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March 27, 2003  
Project H9042.C/Q

Mr. Jerry Harbert  
46765 Mountain Cove Drive  
Indian Wells, California 92210

**Subject: Proposed Site Specific Cleanup Goals - Revised**  
**Groundwater Monitoring Report - Fourth Quarter 2002**  
**Work Plan for Conduit Study**  
Harbert Transportation  
19984 Meekland Avenue, Hayward, California

Dear Mr. Harbert:

This report presents revised site-specific cleanup goals for petroleum hydrocarbons and describes groundwater monitoring activities conducted by Weber, Hayes and Associates at the former Harbert Transportation facility, 19984 Meekland Avenue, Hayward, California, during the fourth quarter 2002. This report has been prepared pursuant to a directive from the Alameda County Health Care Services Agency/Environmental Health Services (Environmental Health) regarding a release of petroleum hydrocarbons from underground storage tanks at the site.

#### **EXECUTIVE SUMMARY**

This quarter we revised our site-specific cleanup goals for petroleum hydrocarbons (PHCs) detected at the Harbert Transportation site (Total Petroleum Hydrocarbons as gasoline [TPH-g] and benzene, toluene, ethylbenzene, and xylenes [BTEX]). The revised site-specific cleanup goals are based on Risk Based Screening Levels (RBSLs) presented in the document *Application of Risk-Based Screening Levels and Decision Making to Sites with Impacted Soil and Groundwater* (California Regional Water Quality Control Board, San Francisco Bay Region, December 2001). **Comparison of the revised site-specific cleanup goals with residual concentrations of PHCs in soil and groundwater indicate that residual concentrations of PHCs in soil and groundwater are below the revised site-specific cleanup goals.** The revised cleanup goals are based on the assumption that shallow groundwater beneath the site is not currently used as a drinking water resource and that there are no nearby sensitive ecological habitats (such as surface water or wetlands) that PHC-impacted groundwater could reach.

The groundwater monitoring event for the fourth quarter 2002 took place on December 30, 2002. Groundwater elevations at the site rose an average of approximately 2.58 feet since the previous quarter (August 2002). The calculated groundwater flow direction on December 30, 2002 was to the west, which appears to be generally consistent with historical data. Groundwater analytical results from the fourth quarter 2002 indicate that dissolved PHCs remain in groundwater at concentrations that exceed final water quality goals (drinking water Action Levels/Maximum Contaminant Levels) in some monitoring wells at the site. Groundwater monitoring at the site has documented a general decrease in dissolved PHC concentrations. Dissolved PHCs should be reduced to final water quality goals by natural attenuation before shallow groundwater would be used as a drinking water resource.

**Methyl - tert - Butyl Ether (MTBE) was not detected in the groundwater samples collected this quarter. MTBE has not been detected in soil or groundwater at the site.** Groundwater samples in the third quarter 2000 were analyzed for the fuel oxygenates Di-isopropyl Ether, tertiary Butyl Alcohol, Ethyl tertiary Butyl Ether, and tertiary Amyl Methyl Ether. No fuel oxygenates were detected in these groundwater samples.

At this time we recommend:

- Completing a Well/Conduit Search to confirm our assumption that shallow groundwater near the site is not a drinking water source and that there are no nearby abandoned wells that could serve as conduits to deeper groundwater. A Work Plan for the Well/Conduit Search is presented in this report
- Continuing quarterly groundwater monitoring while the Regional Board and Alameda County Environmental Health review the cleanup goals proposed in this report
- Closing the fuel leak investigation and cleanup if the Well/Conduit Search confirms that shallow groundwater is not currently a drinking water source. Site investigations and groundwater monitoring have shown that residual PHCs in soil do not threaten human health or groundwater resources and that residual PHCs in groundwater are stable and declining. Residual PHCs in groundwater should degrade to groundwater quality goals (drinking water Action Levels/Maximum Contaminant Levels) before shallow groundwater would be used as a drinking water source.

## INTRODUCTION

This report presents revised site-specific cleanup goals for petroleum hydrocarbons and documents groundwater monitoring activities at the former Harbert Transportation facility, 19984 Meekland Avenue, Hayward, California (the site), during the fourth quarter 2002. This report has been prepared pursuant to a directive from the Alameda County Health Care Services Agency/Environmental Health Services (Environmental Health, August 8, 2000) regarding a release of petroleum hydrocarbons (PHCs) from underground storage tanks (USTs) at the site.

This quarter we revised our proposed site-specific cleanup goals for PHCs detected at the site (Total Petroleum Hydrocarbons as gasoline [TPH-g] and benzene, toluene, ethylbenzene, and xylenes [BTEX]). The revised site-specific cleanup goals are based on site-specific characteristics and Risk Based Screening Levels (RBSLs) presented in the document *Application of Risk-Based Screening Levels and Decision Making to Sites with Impacted Soil and Groundwater* (California Regional Water Quality Control Board, San Francisco Bay Region, December 2001).

**Comparison of the revised site-specific cleanup goals with residual concentrations of PHCs in soil and groundwater indicate that residual concentrations of PHCs in soil and groundwater are below the proposed site-specific cleanup goals.**

Environmental Health concurred with our first quarter 2002 recommendation to decrease the sampling frequency of selected site monitoring wells. The revised sampling schedule entails collecting groundwater samples from monitoring wells MW-3, 5, 6, 9, and 10 quarterly, monitoring well MW-7 semi-annually (second and fourth quarters only), and all of the wells annually in the fourth quarter.

Groundwater monitoring activities conducted during this quarter included:

1. Measuring groundwater levels and checking for the presence of free product in all of the monitoring wells associated with the site
2. Measuring the physical parameters of pH, temperature, electrical conductivity, and dissolved oxygen concentration in each well
3. Collecting groundwater samples from the appropriate monitoring wells
4. Submitting the groundwater samples to a state-certified analytical laboratory for analysis of dissolved PHC concentrations following proper chain-of-custody procedures
5. Calculating groundwater elevations, flow direction, and gradient in the vicinity of the site
6. Mapping the extent of the dissolved PHC plume in groundwater beneath the site, and
7. Preparing this technical report

## **SITE DESCRIPTION AND BACKGROUND**

The site is located at the corner of Meekland Avenue and Blossom Way, a highly urbanized area in Alameda County California (Figure 1). The site is located at an elevation of approximately 55 feet above sea level. The site is relatively flat, with an area of approximately 21,000 square feet. The site is located approximately 2,500 feet south of San Lorenzo Creek, and approximately 15,000 feet east of the San Francisco Bay (see Figure 1). There are no ecologically sensitive areas (such as surface water or wetlands) or homes to endangered species within 1,000 feet of the site. Domestic water at the site and in the vicinity is provided by the East Bay Municipal Utilities District.

### **Past, Current and Anticipated Future Site Activities and Uses**

The site was used primarily for commercial activities in the past. It operated as a motor vehicle fueling station in the 1940's. Harbert Transportation used the site as a vehicle and fueling yard before selling the site to Durham Transportation in 1986. Durham used the site for similar activities.

The site is currently vacant. Anticipated future site uses are residential, so **all Risk-Based Screening for contaminants at the site will be based on residential land use.** If residual

concentrations of PHCs are below the residential Risk-Based Screening Levels, no formal land use restrictions will be necessary to protect human health.

### Summary of Site Investigations

In August 1989, four underground storage tanks (USTs) were removed from the site and properly disposed of. Soil and groundwater investigations at the site, conducted by Applied Geosystems, CTTS, and AGI Technologies, indicated that PHCs (Total Petroleum Hydrocarbons as gasoline [TPH-g] and benzene, toluene, ethylbenzene, and xylenes [BTEX]) were present in soil and groundwater at the site. A list of reports documenting the soil and groundwater investigations is included in the Reference section. Twelve groundwater monitoring wells were installed by the former consultants. Ten of the monitoring wells still exist at the site (see Figure 2). Documentation indicates the other two monitoring wells were properly destroyed. Groundwater samples were not collected from the site between September 1996 and September 2000. Documentation indicates that excavated soil from the UST removals was returned to the (reportedly plastic-lined) excavations (CTTS, November 1, 1992).

Weber, Hayes and Associates initiated a groundwater monitoring program at the site in the third quarter 2000. The groundwater monitoring program continued on a quarterly basis to the present. **Analytical data from the groundwater monitoring program indicate that shallow groundwater at the site has been impacted by PHCs. However, neither Methyl tert Butyl Ether (MTBE) nor other fuel oxygenates (Di-isopropyl Ether, tertiary Butyl Alcohol, Ethyl tertiary Butyl Ether, and tertiary Amyl Methyl Ether) have ever been detected in groundwater at the site.**

On February 14, 2001, we collected soil samples from the site to determine the extent of PHCs remaining in the unsaturated zone in accordance with our September 7, 2000 Work Plan (see Figures 2 and 3, and Table 1 for analytical data). The Work Plan was approved by Environmental Health on November 1, 2000. **Analysis of the data collected indicated that the soils at the site were predominately fine grained, and confirmed that significant concentrations of PHCs remained in soils in isolated areas beneath the former dispensers and in the 1989 UST excavation which was backfilled with the excavated material.** We recommended excavation of these residual PHCs as an Interim Remedial Action (Weber, Hayes and Associates, June 18, 2001). Environmental Health concurred with this recommendation in a letter dated June 26, 2001.

**On January 7 - 10, 2002 we conducted an interim remedial action excavation using six foot diameter augers to remove contaminated soils from the subsurface.** Approximately 670 cubic yards (yds<sup>3</sup>) of soil was removed from the subsurface. Approximately 594 yds<sup>3</sup> of PHC-impacted soil was transported to an appropriate landfill for disposal. The remaining soil was verified not to contain any detectable PHCs, and was reused on-site as backfill material. A pump was installed in one of the large diameter boreholes and 3,000-gallons of PHC impacted water was removed from the subsurface and properly disposed of. Oxygen Release Compound<sup>®</sup> (ORC) was added to the saturated zone in each borehole to promote microbial growth and enhance the ability of aerobic

microbes to degrade contaminants. Each borehole was backfilled with control density fill and clean fill soil to ground surface. This work was described in our February 8, 2002 report, *Large Diameter Excavation and 4th Quarter 2001 Quarterly Groundwater Monitoring*. Analytical data is summarized in Table 1 and on Figure 4. The highest residual PHC concentrations at the site after the source zone excavation are summarized below.

Summary of Maximum Residual PHC Concentrations in Soil After Source Zone Excavation  
(mg/kg, ppm)

Chemical	TPH-g	Benzene	Toluene	Ethylbenzene	Xylenes
Highest Site Soil Concentrations	34	0.041	0.014	0.12	0.62

The highest residual PHC concentrations at the site are from a single confirmation soil sample collected after the source excavation in January 2002 (sample LD#16 SW-W). The majority of the confirmation samples collected after the source excavation did not contain any detectable PHCs (see Table 1 and Figure 4).

In the first quarter 2002, we recommended that the frequency of sampling in monitoring well MW-7 be reduced to semi-annually (second and fourth quarters) and that the frequency of sampling in monitoring wells MW-4, 8, 11 and 12 be reduced to annually (fourth quarter only). Alameda County Environmental Health concurred with our recommendations in a telephone conversation on July 29, 2002.

## GROUNDWATER MONITORING - FOURTH QUARTER 2002

The groundwater monitoring event for the fourth quarter 2002 took place on December 30, 2002. Field methods followed Weber, Hayes and Associates' standard field methodology for groundwater monitoring, which is described in Appendix A. Groundwater samples were collected from all monitoring wells at the site in accordance with directives from Environmental Health, and analyzed for Total Petroleum Hydrocarbons as gasoline (TPH-g) by EPA Method 8015M, and benzene, toluene, ethylbenzene, and xylenes (BTEX), and Methyl tert Butyl Ether (MTBE) by EPA Method 8020. Samples with elevated detection limits or detections of MTBE were analyzed by EPA Method 8260 to confirm the presence of MTBE and provide the proper detection limit. Field data forms are also presented in Appendix A.

### Free Product

Free product was not observed in any of the monitoring wells at the site.

### Groundwater Elevation and Flow Direction

Groundwater elevations were calculated by subtracting the measured depth-to-groundwater from the top-of-casing elevations, which were surveyed by a state-licensed Land Surveyor. Field measurements and the calculated groundwater elevations for the site are summarized in Table 2. Groundwater elevations at the site rose an average of approximately 2.58 feet since the previous quarter (August 2002). Calculated groundwater elevations from the gauging data collected on December 30, 2002 are shown on Figure 5. Data from this quarter indicate that groundwater flow is to the west (see Figure 2). The calculated groundwater gradient on December 30, 2002 was to the west at approximately 0.002 feet per foot. Previous reports indicate that the groundwater flow direction in the vicinity of the site has generally been in a westerly direction. A table and figures summarizing previous depth to groundwater data is presented as Appendix B.

### Groundwater Analytical Results

Groundwater samples were collected from all of the monitoring wells associated with the site this quarter, in accordance with directives from Environmental Health. The groundwater analytical results for this quarter are summarized below.

Summary of Groundwater Sample Analytical Results, December 30, 2002 ( $\mu\text{g/L}$ , ppb)

Well ID	TPH-g	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
MW-3	70	ND	ND	2.1	< 1	ND*
MW-4	ND	ND	ND	ND	< 1	ND
MW-5	130	5.8	1.0	9.9	5.9	ND*
MW-6	670	2.5	< 1.25	29	2.7	< 2*
MW-7	ND	ND	ND	ND	< 1	ND*
MW-8	ND	ND	ND	ND	< 1	ND*
MW-9	2,800	140	25	200	370	ND*
MW-10	1,200	5.6	< 5	< 5	< 10	ND*
MW-11	ND	ND	ND	ND	< 1	ND*
MW-12	ND	ND	ND	ND	< 1	ND*
PQLs	50	0.5	0.5	0.5	1	1
AL/MCL	1,000	1	150	700	1,750	5

\* = Confirmed by GC/MS method 8260, PQL = Laboratory's Practical Concentration Limit

The concentration of benzene in wells MW-5 and 6 exceed the groundwater quality goal/drinking water maximum contaminant level (MCL) of 1 part per billion (ppb).

The concentrations of TPH-g and benzene in well MW-9 exceed the respective groundwater quality goal/drinking water Action Level (AL) and MCL.

The concentrations of TPH-g and benzene in well MW-10 exceed the respective groundwater quality goal/AL and MCL.

No other PHCs exceed their respective groundwater quality goals/ALs or MCLs.

**MTBE was not detected in any of the wells associated with the site.**

**Please see the Site Conceptual Model and subsequent sections on Risk-Based Screening Levels for a discussion of the groundwater analytical results.**

Analytical results for the groundwater samples collected by Weber, Hayes and Associates are summarized in Table 2. PHC concentrations detected in groundwater during the current monitoring event are shown on Figure 6. The extent of dissolved PHCs greater than 1,000 ppb TPH-g and 10 ppb benzene in groundwater are shown on Figure 7. A dissolved oxygen concentration contour map is presented as Figure 8.

We note that when PHC concentrations increase in well MW-5 they decrease in well MW-9, and vice-versa, however, there appears to be a general decline in PHC concentrations in both of these wells. The decreasing trend in TPH-g and benzene concentrations in wells MW-5 and 9, along with groundwater elevations over time, are shown on Figures 9 and 10.

The Certified Analytical Report for the groundwater samples is presented as Appendix C. All laboratory quality control and quality assurance data were within acceptable limits. A table and figures summarizing analytical results of groundwater samples collected by previous consultants is presented as Appendix D.

### **Dissolved Oxygen Measurements**

Current and historic dissolved oxygen measurements collected at the site indicate generally lower levels of dissolved oxygen in PHC-impacted wells compared to levels in non-impacted, upgradient wells. The decrease in dissolved oxygen in the impacted wells is shown on the dissolved oxygen concentration contour map, Figure 8. We believe the depletion of dissolved oxygen in PHC-impacted wells, combined with the observed decrease in dissolved PHC concentrations over time (see Figures 9 and 10), indicates that natural attenuation of PHCs via biologic activity (bioremediation) is occurring in groundwater, with microbes using dissolved PHCs as a food source during aerobic respiration (see Bushek and O'Reilly, 1995).

### Summary of Quarterly Groundwater Monitoring Results

- Concentrations of dissolved PHCs generally decreased compared to last quarter.
- Free product was not observed in any of the monitoring wells at the site.
- Groundwater elevations at the site rose an average of approximately 2.58 feet since the previous quarter (August 2002).
- The groundwater flow direction on December 30, 2002 was to the west at a gradient of approximately 0.002 feet per foot. This direction is in general agreement with data collected by us in the past three quarters and previous data collected by others at the site.
- **MTBE was not detected in any of the groundwater samples collected this quarter.**
- TPH-g was detected at a concentration above the drinking water Action Level in on-site well MW-9 and in off-site well MW-10, both of which are located downgradient of the removed USTs.
- Benzene was detected at a concentration above the drinking water MCL in wells MW-5, 6, 9, and 10.
- **Current and historic measurements of dissolved oxygen collected at the site indicate aerobic bioremediation is occurring in the PHC-impacted wells.**

### SITE CONCEPTUAL MODEL

The Site Conceptual Model provides a compilation of our understanding of the existing site conditions:

- Soils encountered at the site generally consisted of fat Clays and sandy Clays.
- Source zone PHC-impacted soil was removed from the site in January 2002. Approximately 594 yds<sup>3</sup> of PHC-impacted soil was removed from the subsurface and transported to an appropriate landfill for disposal. The maximum residual PHC concentrations in soil are summarized in the Table below (see Table 1).
- **MTBE has not been detected in any of the soil or groundwater samples collected at the site.**



- Dissolved PHCs are present in four on-site wells downgradient of the removed USTs at concentrations that exceed groundwater quality goals/drinking water Action Levels and/or MCLs.
- Dissolved PHC concentrations show a general downward trend (see Table 2 and Figures 9 and 10).
- **Natural attenuation/bioremediation has and will continue to remove PHCs from groundwater at the site, as evidenced by the general downward trend in PHC concentrations.**

Summary of Maximum Residual PHC Concentrations in Soil and Groundwater

Chemical	TPH-g	Benzene	Toluene	Ethylbenzene	Xylenes
Highest Site Soil Concentrations	34 mg/kg	0.041 mg/kg	0.014 mg/kg	0.12 mg/kg	0.62 mg/kg
Highest Current Groundwater Concentration	2,800 µg/L	140 µg/L	25 µg/L	200 µg/L	370 µg/L

The question now is: Do the residual concentrations of PHCs in soil and groundwater at this site pose a risk to human health and/or the environment? To answer this question we looked to the California Regional Water Quality Control Board, San Francisco Bay Region's publication: *Application of Risk-Based Screening Levels and Decision Making to Sites with Impacted Soil and Groundwater*.

## APPROPRIATENESS OF TIER 1 LOOKUP TABLES/RISK-BASED SCREENING LEVELS

Tier 1 Lookup Tables and Risk-Based Screening Levels (RBSLs), such as those presented in the California Regional Water Quality Control Board, San Francisco Bay Region's *Application of Risk-Based Screening Levels and Decision Making to Sites with Impacted Soil and Groundwater* are appropriate for evaluating risks posed by residual PHCs at this site because:

- Tier 1 Risk-Based Screening Levels (RBSLs) exist for all of the chemicals of concern at this site: Total Petroleum Hydrocarbons as gasoline (TPH-g) and benzene, toluene, ethylbenzene, and xylenes (BTEX).
- Soil and groundwater conditions at the site do NOT differ significantly from those assumed in the lookup tables.
- Residual PHCs do not pose a heightened threat to ecologically sensitive habitats, such as wetlands and surface water, or to endangered species habitats, due to the distance to any such habitats.
- The site does NOT have a high public profile that would warrant a fully documented, detailed environmental risk assessment.

### Soil and Groundwater Characterization

Soils at the site are predominately clays and sandy clays with some clayey sand lens, see Figure 3. PHC-impacted soil was encountered predominately between thirteen feet below the ground surface (bgs) and the top of the unconfined groundwater at a depth of approximately 21 to 24 feet bgs, though some PHCs were encountered at shallower and deeper depths. The PHCs were most likely released to soils at the site from the USTs and/or appurtenant pipes and dispensers. As described above, most of the PHC-impacted soil at the site was removed by excavation in January 2002.

Groundwater beneath the site is assumed to have beneficial uses as a drinking water source and for municipal and industrial water supply, though it is unlikely that it is currently used for either of these activities, as potable water at the site and in the immediate vicinity is supplied by the East Bay Municipal Utility District (telephone discussion with staff of City of Hayward Public Works). We recommend that a well/conduit search be conducted to confirm this assumption, and have included a Work Plan for the search in this report. We note that both the yield of the shallow water bearing unit and the quality of the groundwater beneath the site for drinking water use has not been quantified. In general, a water bearing unit must have an average, sustained yield of 200 gallons per day and total dissolved solids must be less than 3,000 milligrams per liter to be considered a drinking water source.

## EXPOSURE POINT CONCENTRATIONS

For a conservative bias, we propose to use the MAXIMUM residual soil concentrations (from post-excavation confirmation samples) and the MAXIMUM current dissolved PHC concentrations at the site as the exposure point concentrations to compare with risk-based screening levels to evaluate the risk the residual PHCs at the site pose to human health and the environment. The maximum soil and groundwater concentrations are summarized below:

Summary of Maximum Residual PHC Concentrations in Soil and Groundwater

Chemical	TPH-g	Benzene	Toluene	Ethylbenzene	Xylenes
Highest Site Soil Concentrations	34 mg/kg	0.041 mg/kg	0.014 mg/kg	0.12 mg/kg	0.62 mg/kg
Highest Current Groundwater Concentration	2,800 µg/L	140 µg/L	25 µg/L	200 µg/L	370 µg/L

## SELECTION OF TIER 1 RBSLs AND COMPARISON TO SITE DATA

We selected site specific soil and groundwater cleanup goals from the California Regional Water Quality Control Board, San Francisco Bay Region's publication: *Application of Risk-Based Screening Levels and Decision Making to Sites with Impacted Soil and Groundwater*.

Our proposed site specific cleanup goals for the PHCs detected in site soil (TPH-g and BTEX) are the Risk-Based Screening Levels (RBSLs) for both surface and subsurface soil for residential land use at sites where groundwater is a potential source of drinking water. These RBSLs are from Table A (Volume 1) of the *RBSL Document*, and are reproduced in Appendix E. We note that because the soil RBSLs for TPH-g and BTEX are based on groundwater protection (leaching to groundwater), the RBSLs for surface and subsurface soils (Tables A and C, respectively) for these compounds are the same.

Our proposed site specific cleanup goals for groundwater beneath the site are the RBSLs for residential land use for protection of human health based on indoor air impacts from Table F-1 of Appendix 1 (Volume 2) of the *RBSL Document*, and are reproduced in Appendix E. This is the only complete exposure pathway for PHC-impacted groundwater at the site. The toxicity and taste and odor RBSLs are removed from consideration by closure of the groundwater ingestion pathway. The aquatic protection and threat to surface water RBSLs are removed from consideration by closure of the transport to surface water pathway. These exposure pathways are closed because :

- We assume groundwater beneath the site is not currently a drinking water source - drinking water at the site and in the vicinity is supplied by a municipal purveyor. A well/conduit

search is necessary to confirm this assumption. We present a Work Plan for a Well/Conduit Search in this report.

