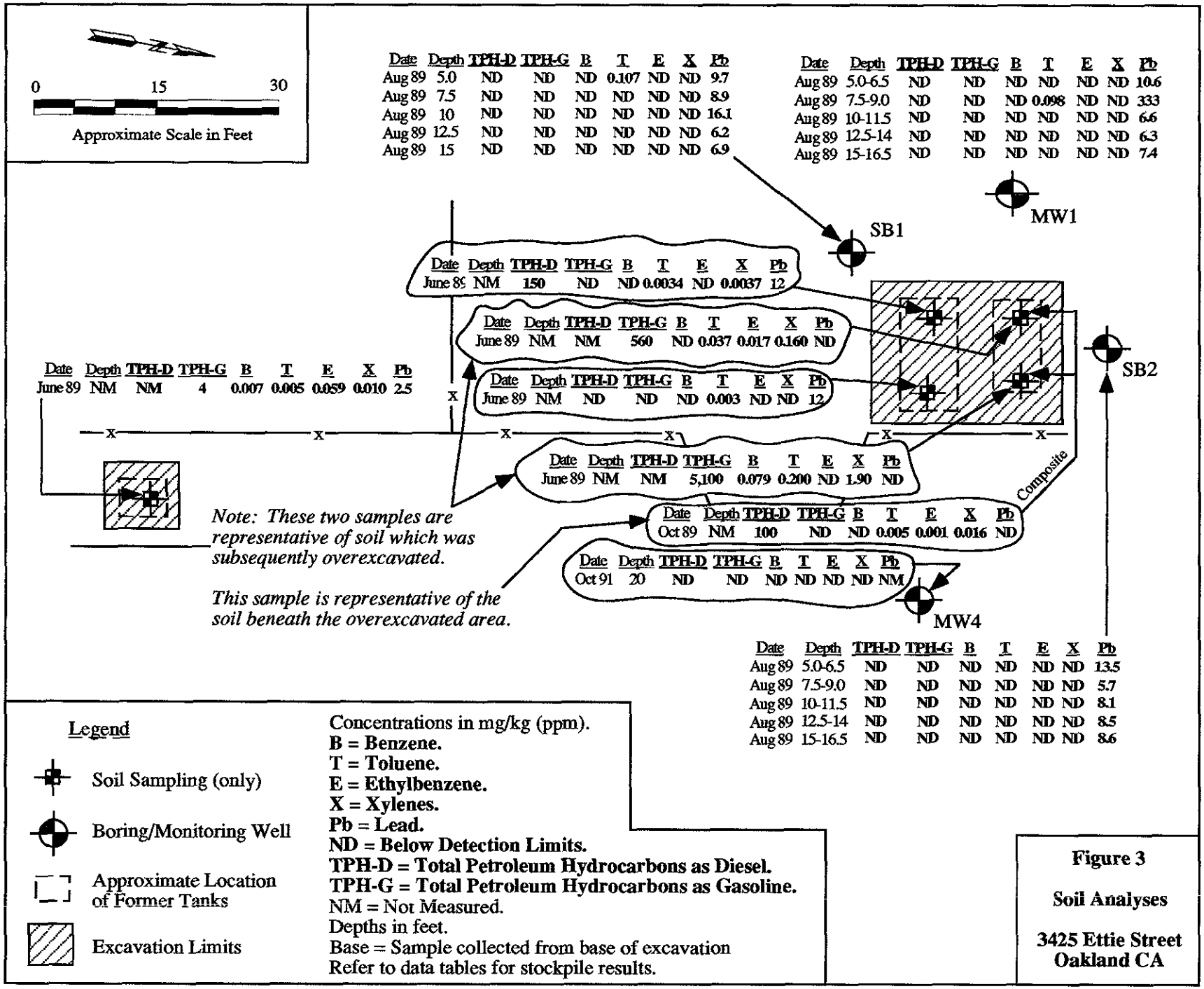