- There will be no use of groundwater from beneath the site as drinking water in the immediate future,
- There are no sensitive ecological habitats, such as surface water or wetlands, within three miles in the downgradient direction from the site. Because of the distance to such sensitive ecological habitats, there is no risk of PHCs reaching them, based on the known propensity for PHCs to degrade and to be fairly immobile in the subsurface. We note that mobile PHCs such as MTBE, are not present at this site.
- Groundwater monitoring data have documented a decreasing trend in dissolved PHC concentrations in groundwater, which should complete the cleanup of PHCs to appropriate final cleanup levels (groundwater quality goals/drinking water Action Levels/Maximum Contaminant Levels) before shallow groundwater beneath the site would be used as a drinking water source.

We selected the RBSL for TPH-g based on the known propensity of gasoline-range petroleum compounds to degrade in situ, the distance of this site from sensitive ecological receptors, the assumption that shallow groundwater is not now a drinking water source, and review of the *RBSL Document*, and we assume that the TPH compounds will degrade before shallow groundwater would be used as a drinking water source. Since the drinking water ingestion and sensitive receptor exposure pathways are closed, there are no other exposure pathways (such as volatilization to indoor air) for TPH-g.

We note that the highest concentration of benzene in groundwater is close to the RBSL for indoor air impacts for *coarse* grained settings, even though the soils at the site are *fine* grained.

Our proposed site-specific cleanup levels are summarized and compared to site data below.

Comparison of Site Specific Cleanup Goals/Tier 1 RBSLs to Site Data

Chemical	TPH-g	Benzene	Toluene	Ethylbenzene	Xylenes
Highest Site Soil Concentrations	34 mg/kg	0.041 mg/kg	0.014 mg/kg	0.12 mg/kg	0.62 mg/kg
Soil Cleanup Goal	100 mg/kg	0.045 mg/kg	2.6 mg/kg	2.5 mg/kg	1.0 mg/kg
Highest Current Groundwater Concentration	2,800 µg/L	140 µg/L	25 µg/L	200 µg/L	370 µg/L
Groundwater Cleanup Goal	5,000 µg/L	5,800 µg/L	530,000 µg/L	170,000 µg/L	150,000 µg/L

## CONCLUSIONS

**Comparison of the proposed site-specific cleanup goals with the highest residual concentrations of PHCs in soil and groundwater indicate that the residual concentrations of PHCs in soil and groundwater are below the site-specific cleanup goals.**

The residual concentrations of PHCs in soil and groundwater at the site do **NOT** pose a significant risk to human health or the environment. A more site-specific risk assessment is not warranted at this site. No land use restrictions or institutional controls are necessary to protect human health or the environment at this site.

We recommend completing a Well/Conduit Search to confirm our assumption that shallow groundwater near the site is not a drinking water source and that there are no nearby abandoned wells that could serve as conduits to deeper groundwater. A Work Plan for the Well/Conduit Search is presented in this report

## WORK PLAN FOR WELL/CONDUIT SEARCH

We proposed to conduct a Well/Conduit Search to determine if 1) shallow groundwater in the vicinity of the site is used for drinking water, and 2) if there are any nearby abandoned wells that could serve as conduits to deeper groundwater.

We will conduct the well/conduit search by requesting records at Alameda County agencies documenting the location, status, and construction details of wells within a 1/4-mile radius of the site. The location of identified wells or possible conduits will be plotted in relation to the site and the predominant shallow groundwater flow direction. We will analyze the data to determine if there are any wells that are threatened by the residual PHCs in groundwater at the site, or if there are any potential conduits for shallow groundwater from the site that is impacted with PHCs to reach deeper groundwater.

We will also interview neighbors within approximately a 1-block radius of the site to ask if there are any undocumented wells in service in the area.

## **RECOMMENDATIONS**

At this time we recommend:

- Completing a Well/Conduit Search to confirm our assumption that shallow groundwater near the site is not a drinking water source and that there are no nearby abandoned wells that could serve as conduits to deeper groundwater. A Work Plan for the Well/Conduit Search is presented in this report
- Continuing quarterly groundwater monitoring while Alameda County Environmental Health and the Regional Board review the cleanup goals proposed in this report
- Closing the fuel leak investigation and cleanup if the Well/Conduit Search confirms that shallow groundwater is not currently a drinking water source and deeper groundwater is not threatened. Site investigations and groundwater monitoring have shown that residual PHCs in soil do not threaten human health or groundwater resources and that residual PHCs in groundwater are stable and declining. Residual PHCs in groundwater should degrade to groundwater quality goals (drinking water Action Levels/Maximum Contaminant Levels) before shallow groundwater would be used as a drinking water source.

**SCHEDULE OF ACTIVITIES FOR THE FOLLOWING QUARTER**

The following activities are scheduled for the next quarter:

- Quarterly groundwater monitoring according to the schedule agreed upon with Environmental Health. Groundwater monitoring will include measuring the depth-to-groundwater, dissolved oxygen concentration, and physical parameters, and collecting samples from the appropriate monitoring wells and analyzing them for TPH-g, BTEX and MTBE by EPA Methods 8015M and 8020. All detections of MTBE will be confirmed by EPA Method 8260.
- Completing a Well/Conduit Search pending Pre-Approval of costs by the Underground Storage Tank Cleanup Fund.

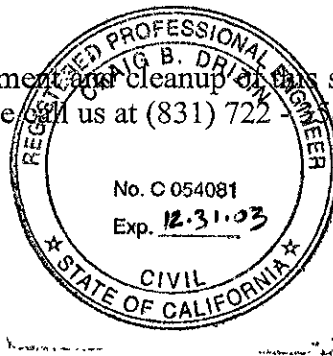
**LIMITATIONS**

Our service consists of professional opinions and recommendations made in accordance with generally accepted geologic and engineering principles and practices. This warranty is in lieu of all others, either expressed or implied. The analysis and proposals in this report are based on sampling and testing which are necessarily limited. Additional data from future work may lead to modification of the opinions expressed herein.

Thank you for the opportunity to aid in the assessment and cleanup of this site. If you have any questions or comments regarding this project please call us at (831) 722-1180.

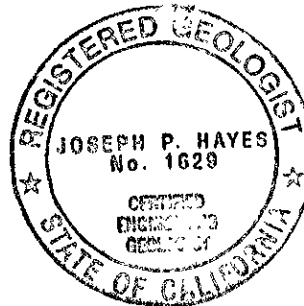
Sincerely yours,

Weber, Hayes And Associates



By: Craig Drizin  
Craig Drizin, P.E.  
Senior Engineer

And: Joseph Hayes  
Joseph Hayes  
Certified Hydrogeologist #373



**Attachments:**

Table 1	Summary of Soil Sample Analytical Results
Table 2	Summary of Groundwater Elevation and PHC Analytical Data
Figure 1	Location Map
Figure 2	Site Plan with Driven Probe Locations and Soil Sample Analytical Results, February 14, 2001
Figure 3	Geologic Cross-Sections A - A' and B - B'
Figure 4	Large Diameter Auger Source Removal Footprint Map and Soil Sample Analytical Results
Figure 5	Site Plan with Groundwater Elevations
Figure 6	Site Plan with PHC Concentrations in Groundwater
Figure 7	Site Plan with Extent of TPH-g and Benzene in Groundwater
Figure 8	Site Plan with Dissolved Oxygen Contours
Figure 9	TPH-g and Groundwater Elevation MW-5 and MW-9 Through December 30, 2002
Figure 10	Benzene and Groundwater Elevation MW-5 and MW-9 Through December 30, 2002
Appendix A	Field Methodology for Groundwater Monitoring and Field Data Forms
Appendix B	Summary of Historical Depth to Groundwater Measurements, Groundwater Elevations, and Groundwater Flow Direction - AGI Technologies, Inc.
Appendix C	Certified Analytical Report - Groundwater Samples
Appendix D	Summary of Historical Groundwater Analytical Results - AGI Technologies, Inc.
Appendix E	Risk Based Screening Levels from <i>Application of Risk-Based Screening Levels and Decision Making to Sites with Impacted Soil and Groundwater</i>

c: Mr. Scott Seery, Alameda County Environmental Health  
Mr. Jeff Lawson  
Ms. Laurie Berger  
Mr. Gregg Petersen, Durham Transportation  
Mr. Chuck Headlee, San Francisco Bay Regional Water Quality Control Board



## REFERENCES

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**Table 1: Summary of Soil Sample Analytical Results**  
**Former Harbert Transportation Facility, 19984 Meekland Avenue, Hayward, CA**  
**Weber, Hayes and Associates Project H9042**

Investigation & Date	Sample ID	Sample Depth (feet/bgs)	TPH-g (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	MTBE (mg/kg)
Proposed Cleanup Levels	--	--	100	0.045	2.6	2.5	1.0	NA
Interim Remedial Action Large Diameter Auger Drilling & Source Removal (January 7, 8, 9, 10, 2002)	Soil Reuse #1a,b,c,d	4-point composite (0 - 10')	ND	ND	ND	ND	ND	ND
	Soil Reuse #2a,b,c,d	4-point composite (0 - 20')	ND	ND	ND	ND	ND	ND
	Soil Reuse #3a,b,c,d	4-point composite (0 - 20')	ND	ND	ND	ND	ND	ND
	LD#1 SW-E	35'	ND	ND	ND	0.005	0.011	ND
	LD#2 SW-W	35'	ND	ND	ND	ND	ND	ND
	LD#3 BC-N	40'	ND	ND	ND	ND	ND	ND
	LD#4 SW-N	40'	1.2	ND	0.012	0.005	0.006	ND
	LD#5 SW-N	40'	ND	ND	ND	ND	ND	ND
	LD#8 SW-S	40'	ND	ND	ND	ND	ND	ND
	LD#9 SW-E	40'	ND	ND	ND	ND	ND	ND
	LD#10 SW-E	40'	ND	ND	ND	ND	ND	ND
	LD#11 SW-W	40'	ND	ND	0.014	0.013	0.062	ND
	LD#12 SW-E	18'	ND	ND	ND	ND	ND	ND
	LD#13 SW-E	18'	ND	ND	ND	ND	ND	ND
	LD#13 SW-E	40'	ND	ND	0.006	ND	0.022	ND
	LD#14 SW-W	40'	ND	ND	ND	ND	ND	ND
LD#15 BC-S	40'	ND	ND	ND	ND	ND	ND	
LD#16 SW-W	18'	ND	ND	ND	ND	ND	ND	
LD#16 SW-W	40'	34	0.041	ND	0.12	0.62	ND	
Landfill Acceptance Borings (October 18, 2001)	DP-1c,d,e,f	4-point composite (15-30')	ND	ND	ND	ND	ND	ND
	DP-2c,d,e,f	4-point composite (15-30')	130	ND	0.13	0.37	1.2	ND
Soil Sampling Additional Site Assessment (February 14, 2001)	DP-1a	2	ND	ND	0.010	ND	0.025	ND
	f	23	ND	ND	ND	ND	ND	ND
	g @ 24'	24	ND	ND	ND	ND	0.007	ND
	g @ 27'	27	ND	ND	ND	0.007	0.015	ND
	DP-2a	2	ND	ND	0.019	0.020	0.13	ND
	d	13.5	1,800	< 0.5	4.5	19	270	ND*
	e	18.5	8,700	18	720	230	1,600	< 0.5*
	g	24	1,800	3.5	52	39.0	250	ND*
	DP-3a	2	ND	ND	0.017	0.006	0.054	ND
	b	7.5	ND	ND	0.063	0.020	0.12	ND
	e	18.5	ND	ND	ND	ND	ND	ND
	g	27.5	18	0.036	0.067	0.070	0.060	ND*
	DP-4a	2	ND	ND	0.014	0.008	0.058	ND
	e	19.5	ND	ND	ND	ND	ND	ND
	g @ 25'	25	ND	ND	ND	ND	ND	ND
	g @ 27'	27	ND	ND	ND	ND	ND	ND
	DP-5a	2	ND	ND	ND	ND	ND	ND
	d	12	ND	ND	ND	ND	ND	ND
	f	20	ND	ND	ND	ND	ND	ND
	g	24	ND	ND	ND	ND	ND	ND
	DP-6a	2	ND	ND	ND	ND	ND	ND
	d	14	ND	ND	ND	ND	ND	ND
	e	18	ND	ND	ND	ND	ND	ND
	g	24	ND	ND	ND	0.009	ND	ND
	DP-7a	2	ND	ND	ND	ND	ND	ND
	d	14	ND	ND	ND	ND	ND	ND
	e	18	ND	ND	ND	ND	ND	ND
	g	24	ND	ND	ND	ND	ND	ND
	DP-8a	2	ND	ND	ND	ND	ND	ND
	d	13	ND	ND	ND	ND	ND	ND
	e	18	ND	ND	ND	ND	ND	ND
	g	24	ND	ND	ND	ND	ND	ND
	DP-9a	2	ND	ND	ND	ND	ND	ND
	d	13	ND	ND	ND	ND	ND	ND
	e	18	ND	ND	ND	ND	ND	ND
	g	24	18	0.020	0.020	0.19	0.30	ND*
Laboratory's Practical Quantitation Limits:			1	0.005	0.005	0.005	0.005	0.05

**NOTES:**

Proposed Cleanup Levels: RBSLs for Surface and Subsurface Soils from Application of Risk Based Screening Levels and Decision Making to Sites with Impacted Soil and Groundwater, SPBAY RWQCB, December 2001

TPH-g - Total Petroleum Hydrocarbons as gasoline

BTEX: B - Benzene, T - Toluene, E - Ethylbenzene, and X - Total Xylenes

MTBE: Methyl-tert-Butyl Ether

bgs: below ground surface

ND: Not detected at or above the lab's practical quantitation limit

<X: Not detected at the elevated PQL. X - PQL elevated due to laboratory dilution

\* - MTBE Analysis confirmed by EPA Method 8260.

**Table 2: Summary of Groundwater Elevation and PHC Analytical Data**

Former Harbert Transportation Facility, 19984 Meekland Avenue, Hayward, Ca.

Weber, Hayes and Associates Project H9042

Monitoring Point Information			Date Sampled	Depth to Groundwater (feet, TOC)	Groundwater Elevation (feet, NGVD)	Laboratory Analytical Results							Field Measurements	
Well I.D.	TOC Elevation (feet, NGVD)	Screen Interval (feet, bgs)				Total Petroleum Hydrocarbons	Volatile Organic Compounds						Dissolved Oxygen (mg/L)	Redox Potential (ORP) (mV)
						Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)	Fuel Oxygenates (ug/L)		
MW-3	55.44	20 - 40?	12/30/02	21.32	34.12	70	ND	ND	2.1	< 1	ND*	--	0.14	536
			08/27/02	23.87	31.57	350	0.56	1.1	14	3.4	ND	--	0.13	216
			06/13/02	22.92	32.52	300	1.1	1.4	4	1.8	ND	--	0.14	194
			03/21/02	21.96	33.48	240	0.94	2.5	12	11.7	ND	--	0.1	--
			12/18/01	23.59	31.85	270	1.6	1.7	13	5.4	ND	--	--	--
			09/20/01	24.16	31.28	380	1.7	2.6	32	8.9	ND	--	--	--
			06/20/01	23.55	31.89	760	4.4	2.4	62	23	ND*	--	0.4	--
			03/29/01	22.02	33.42	170	1.1	ND	ND	2.6	ND*	--	--	--
			01/12/01	23.41	32.03	310	2.4	2.2	10	1.6	ND	--	0.6	--
			09/27/00	23.09	32.35	430	ND	ND	4.4	10	ND	--	0.7	--
MW-4	55.71	20 - 40?	12/30/02	21.50	34.21	ND	ND	ND	ND	< 1	ND	--	0.41	368
			08/27/02	24.07	31.64	--	--	--	--	--	--	--	0.21	187
			06/13/02	23.15	32.56	ND	ND	ND	ND	ND	ND	--	0.20	392
			03/21/02	22.15	33.56	ND	ND	ND	ND	ND	ND	--	0.2	--
			12/18/01	23.80	31.91	ND	ND	0.9	ND	ND	ND	--	--	--
			09/20/01	24.32	31.39	ND	ND	ND	ND	ND	ND	--	--	--
			06/20/01	23.74	31.97	ND	ND	ND	ND	ND	ND	--	0.4	--
			03/29/01	22.22	33.49	ND	ND	ND	ND	ND	ND	--	--	--
			01/12/01	23.60	32.11	ND	ND	4.2	ND	ND	ND	--	0.5	--
			09/27/00	23.25	32.46	ND	ND	ND	ND	ND	ND	ND	0.7	--
MW-5	56.03	25 - 45	12/30/02	21.88	34.15	130	5.8	1.0	9.9	5.9	ND*	--	0.14	251
			08/27/02	24.42	31.61	1,900	170	14	210	93	ND*	--	0.43	207
			06/13/02	23.57	32.46	1,500	24	16	120	110	ND*	--	0.06	144
			03/21/02	24.69	31.34	360	11	9.4	28	62	ND	--	0.1	--
			12/18/01	23.15	32.88	760	21	12	86	94	ND*	--	--	--
			09/20/01	24.75	31.28	2,300	46	41	280	330	ND*	--	--	--
			06/20/01	24.15	31.88	6,500	120	130	740	940	ND*	--	0.3	--
			03/29/01	22.69	33.34	13,000	220	510	1000	2700	ND*	--	--	--
			01/12/01	23.97	32.06	1,100	62	40	150	290	ND*	--	0.4	--
			09/27/00	23.69	32.34	18,000	840	2.9	1200	3500	< 30	ND	0.3	--
MW-6	56.01	25 - 45	12/30/02	21.91	34.10	670	2.5	< 1.25	29	2.7	ND*	--	0.15	321
			08/27/02	24.44	31.57	1,300	< 2.5	7.2	210	55	ND*	--	0.14	231
			06/13/02	23.53	32.48	1,600	< 1.25	4.7	67	5.3	< 1.5*	--	0.53	233
			03/21/02	23.11	32.90	750	0.77	1.2	39	3.2	ND*	--	0.1	--
			12/18/01	24.16	31.85	3,700	33	8.7	320	110	< 1.5*	--	--	--
			09/20/01	24.72	31.29	2,500	11	8.6	240	94	ND*	--	0.3	--
			06/20/01	24.13	31.88	1,800	14	4.6	160	79	ND*	--	--	--
			03/29/01	22.56	33.45	610	2.2	ND	37	4.6	ND*	--	0.5	--
			01/12/01	23.97	32.04	2,300	16	3.5	290	83	ND*	--	0.5	--
			09/27/00	23.56	32.45	1,300	ND	4.3	200	17	ND	ND	0.5	--



**Table 2: Summary of Groundwater Elevation and PHC Analytical Data**  
 Former Harbert Transportation Facility, 19984 Meekland Avenue, Hayward, Ca.  
 Weber, Hayes and Associates Project H9042

Monitoring Point Information			Date Sampled	Depth to Groundwater (feet, TOC)	Groundwater Elevation (feet, NGVD)	Laboratory Analytical Results							Field Measurements		
Well I.D.	TOC Elevation (feet, NGVD)	Screen Interval (feet, bgs)				Total Petroleum Hydrocarbons Gasoline (ug/L)	Volatile Organic Compounds						Dissolved Oxygen (mg/L)	Redox Potential (ORP) (mV)	
							Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)	Fuel Oxygenates (ug/L)			
MW-7	56.66	25 - 45	12/30/02	22.34	34.32	ND	ND	ND	ND	< 1	ND*	--	0.17	370	
			08/27/02	24.98	31.68	--	--	--	--	--	--	--	--	0.22	369
			06/13/02	24.07	32.59	ND	ND	ND	ND	ND	ND	ND	--	0.20	370
			03/21/02	23.05	33.61	ND	ND	ND	ND	ND	ND	ND	--	0	--
			12/18/01	24.70	31.96	290	ND	ND	119	4.6	ND	--	--	--	--
			09/20/01	25.27	31.39	290	0.98	ND	12	4.5	ND*	--	--	0.4	--
			06/20/01	24.68	31.98	430	2.4	0.96	30	9.7	ND*	--	--	--	--
			03/29/01	23.10	33.56	ND	ND	ND	ND	ND	ND	ND	--	0.5	--
			01/12/01	24.49	32.17	1,600	13	0.86	160	35	ND*	--	--	0.5	--
			09/27/00	24.18	32.48	270	13	6.6	11	ND	ND	ND	--	0.5	--
MW-8	56.16	20 - 40	12/30/02	21.79	34.37	ND	ND	ND	ND	< 1	ND*	--	1.36	365	
			08/27/02	24.43	31.73	--	--	--	--	--	--	--	--	1.88	402
			06/13/02	23.54	32.62	ND	ND	ND	ND	ND	ND	ND	--	1.96	394
			03/21/02	22.51	33.65	ND	ND	ND	ND	ND	ND	ND	--	2.4	--
			12/18/01	24.16	32.00	ND	ND	ND	ND	ND	ND	ND	--	--	--
			09/20/01	24.68	31.48	ND	ND	ND	ND	ND	ND	ND	--	1.6	--
			06/20/01	24.09	32.07	ND	ND	ND	ND	ND	ND	ND	--	--	--
			03/29/01	22.56	33.60	ND	ND	0.8	ND	ND	ND	ND	--	1.9	--
			01/12/01	23.93	32.23	ND	ND	ND	ND	ND	ND	ND	--	2.1	--
			09/27/00	23.59	32.57	ND	ND	ND	ND	ND	ND	ND	ND	1.9	--
MW-9	55.21	20 - 40	12/30/02	21.09	34.12	2,800	140	25	200	370	ND*	--	0.15	276	
			08/27/02	23.69	31.52	310	27	2.5	20	20	ND*	--	--	0.18	154
			06/13/02	22.76	32.45	5,100	140	21	490	300	< 1.5*	--	--	0.14	135
			03/21/02	21.76	33.45	510	26	4.6	50	52	ND	--	--	0.1	--
			12/18/01	23.38	31.83	6,400	640	120	630	1300	< 1.5*	--	--	--	--
			09/20/01	23.94	31.27	3,400	270	38	390	430	ND*	--	--	0.3	--
			06/20/01	23.36	31.85	8,300	330	88	850	1700	< 0.6*	--	--	--	--
			03/29/01	21.61	33.60	1,600	110	14	240	150	ND*	--	--	0.4	--
			01/12/01	23.17	32.04	10,000	550	110	1200	2200	ND*	--	--	0.5	--
			09/27/00	22.90	32.31	1,000	40	6.7	110	55	ND	ND	ND	0.5	--
MW-10	54.74	25 - 40	12/30/02	20.78	33.96	1,200	5.6	< 5	< 5	< 10	ND*	--	0.18	267	
			08/27/02	23.46	31.28	1,800	< 2.5	15	3.9	5	1,800	ND*	--	0.14	483
			06/13/02	22.58	32.18	1,700	0.77	6.2	3.3	2.9	< 0.3*	--	--	0.28	201
			03/21/02	21.53	33.21	1,500	ND	11	3.1	ND	ND	ND*	--	0.1	--
			12/18/01	21.11	33.63	1,800	7.9	2.9	ND	ND	< 0.6*	--	--	--	--
			09/20/01	23.70	31.04	1,200	6	9.9	1.2	3.9	ND*	--	--	0.4	--
			06/20/01	23.17	31.57	810***	3	1.6	5.1	13	ND*	--	--	--	--
			03/29/01	21.63	33.11	600***	2	0.65	ND	0.72	ND	--	--	0.5	--
			01/12/01	22.99	31.75	530	3.7	1.9	2.1	4.5	ND	--	--	0.6	--
			09/27/00	22.72	32.02	880	ND	ND	ND	ND	ND	ND	ND	0.4	--

**Table 2: Summary of Groundwater Elevation and PHC Analytical Data**

Former Harbert Transportation Facility, 19984 Meekland Avenue, Hayward, Ca.

Weber, Hayes and Associates Project H9042

Monitoring Point Information			Date Sampled	Depth to Groundwater (feet, TOC)	Groundwater Elevation (feet, NGVD)	Laboratory Analytical Results							Field Measurements		
Well I.D.	TOC Elevation (feet, NGVD)	Screen Interval (feet, bgs)				Total Petroleum Hydrocarbons		Volatile Organic Compounds					Dissolved Oxygen (mg/L)	Redox Potential (ORP) (mV)	
						Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)	Fuel Oxygenates (ug/L)			
MW-11	55.20	25 - 40	12/30/02	21.11	34.09	ND	ND	ND	ND	< 1	ND	--	0.16	374	
			08/27/02	23.68	31.52	--	--	--	--	--	--	--	--	0.13	369
			06/13/02	22.78	32.42	ND	ND	ND	ND	ND	ND	ND	--	0.15	380
			03/21/02	21.76	33.44	ND	ND	ND	ND	ND	ND	ND	--	0.1	--
			12/18/01	23.39	31.81	ND	ND	0.56	ND	ND	ND	ND	--	--	--
			09/20/01	23.87	31.33	ND	ND	ND	ND	ND	ND	ND	--	0.4	--
			06/20/01	23.39	31.81	ND	ND	ND	ND	ND	ND	ND	--	--	--
			03/29/01	21.84	33.36	ND	ND	4.5	ND	ND	ND	ND	--	0.6	--
			01/12/01	23.21	31.99	ND	ND	2.1	ND	ND	ND	ND	--	0.6	--
			09/27/00	22.43	32.77	63	ND	ND	ND	ND	ND	ND	ND	0.6	--
MW-12	56.49	25 - 40	12/30/02	22.16	34.33	ND	ND	ND	ND	< 1	ND	--	0.77	372	
			08/27/02	24.68	31.81	--	--	--	--	--	--	--	--	0.60	410
			06/13/02	23.86	32.63	ND	ND	ND	ND	ND	ND	ND	--	0.51	400
			03/21/02	22.86	33.63	ND	ND	ND	ND	ND	ND	ND	--	0.7	--
			12/18/01	24.49	32.00	ND	ND	0.86	ND	ND	ND	ND	--	--	--
			09/20/01	24.95	31.54	ND	ND	ND	ND	ND	ND	ND	--	0.7	--
			06/20/01	24.47	32.02	ND	ND	ND	ND	ND	ND	ND	--	--	--
			03/29/01	22.91	33.58	ND	ND	5	ND	ND	ND	ND	--	1	--
			01/12/01	24.28	32.21	ND	ND	1.1	ND	ND	ND	ND	--	1	--
			09/27/00	23.98	32.51	ND	ND	ND	ND	ND	ND	ND	ND	1.2	--
<b>Practical Quantitation Limits:</b>						50	0.5	0.5	0.5	0.5	1	0.5			
<b>Proposed Site-Specific Cleanup Goals:</b>						5,000	5,800	530,000	170,000	150,000	NA	NA			

**NOTES:**

T O C = Top of Casing Elevation Calculated groundwater elevation = TOC - Depth to Groundwater Referenced to NGVD  
 TPH-g = Total Petroleum Hydrocarbons as gasoline MTBE = Methyl - tert - Butyl Ether  
 F O 's = Fuel Oxygenates = Di-isopropyl ether (DIPE), tertiary Butyl Alcohol (TBA), Ethyl tertiary Butyl Ether (ETBE), tertiary amyl Methyl Ether (TAME)  
 VOC's = Volatile Organic Compounds D O = Dissolved Oxygen  
 ug/L = micrograms per liter, parts per billion; mg/L = milligrams per liter, parts per million  
 ND = Not Detected at the Practical Quantitation Limit (PQL), <X = Not Detected at the elevated PQL, X = PQL elevated because of sample dilution  
 -- = Data not collected or measured, or analysis not conducted  
 MCL = Maximum Contaminant Level for drinking water in California (Department of Health Services).  
 \* Confirmed by GC/MS method 8260  
 \*\* = Action Level \*\*\* = Secondary MCL / water quality goal  
 \*\*\*\* = Laboratory Report indicates results within quantitation range, chromatographic pattern not typical of fuel

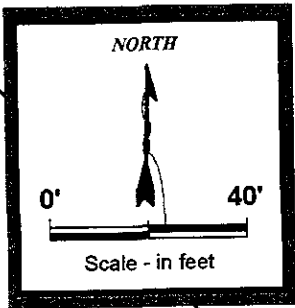


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**WA**  
**Weber, Hayes & Associates**  
 Hydrogeology and Environmental Engineering  
 120 Westgate Drive, Watsonville, Ca. 95076  
 (831) 722 - 3580 (831) 662 - 3100

**Location Map**  
 Former Harbert Transportation Facility  
 1984 Meekland Avenue  
 Hayward, California

**Figure**  
**1**  
**Job #**  
**H9042**



Former Waste Oil  
UST Excavation  
August 1989

**DP-4**  
Soil @ 2'  
Toluene 0.014 ppm  
Ethylbenzene 0.008 ppm  
Xylenes 0.058 ppm  
Soil @ 19.5'  
No Detections  
Soil @ 25'  
No Detections  
Soil @ 27'  
No Detections

**DP-5**  
Soil @ 2'  
No Detections  
Soil @ 12'  
No Detections  
Soil @ 20'  
No Detections  
Soil @ 24'  
No Detections

**DP-6**  
Soil @ 2'  
No Detections  
Soil @ 14'  
No Detections  
Soil @ 18'  
No Detections  
Soil @ 24'  
Ethylbenzene: 0.009 ppm

**DP-7**  
Soil @ 2'  
No Detections  
Soil @ 14'  
No Detections  
Soil @ 18'  
No Detections  
Soil @ 24'  
No Detections

**DP-1**  
Soil @ 2'  
Toluene 0.01 ppm  
Xylenes 0.025 ppm  
Soil @ 23'  
No Detections  
Soil @ 24'  
Ethylbenzene: 0.007 ppm  
Xylenes 0.015 ppm  
Soil @ 27'  
Xylenes: 0.007 ppm

**DP-9**  
Soil @ 2'  
No Detections  
Soil @ 13'  
No Detections  
Soil @ 18'  
No Detections  
Soil @ 24'  
Gasoline: 18 ppm  
Benzene 0.02 ppm  
Toluene 0.02 ppm  
Ethylbenzene: 0.13 ppm  
Xylenes: 0.30 ppm  
Groundwater @ 24'  
Gasoline 25,000 ppb  
Benzene 680 ppb  
Toluene 160 ppb  
Ethylbenzene: 3,000 ppb  
Xylenes 5,600 ppb

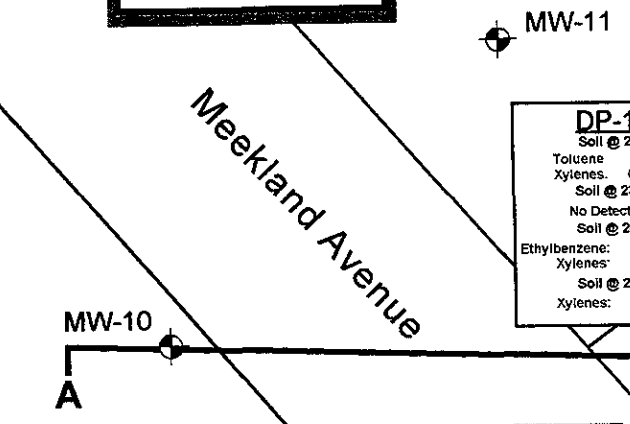
**DP-8**  
Soil @ 2'  
No Detections  
Soil @ 16'  
No Detections  
Soil @ 18'  
No Detections  
Soil @ 24'  
No Detections

**DP-2**  
Soil @ 2'  
Benzene < 0.5 ppm  
Toluene: 0.019 ppm  
Ethylbenzene: 0.02 ppm  
Xylenes 0.13 ppm  
Soil @ 13.5'  
Gasoline: 1,800 ppm  
Toluene: 4.5 ppm  
Ethylbenzene: 19 ppm  
Xylenes: 270 ppm  
Soil @ 18.5'  
Gasoline: 8,700 ppm  
Benzene: 18 ppm  
Toluene: 720 ppm  
Ethylbenzene 230 ppm  
Xylenes: 1,600 ppm  
MTBE: < 0.5 ppm  
Soil @ 24'  
Gasoline 1,800 ppm  
Benzene 3.5 ppm  
Toluene: 52 ppm  
Ethylbenzene: 39 ppm  
Xylenes: 250 ppm

**DP-3**  
Soil @ 2'  
Toluene 0.017 ppm  
Ethylbenzene 0.006 ppm  
Xylenes 0.054 ppm  
Soil @ 7.5'  
Toluene 0.063 ppm  
Ethylbenzene: 0.02 ppm  
Xylenes: 0.12 ppm  
Soil @ 18.5'  
No Detections  
Soil @ 27.5'  
Gasoline: 18 ppm  
Benzene 0.036 ppm  
Toluene 0.087 ppm  
Ethylbenzene 0.07 ppm  
Xylenes 0.05 ppm

Former Fuel UST  
Excavation  
August 1989

Fuel Dispensers  
Removed  
August 1989



**EXPLANATION**

- MW-8 Groundwater Monitoring Well.
- Hydraulic Driven Probe Location, Discrete Interval coring and sampling.
- Hydraulic Driven Probe Location, Continuous Core.

**DP-1**  
Soil @ 2'  
Toluene 0.01 ppm  
Xylenes 0.025 ppm  
Soil @ 23'  
No Detections  
Soil @ 24'  
Ethylbenzene: 0.007 ppm  
Xylenes 0.015 ppm  
Soil @ 27'  
Xylenes: 0.007 ppm

Driven Probe Identification and Analytical Data. All soil and groundwater samples analyzed for Total Petroleum Hydrocarbons as gasoline, Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX), and Methyl Tert Butyl Ether (MTBE). Soil results presented in parts per million (ppm, mg/kg), groundwater results presented in parts per billion (ppb, ug/L). Results are shown for detected analytes only, all others Not Detected (ND), including MTBE in all locations.

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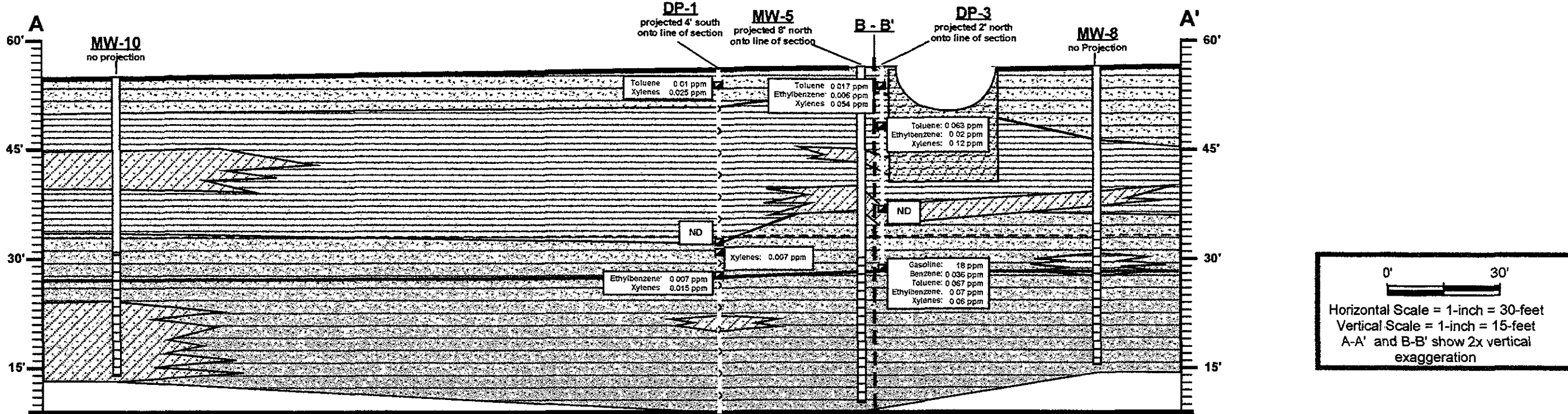


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**Site Plan with Driven Probe Locations and Soil Sample Analytical Results, February 14, 2001**  
Former Harbert Transportation Facility  
19984 Meekland Avenue, Hayward, California

**Figure 2**  
**Project H9042**

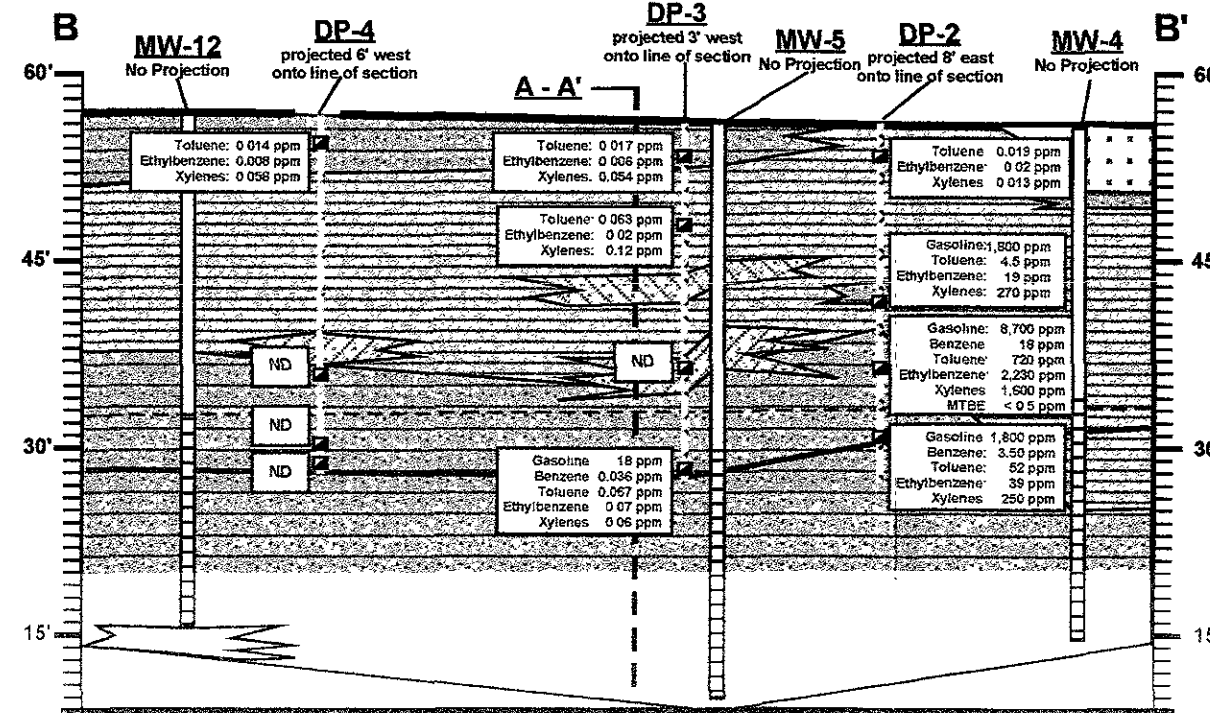
Oriented at North 88 West



LEGEND:

- Asphalt.**
  - Fat CLAY**, very dark grayish brown to dark gray (10 YR 3/2 to 4/1), damp to wet, firm soft to firm, moderate to high plasticity, no dilatency, low toughness, dominantly clay with few fine to medium grained sands.
  - Sandy CLAY**, brown to very dark grayish brown (10 YR 4/3 to 3/2), dry to damp, no to moderate plasticity, no dilatency, mostly clay with some fine to medium grain sands, subangular.
  - Clayey SAND**, color varies, yellowish brown to dark gray (10 YR 3/6 to 5/1), dry to saturated, medium dense, mostly fine grained sands, subangular, 35-40 % clay, slight plasticity.
  - Poorly Graded SAND with Gravel**, fill material.
  - Cement Seal**, used in sealing driven probe borings.
  - Excavated Native Soil used as Backfill in UST Excavation**
- Soil Sample Analytical Results. All soil samples were analyzed for Total Petroleum Hydrocarbons as gasoline (TPH-g), Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX), Methyl Tert Butyl Ether (MTBE). Results are shown for detected analytes only, all others Not Detected (ND), including MTBE in all locations.
- Monitoring well location designation completion depth and screened interval
- Groundwater elevation in monitoring wells from March 29 2001 groundwater monitoring event

Oriented at North 3 East



**NOTES**  
 First Encountered Groundwater elevation from Hydraulic Driven Probe Investigation, February 14, 2001  
 See Figure 2 for plan view of geologic cross-sections A-A' and B-B'  
 Lithology compiled from Geologic Logs MW-4 5 8 10 and 12 (completed by others) and DP-1-4  
 All elevations are referenced to National Geodetic Vertical Datum of 1929 Mean Sea Level (MSL)

**FIGURE 3**  
**Job # H9042**

**Geologic Cross-Section A-A' & B-B'**  
 Harbert Transportation  
 19984 Meekland Avenue  
 Hayward, California

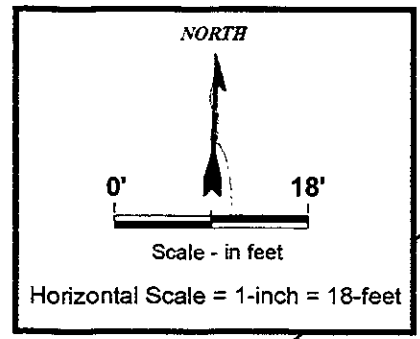
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Residential Property

Residential Property



Former Fuel UST Excavation August 1989

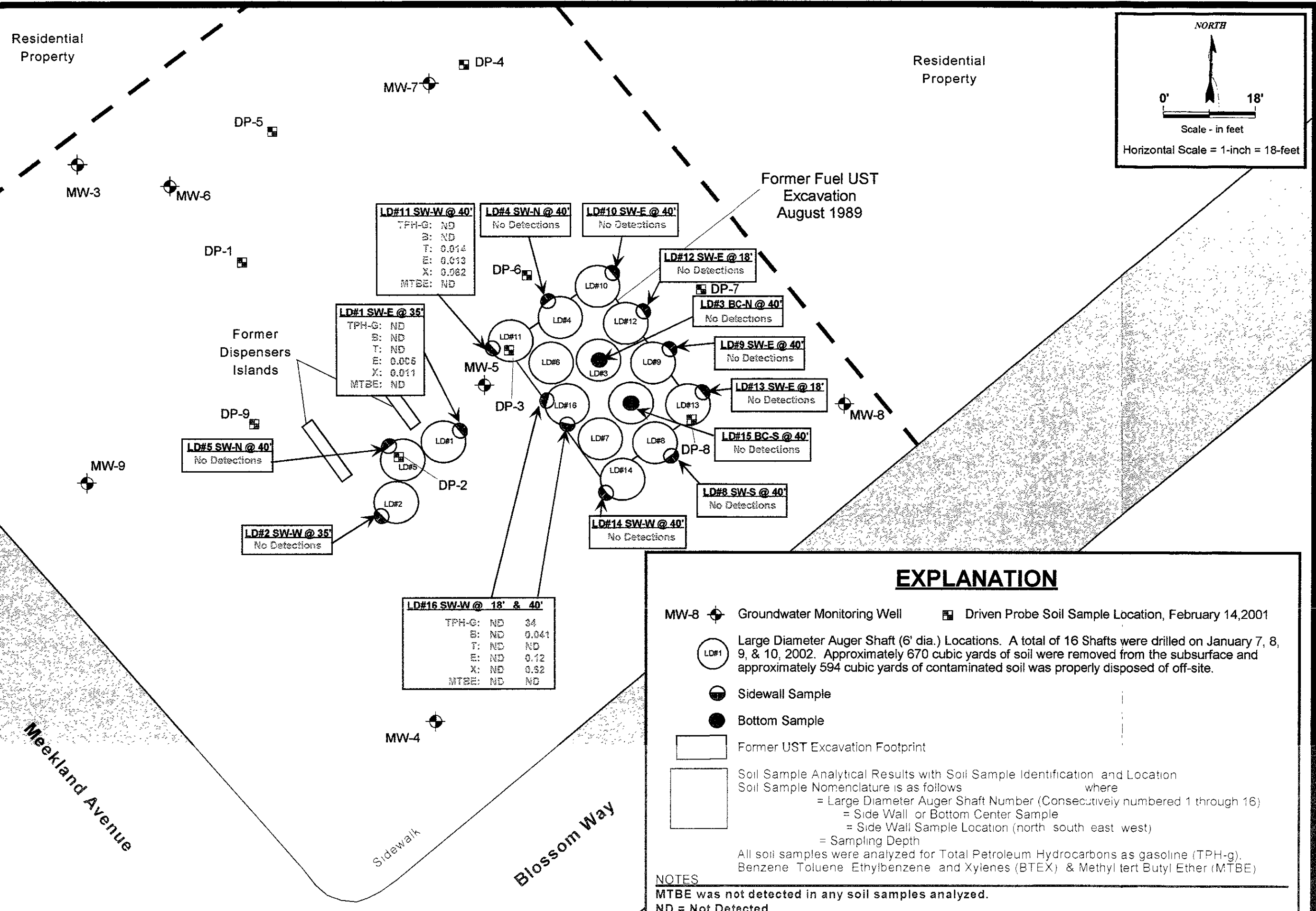


FIGURE 4 Job # H9042

Large Diameter Auger Source Removal Footprint Map and Soil Sample Analytical Results  
Harbert Transportation  
19984 Meekland Avenue  
Hayward, California

### EXPLANATION

- MW-8 Groundwater Monitoring Well
- Driven Probe Soil Sample Location, February 14, 2001
- LD#1 Large Diameter Auger Shaft (6' dia.) Locations. A total of 16 Shafts were drilled on January 7, 8, 9, & 10, 2002. Approximately 670 cubic yards of soil were removed from the subsurface and approximately 594 cubic yards of contaminated soil was properly disposed of off-site.
- Sidewall Sample
- Bottom Sample

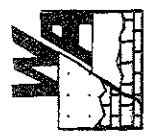
Former UST Excavation Footprint

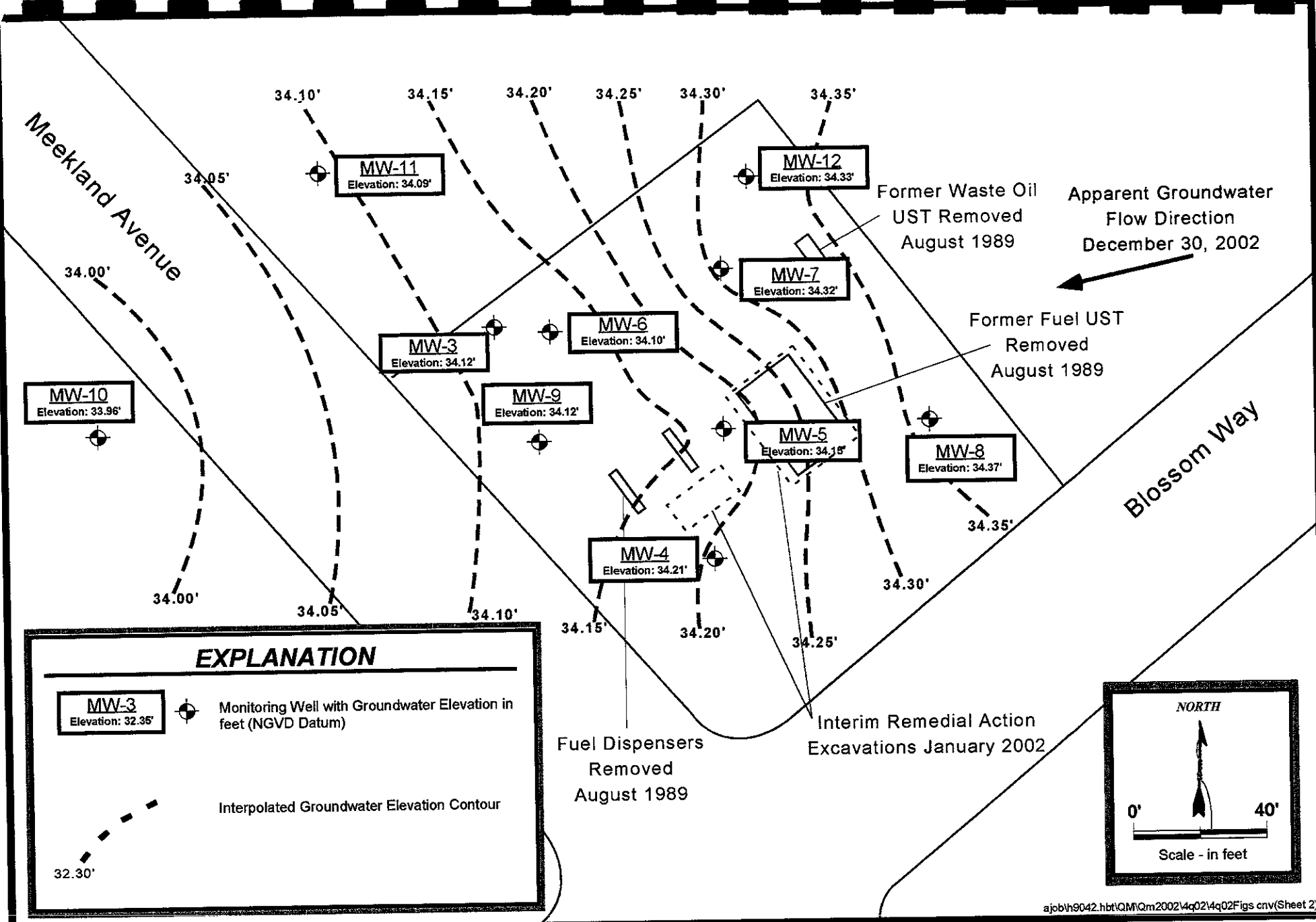
Soil Sample Analytical Results with Soil Sample Identification and Location  
Soil Sample Nomenclature is as follows where  
 = Large Diameter Auger Shaft Number (Consecutively numbered 1 through 16)  
 = Side Wall or Bottom Center Sample  
 = Side Wall Sample Location (north south east west)  
 = Sampling Depth

All soil samples were analyzed for Total Petroleum Hydrocarbons as gasoline (TPH-g), Benzene Toluene Ethylbenzene and Xylenes (BTEX) & Methyl tert Butyl Ether (MTBE)

NOTES  
 MTBE was not detected in any soil samples analyzed.  
 ND = Not Detected.