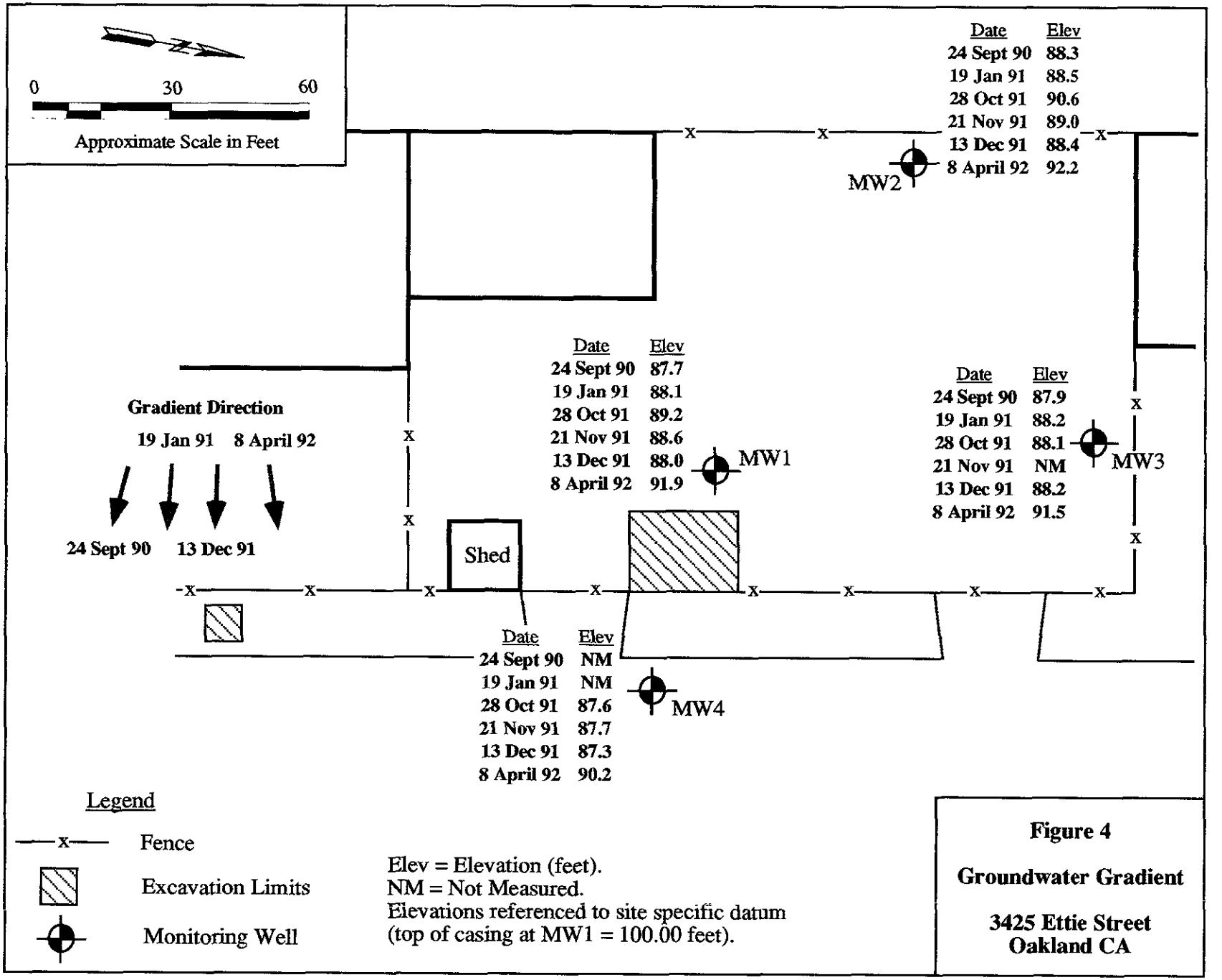