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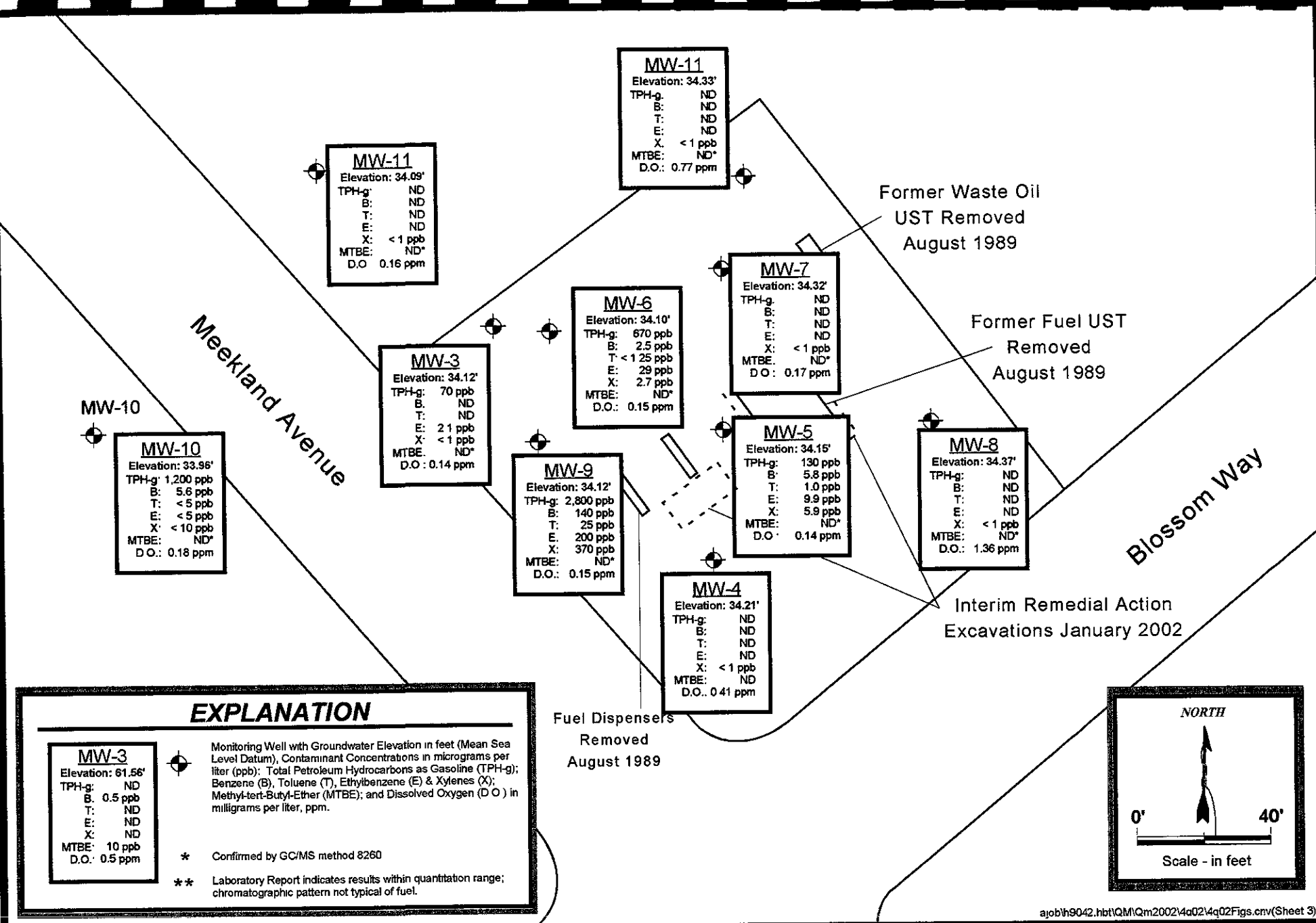
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**Site Plan with Groundwater Elevations**  
**December 30, 2002**  
 Former Harbert Transportation Facility  
 19984 Meekland Avenue, Hayward, California

**Figure**  
**5**  
**Project**  
**H9042**

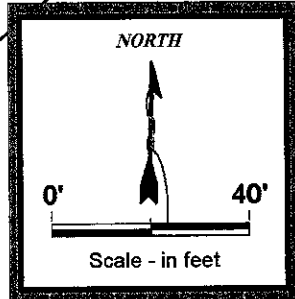


**EXPLANATION**

<b>MW-3</b>
Elevation: 61.56'
TPH-g: ND
B: 0.5 ppb
T: ND
E: ND
X: ND
MTBE: 10 ppb
D.O.: 0.5 ppm

Monitoring Well with Groundwater Elevation in feet (Mean Sea Level Datum), Contaminant Concentrations in micrograms per liter (ppb): Total Petroleum Hydrocarbons as Gasoline (TPH-g); Benzene (B), Toluene (T), Ethylbenzene (E) & Xylenes (X); Methyl-tert-Butyl-Ether (MTBE); and Dissolved Oxygen (D.O.) in milligrams per liter, ppm.

- \* Confirmed by GC/MS method 8260
- \*\* Laboratory Report indicates results within quantitation range; chromatographic pattern not typical of fuel.



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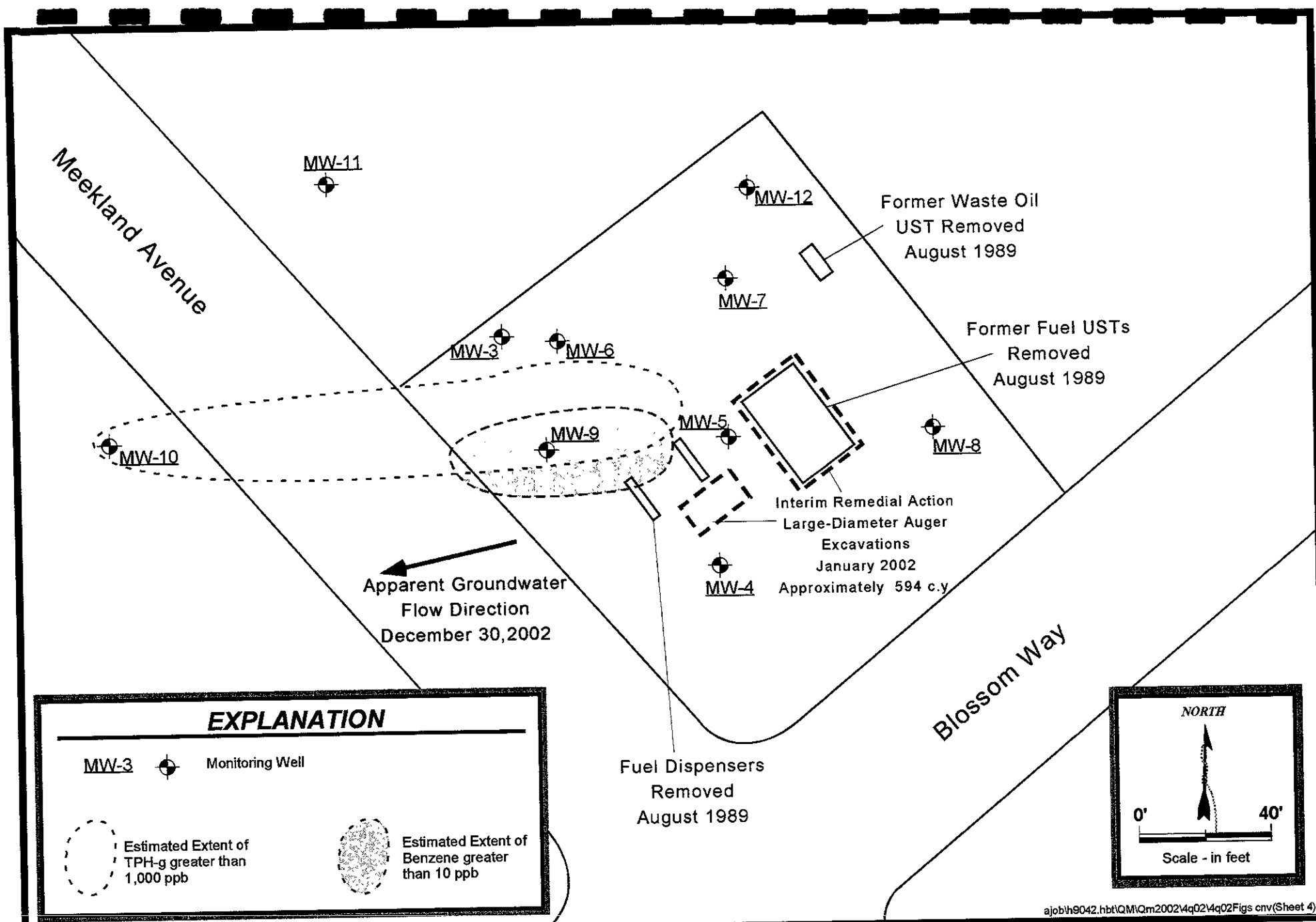


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**Site Plan with PHC Concentrations in Groundwater**  
 December 30, 2002  
 Former Harbert Transportation Facility  
 19984 Meekland Avenue, Hayward, California


**Figure 6**  
**Project H9042**







**EXPLANATION**


MW-3  Monitoring Well

 Estimated Extent of TPH-g greater than 1,000 ppb

 Estimated Extent of Benzene greater than 10 ppb

**NORTH**



0'  40'

Scale - in feet

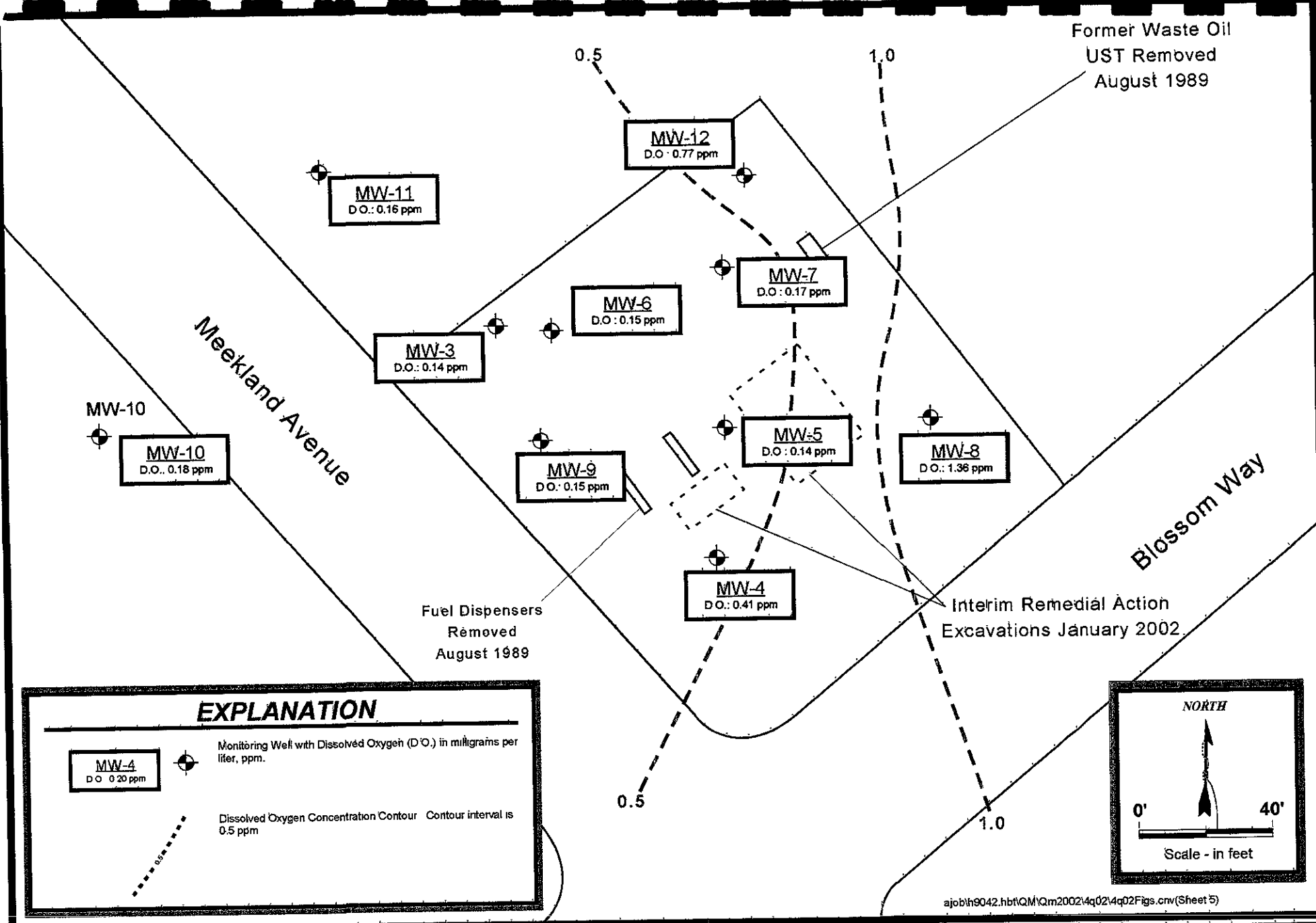
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**Site Plan with Extent of TPH-g and Benzene  
 in Groundwater, December 30, 2002**  
 Former Harbert Transportation Facility  
 19984 Meekland Avenue, Hayward, California

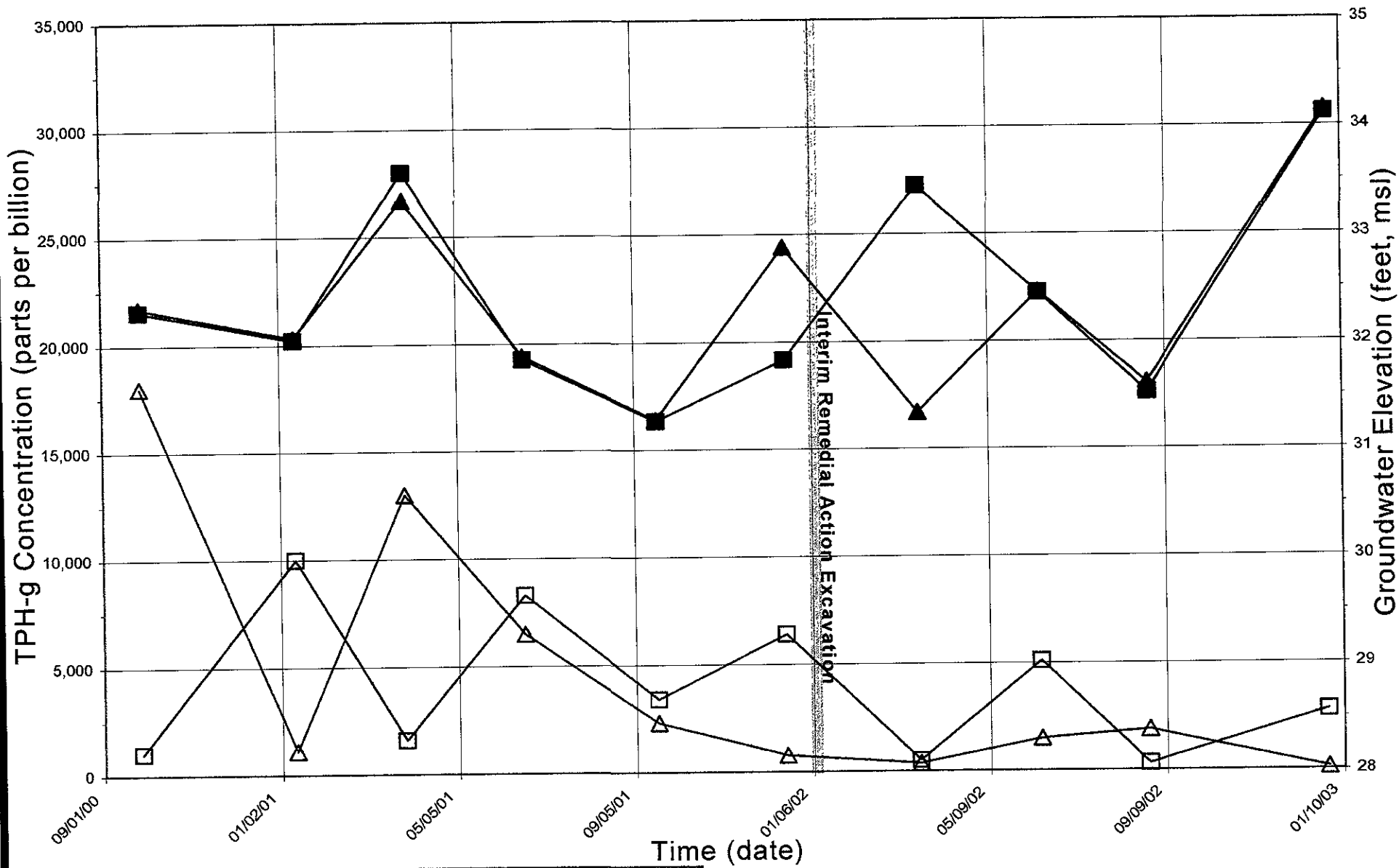
**Figure  
 7  
 Project  
 H9042**



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**Site Plan with Dissolved Oxygen Contours**  
 December 30, 2002  
 Former Harbert Transportation Facility  
 19984 Meekland Avenue, Hayward, California

**Figure 8**  
**Project H9042**



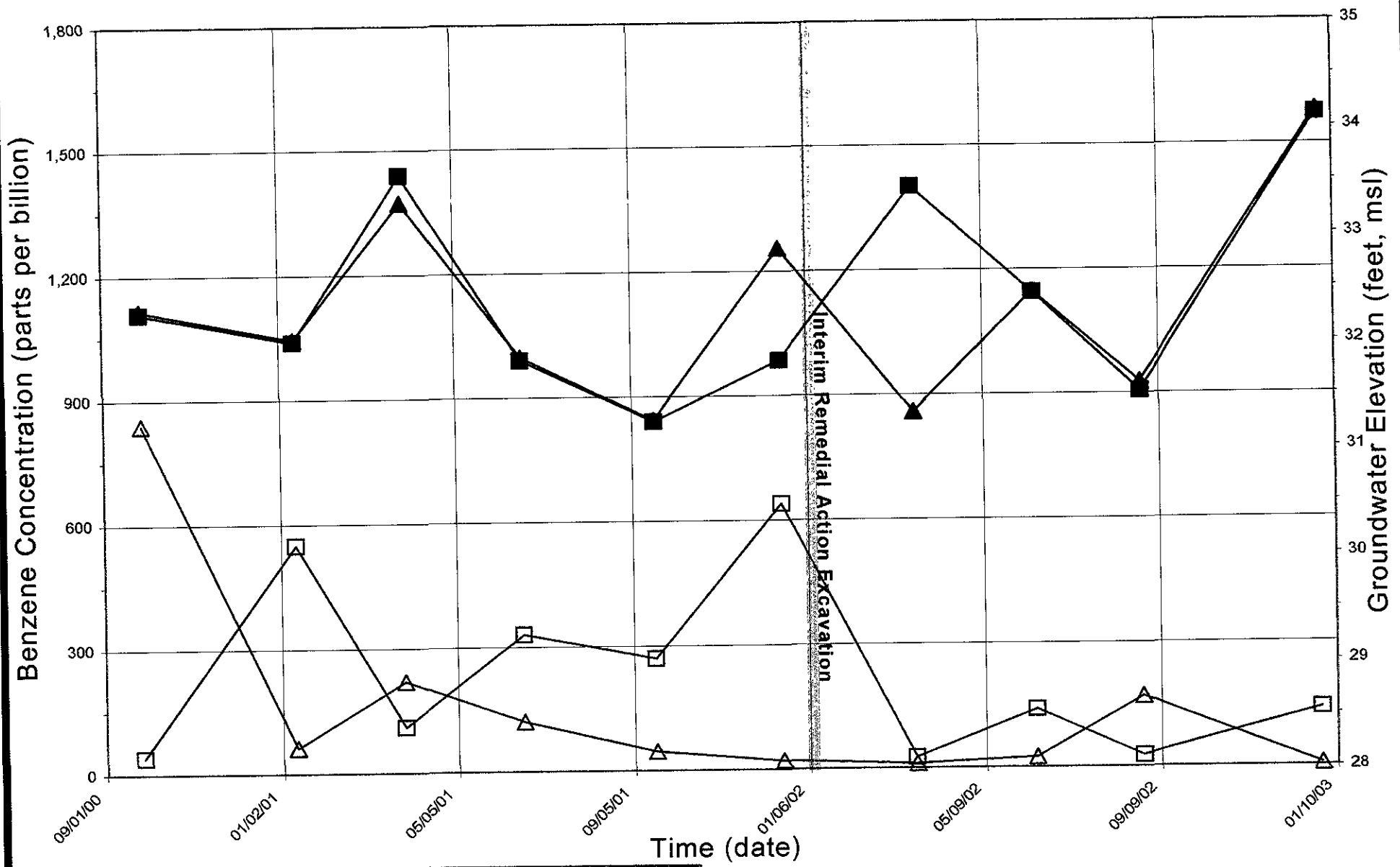
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**TPH-g and Groundwater Elevation in MW-5 and MW-9 Through December 30, 2002**  
 Former Harbert Transportation Facility  
 19984 Meekland Avenue, Hayward, California

**Figure 9**  
**Project H9042**



▲ MW-5 Groundwater Elevation    ■ MW-9 Groundwater Elevation  
 ▲ MW-5 Benzene Concentration    □ MW-9 Benzene Concentration

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**Benzene and Groundwater Elevation in MW-5 and  
 MW-9 Through December 30, 2002**  
 Former Harbert Transportation Facility  
 19984 Meekland Avenue, Hayward, California

**Figure  
 10  
 Project  
 H9042**

Proposed Site Specific Cleanup Goals - *Revised*  
Groundwater Monitoring Report - Fourth Quarter 2002  
19984 Meekland Avenue, Hayward, California  
March 27, 2003

## **Appendix A**

# **Field Methodologies for Groundwater Monitoring and Field Data Forms**

## Appendix A

### Field Methodologies for Groundwater Monitoring

Weber, Hayes and Associates' groundwater monitoring field methodology is based on procedures specified in the *LUFT Field Manual*. The first step in groundwater well sampling is for Weber, Hayes and Associates field personnel to measure the depth-to-groundwater to the nearest hundredth (0.01) of a foot with an electric sounder. If the well appears to be pressurized, or the groundwater level is fluctuating, measurements are made until the groundwater levels stabilizes, and a final depth-to-groundwater measurement is taken and recorded. After the depth-to-groundwater is measured, the well is then checked for the presence of free product with a clear, disposable polyethylene bailer. If free product is present, the thickness of the layer is recorded, and the product is bailed to a sheen. All field data (depth-to-groundwater, well purge volume, physical parameters, and sampling method) is recorded on field data sheets (see attached). Because removing free product may skew the data, wells that contain free product are not used in groundwater elevation and gradient calculations.