**Figure 3**

**Soil Analyses**

**3425 Ettie Street**
**Oakland CA**

STREAMBORN


0
30
60
Approximate Scale in Feet
Date Elev
24 Sept 90 88.3
19 Jan 91 88.5
28 Oct 91 90.6
21 Nov 91 89.0
13 Dec 91 88.4
8 April 92 92.2
MW2
Date Elev
24 Sept 90 87.7
19 Jan 91 88.1
28 Oct 91 89.2
21 Nov 91 88.6
13 Dec 91 88.0
8 April 92 91.9
MW1
Date Elev
24 Sept 90 87.9
19 Jan 91 88.2
28 Oct 91 88.1
21 Nov 91 NM
13 Dec 91 88.2
8 April 92 91.5
MW3
Gradient Direction
19 Jan 91 8 April 92
24 Sept 90 13 Dec 91
Shed
Date Elev
24 Sept 90 NM
19 Jan 91 NM
28 Oct 91 87.6
21 Nov 91 87.7
13 Dec 91 87.3
8 April 92 90.2
MW4
Legend
Fence
Excavation Limits
Monitoring Well
Elev = Elevation (feet).
NM = Not Measured.
Elevations referenced to site specific datum
(top of casing at MW1 = 100.00 feet).
Figure 4
Groundwater Gradient
3425 Ettie Street
Oakland CA
STREAMBORN

# APPENDIX A

Boring and Well Logs

# MONITOR WELL MW1/583 LOG



GOLDEN, STEFAN, ELLENBURG & TOBY

CLIENT: (BAY AREA CONTAINER) CONTRACTOR: KVILHAUG DATE START: 8/25/89 FINISH: 8/28/

PROJECT NO.: 3600-03-10 DRILLER: GEOLOGIST(S): R. MARION

DRILL METHOD: AUGER DRILL RIG: B-53

SAMPLE METHOD: SPOON LOCATION: 3425 ETTIE ST., OAKLAND, CA

| DEPTH | LITH COL | SAMPLE INTERVAL | BLOW COUNTS | HNu/OVA | LITHOLOGIC DESCRIPTION | OBSERVATIONS | WELL DESIGN |
|---|---|---|---|---|---|---|---|
| 1 | | | | | | | GROUT |
| 2 | | 2½-4' | 4/4/8 | .5 | 7.5YR-3/2 DARK BROWN SANDY CLAY AT TOP GRADING TO 7.5YR-2/2 BLACK CLAY, MOIST, PLASTIC, CH-OH | HNU=0 IN BREATHING ZONE. | BENTONITE |
| 3 | | | | | | | |
| 4 | | | | | | | 4" PVC RISER |
| 5 | | 5-6½' | 4/4/8 | 5-6 | 7.5YR-2/2 BLACK CLAY, MOIST, PLASTIC, AS ABOVE, CH-OH | | |
| 6 | | | | | | | 4" PVC SCREEN |
| 7 | | 7½-9' | 3/4/6 | 1 | CLAY, AS ABOVE, FIRM, CH-OH 12" RECOV. | | |
| 8 | | | | | | | |
| 9 | | | | | | | SAND PACK |
| 10 | | 10-11½' | 8/9/12 | 1 | 10YR-4/2 DARK GREY-BROWN CLAY W/ SOME SUB-ROUND PEBBLES AND FRAGMENTS OF DARK BROWN COAL-LIKE MATERIAL, YELLOW & ORANGE STAINED AREAS, MOIST-DAMP TOWARD BOTTOM, CL. | | |
| 11 | | | | | | | |
| 12 | | | | | | | |
| 13 | | 12½-14' | | 1 | 10YR-5/4 YELLOWISH BROWN CLAY W/ SUBANGULAR QUARTZ FRAGMENTS & PEBBLES, COMMON BLACK FRAGMENTS, OCCAS ORANGE STAIN, V DAMP-MOIST, CL | POSS. IN WATER ZONE | |
| 14 | | | | | | | |
| 15 | | | | | | | |

# MONITOR WELL MW1 LOG



GOLDEN, STEFAN, ELLENBERG, & TOBY

CLIENT: (BAY AREA CONTAINER) CONTRACTOR: KUILHAUG DATE START: 8/25/89 FINISH: 8/28/

PROJECT NO.: 3600-03-10 DRILLER: GEOLOGIST(S): R. MARION

DRILL METHOD: AUGER DRILL RIG: B-53

SAMPLE METHOD: SPOON LOCATION: 3425 ETTIE ST, OAKLAND, CA

| DEPTH | LITH COL | SAMPLE INTERVAL | BLOW COUNTS | HNu/OVA | LITHOLOGIC DESCRIPTION | OBSERVATIONS | WELL DESIGN |
|---|---|---|---|---|---|---|---|
| 15 | | 15-16½' | | 10-40 | 10YR-5/4 YELLOWISH BROWN CLAY, SOFT, SLI SILTY, AREAS OF LIGHT GREY & OCCAS BLACK STAINING, MOIST-WET, PLASTIC, CL. REC 16" | HNU=0 IN BREATHING ZONE. | 4" PVC SCREEN 2 |
| 16 | | | | | | | |
| 17 | | | | | | | SAND PACK |
| 18 | | 17½-19' | 3/3/5 | 1-5 | CLAY, AS ABOVE, VMOIST, CL REC. 16". | | |
| 19 | | 19-20½' | | 1 | 2.5Y-6/2 LIGHT BROWNISH GREY CLAY, TRACE TO LITTLE SILT & FINE SAND, ORANGE-BROWN STAINING THROUGHOUT, FIRM, DAMP PLASTIC WHEN WETTED, CL. REC. 14" | | BOTTOM SCREEN 20.0' |
| 20 | | | | | | | T.D. 20.5' |

# MONITOR WELL MW2 LOG



GOLDMAN, STEFAN, ELLENBERG, & TOBY

CLIENT: (BAY AREA CONTAINER) CONTRACTOR: KYLEHAUS DATE START: 8/28/89 FINISH: 8/28/

PROJECT NO.: 3600-03-10 DRILLER: GEOLOGIST(S): R. MARION

DRILL METHOD: AUGER DRILL RIG: B-53

SAMPLE METHOD: SPOON LOCATION: 3425 ETTIE ST, OAKLAND, CA

| DEPTH | LITH COL | SAMPLE INTERVAL | BLOW COUNTS | HNu/OVA | LITHOLOGIC DESCRIPTION | OBSERVATIONS | WELL DESIGN |
|---|---|---|---|---|---|---|---|
| 1 | | | | | | | BENTONITE GROUT |
| 2 | | | | | SAMPLES TAKEN FOR LITHOLOGY ONLY. | | |
| 3 | | | | | | HNU=0 IN BREATHING SPACE. | |
| 4 | | | | | | | |
| 5 | | 5-6½' | | 0 | 2.5Y-2/0 BLACK CLAY, LITTLE MED TO COARSE-GRAINED SAND & SMALL PEBBLES IN TOP 2", FIRM, DAMP, PLASTIC WHEN WETTED. CL-OH. REC 5.5" | | TOP SCREEN AT 4.0' |
| 6 | | | | | | | |
| 7 | | | | | | | SAND PACK |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | 10-11½' | 18/25/35 | 0 | 2.5Y-6/2 LIGHT BROWNISH GREY SILT/CLAY, ORANGE-BROWN, DARK BROWN & BLACK STAINED AREAS, LITTLE FINE TO MED SAND, SLI DAMP, CRUMBLY, TRACE PEBBLES, ML-CL. REC 9" | | 4" PVC SCREEN |
| 11 | | | | | | | |
| 12 | | | | | | | |
| 13 | | | | | | | |
| 14 | | | | | | | |
| 15 | | | | | | | |