After measuring the depth-to-groundwater, each well, starting with the cleanest well (based on analytical results from the last sampling event), is purged with a low flow submersible electric pump. During purging the physical parameters of temperature, conductivity, pH, dissolved oxygen (D.O.) concentration, and Oxidation-Reduction Potential (ORP) of the purge water are monitored with a QED MP20 Micropurge Flow-Through-Cell and Meter to insure that these parameters have stabilized (are within ~ 15 percent of the previous measurement). The QED MP20 Meter is capable of contiguously monitoring the physical parameters of the purge water via the flow through cell and providing an alarm to indicate when the physical parameters have stabilized to the users specifications. Purging is determined to be complete (stabilized aquifer conditions reached) after the removal of approximately three to five well volumes of water or when the physical parameters have stabilized. Dissolved oxygen and ORP measurements are used as an indicator of intrinsic bioremediation within the contaminant plume. All field instruments are calibrated before use.

All purge water is stored on site in DOT-approved, 55-gallon drums for disposal by a state-licensed contractor pending laboratory analysis for fuel hydrocarbons.

After purging, the water level in the well is allowed to recover to 80 percent of its original depth before a sample is collected. After water level recovery, a groundwater sample is collected from each well with a new, disposable bailer, and decanted into the appropriate laboratory-supplied sample container(s). The sample containers at this site were 40-ml. vials. Each vial was filled until a convex meniscus formed above the vial rim, then sealed with a Teflon<sup>®</sup>-septum cap, and inverted to insure that there were no air bubbles or head space in the vial. All samples are labeled in the field and transported in insulated containers cooled with blue ice to state-certified laboratories under proper chain of custody procedures.

All field and sampling equipment is decontaminated before, between, and after measurements or sampling by washing in an Liqui-Nox and tap water solution, rinsing with tap water, and rinsing with distilled water.



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INDICATE ATTACHMENTS THAT APPLY

\_\_\_\_ Data Sheets  
 \_\_\_\_ COC's  
 \_\_\_\_ Site Map  
 \_\_\_\_ Photo Sheet  
 \_\_\_\_ Chargeable Materials

Job Name: Harbert Transportation	Date: 12/23/02 <sup>RD</sup> <del>12/23/02</del> 12/30/02
Field Location: 19984 Meekland Avenue, Hayward	Study #: H9042.Q
Field Tasks: <input type="checkbox"/> Drilling <input checked="" type="checkbox"/> Sampling <input checked="" type="checkbox"/> Other 4 <sup>th</sup> Quarter 2002 Well Sampling	Weather Conditions: Cloudy → Rain
Personnel/Company onsite: (Weber, Hayes and Associates) Chad Taylor	

**FIELD WORK PLANNING:** Performed on: 12/20/02

Meet with project manager: **X** yes, or no.  
 Number of wells to be sampled: **Ten Wells, with D.O. in all wells**  
 Sample wells: **MW-3 - 12, for TPH-g, BTEX, and MTBE.**  
 Proposed sampling date: 12/23/02

**TIME:** 0700  
 Arrive onsite to perform 4<sup>th</sup> Quarter Monitoring Well Sampling.

**COMMENTS:**  
 Send all analytical to Entech Analytical Laboratory.

**INITIALS:**

- All sampling is conducted according to Standard Operating Procedure (SOP) 10I/
- Water Quality Sampling Information for each well sampled is recorded on following pages.
- Upon sampling, all samples are placed immediately in coolers containing blue ice.
- After sampling each well all equipment is decontaminated according to SOP 10B/.
- All purge water is properly disposed in 55-gallon drums to be purged at a later date.
- All samples are recorded on field Chain-of-Custody Sheets for transport to Laboratory.

**BEGIN CALIBRATION:**

QED MP20 Flow Through Cell: Temp = 14.2°C, pH = 7.0 & 11.0, EC = 1415 / Barometric Pressure = 130  
 D.O. % Saturation = 100%, ORP = NA

**BEGIN SAMPLING ALL WELLS:**

MW3 MW4 MW5 MW7 MW11 MW3 MW6 MW10 MW5 MW9  
 -See information below for general monitoring well information this sampling round.

**COMMENTS:**

All well will be purged until the QED MP20 unit indicates that the water quality parameters (pH, Conductivity, Temp, D.O., and ORP) have stabilized to within ~ 15 % or once four casing volumes in the column requiring sampling have been removed (see Water Quality Sampling Field Forms for details). Wells will be purged from bottom-up and will follow standard operating procedures by WHA. Wells will be sampled using a bladder pump, or disposable bailer.

CHT 12/30/02  
 Signature of Field Personnel & Date





**Weber, Hayes & Associates**  
 Hydrogeology and Environmental Engineering  
 120 Westgate Dr., Watsonville, CA 95076  
 (831) 722-3580 (831) 662-3100  
 Fax: (831) 722-1159

Location	GW Depth (TOC)	Total Depth of Well	D.O. (mg/L)	ORP (mV)	Floating Product (comments).
MW-3	21.32'	40'	0.14	536	No FP, Very Slight Odor
MW-4	21.50'	40'	0.41	368	No FP, No Odor
MW-5	21.88'	45'	0.14	251	No FP, Moderate Odor
MW-6	21.94'	45'	0.15	321	No FP, Slight Odor
MW-7	22.34'	40'	0.17	370	No FP, No Odor
MW-8	21.79'	40'	1.36	365	No FP, No Odor
MW-9	21.09'	40'	0.15	276	No FP, Moderate Odor
MW-10	20.78'	40'	0.18	267	No FP, Slight Odor
MW-11	21.11'	40'	0.16	374	No FP, No Odor
MW-12	22.16'	40'	0.77	372	No FP, No Odor

HOW MANY PURGE DRUMS WERE LEFT ONSITE 6 . APPROXIMATE GAL. ~300 .  
 CALL BAYSIDE OIL ON 1/2/03 TO HAVE DRUMS PURGED.  
 DRUMS WILL BE PURGED ON ?? .

COMMENTS:

[Signature] 12/30/02  
 Signature of Field Personnel & Date

# GROUNDWATER MONITORING WELL SAMPLING INFORMATION

Project Name/No.: Harbert Transportation / H9042.0 Date: 12/30/01

Sample No.: MW-8 Sample Location: MW-8

Samplers Name: Chad Tyler Recorded by: CT

Purge Equipment: X Bailer: Disposable or Acrylic  
X Whaler # 1 Disposable Bailer  
 Bladder Pump Whaler # \_\_\_\_\_  
 Submersible Pump Bladder Pump \_\_\_\_\_  
 Submersible Pump Submersible Pump \_\_\_\_\_

Analyses Requested (circle all that apply): TPH-gas, BTEX, MTBE, 1,2-DCA, EDB, 8260 Fuel Oxygenates Number and Types of Bottle Used: 5x40mL VOA's  
TPH-diesel, Stoddard Solvent  
Intrinsic Bio-Parameters

Well Number: MW-8 Well Diameter: 4" with Casing Volume of:  
 Depth to Water: 21.79' TOC 2" = (0.16 Gallon/Feet)  
 Well Depth: 40' BGS or TOC 4" = (0.65 Gallon/Feet)  
 Height W-Column: 18.21' feet (well depth - depth to water) 5" = (1.02 Gallon/Feet)  
 Volume in Well: 12.0365 gallons (casing volume X height) 6" = (1.47 Gallon/Feet)  
 Gallons to purge: 47.35 gallons (volume X 4) 8" = (2.61 Gallon/Feet)

Lab: Entech Transportation: Deliver

Time (24 hr.)	Volume Purged (Gallons)	Temperature (°C)	Conductivity (ms/cm)	D.O. (ppm)	pH	ORP (mV)	Turbidity: Color, Fines	Micropurge Parameters Stabilized
0738	0	15.63	0.615	3.12	8.48	367	Low: Clear-Brown, Minor Fines	
0739	2	17.72	0.657	2.12	8.48	362	↓ ↓ ↓	
0741	4	18.14	0.618	1.06	8.13	362	Low: Clear, Trace Fines	
0742	6	18.19	0.637	0.99	8.51	363	↓ ↓ ↓	
0743	8	18.21	0.651	0.07	8.50	364	↓ ↓ ↓	
0745	10	18.23	0.665	1.18	8.49	364	↓ ↓ ↓	
0752	20	18.24	0.685	1.36	8.47	365	↓ ↓ ↓	✓
STOP - Parameters Stabilized. Purge Complete.								
CT 1/4/02								

**Wait for 80% well volume recovery prior to sampling.**

Calculate depth to water (from TOC), for 80% well volume recovery:

Calculate 80% of original well volume:

Original Height of Water Column = 18.21' x 0.8 = 14.568' - (Well Depth) 40' = Depth to water 25.43'

Time: 0754 1st measured depth to water, 25.80' feet below Is well within 80% of original well casing volume: Yes  No   
 Time: 19 1st measured depth to water, 19 feet below Is well within 80% of original well casing volume: Yes  No   
 Time: 19 1st measured depth to water, 19 feet below Is well within 80% of original well casing volume: Yes  No

### Sample Well

Time: 0754 Sample ID: MW-8 Depth: 25.80' feet below TOC

Comments: No Floating Product. No Odor.

# GROUNDWATER MONITORING WELL SAMPLING INFORMATION

Project Name/No.: Harbert Transportation / H90420 Date: 12/30/02

Sample No.: MW.4 Sample Location: MW.4

Samplers Name: Chad Tyl Recorded by: CT

**Purge Equipment:**

\_\_\_\_\_ Bailer: Disposable or Acrylic  
X Whaler # 1  
 \_\_\_\_\_ Bladder Pump  
 \_\_\_\_\_ Submersible Pump

**Sample Equipment:**

X Disposable Bailer  
 \_\_\_\_\_ Whaler # \_\_\_\_\_  
 \_\_\_\_\_ Bladder Pump  
 \_\_\_\_\_ Submersible Pump

**Analyses Requested (circle all that apply):**

TPH-gal, BTEX, MTBE, 1,2-DCA, EDB, 8260 Fuel Oxygenates,

TPH-diesel, Stoddard Solvent

Intrinsic Bio. Parameters

**Number and Types of Bottle Used:**

5x40L W/ HCl

Well Number: MW.4  
 Depth to Water: 21.50' TOC  
 Well Depth: 40' BGS or TOC  
 Height W-Column: 18.50' feet (well depth - depth to water)  
 Volume in Well: 2.96 gallons (casing volume X height)  
 Gallons to purge: 11.84 gallons (volume X 4)

Well Diameter: 2" with Casing Volume of:  
 2" = (0.16 Gallon/Feet)  
 4" = (0.65 Gallon/Feet)  
 5" = (1.02 Gallon/Feet)  
 6" = (1.47 Gallon/Feet)  
 8" = (2.61 Gallon/Feet)

Lab: Entech

Transportation: Delmar

Time (24 hr.)	Volume Purged (Gallons)	Temperature (°C)	Conductivity (ms/cm)	D.O. (ppm)	pH	ORP (mV)	Turbidity: Color, Fines	Micropurge Parameters Stabilized
0806	0	17.55	0.660	2.95	8.29	375	High: Brown, Many Fines	
0807	1	18.28	0.667	1.45	8.37	370	Moderate: Brown, Mod Fines	
0808	2	18.49	0.668	0.99	8.38	369	Low: Clear-Brown, Minor Fines	
0808	3	18.59	0.668	0.74	8.39	369	↓ ↓ ↓	
0809	4	18.69	0.669	0.77	8.39	368	↓ ↓ ↓	
0810	6	18.75	0.670	0.16	8.38	369	Low: Clear, Trace Fines	
0812	8	18.76	0.671	0.54	8.38	368	↓ ↓ ↓	
0813	10	18.79	0.671	0.54	8.38	368	↓ ↓ ↓	
0815	12	18.79	0.672	0.41	8.37	368	↓ ↓ ↓	

**Wait for 80% well volume recovery prior to sampling.**

Calculate depth to water (from TOC), for 80% well volume recovery:

Calculate 80% of original well volume:

Original Height of Water Column = 18.50' x 0.8 = 14.80' - (Well Depth) 40' = Depth to water 25.20'

Time: 0817 1st measured depth to water, 21.5 feet below  
 Time: 19 1st measured depth to water, 19 feet below

Is well within 80% of original well casing volume: Yes  No   
 Is well within 80% of original well casing volume: Yes  No   
 Is well within 80% of original well casing volume: Yes  No

**Sample Well**

Time: 0817 Sample ID: MW.4 Depth: 21.65' feet below TOC

Comments: No Floaty Product No Odor

# GROUNDWATER MONITORING WELL SAMPLING INFORMATION

Project Name/No.: Harbor Transportation / H9042-Q Date: 12/30/02

Sample No.: MW-12 Sample Location: MW-12

Samplers Name: Chad TyL Recorded by: CT

Purge Equipment: X Bailer: Disposable or Acrylic  
X Whaler # 1  
 Bladder Pump  
 Submersible Pump

Sample Equipment:  
X Disposable Bailer  
 Whaler # \_\_\_\_\_  
 Bladder Pump  
 Submersible Pump

Analyses Requested (circle all that apply):  
TPH-gal, BTEX, MTBE, 1,2-DCA, EDB, 8200 Fuel Oxygenates  
TPH-diesel, Stoddard Solvent  
 Intrinsic Bio. Parameters

Number and Types of Bottle Used:  
5x40-LVW's

Well Number: MW-12 Well Diameter: 2" with Casing Volume of:  
 Depth to Water: 22.16' TOC 2" = (0.16 Gallon/Feet)  
 Well Depth: 40' BGS or TOC 4" = (0.65 Gallon/Feet)  
 Height W-Column: 17.84' feet (well depth - depth to water) 5" = (1.02 Gallon/Feet)  
 Volume in Well: 2.8544 gallons (casing volume X height) 6" = (1.47 Gallon/Feet)  
 Gallons to purge: 11.42 gallons (volume X 4) 8" = (2.61 Gallon/Feet)

Lab: Entech Transportation: Palmer

Time (24 hr.)	Volume Purged (Gallons)	Temperature (°C)	Conductivity (ms/cm)	D.O. (ppm)	pH	ORP (mV)	Turbidity: Color, Fines	Micropurge Parameters Stabilized
0839	0	17.11	0.690	2.47	8.08	376	Moderate: Brown, Mod Fines	
0839	1	17.55	0.692	1.92	8.11	375	Low: Clear-Brown, Trace Fines	
0840	2	17.74	0.690	1.03	8.12	374	Low: Clear, Trace Fines	
0840	3	17.79	0.691	0.78	8.13	373	↓ ↓ ↓ ↓ ↓	
0841	4	17.87	0.691	0.65	8.14	373		
0842	6	17.94	0.693	0.71	8.15	372		
0844	8	17.97	0.695	0.76	8.16	372		
0845	10	17.90	0.696	0.73	8.16	372		
0846	12	18.01	0.697	0.77	8.16	372		

**Wait for 80% well volume recovery prior to sampling.**  
 Calculate depth to water (from TOC), for 80% well volume recovery:

Calculate 80% of original well volume:  
 Original Height of Water Column = 17.84' x 0.8 = 14.272' (Well Depth) 40' = Depth to water 25.73'

Time: 0848 1st measured depth to water, 22.22' feet below Is well within 80% of original well casing volume: Yes  No   
 Time: 19 1st measured depth to water, 14 feet below Is well within 80% of original well casing volume: Yes  No   
 Time: 19 1st measured depth to water, 14 feet below Is well within 80% of original well casing volume: Yes  No

### Sample Well

Time: 0848 Sample ID: MW-12 Depth: 22.22' feet below TOC

Comments: No Floaty Product. No Odor.

# GROUNDWATER MONITORING WELL SAMPLING INFORMATION

Project Name/No.: Harbert Transportation / 19012-G Date: 12/30/02  
 Sample No.: MW-7 Sample Location: MW-7

Samplers Name: Chad TjL Recorded by: CT

**Purge Equipment:**  
 \_\_\_\_\_ Bailer: Disposable or Acrylic  
X \_\_\_\_\_ Whaler # 1  
 \_\_\_\_\_ Bladder Pump  
 \_\_\_\_\_ Submersible Pump

**Sample Equipment:**  
 \_\_\_\_\_ X \_\_\_\_\_ Disposable Bailer  
 \_\_\_\_\_ Whaler # \_\_\_\_\_  
 \_\_\_\_\_ Bladder Pump  
 \_\_\_\_\_ Submersible Pump

**Analyses Requested (circle all that apply):**  
TPH-gas, BTEX, MTBE, 1,2-DCA, EDB, 8260 Fuel Oxygenates  
~~TPH-diesel, Stoddard Solvent~~  
~~Intrinsic Bio. Parameters~~

**Number and Types of Bottle Used:**  
5x40ml Vials w/HCl

**Well Number:** MW-7 **Well Diameter:** 4" with Casing Volume of:  
**Depth to Water:** 22.34' TOC 2" = (0.16 Gallon/Feet)  
**Well Depth:** 40' BGS or TOC 4" = (0.65 Gallon/Feet)  
**Height W-Column:** 17.66' feet (well depth - depth to water) 5" = (1.02 Gallon/Feet)  
**Volume in Well:** 11.479 gallons (casing volume X height) 6" = (1.47 Gallon/Feet)  
**Gallons to purge:** 45.92 gallons (volume X 4) 8" = (2.61 Gallon/Feet)

Lab: Enter Transportation: Delmar

Time (24 hr.)	Volume Purged (Gallons)	Temperature (°C)	Conductivity (ms/cm)	D.O. (ppm)	pH	ORP (mV)	Turbidity: Color, Fines	Micropurge Parameters Stabilized
0902	0	16.97	0.687	3.06	8.24	375	High: Brown Many Fines	
0903	2	18.02	0.704	0.61	8.29	372	Low: Clear-Brown, Minor Fines	
0905	4	18.17	0.704	0.37	8.30	372	↓ ↓ ↓	
0907	6	18.30	0.703	0.25	8.30	372	Low: Clear, Trace Fines	
0907	8	18.30	0.703	0.24	8.30	372		
0909	10	18.31	0.703	0.18	8.30	372		
0917	20	18.31	0.702	0.18	8.29	370		
0918	22	18.31	0.702	0.17	8.28	370		

**Wait for 80% well volume recovery prior to sampling.**  
 Calculate depth to water (from TOC), for 80% well volume recovery:

Calculate 80% of original well volume:  
 Original Height of Water Column = 17.66' x 0.8 = 14.128' - (Well Depth) 40' = Depth to water 25.87'

Time: 0910 1st measured depth to water, 23.28' feet below Is well within 80% of original well casing volume: Yes  No   
 Time: 19 1st measured depth to water, 19 feet below Is well within 80% of original well casing volume: Yes  No   
 Time: 19 1st measured depth to water, 19 feet below Is well within 80% of original well casing volume: Yes  No

### Sample Well

Time: 0920 Sample ID: MW-7 Depth: 23.28' feet below TOC

Comments: No Fleety Product, No Odor.

# GROUNDWATER MONITORING WELL SAMPLING INFORMATION

Project Name/No.: Herbert Transportation / H9042.0 Date: 12/30/14

Sample No.: MW-11 Sample Location: MW-11

Samplers Name: Chad Tyl Recorded by: CT

Purge Equipment: \_\_\_\_\_ Bailer: Disposable or Acrylic  
X Whaler # 1  
 \_\_\_\_\_ Bladder Pump  
 \_\_\_\_\_ Submersible Pump

Sample Equipment: \_\_\_\_\_ Disposable Bailer  
X Whaler # \_\_\_\_\_  
 \_\_\_\_\_ Bladder Pump  
 \_\_\_\_\_ Submersible Pump

Analyses Requested (circle all that apply):  
TPH-gas, BTEX, MTBE, 1, 2-DCA, EDB, 8260 Fuel Oxygenates,  
TPH-diesel, Stoddard Solvent-  
Intrinsic Bio. Parameters

Number and Types of Bottle Used:  
5 x 400 mL W/S w/BCI

Well Number: MW-11 Well Diameter: 2" with Casing Volume of:  
 Depth to Water: 21.11' TOC 2" = (0.16 Gallon/Feet)  
 Well Depth: 40' BGS or TOC 4" = (0.65 Gallon/Feet)  
 Height W-Column: 18.89' feet (well depth - depth to water) 5" = (1.02 Gallon/Feet)  
 Volume in Well: 3.0224 gallons (casing volume X height) 6" = (1.47 Gallon/Feet)  
 Gallons to purge: 12.09 gallons (volume X 4) 8" = (2.61 Gallon/Feet)

Lab: Entech Transportation: Deliver

Time (24 hr.)	Volume Purged (Gallons)	Temperature (°C)	Conductivity (ms/cm)	D.O. (ppm)	pH	ORP (mV)	Turbidity: Color, Fines	Micropurge Parameters Stabilized
0947	0	16.93	0.953	2.60	8.14	382	Hgt: Brown, Many Fines	
0948	1	17.21	0.946	1.67	8.17	378	Moderate: Brown, Mod Fines	
0948	2	17.33	0.943	1.01	8.18	377	Low: Clear, Brown, Minor Fines	
0949	3	17.41	0.943	0.70	8.19	376	↓ ↓ ↓	
0949	4	17.48	0.944	0.57	8.19	375	↓ ↓ ↓	
0951	6	17.53	0.945	0.40	8.19	375	Low: Clear, Trace Fines	
0952	8	17.54	0.946	0.23	8.19	374	↓ ↓ ↓	
0954	10	17.56	0.946	0.19	8.19	374	↓ ↓ ↓	
0956	13	17.58	0.947	0.16	8.19	374	↓ ↓ ↓	

**Wait for 80% well volume recovery prior to sampling.**  
 Calculate depth to water (from TOC), for 80% well volume recovery:

Calculate 80% of original well volume:  
 Original Height of Water Column = 18.89' x 0.8 = 15.112' - (Well Depth) 40' = Depth to water 24.89'

Time: 0958 1st measured depth to water, 21.27' feet below: Is well within 80% of original well casing volume: Yes  No   
 Time: 10 1st measured depth to water, 15 feet below: Is well within 80% of original well casing volume: Yes  No   
 Time: 10 1st measured depth to water, 15 feet below: Is well within 80% of original well casing volume: Yes  No

### Sample Well

Time: 0958 Sample ID: MW-11 Depth: 21.27' feet below TOC

Comments: No Flocy Product, No Odor.

# GROUNDWATER MONITORING WELL SAMPLING INFORMATION

Project Name/No.: Harbert Transportation / H9042.0 Date: 12/30/02  
 Sample No.: MW3 Sample Location: MW3

Samplers Name: Chad Tyl Recorded by: CT

**Purge Equipment:**  
 \_\_\_\_\_ Bailer: Disposable or Acrylic  
X \_\_\_\_\_ Whaler # 2  
 \_\_\_\_\_ Bladder Pump  
 \_\_\_\_\_ Submersible Pump

**Sample Equipment:**  
 \_\_\_\_\_ X \_\_\_\_\_ Disposable Bailer  
 \_\_\_\_\_ Whaler # \_\_\_\_\_  
 \_\_\_\_\_ Bladder Pump  
 \_\_\_\_\_ Submersible Pump

**Analyses Requested (circle all that apply):**  
TPH-gas BTEX MTBE 1,2-DCA EDR 8260 Fuel Oxygenates  
TPH-diesel Stoddard Solvent  
Intrinsic Bio: Parameters

**Number and Types of Bottle Used:**  
5 x 60 mL W's

Well Number: MW3 Well Diameter: 2" with Casing Volume of:  
 Depth to Water: 21.32' TOC 2" = (0.16 Gallon/Feet)  
 Well Depth: 40' BGS or TOC 4" = (0.65 Gallon/Feet)  
 Height W-Column: 18.68' feet (well depth - depth to water) 5" = (1.02 Gallon/Feet)  
 Volume in Well: 2.9888 gallons (casing volume X height) 6" = (1.47 Gallon/Feet)  
 Gallons to purge: 11.96 gallons (volume X 4) 8" = (2.61 Gallon/Feet)

Lab: Entech Transportation: Delmar

Time (24 hr.)	Volume Purged (Gallons)	Temperature (°C)	Conductivity (ms/cm)	D.O. (ppm)	pH	ORP (mV)	Turbidity: Color, Fines	Micropurge Parameters Stabilized
1020	0	18.01	0.718	2.88	8.55	364	Modestly Brown, Modest Fines	
1021	1	18.27	0.732	1.88	8.40	359	Low Clear-Brown, Minor Fines	
1021	2	18.37	0.735	0.98	8.41	357	↓ ↓ ↓	
1022	3	18.44	0.736	0.52	8.41	353		
1022	4	18.49	0.738	0.34	8.40	347	Low: Clear, Trace Fines	
1024	6	18.53	0.740	0.25	8.38	343	↓ ↓ ↓	
1025	8	18.54	0.741	0.20	8.38	340		
1026	10	18.54	0.741	0.16	8.36	337	↓ ↓ ↓	
1027	12	18.54	0.741	0.14	8.36	335		

**Wait for 80% well volume recovery prior to sampling.**  
 Calculate depth to water (from TOC), for 80% well volume recovery:

Calculate 80% of original well volume:  
 Original Height of Water Column =  $18.68' \times 0.8 = 14.944'$  (Well Depth)  $40' =$  Depth to water  $25.06'$

Time: 1029 1st measured depth to water, 21.47' feet below \_\_\_\_\_ Is well within 80% of original well casing volume: Yes  No   
 Time: \_\_\_\_\_ 1st measured depth to water, \_\_\_\_\_ feet below \_\_\_\_\_ Is well within 80% of original well casing volume: Yes  No   
 Time: 1029 1st measured depth to water, 1029 feet below \_\_\_\_\_ Is well within 80% of original well casing volume: Yes  No

### Sample Well

Time: 1029 Sample ID: MW3 Depth: 21.47 feet below TOC  
 Comments: No Floaty Product. Very Slight Odor.

# GROUNDWATER MONITORING WELL SAMPLING INFORMATION

Project Name/No.: Harbert Transportation / H9012.0 Date: 12/20/02

Sample No.: MW.6 Sample Location: MW.6

Samplers Name: Chad TjL Recorded by: CT

Purge Equipment: X Bailer: Disposable or Acrylic  
X Whaler # 2  
 Bladder Pump  
 Submersible Pump

Sample Equipment:  
X Disposable Bailer  
 Whaler # \_\_\_\_\_  
 Bladder Pump  
 Submersible Pump

Analyses Requested (circle all that apply):  
~~TPH-gas, BTEX, MTBE, 2, 4-DCA, EDB, 8200 Fuel Oxygenates~~  
~~TPH diesel, Stoddard Solvent~~  
~~Intrinsic Bio-Parameters~~

Number and Types of Bottle Used:  
5x40mL UGA's

Well Number: MW.6 Well Diameter: 4" with Casing Volume of:  
 Depth to Water: 21.9' TOC 2" = (0.16 Gallon/Feet)  
 Well Depth: 45' BGS or TOC 4" = (0.65 Gallon/Feet)  
 Height W-Column: 23.09' feet (well depth - depth to water) 5" = (1.02 Gallon/Feet)  
 Volume in Well: 15.0085 gallons (casing volume X height) 6" = (1.47 Gallon/Feet)  
 Gallons to purge: 60.03 gallons (volume X 4) 8" = (2.61 Gallon/Feet)

Lab: Entech Transportation: Deliver

Time (24 hr.)	Volume Purged (Gallons)	Temperature (°C)	Conductivity (ms/cm)	D.O. (ppm)	pH	ORP (mV)	Turbidity: Color, Fines	Micropurge Parameters Stabilized
1042	0	17.73	0.774	0.89	8.36	291	High Dark Brown, Many Fines	
1043	2	18.25	0.744	0.62	8.37	300	Low: Clear-Brown, Minor Fines	
1045	4	18.45	0.740	0.38	8.37	327	↓ ↓ ↓	
1046	6	18.60	0.738	0.27	8.37	334	↓ ↓ ↓	
1048	8	19.69	0.735	0.26	8.38	338	↓ ↓ ↓	
1049	10	18.73	0.734	0.23	8.38	340	↓ ↓ ↓	
1056	20	18.16	0.675	0.63	8.38	332	Low: Clear, Trace Fines	
1108	38	19.00	0.738	0.15	8.34	321	↓ ↓ ↓	✓
STDP-Parameters Stabilized. Purge Complete.								

**Wait for 80% well volume recovery prior to sampling.**  
 Calculate depth to water (from TOC), for 80% well volume recovery:

Calculate 80% of original well volume:  
 Original Height of Water Column =  $23.09' \times 0.8 = 18.472'$  - (Well Depth) 45' = Depth to water 26.53'

Time: 1110 1st measured depth to water, 22.44' feet below Is well within 80% of original well casing volume: Yes  No   
 Time: 1110 1st measured depth to water, 19' feet below Is well within 80% of original well casing volume: Yes  No   
 Time: 1110 1st measured depth to water, 19' feet below Is well within 80% of original well casing volume: Yes  No

### Sample Well

Time: 1110 Sample ID: MW.6 Depth: 22.44' feet below TOC

Comments: No Floccy Product. Slight Odor.



# GROUNDWATER MONITORING WELL SAMPLING INFORMATION

Project Name/No.: Herbert Transportation / H9042.0 Date: 12/30/02  
 Sample No.: MW-10 Sample Location: MW-10

Samplers Name: Chad Tyl Recorded by: CT

**Purge Equipment:**  
 \_\_\_\_\_ Bailer: Disposable or Acrylic  
X \_\_\_\_\_ Whaler # 1  
 \_\_\_\_\_ Bladder Pump  
 \_\_\_\_\_ Submersible Pump

**Sample Equipment:**  
X \_\_\_\_\_ Disposable Bailer  
 \_\_\_\_\_ Whaler # \_\_\_\_\_  
 \_\_\_\_\_ Bladder Pump  
 \_\_\_\_\_ Submersible Pump

**Analyses Requested (circle all that apply):**  
TPH-gas BTEX MTBE 1,2-DCA FDR 8260 Fuel Oxygenates  
~~TPH-diesel~~, ~~Stoddard Solvent~~  
Intrinsic Bio. Parameters

**Number and Types of Bottle Used:**  
5x400LON's w/ HCl

**Well Number:** MW-10 **Well Diameter:** 4" with Casing Volume of:  
**Depth to Water:** 20.78' TOC 2" = (0.16 Gallon/Feet  
**Well Depth:** 40' BGS or TOC 4" = (0.65 Gallon/Feet  
**Height W-Column:** 19.22' feet (well depth - depth to water) 5" = (1.02 Gallon/Feet  
**Volume in Well:** 12.493 gallons (casing volume X height) 6" = (1.47 Gallon/Feet  
**Gallons to purge:** 49.97 gallons (volume X 4) 8" = (2.61 Gallon/Feet

Lab: Entech Transportation: Deliver

Time (24 hr.)	Volume Purged (Gallons)	Temperature (°C)	Conductivity (ms/cm)	D.O. (ppm)	pH	ORP (mV)	Turbidity: Color, Fines	Micropurge Parameters Stabilized
1135	0	17.77	1.066	1.77	8.28	340	Mod-High: Gray-Brown, Moderate Fines	
1136	2	18.14	1.014	0.65	8.24	324	Low: Clear-Gray, Minor Fines	
1137	4	18.45	0.940	0.25	8.20	294	Low: Clear, Trace Fines	
1139	6	18.60	0.931	0.17	8.20	271	↓ ↓ ↓	
1140	8	18.65	0.929	0.16	8.20	264		
1142	10	18.70	0.928	0.14	8.19	263		
1148	20	18.77	0.927	0.18	8.20	267		
1149	21	18.77	0.927	0.18	8.19	267		✓
STDP- Parameters Stabilized. Purge Complete.								

**Wait for 80% well volume recovery prior to sampling.**  
 Calculate depth to water (from TOC), for 80% well volume recovery:

Calculate 80% of original well volume:  
 Original Height of Water Column =  $19.22' \times 0.8 = 15.376'$  - (Well Depth)  $40'$  = Depth to water  $24.62'$

Time: 1151 1st measured depth to water, 20.99' feet below Is well within 80% of original well casing volume: Yes  No   
 Time: 15 1st measured depth to water, 15 feet below Is well within 80% of original well casing volume: Yes  No   
 Time: 15 1st measured depth to water, 15 feet below Is well within 80% of original well casing volume: Yes  No

### Sample Well

Time: 1151 Sample ID: MW-10 Depth: 20.99' feet below TOC

Comments: No Floaty Product, Slight Odor.

# GROUNDWATER MONITORING WELL SAMPLING INFORMATION

Project Name/No.: Harbert Transportation / H9042.Q Date: 12/30/02

Sample No.: MW-5 Sample Location: MW-5

Samplers Name: Chad Taylor Recorded by: CT

Purge Equipment: \_\_\_\_\_ Bailer: Disposable or Acrylic  
X Whaler # 3  
 \_\_\_\_\_ Bladder Pump  
 \_\_\_\_\_ Submersible Pump

Sample Equipment:  
X Disposable Bailer  
 \_\_\_\_\_ Whaler # \_\_\_\_\_  
 \_\_\_\_\_ Bladder Pump  
 \_\_\_\_\_ Submersible Pump

Analyses Requested (circle all that apply): TPH-gas, BTEX, MTBE, 1,2-DCA, EDB, 8260 Fuel Oxygenates  
TPH diesel, Stoddard Solvent  
 Intrinsic Bio. Parameters

Number and Types of Bottle Used: 5 x 40 mL W/M's w/ HCl

Well Number: MW-5 Well Diameter: 4" with Casing Volume of:  
 Depth to Water: 21.88' TOC 2" = (0.16 Gallon/Feet)  
 Well Depth: 45' BGS or TOC 4" = (0.65 Gallon/Feet)  
 Height W-Column: 23.12' feet (well depth - depth to water) 5" = (1.02 Gallon/Feet)  
 Volume in Well: 15.078 gallons (casing volume X height) 6" = (1.47 Gallon/Feet)  
 Gallons to purge: 60.11 gallons (volume X 4) 8" = (2.61 Gallon/Feet)

Lab: Futech Transportation: Deliver

Time (24 hr.)	Volume Purged (Gallons)	Temperature (°C)	Conductivity (ms/cm)	D.O. (ppm)	pH	ORP (mV)	Turbidity: Color, Fines	Micropurge Parameters Stabilized
1213	0	17.67	0.144	2.85	8.74	309	High: Dark Gray, Many Fines.	
1215	2	18.45	0.116	2.71	8.71	308	Moderate: Gray, Moderate Fines	
1216	4	18.57	0.137	2.78	8.59	311	↓ ↓ ↓	
1218	6	18.64	0.162	2.59	8.50	311		
1219	8	18.66	0.176	2.46	8.50	311		
1221	10	18.68	0.228	2.07	8.46	311		
1229	20	18.73	0.371	1.25	8.44	306		
1251	49	18.45	0.352	0.14	8.40	251	Low: Clear-Gray, Minor Fines	✓
STDP - Parameters Stabilized. Purge Complete.								

**Wait for 80% well volume recovery prior to sampling.**  
 Calculate depth to water (from TOC), for 80% well volume recovery:

Calculate 80% of original well volume:  
 Original Height of Water Column = 23.12' x 0.8 = 18.496' - (Well Depth) 45' = Depth to water 26.50'

Time: 1252 1st measured depth to water, 34.85' feet below Is well within 80% of original well casing volume: Yes \_\_\_\_\_ No   
 Time: 1255 1st measured depth to water, 30.21' feet below Is well within 80% of original well casing volume: Yes \_\_\_\_\_ No   
 Time: 1310 1st measured depth to water, 26.48' feet below Is well within 80% of original well casing volume: Yes  No \_\_\_\_\_

### Sample Well

Time: 1310 Sample ID: MW-5 Depth: 26.48' feet below TOC

Comments: No Floaty Product. Moderate Odor.

# GROUNDWATER MONITORING WELL SAMPLING INFORMATION

Project Name/No.: Harbert Transportation / H1042-Q Date: 12/30/02

Sample No.: MW-9 Sample Location: MW-9

Samplers Name: Chad Taylor Recorded by: CT

<b>Purge Equipment:</b> _____ Bailer: Disposable or Acrylic <u>X</u> _____ Whaler # <u>3</u> _____ Bladder Pump _____ Submersible Pump	<b>Sample Equipment:</b> _____ <u>X</u> _____ Disposable Bailer _____ Whaler # _____ _____ Bladder Pump _____ Submersible Pump
--	--

Analyses Requested (circle all that apply):  
TPH-gas, BTEX, MTBE, 1,2-DCA, EDB, 3260 Fuel Oxygenates  
TPH diesel, Stoddard Solvent

Number and Types of Bottle Used:  
5 x 40mL VOA's

~~Intrinsic Bio. Parameters~~

Well Number: <u>MW-9</u> Depth to Water: <u>21.09'</u> TOC Well Depth: <u>40'</u> BGS or TOC Height W-Column: <u>18.91'</u> feet (well depth - depth to water) Volume in Well: <u>12.2915</u> gallons (casing volume X height) Gallons to purge: <u>49.17</u> gallons (volume X 4)	Well Diameter: <u>4"</u> with Casing Volume of: 2" = (0.16 Gallon/Feet) 4" = (0.65 Gallon/Feet) 5" = (1.02 Gallon/Feet) 6" = (1.47 Gallon/Feet) 8" = (2.61 Gallon/Feet)
---	--

Lab: Entech Transportation: Deliver

Time (24 hr.)	Volume Purged (Gallons)	Temperature (°C)	Conductivity (ms/cm)	D.O. (ppm)	pH	ORP (mV)	Turbidity: Color, Fines	Micropurge Parameters Stabilized
1314	0	17.24	0.829	2.53	8.40	282	High: Dark Gray, Many Fines	
1315	2	18.49	0.833	0.46	8.53	253	Low: Clear-Gray, Minor Fines	
1317	4	18.87	0.691	0.11	8.61	267	↓ ↓ ↓	
1318	6	18.91	0.686	0.13	8.63	273	Low: Clear, Trace Fines	
1319	8	18.95	0.684	0.11	8.64	275	↓ ↓ ↓	
1320	10	18.98	0.681	0.10	8.63	276	↓ ↓ ↓	
1327	20	19.04	0.685	0.14	8.50	276	↓ ↓ ↓	
1329	23	19.06	0.684	0.15	8.48	276	↓ ↓ ↓	✓
STOP - Parameters Stabilized. Purge Complete.								

**Wait for 80% well volume recovery prior to sampling.**

Calculate depth to water (from TOC), for 80% well volume recovery:

Calculate 80% of original well volume:

Original Height of Water Column =  $18.91' \times 0.8 = 15.128'$  - (Well Depth) 40' = Depth to water 24.87'

Time: 1332 1st measured depth to water, 21.49' feet below  
 Time: 1332 1st measured depth to water, 21.49' feet below  
 Time: 1332 1st measured depth to water, 21.49' feet below

Is well within 80% of original well casing volume: Yes  No   
 Is well within 80% of original well casing volume: Yes  No   
 Is well within 80% of original well casing volume: Yes  No

## Sample Well

Time: 1332 Sample ID: MW-9 Depth: 21.49' feet below TOC

Comments: No Floccing Product. Moderate Odor.



**Weber, Hayes & Associates**  
Hydrogeology and Environmental Engineering  
120 Westgate Dr., Watsonville, CA 95076  
(831) 722-3580 (831) 662-3100  
Fax: (831) 722-1159

## Letter of Transmittal

**to:** Mr. Jerry Harbert  
46765 Mountain Cove Drive  
Indian Wells, California 92210

**from:** Craig Drizin

**re:** Harbert Transportation, 19984 Meekland Avenue, Hayward, California

**date:** March 27, 2003

<i>Number of Copies</i>	<i>Date of Documents</i>	<i>Description</i>
1	March 27, 2003	<i>Proposed Site Specific Cleanup Goals - Revised, Groundwater Monitoring Report - Fourth Quarter 2002</i>

**c:** Mr. Scott Seery  
Alameda County Environmental Health Services  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502 - 6577

Mr. Jeff Lawson  
Silicon Valley Law Group  
152 N. Third Street, Suite 900  
San Jose, California 95112

Ms. Laurie Berger  
905 Emerald Hill Road  
Redwood City, California 94061

Mr. Gregg Petersen  
Durham Transportation  
9011 Mountain Ridge Drive, Travis Building, Suite 200  
Austin, Texas 78759 - 7275

Mr. Chuck Headlee  
San Francisco Bay Regional Water Quality Control Board  
1515 Clay Street, Suite 1400  
Oakland, California 94612

Proposed Site Specific Cleanup Goals - *Revised*  
Groundwater Monitoring Report - Fourth Quarter 2002  
19984 Meekland Avenue, Hayward, California  
March 27, 2003

## **Appendix B**

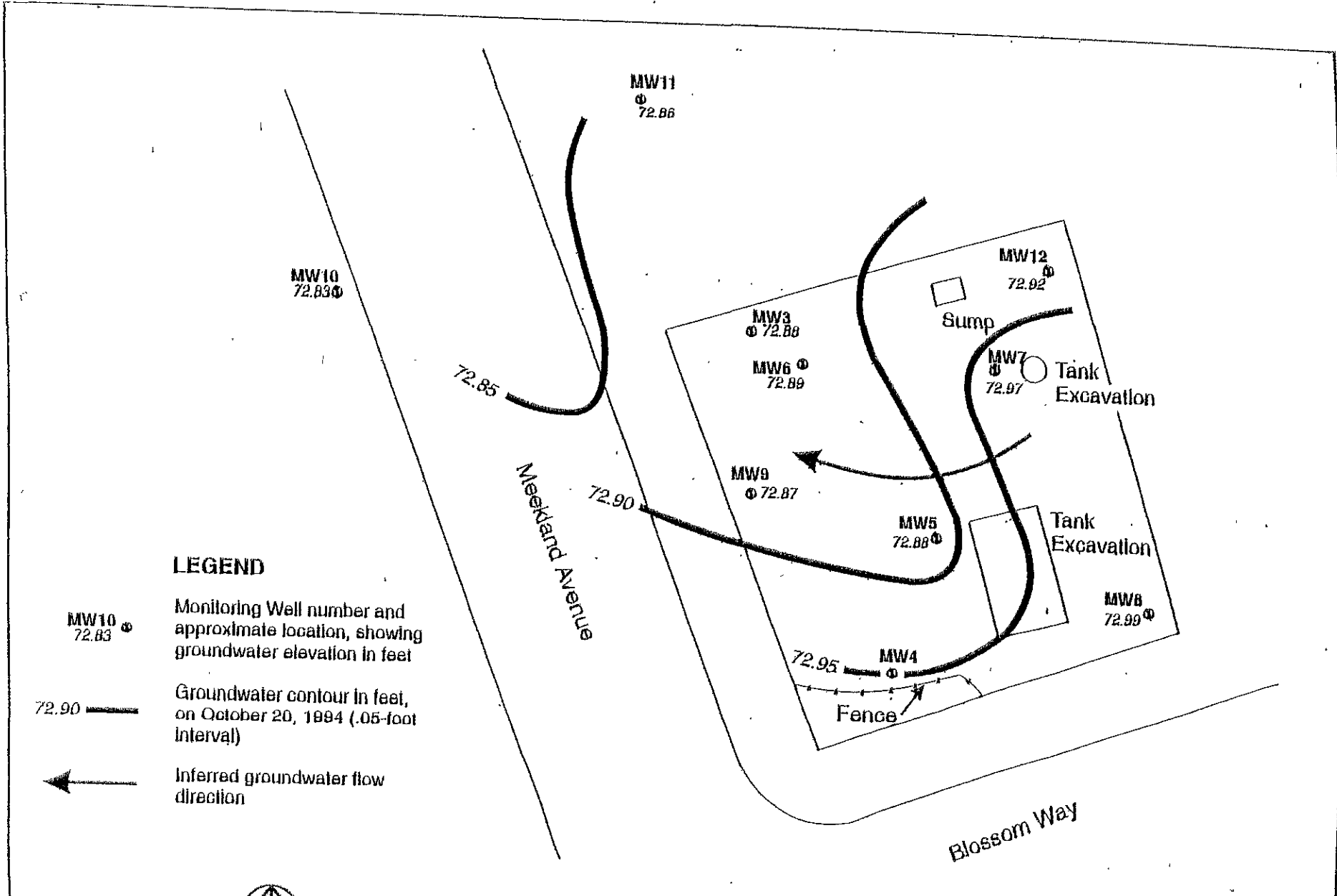
### **Summary of Historical Depth to Groundwater Measurements, Groundwater Elevations, and Groundwater Flow Direction - AGI Technologies, Inc.**

**Table 1**  
**Groundwater Elevation Data**  
Harbert Transportation/Meekland Avenue  
Hayward, California




Well Number	Date Sampled	Top of Casing Elevation (feet)	Depth to Groundwater (ft bgs)	Groundwater Elevation (feet)
MW3	10/20/94	100.00	27.12	72.88
	09/15/95		24.22	75.78
	03/14/96		19.02	80.98
	09/26/96		23.61	76.39
MW4	10/20/94	100.27	27.32	72.95
	09/15/95		24.42	75.85
	03/14/96		19.23	81.04
	09/26/96		23.85	76.42
MW5	10/20/94	100.59	27.71	72.88
	09/15/95		24.87	75.72
	03/14/96		19.95	80.64
	09/26/96		24.38	76.21
MW6	10/20/94	100.57	27.68	72.89
	09/15/95		24.79	75.78
	03/14/96		19.54	81.03
	09/26/96		24.20	76.37
MW7	10/20/94	101.22	28.25	72.97
	09/15/95		25.35	75.87
	03/14/96		20.06	81.16
	09/26/96		24.75	76.47
MW8	10/20/94	100.72	27.73	72.99
	09/15/95		24.81	75.91
	03/14/96		19.52	81.20
	09/26/96		24.13	76.59
MW9	10/20/94	99.77	26.90	72.87
	09/15/95		24.01	75.76
	03/14/96		18.80	80.97
	09/26/96		23.50	76.27
MW10	10/20/94	99.29	26.46	72.83
	09/15/95		23.79	75.50
	03/14/96		18.62	80.67
	09/26/96		23.30	75.99
MW11	10/20/94	99.75	26.89	72.86
	09/15/95		24.05	75.70
	03/15/96		18.79	80.96
	09/26/96		23.53	76.22
MW12	10/20/94	101.03	28.11	72.92
	09/15/95		25.19	75.84
	03/14/96		19.84	81.19
	09/26/96		24.57	76.46

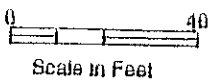
Note:

ft bgs - Feet below ground surface.