# MONITOR WELL MW2 LOG



GOLDEN, STEFAN, ELLANBERG, & TROY

CLIENT: (BAY AREA CONTAINER) CONTRACTOR: KVILHAUG DATE START: 8/28/89 FINISH: 8/28/

PROJECT NO.: 5600-03-10 DRILLER: GEOLOGIST(S): R. MARICH

DRILL METHOD: AUGER DRILL RIG: B-53

SAMPLE METHOD: SPOON LOCATION: 3425 ETTIE ST, OAKLAND

| DEPTH | LITH COL | SAMPLE INTERVAL | BLOW COUNTS | HNu/OVA | LITHOLOGIC DESCRIPTION | OBSERVATIONS | WELL DESIGN |
|---|---|---|---|---|---|---|---|
| 15 | | 15-16½' | 5/6/10 | 0 | 10YR-5/3 BROWN CLAY/SILT MATRIX W/ 60-70% GRAVEL, VMOIST-WET, GC-CL. REC. 15". | | 4" PVC SCREEN |
| 16 | | | | | | | |
| 17 | | | | | | | SAND PACK |
| 18 | | | | | | | |
| 19 | | | | | | | |
| 20 | | 20-21½' | 7/8/10 | 0 | 2.5Y-6/2 LIGHT BROWNISH GREY, CLAY 50% STAINED W/ ORANGE-BROWN, TRACE TO LITTLE-BLACK FRAGMENTS & STAINING, TRACE PEBBLES, VMOIST. CL | HNU = 0.5 IN BREATHING SPACE. | BOTTOM SCREEN 20.5' |
| 21 | | | | | | | T.D. = 21.0' |

WESTON

# MONITOR WELL MW3 LOG



GOLDEN, STEFAN, ELLENBURG, TOBY

CLIENT: BAY AREA CONTAINER  CONTRACTOR: KYLEMUG  DATE START: 8/29  FINISH: 8/29

PROJECT NO.: 3600-03-10  DRILLER:  GEOLOGIST(S):

DRILL METHOD: AUGER  DRILL RIG: B-53

SAMPLE METHOD: SPOON  LOCATION: 3425 ETTIE ST, OAKLAND

| DEPTH | LITH COL | SAMPLE INTERVAL | BLOW COUNTS | HNU/OVA | LITHOLOGIC DESCRIPTION | OBSERVATIONS |
|---|---|---|---|---|---|---|
| 5 | | 5-6½' | 3/4/5 | 0 | 2.5Y-2/0 BLACK CLAY, DAMP, SOFT, PLASTIC. REC 11" CH-OH | HNU=0 IN BREATHING ZONE. |
| 10 | | 10-11½' | 4/7/7 | 0 | 2.5Y-6/2 LIGHT BROWNISH GREY, CLAY, ORANGE-BROWN & BLACK STAINING DISTRIBUTED THROUGHOUT TRACE SILT & SMALL PEBBLES, FIRM, DAMP, MODERATELY PLASTIC WHEN WET. REC 10". CL | |