**LEGEND**

- MW10 72.83  Monitoring Well number and approximate location, showing groundwater elevation in feet
- 72.90  Groundwater contour in feet, on October 20, 1994 (.05-foot interval)
-  Inferred groundwater flow direction

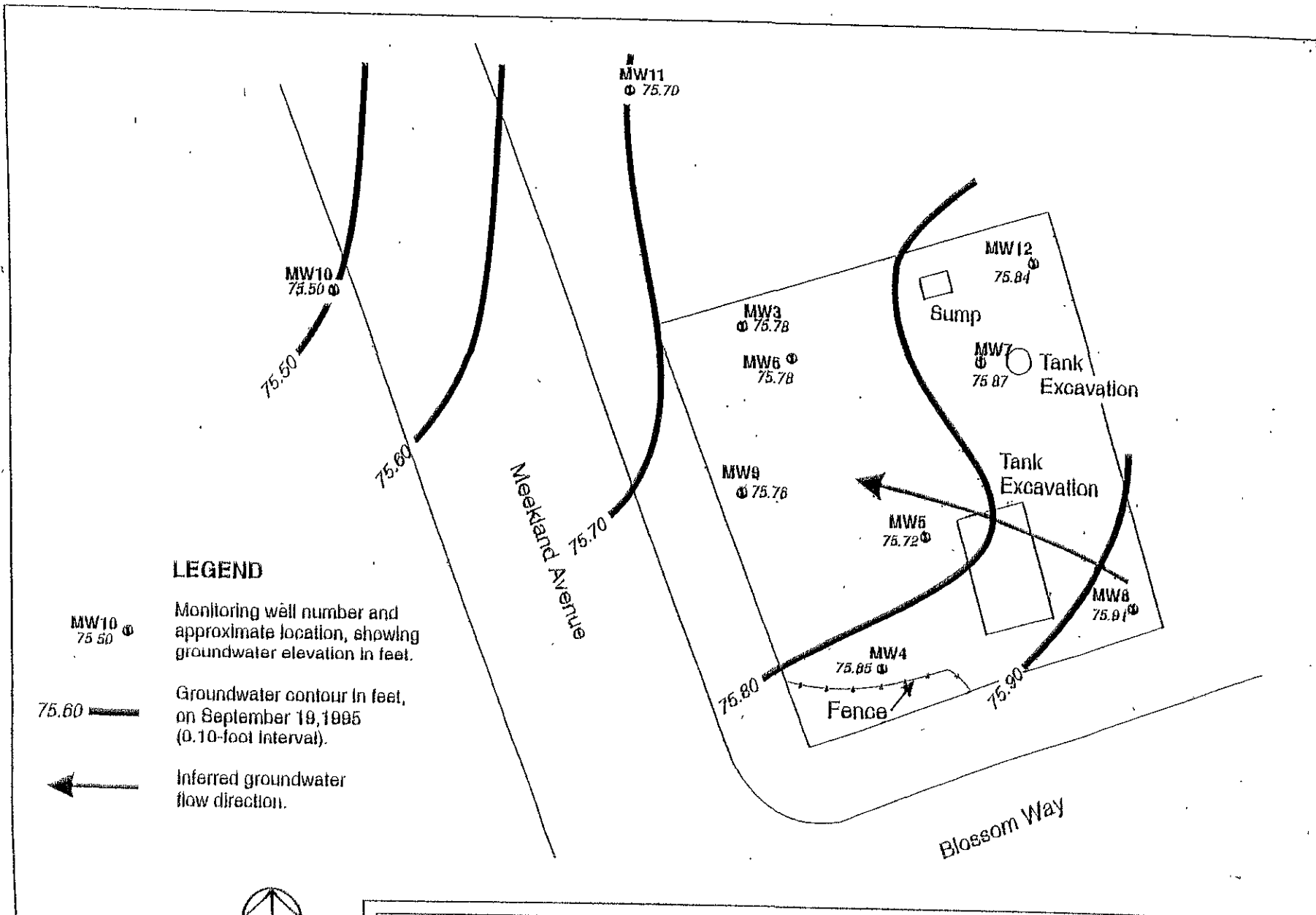


**AGI**  
TECHNOLOGIES




**Groundwater Elevation and Contour Map** 10/20/94  
Harbert Transportation/Meekland Avenue  
Hayward, California

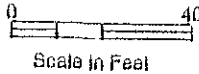
FIGURE  
**3**

PROJECT NO. \_\_\_\_\_ DRAWN \_\_\_\_\_ DATE \_\_\_\_\_ APPROVED \_\_\_\_\_



**LEGEND**

- MW10 75.50  Monitoring well number and approximate location, showing groundwater elevation in feet.
- 75.60  Groundwater contour in feet, on September 19, 1995 (0.10-foot interval).
-  Inferred groundwater flow direction.



**AGI**  
TECHNOLOGIES

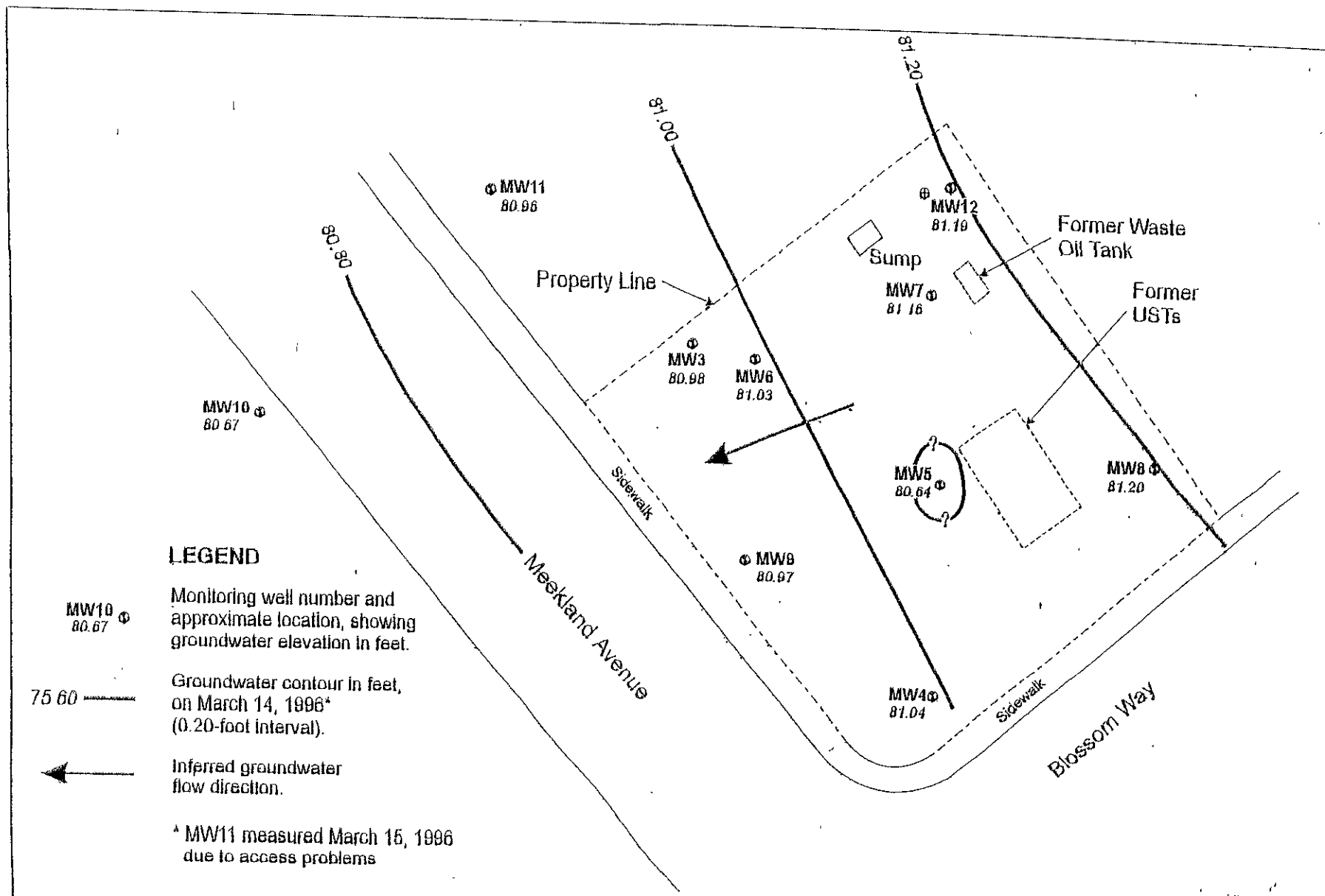
**Groundwater Elevation and Contour Map**  
Harbert Transportation/Meekland Avenue  
Hayward, California

9.19.95 FIGURE

**3**

PROJECT NO. \_\_\_\_\_ DRAWN \_\_\_\_\_ DATE \_\_\_\_\_ APPROVED \_\_\_\_\_





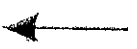
**LEGEND**

MW10  
80.67

Monitoring well number and approximate location, showing groundwater elevation in feet.

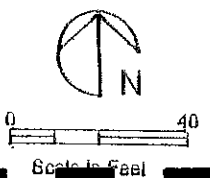
75 60

Groundwater contour in feet, on March 14, 1996\* (0.20-foot interval).



Inferred groundwater flow direction.

\* MW11 measured March 15, 1996 due to access problems



**AGI**  
TECHNOLOGIES

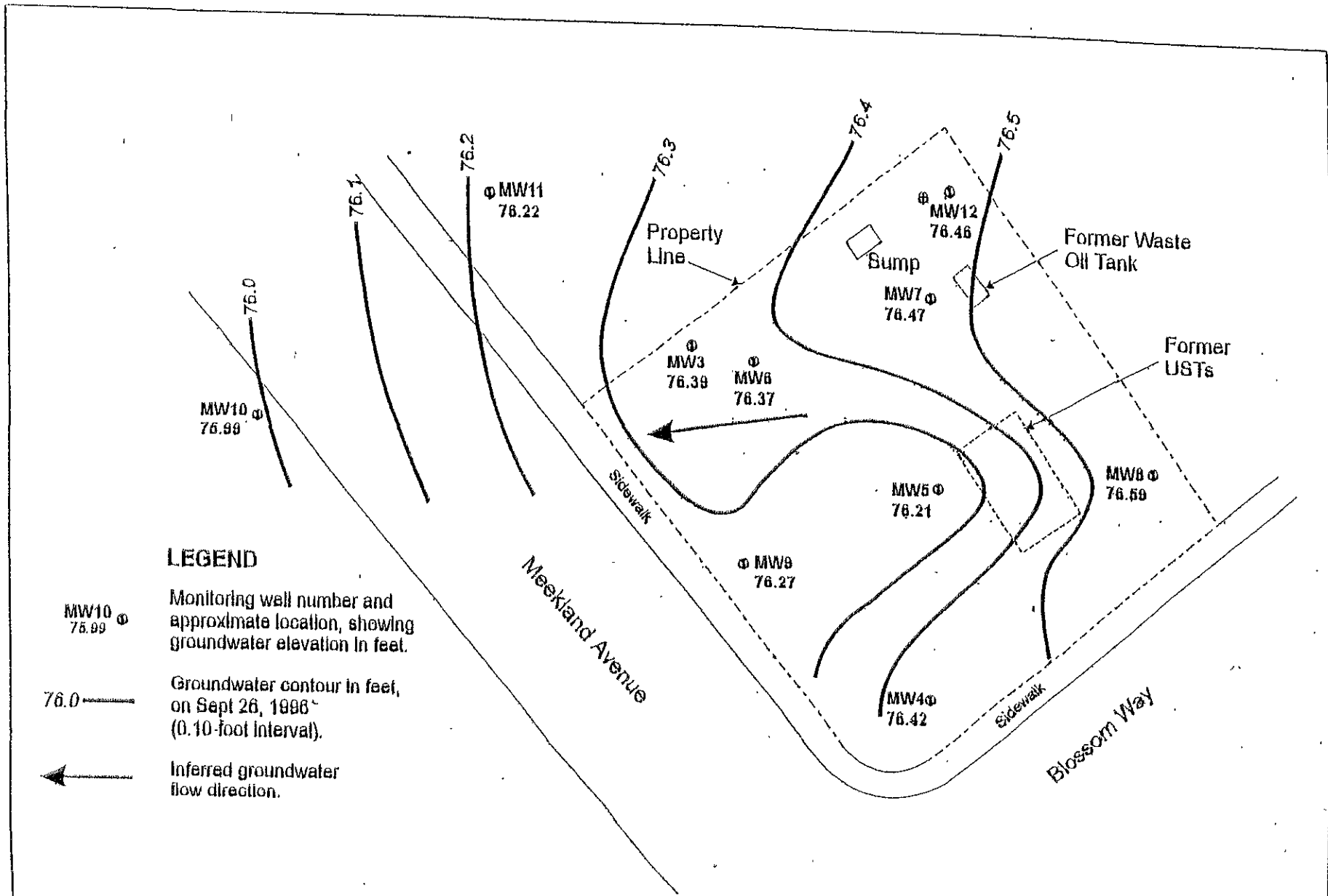
**Groundwater Elevation and Contour Map**

Harbert Transportation/Meekland Avenue  
Hayward, California

FIGURE

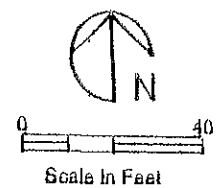
3.14.96

**3**



**LEGEND**

- MW10  
76.99
- Monitoring well number and approximate location, showing groundwater elevation in feet.
- 76.0
- Groundwater contour in feet, on Sept 26, 1986 (0.10-foot interval).
- ←
- Inferred groundwater flow direction.



<b>AGI</b> TECHNOLOGIES <small>nw@sen98.cdi</small>	<b>Groundwater Elevation and Contour Map</b>		FIGURE
	Harbert Transportation/Meekland Avenue Hayward, California		<b>3</b>
PROJECT NO. 16 933 009	DRAWN <small>DCP</small>	DATE	APPROVED <small>_____</small>
			REVISOR <small>_____</small>

9.26.96

Proposed Site Specific Cleanup Goals - *Revised*  
Groundwater Monitoring Report - Fourth Quarter 2002  
19984 Meekland Avenue, Hayward, California  
March 27, 2003

## **Appendix C**

### **Certified Analytical Report - Groundwater Samples**

# Entech Analytical Labs, Inc.

3334 Victor Court • Santa Clara, CA 95054 • (408) 588-0200 • Fax (408) 588-0201

January 07, 2003

Chad Taylor  
Weber, Hayes and Associates  
120 Westgate Drive  
Watsonville, CA 95076

<b>Order:</b> 32738	<b>Date Collected:</b> 12/30/02
<b>Project Name:</b> Harbert Transportation	<b>Date Received:</b> 12/30/02
<b>Project Number:</b> H9042.Q	<b>P.O. Number:</b> H9042.Q
<b>Project Notes:</b>	

On December 30, 2002, samples were received under documented chain of custody. Results for the following analyses are attached:

<u>Matrix</u>	<u>Test</u>	<u>Method</u>
Liquid	EDF Deliverables	EDF
	Gas/BTEX/MTBE	EPA 8015 MOD (Purgeable)
		EPA 8020
	MTBE by EPA 8260B	EPA 8260B
	PDF	PDF

Chemical analysis of these samples has been completed. Summaries of the data are contained on the following pages. USEPA protocols for sample storage and preservation were followed.

Entech Analytical Labs, Inc. is certified by the State of California (#2346). If you have any questions regarding procedures or results, please call me at 408-588-0200.

Sincerely,



Patti Sandrock  
QA/QC Manager

# Entech Analytical Labs, Inc.

3334 Victor Court • Santa Clara, CA 95054 • (408) 588-0200 • Fax (408) 588-0201

Weber, Hayes and Associates  
 120 Westgate Drive  
 Watsonville, CA 95076  
 Attn: Chad Taylor

Date: 1/7/03  
 Date Received: 12/30/02  
 Project Name: Harbert Transportation  
 Project Number: H9042.Q  
 P.O. Number: H9042.Q  
 Sampled By: Chad Taylor

## Certified Analytical Report

Order ID: 32738      Lab Sample ID: 32738-001      Client Sample ID: MW-3  
 Sample Time: 10:29 AM      Sample Date: 12/30/02      Matrix: Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Benzene	ND		1	0.5	0.5	µg/L	N/A	01/03/03	WGC42710	EPA 8020
Toluene	ND		1	0.5	0.5	µg/L	N/A	01/03/03	WGC42710	EPA 8020
Ethyl Benzene	2.1		1	0.5	0.5	µg/L	N/A	01/03/03	WGC42710	EPA 8020
Xylenes, Total	ND		1	1	1	µg/L	N/A	01/03/03	WGC42710	EPA 8020

Surrogate      Surrogate Recovery      Control Limits (%)  
 4-Bromofluorobenzene      113.1      65 - 135

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Methyl-t-butyl Ether	ND		1	1	1	µg/L	N/A	01/06/03	WMS11867	EPA 8260B

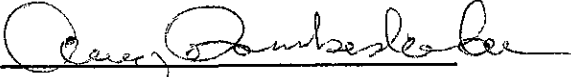
Surrogate      Surrogate Recovery      Control Limits (%)  
 4-Bromofluorobenzene      117.0      73 - 151  
 Dibromofluoromethane      108.0      57 - 156  
 Toluene-d8      116.0      77 - 150

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Gasoline	70		1	50	50	µg/L	N/A	01/03/03	WGC42710	EPA 8015 MOD (Purgeable)

Surrogate      Surrogate Recovery      Control Limits (%)  
 4-Bromofluorobenzene      122.3      65 - 135

DF = Dilution Factor      ND = Not Detected      DLR = Detection Limit Reported      PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)

  
 Patti Sandrock, QA/QC Manager

Environmental Analysis Since 1983

# Entech Analytical Labs, Inc.

3334 Victor Court • Santa Clara, CA 95054 • (408) 588-0200 • Fax (408) 588-0201

Weber, Hayes and Associates  
120 Westgate Drive  
Watsonville, CA 95076  
Attn: Chad Taylor

Date: 1/7/03  
Date Received: 12/30/02  
Project Name: Harbert Transportation  
Project Number: H9042.Q  
P.O. Number: H9042.Q  
Sampled By: Chad Taylor

## Certified Analytical Report

Order ID: 32738

Lab Sample ID: 32738-002

Client Sample ID: MW-4

Sample Time: 8:17 AM

Sample Date: 12/30/02

Matrix: Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Benzene	ND		1	0.5	0.5	µg/L	N/A	01/02/03	WGC42710	EPA 8020
Toluene	ND		1	0.5	0.5	µg/L	N/A	01/02/03	WGC42710	EPA 8020
Ethyl Benzene	ND		1	0.5	0.5	µg/L	N/A	01/02/03	WGC42710	EPA 8020
Xylenes, Total	ND		1	1	1	µg/L	N/A	01/02/03	WGC42710	EPA 8020
				Surrogate		Surrogate Recovery		Control Limits (%)		
				4-Bromofluorobenzene		99.1		65 - 135		
Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Methyl-t-butyl Ether	ND		1	1	1	µg/L	N/A	01/02/03	WGC42710	EPA 8020
				Surrogate		Surrogate Recovery		Control Limits (%)		
				4-Bromofluorobenzene		99.1		65 - 135		
Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Gasoline	ND		1	50	50	µg/L	N/A	01/02/03	WGC42710	EPA 8015 MOD. (Purgeable)
				Surrogate		Surrogate Recovery		Control Limits (%)		
				4-Bromofluorobenzene		91.9		65 - 135		

DF = Dilution Factor

ND = Not Detected

DLR = Detection Limit Reported

PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)

Patti Sandrock, QA/QC Manager

Environmental Analysis Since 1983

# Entech Analytical Labs, Inc.

3334 Victor Court • Santa Clara, CA 95054 • (408) 588-0200 • Fax (408) 588-0201

Weber, Hayes and Associates  
120 Westgate Drive  
Watsonville, CA 95076  
Attn: Chad Taylor

Date: 1/7/03  
Date Received: 12/30/02  
Project Name: Harbert Transportation  
Project Number: H9042.Q  
P.O. Number: H9042.Q  
Sampled By: Chad Taylor

## Certified Analytical Report

Order ID: 32738      Lab Sample ID: 32738-003      Client Sample ID: MW-5  
Sample Time: 1:10 PM      Sample Date: 12/30/02      Matrix: Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Benzene	5.8		1	0.5	0.5	µg/L	N/A	01/02/03	WGC42710	EPA 8020
Toluene	1.0		1	0.5	0.5	µg/L	N/A	01/02/03	WGC42710	EPA 8020
Ethyl Benzene	9.9		1	0.5	0.5	µg/L	N/A	01/02/03	WGC42710	EPA 8020
Xylenes, Total	5.9		1	1	1	µg/L	N/A	01/02/03	WGC42710	EPA 8020

Surrogate      Surrogate Recovery      Control Limits (%)  
4-Bromofluorobenzene      103.0      65 - 135

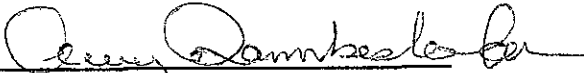
Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Methyl-t-butyl Ether	ND		1	1	1	µg/L	N/A	01/06/03	WMS11867	EPA 8260B

Surrogate      Surrogate Recovery      Control Limits (%)  
4-Bromofluorobenzene      106.0      73 - 151  
Dibromofluoromethane      103.0      57 - 156  
Toluene-d8      113.0      77 - 150

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Gasoline	130		1	50	50	µg/L	N/A	01/02/03	WGC42710	EPA 8015 MOD. (Purgeable)

Surrogate      Surrogate Recovery      Control Limits (%)  
4-Bromofluorobenzene      108.6      65 - 135

DF = Dilution Factor      ND = Not Detected      DLR = Detection Limit Reported      PQL = Practical Quantitation Limit  
Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)

  
Patti Sandrock, QA/QC Manager

Environmental Analysis Since 1983

# Entech Analytical Labs, Inc.

3334 Victor Court • Santa Clara, CA 95054 • (408) 588-0200 • Fax (408) 588-0201

Weber, Hayes and Associates  
120 Westgate Drive  
Watsonville, CA 95076  
Attn: Chad Taylor

Date: 1/7/03  
Date Received: 12/30/02  
Project Name: Harbert Transportation  
Project Number: H9042.Q  
P.O. Number: H9042.Q  
Sampled By: Chad Taylor

## Certified Analytical Report

Order ID: 32738

Lab Sample ID: 32738-004

Client Sample ID: MW-6

Sample Time: 11:10 AM

Sample Date: 12/30/02

Matrix: Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Benzene	2.5		2.5	0.5	1.25	µg/L	N/A	01/02/03	WGC42710	EPA 8020
Toluene	ND		2.5	0.5	1.25	µg/L	N/A	01/02/03	WGC42710	EPA 8020
Ethyl Benzene	29		2.5	0.5	1.25	µg/L	N/A	01/02/03	WGC42710	EPA 8020
Xylenes, Total	2.7		2.5	1	2.5	µg/L	N/A	01/02/03	WGC42710	EPA 8020

### Surrogate

### Surrogate Recovery

### Control Limits (%)

4-Bromofluorobenzene

139.9

65 - 135

aaa-Trifluorotoluene

93.1

65 - 135

Comment: High surrogate recovery for 4-BFB due to matrix interference. See TFT results.