WELL DESIGN

CEMENT GROUT

TOP SAND

4" PVC RISER

TOP SCREEN

SAND PACK

4" PVC SCREEN

WESTON

# MONITOR WELL MW3 LOG



GOLDEN, STEFAN, ELLENBURG, & TOBY

CLIENT: (BAY AREA CONTAINER) CONTRACTOR: KVILHAUG DATE START: 8/29 FINISH: 8/29

PROJECT NO.: 3600-03-10 DRILLER: _____ GEOLOGIST(S): R. MARION

DRILL METHOD: AUGER DRILL RIG: B-53 _____

SAMPLE METHOD: SPOON LOCATION: 3425 ETTIE ST, OAKLAND, CA

| DEPTH | LITH COL | SAMPLE INTERVAL | BLOW COUNTS | HNU/OVA | LITHOLOGIC DESCRIPTION | OBSERVATIONS |
|---|---|---|---|---|---|---|
| 15 | | 15-16½' | 4/7/10 | 0 | 15.0'-15.2': CLAY AS ABOVE<br>15.2'-16.5': 2.5Y 6/2 LIGHT BROWNISH GREY ~~CLAY~~ FINE SAND & SILT, 50% LT STAINED ORANGE-BROWN, TRACE SUBANGULAR PEBBLES, DAMP MOIST. REC. 17". ML. | WELL DESIGN<br>4" PVC SCREEN<br>SAND PACK |
| 16 | | | | | | |
| 17 | | | | | | |
| 18 | | | | | | |
| 19 | | | | | | |
| 20 | | 20-21.5' | | 0 | 20.0'-20.2': 10YR-5/3 BROWN CLAY MATRIX W/ 40-50% PEBBLES, SUBANGULAR, UP TO 3/8" IN DIAMETER. CL-GC<br>20.2'-21.5': 10YR-6/2 LIGHT BROWNISH GREY CLAY, ORANGE-BROWN STAINED AREAS DISTRIBUTED THROUGHOUT, FAIRLY SOFT, MOIST-OUTSIDE OF SAMPLE IS WET, PLASTIC. CL. | BASE SCREEN 20.8'<br>T.D. 20.5' |

WESTON

# SOIL BORING SB1 LOG



GOLDEN, STEFAN, ELLENBERG, & TOBY

CLIENT: (BAY AREA CONTAINER) CONTRACTOR: KVILHAUG DATE START: 8/28 FINISH: 8/28

PROJECT NO.: 3600-03-10 DRILLER: GEOLOGIST(S): R. MARION

DRILL METHOD: AUGER DRILL RIG: B-53

SAMPLE METHOD: SPOON LOCATION: 3425 ETTIE ST, OAKLAND, CA

| DEPTH | LITH COL | SAMPLE INTERVAL | BLOW COUNTS | HNu/OVA | LITHOLOGIC DESCRIPTION | OBSERVATIONS |
|---|---|---|---|---|---|---|
| 1 | | | | | | |
| 2 | | | | | UNABLE TO GET SAMPLE AT 2 1/2'. ENCOUNTERED LARGE BRICK. | |
| 3 | | | | | | |
| 4 | | | | | | |
| 5 | | 5-6 1/2' | 5/5/0 | 1.4 | 2.5Y-2/0 BLACK CLAY, DAMP, PLASTIC, LARGE BRICK FRAGMENT IN UPPER 2". REC 13". CH-OH. | GROUT |
| 6 | | | | | | |
| 7 | | | | | | |
| 8 | | 7 1/2-9' | 6/10/17 | 0 | 7.5-8.0': 5Y-4/1 DARK GREY CLAY, W/ LIGHT GRAY INCLUSIONS, DAMP, PLASTIC, GRADING TO: 8.0-9.0': 2.5Y-6/2 LIGHT BROWNISH GREY CLAY, SCATTERED ORANGE-BROWN & BLACK STAIN, DAMP, PLASTIC. REC. 20". CL | |
| 9 | | | | | | |
| 10 | | 10-11 1/2' | 14/15/25 | 0.4 | 2.5Y-6/2 LIGHT BROWNISH GREY CLAY, AS ABOVE, HEAVY ORANGE-BROWN & DARK BROWN STAINING THROUGHT. REC. 18". CL | |
| 11 | | | | | | |
| 12 | | | | | | |
| 13 | | 12 1/2-14' | 29/15/10 | 0.4 | 10YR-5/3 BROWN CLAY/SILT MATRIX W/ 60-70% GRAVEL, UMOIST TO WET, REC 6". CL-GC. | APPARENTLY IN WATER ZONE. |
| 14 | | 14-15 1/2' | 4/5/7 | 1.4 | 10YR-5/4 YELLOWISH BROWN CLAY, W/ AREAS OF 2.5Y-6/2 LIGHT BROWN-GREY & SCATTERED BLACK STAIN, MOIST, PLASTIC. REC 23" CL | BENTONITE |
| 15 | | | | | | T.D. 15.5' |

# SOIL BORING SB2 LOG



GOLDEN, STEFFAN, ELLENBOGE, & TOBY

CLIENT: (BAY AREA CONTAINER) CONTRACTOR: KVILHAUG DATE START: 8/25 FINISH: 8/25

PROJECT NO.: 3600-03-10 DRILLER: GEOLOGIST(S): R. MARION

DRILL METHOD: AUGER DRILL RIG: B-53

SAMPLE METHOD: SPOON LOCATION: 3425 ETTIE ST, OAKLAND

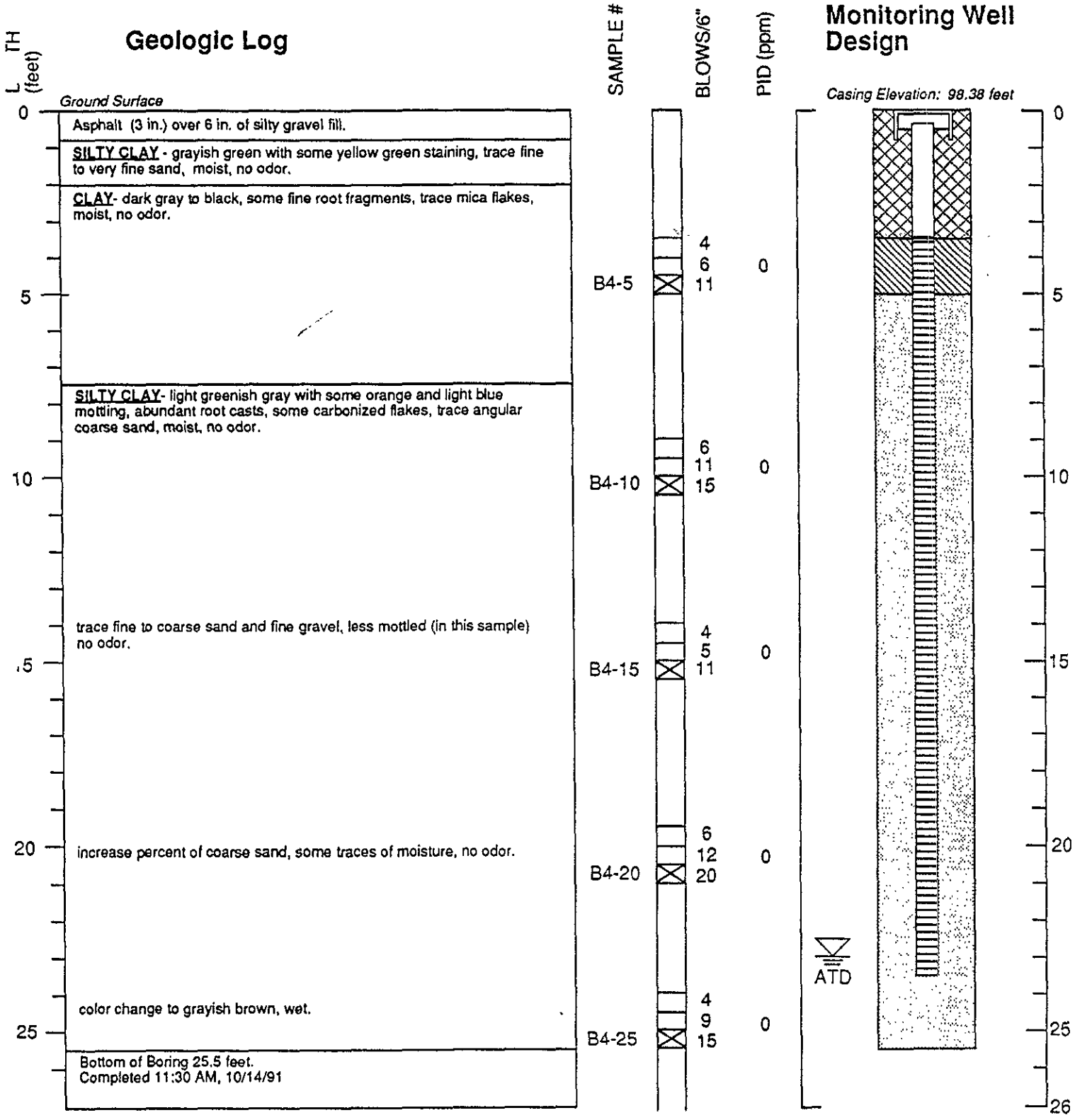
| DEPTH | LITH COL | SAMPLE INTERVAL | BLOW COUNTS | HNu/OVA | LITHOLOGIC DESCRIPTION | OBSERVATIONS |
|---|---|---|---|---|---|---|
| 1 | | | | | | |
| 2 | | 2½-4' | 3/5/8 | 0.5 | 2.5YR-2/2 BLACK CLAY W/ LITTLE TO SOME LIGHT GREY, SUBRND QTZ GRAINS AT TOP OF SAMPLE, DAMP, PLASTIC. REC. 12". CH=OH. | HNU=0 IN BREATHING ZONE. |
| 3 | | | | | | |
| 4 | | | | | | |
| 5 | | 5-6½' | 5/8/13 | 1.8 | 2.5YR-2/2 BLACK CLAY, AS ABOVE REC. 15". CH-OH. | |
| 6 | | | | | | |
| 7 | | | | | | |
| 8 | | 7½-9' | 5/14/15 | 0.4 | 2.5Y-3/0 VERY DARK GREY CLAY GRADING TO LIGHT GREY-GREEN AT BOTTOM (NO MUNSEL COLOR), SLI DAMP, CRUMBLY TO SLI PLASTIC. REC. 12". CL. | |
| 9 | | | | | | |
| 10 | | 10-11½' | 15/20/25 | 0 | 10YR-5/3 BROWN CLAY WITH FREQUENT ORANGE AND OCCAS. RED STAIN, SOME PEBBLES & ROCK FRAGMENTS. CL | |
| 11 | | | | | | |
| 12 | | | | | | |
| 13 | | 12½-14' | | 0 | 10YR-5/4 YELLOWISH BROWN CLAY, W/ STREAKS OR DARK GREY-BLACK STAIN, LIGHT GREY INCLUSIONS, MOIST-VMOIST, MOD PLASTIC. CL | |
| 14 | | 14-15½' | | 0 | CLAY, AS ABOVE. | |
| 15 | | | | | | |

GROUT

BENTONITE

T.D. 15.5'

# Boring Log SB4 (MW-4)




1. *Refer to Figure A-1 for explanation of descriptions and symbols.*
2. *Soil descriptions and stratum lines are interpretive and actual changes may be gradual.*
3. *Groundwater level is the approximate level at time of drilling (ATD) for date specified. Level may vary with time.*
4. *Casing elevation is measured relative to an arbitrary datum of 100.00 feet at the top of casing elevation of MW-1.*

HARTCROWSER

*J-6018* *12/91*

*Figure A*

*Page 1 of 1*

# APPENDIX B

26 October 1989 Telephone Conversation between Dennis Byrne, Alameda County Department of Environmental health and Cemantha Davisson, Roy F. Weston

WESTON

Originator

# PHONE CONVERSATION RECORD

Conversation with:
Name Dennis Byrne
Company Alameda County Health
Address
Phone

Date 10/26/89
Time 10:15 (AM)/PM

☐ Originator Placed Call
☒ Originator Received Call
W.O. NO.

Subject

Notes:

Told him results of final Confirmation sample on 2000 gal side tank below manifold were clean on LUFT. He says to follow Regional Board requirements not LUFT - I pointed out to him that document is a supplement to LUFT, He agreed. Asked so what are the cut off points? - He said 1000 ppm - either gasoline or diesel.

He also stated groundwater sampling must be done on quarterly basis for one year to get representative conditions.

Told him a report will be compiled once backfilled and will be sent to client to present to him.

He said OK to backfill. (I expressed Concern for safety with pit being open)

☐ File
☐ Tickle File ___/___/___
☐ Follow-Up By:
☐ Copy/Route To:

Follow-Up-Action:

Originator's Initials