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Methyl-t-butyl Ether	ND		2	1	2	µg/L	N/A	01/06/03	WMS11867	EPA 8260B

### Surrogate

### Surrogate Recovery

### Control Limits (%)

4-Bromofluorobenzene

104.0

73 - 151

Dibromofluoromethane

111.0

57 - 156

Toluene-d8

111.0

77 - 150

Comment: Sample diluted due to high concentrations of non-target compounds.

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Gasoline	670		2.5	50	125	µg/L	N/A	01/02/03	WGC42710	EPA 8015 MOD. (Purgeable)

### Surrogate

### Surrogate Recovery

### Control Limits (%)

4-Bromofluorobenzene

183.5

65 - 135

aaa-Trifluorotoluene

105.0

65 - 135

Comment: High surrogate recovery for 4-BFB due to matrix interference. See TFT results.

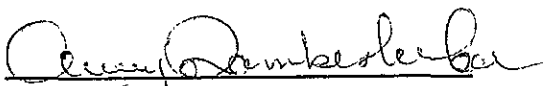
DF = Dilution Factor

ND = Not Detected

DLR = Detection Limit Reported

PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)



Patti Sandrock, QA/QC Manager

Environmental Analysis Since 1983



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Weber, Hayes and Associates  
 120 Westgate Drive  
 Watsonville, CA 95076  
 Attn: Chad Taylor

Date: 1/7/03  
 Date Received: 12/30/02  
 Project Name: Harbert Transportation  
 Project Number: H9042.Q  
 P.O. Number: H9042.Q  
 Sampled By: Chad Taylor

## Certified Analytical Report

Order ID: 32738

Lab Sample ID: 32738-005

Client Sample ID: MW-7

Sample Time: 9:20 AM

Sample Date: 12/30/02

Matrix: Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Benzene	ND		1	0.5	0.5	µg/L	N/A	01/02/03	WGC42710	EPA 8020
Toluene	ND		1	0.5	0.5	µg/L	N/A	01/02/03	WGC42710	EPA 8020
Ethyl Benzene	ND		1	0.5	0.5	µg/L	N/A	01/02/03	WGC42710	EPA 8020
Xylenes, Total	ND		1	1	1	µg/L	N/A	01/02/03	WGC42710	EPA 8020
			<b>Surrogate</b>				<b>Surrogate Recovery</b>		<b>Control Limits (%)</b>	
			4-Bromofluorobenzene				97.3		65 - 135	
Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Methyl-t-butyl Ether	ND		1	1	1	µg/L	N/A	01/06/03	WMS11867	EPA 8260B
			<b>Surrogate</b>				<b>Surrogate Recovery</b>		<b>Control Limits (%)</b>	
			4-Bromofluorobenzene				115.0		73 - 151	
			Dibromofluoromethane				112.0		57 - 156	
			Toluene-d8				120.0		77 - 150	
Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Gasoline	ND		1	50	50	µg/L	N/A	01/02/03	WGC42710	EPA 8015 MOD (Purgeable)
			<b>Surrogate</b>				<b>Surrogate Recovery</b>		<b>Control Limits (%)</b>	
			4-Bromofluorobenzene				95.2		65 - 135	

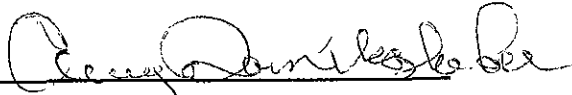
DF = Dilution Factor

ND = Not Detected

DLR = Detection Limit Reported

PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc (CA ELAP #2346)

  
 Patti Sandroek, QA/QC Manager

Environmental Analysis Since 1983

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Weber, Hayes and Associates  
 120 Westgate Drive  
 Watsonville, CA 95076  
 Attn: Chad Taylor

Date: 1/7/03  
 Date Received: 12/30/02  
 Project Name: Harbert Transportation  
 Project Number: H9042.Q  
 P.O. Number: H9042.Q  
 Sampled By: Chad Taylor

## Certified Analytical Report

Order ID: 32738

Lab Sample ID: 32738-006

Client Sample ID: MW-8

Sample Time: 7:54 AM

Sample Date: 12/30/02

Matrix: Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Benzene	ND		1	0.5	0.5	µg/L	N/A	01/02/03	WGC42710	EPA 8020
Toluene	ND		1	0.5	0.5	µg/L	N/A	01/02/03	WGC42710	EPA 8020
Ethyl Benzene	ND		1	0.5	0.5	µg/L	N/A	01/02/03	WGC42710	EPA 8020
Xylenes, Total	ND		1	1	1	µg/L	N/A	01/02/03	WGC42710	EPA 8020

<b>Surrogate</b>	<b>Surrogate Recovery</b>	<b>Control Limits (%)</b>
4-Bromofluorobenzene	98.9	65 - 135

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Methyl-t-butyl Ether	ND		1	1	1	µg/L	N/A	01/06/03	WMS11867	EPA 8260B


<b>Surrogate</b>	<b>Surrogate Recovery</b>	<b>Control Limits (%)</b>
4-Bromofluorobenzene	113.0	73 - 151
Dibromofluoromethane	114.0	57 - 156
Toluene-d8	120.0	77 - 150

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Gasoline	ND		1	50	50	µg/L	N/A	01/02/03	WGC42710	EPA 8015 MOD. (Purgeable)

<b>Surrogate</b>	<b>Surrogate Recovery</b>	<b>Control Limits (%)</b>
4-Bromofluorobenzene	92.4	65 - 135

DF = Dilution Factor      ND = Not Detected      DLR = Detection Limit Reported      PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)

  
 Patti Sandrock, QA/QC Manager

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Weber, Hayes and Associates  
120 Westgate Drive  
Watsonville, CA 95076  
Attn: Chad Taylor

Date: 1/7/03  
Date Received: 12/30/02  
Project Name: Harbert Transportation  
Project Number: H9042.Q  
P.O. Number: H9042.Q  
Sampled By: Chad Taylor

## Certified Analytical Report

Order ID: 32738

Lab Sample ID: 32738-007

Client Sample ID: MW-9

Sample Time: 1:32 PM

Sample Date: 12/30/02

Matrix: Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Benzene	140		10	0.5	5	µg/L	N/A	01/02/03	WGC42710	EPA 8020
Toluene	25		10	0.5	5	µg/L	N/A	01/02/03	WGC42710	EPA 8020
Ethyl Benzene	200		10	0.5	5	µg/L	N/A	01/02/03	WGC42710	EPA 8020
Xylenes, Total	370		10	1	10	µg/L	N/A	01/02/03	WGC42710	EPA 8020
Surrogate							Surrogate Recovery		Control Limits (%)	
4-Bromofluorobenzene							114.1		65 - 135	
Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Methyl-t-butyl Ether	ND		1	1	1	µg/L	N/A	01/07/03	WMS21868	EPA 8260B
Surrogate							Surrogate Recovery		Control Limits (%)	
4-Bromofluorobenzene							98.5		73 - 151	
Dibromofluoromethane							101.8		57 - 156	
Toluene-d8							104.2		77 - 150	
Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Gasoline	2800		10	50	500	µg/L	N/A	01/02/03	WGC42710	EPA 8015 MOD. (Purgeable)
Surrogate							Surrogate Recovery		Control Limits (%)	
4-Bromofluorobenzene							122.4		65 - 135	

DF = Dilution Factor

ND = Not Detected

DLR = Detection Limit Reported

PQL = Practical Quantitation Limit

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Weber, Hayes and Associates  
 120 Westgate Drive  
 Watsonville, CA 95076  
 Attn: Chad Taylor

Date: 1/7/03  
 Date Received: 12/30/02  
 Project Name: Harbert Transportation  
 Project Number: H9042.Q  
 P.O. Number: H9042.Q  
 Sampled By: Chad Taylor

## Certified Analytical Report

Order ID: 32738

Lab Sample ID: 32738-008

Client Sample ID: MW-10

Sample Time: 11:51 AM

Sample Date: 12/30/02

Matrix: Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Benzene	5.6		10	0.5	5	µg/L	N/A	01/02/03	WGC42710	EPA 8020
Toluene	ND		10	0.5	5	µg/L	N/A	01/02/03	WGC42710	EPA 8020
Ethyl Benzene	ND		10	0.5	5	µg/L	N/A	01/02/03	WGC42710	EPA 8020
Xylenes, Total	ND		10	1	10	µg/L	N/A	01/02/03	WGC42710	EPA 8020
			Surrogate			Surrogate Recovery			Control Limits (%)	
			4-Bromofluorobenzene			109.0			65 - 135	
Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Methyl-t-butyl Ether	ND		1	1	1	µg/L	N/A	01/07/03	WMS21868	EPA 8260B
			Surrogate			Surrogate Recovery			Control Limits (%)	
			4-Bromofluorobenzene			101.9			73 - 151	
			Dibromofluoromethane			102.5			57 - 156	
			Toluene-d8			103.9			77 - 150	
Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Gasoline	1200		10	50	500	µg/L	N/A	01/02/03	WGC42710	EPA 8015 MOD. (Purgeable)
			Surrogate			Surrogate Recovery			Control Limits (%)	
			4-Bromofluorobenzene			100.0			65 - 135	

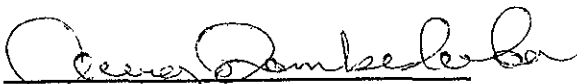
DF = Dilution Factor

ND = Not Detected

DLR = Detection Limit Reported

PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)



Patti Sandrock, QA/QC Manager

Environmental Analysis Since 1983

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Weber, Hayes and Associates  
120 Westgate Drive  
Watsonville, CA 95076  
Attn: Chad Taylor

Date: 1/7/03  
Date Received: 12/30/02  
Project Name: Harbert Transportation  
Project Number: H9042.Q  
P.O. Number: H9042.Q  
Sampled By: Chad Taylor

## Certified Analytical Report

Order ID: 32738

Lab Sample ID: 32738-009

Client Sample ID: MW-11

Sample Time: 9:58 AM

Sample Date: 12/30/02

Matrix: Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Benzene	ND		1	0.5	0.5	µg/L	N/A	01/03/03	WGC42711	EPA 8020
Toluene	ND		1	0.5	0.5	µg/L	N/A	01/03/03	WGC42711	EPA 8020
Ethyl Benzene	ND		1	0.5	0.5	µg/L	N/A	01/03/03	WGC42711	EPA 8020
Xylenes, Total	ND		1	1	1	µg/L	N/A	01/03/03	WGC42711	EPA 8020

Surrogate

Surrogate Recovery

Control Limits (%)

4-Bromofluorobenzene

95.1

65 - 135

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Methyl-t-butyl Ether	ND		1	1	1	µg/L	N/A	01/03/03	WGC42711	EPA 8020

Surrogate

Surrogate Recovery

Control Limits (%)

4-Bromofluorobenzene

95.1

65 - 135

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Gasoline	ND		1	50	50	µg/L	N/A	01/03/03	WGC42711	EPA 8015 MOD. (Purgeable)

Surrogate

Surrogate Recovery

Control Limits (%)

4-Bromofluorobenzene

94.1

65 - 135

DF = Dilution Factor

ND = Not Detected

DLR = Detection Limit Reported

PQL = Practical Quantitation Limit

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Environmental Analysis Since 1983

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Weber, Hayes and Associates  
120 Westgate Drive  
Watsonville, CA 95076  
Attn: Chad Taylor

Date: 1/7/03  
Date Received: 12/30/02  
Project Name: Harbert Transportation  
Project Number: H9042.Q  
P.O. Number: H9042.Q  
Sampled By: Chad Taylor

## Certified Analytical Report

Order ID: 32738

Lab Sample ID: 32738-010

Client Sample ID: MW-12

Sample Time: 8:48 AM

Sample Date: 12/30/02

Matrix: Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Benzene	ND		1	0.5	0.5	µg/L	N/A	01/03/03	WGC42711	EPA 8020
Toluene	ND		1	0.5	0.5	µg/L	N/A	01/03/03	WGC42711	EPA 8020
Ethyl Benzene	ND		1	0.5	0.5	µg/L	N/A	01/03/03	WGC42711	EPA 8020
Xylenes, Total	ND		1	1	1	µg/L	N/A	01/03/03	WGC42711	EPA 8020

### Surrogate

### Surrogate Recovery

### Control Limits (%)

4-Bromofluorobenzene

98.7

65 - 135

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Methyl-t-butyl Ether	ND		1	1	1	µg/L	N/A	01/03/03	WGC42711	EPA 8020

### Surrogate

### Surrogate Recovery

### Control Limits (%)

4-Bromofluorobenzene

98.7

65 - 135

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Gasoline	ND		1	50	50	µg/L	N/A	01/03/03	WGC42711	EPA 8015 MOD (Purgeable)

### Surrogate

### Surrogate Recovery

### Control Limits (%)

4-Bromofluorobenzene

97.4

65 - 135

DF = Dilution Factor

ND = Not Detected

DLR = Detection Limit Reported

PQL = Practical Quantitation Limit

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Environmental Analysis Since 1983

# Entech Analytical Labs, Inc.

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## Quality Control Results Summary

QC Batch #: WGC42710  
Matrix: Liquid

Units: µg/L  
Date Analyzed: 01/02/03

Parameter	Method	Blank Result	Spike Sample ID	Spike Amount	Sample Result	Spike Result	QC Type	% Recovery	RPD	RPD Limits	Recovery Limits
<b>Test: TPH as Gasoline</b>											
TPH as Gasoline	EPA 8015 M	ND		250		250.6	LCS	100.2			65.0 - 135.0
			<b>Surrogate</b>		<b>Surrogate Recovery</b>		<b>Control Limits (%)</b>				
			4-Bromofluorobenzene		79.5		65 - 135				
<b>Test: BTEX</b>											
Benzene	EPA 8020	ND		8		7.36	LCS	92.0			65.0 - 135.0
Ethyl Benzene	EPA 8020	ND		8		7.61	LCS	95.1			65.0 - 135.0
Toluene	EPA 8020	ND		8		7.87	LCS	98.4			65.0 - 135.0
Xylenes, total	EPA 8020	ND		24		23.2	LCS	96.7			65.0 - 135.0
			<b>Surrogate</b>		<b>Surrogate Recovery</b>		<b>Control Limits (%)</b>				
			4-Bromofluorobenzene		99.5		65 - 135				
<b>Test: MTBE by EPA 8020</b>											
Methyl-t-butyl Ether	EPA 8020	ND		8		7.04	LCS	88.0			65.0 - 135.0
			<b>Surrogate</b>		<b>Surrogate Recovery</b>		<b>Control Limits (%)</b>				
			4-Bromofluorobenzene		99.5		65 - 135				
<b>Test: TPH as Gasoline</b>											
TPH as Gasoline	EPA 8015 M	ND		250		252.8	LCSD	101.1	0.87	25.00	65.0 - 135.0
			<b>Surrogate</b>		<b>Surrogate Recovery</b>		<b>Control Limits (%)</b>				
			4-Bromofluorobenzene		89.8		65 - 135				
<b>Test: BTEX</b>											
Benzene	EPA 8020	ND		8		8.0	LCSD	100.0	8.33	25.00	65.0 - 135.0
Ethyl Benzene	EPA 8020	ND		8		8.3	LCSD	103.8	8.67	25.00	65.0 - 135.0
Toluene	EPA 8020	ND		8		7.81	LCSD	97.6	0.77	25.00	65.0 - 135.0
Xylenes, total	EPA 8020	ND		24		24.8	LCSD	103.3	6.67	25.00	65.0 - 135.0
			<b>Surrogate</b>		<b>Surrogate Recovery</b>		<b>Control Limits (%)</b>				
			4-Bromofluorobenzene		101.8		65 - 135				
<b>Test: MTBE by EPA 8020</b>											
Methyl-t-butyl Ether	EPA 8020	ND		8		7.45	LCSD	93.1	5.66	25.00	65.0 - 135.0
			<b>Surrogate</b>		<b>Surrogate Recovery</b>		<b>Control Limits (%)</b>				
			4-Bromofluorobenzene		101.8		65 - 135				

# Entech Analytical Labs, Inc.

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## Quality Control Results Summary

QC Batch #: WGC42711  
 Matrix: Liquid

Units: µg/L  
 Date Analyzed: 01/03/03

Parameter	Method	Blank Result	Spike Sample ID	Spike Amount	Sample Result	Spike Result	QC Type	% Recovery	RPD	RPD Limits	Recovery Limits
<b>Test: TPH as Gasoline</b>											
TPH as Gasoline	EPA 8015 M	ND		250		262.	LCS	104.8			65.0 - 135.0
			<b>Surrogate</b>		<b>Surrogate Recovery</b>		<b>Control Limits (%)</b>				
			4-Bromofluorobenzene		78.8		65 - 135				
<b>Test: BTEX</b>											
Benzene	EPA 8020	ND		8		8.07	LCS	100.9			65.0 - 135.0
Ethyl Benzene	EPA 8020	ND		8		8.46	LCS	105.8			65.0 - 135.0
Toluene	EPA 8020	ND		8		8.95	LCS	111.9			65.0 - 135.0
Xylenes, total	EPA 8020	ND		24		26.	LCS	108.3			65.0 - 135.0
			<b>Surrogate</b>		<b>Surrogate Recovery</b>		<b>Control Limits (%)</b>				
			4-Bromofluorobenzene		98.8		65 - 135				
<b>Test: MTBE by EPA 8020</b>											
Methyl-t-butyl Ether	EPA 8020	ND		8		7.34	LCS	91.8			65.0 - 135.0
			<b>Surrogate</b>		<b>Surrogate Recovery</b>		<b>Control Limits (%)</b>				
			4-Bromofluorobenzene		98.8		65 - 135				
<b>Test: TPH as Gasoline</b>											
TPH as Gasoline	EPA 8015 M	ND		250		284.2	LCSD	113.7	8.13	25.00	65.0 - 135.0
			<b>Surrogate</b>		<b>Surrogate Recovery</b>		<b>Control Limits (%)</b>				
			4-Bromofluorobenzene		79.5		65 - 135				
<b>Test: BTEX</b>											
Benzene	EPA 8020	ND		8		8.83	LCSD	110.4	8.99	25.00	65.0 - 135.0
Ethyl Benzene	EPA 8020	ND		8		9.17	LCSD	114.6	8.05	25.00	65.0 - 135.0
Toluene	EPA 8020	ND		8		9.53	LCSD	119.1	6.28	25.00	65.0 - 135.0
Xylenes, total	EPA 8020	ND		24		27.8	LCSD	115.8	6.69	25.00	65.0 - 135.0
			<b>Surrogate</b>		<b>Surrogate Recovery</b>		<b>Control Limits (%)</b>				
			4-Bromofluorobenzene		99.9		65 - 135				
<b>Test: MTBE by EPA 8020</b>											
Methyl-t-butyl Ether	EPA 8020	ND		8		8.31	LCSD	103.9	12.40	25.00	65.0 - 135.0
			<b>Surrogate</b>		<b>Surrogate Recovery</b>		<b>Control Limits (%)</b>				
			4-Bromofluorobenzene		99.9		65 - 135				



# Entech Analytical Labs, Inc.

3334 Victor Court • Santa Clara, CA 95054 • (408) 588-0200 • Fax (408) 588-0201

## Quality Control Results Summary

QC Batch #: WMS11867  
Matrix: Liquid

Units:  $\mu\text{g/L}$   
Date Analyzed: 01/06/03

Parameter	Method	Blank Result	Spike Sample ID	Spike Amount	Sample Result	Spike Result	QC Type	% Recovery	RPD	RPD Limits	Recovery Limits
<b>Test:</b> MTBE by EPA 8260B											
Methyl-t-butyl Ether	EPA 8260B	ND		20		14.7	LCS	73.5			56.0 - 135.0
	<b>Surrogate</b>			<b>Surrogate Recovery</b>				<b>Control Limits (%)</b>			
	4-Bromofluorobenzene			102.0				73 - 151			
	Dibromofluoromethane			88.0				57 - 156			
	Toluene-d8			105.0				77 - 150			
<b>Test:</b> MTBE by EPA 8260B											
Methyl-t-butyl Ether	EPA 8260B	ND		20		13.7	LCSD	68.5	7.04	25.00	56.0 - 135.0
	<b>Surrogate</b>			<b>Surrogate Recovery</b>				<b>Control Limits (%)</b>			
	4-Bromofluorobenzene			104.0				73 - 151			
	Dibromofluoromethane			85.0				57 - 156			
	Toluene-d8			107.0				77 - 150			

# Entech Analytical Labs, Inc.

3334 Victor Court • Santa Clara, CA 95054 • (408) 588-0200 • Fax (408) 588-0201

## Quality Control Results Summary

QC Batch #: WMS21868  
 Matrix: Liquid

Units: µg/L  
 Date Analyzed: 01/07/03

Parameter	Method	Blank Result	Spike Sample ID	Spike Amount	Sample Result	Spike Result	QC Type	% Recovery	RPD	RPD Limits	Recovery Limits
<b>Test: MTBE by EPA 8260B</b>											
Methyl-t-butyl Ether	EPA 8260B	ND		20		18.784	LCS	93.9			65.0 - 135.0
<b>Surrogate</b>		<b>Surrogate Recovery</b>		<b>Control Limits (%)</b>							
4-Bromofluorobenzene		102.0		73 - 151							
Dibromofluoromethane		102.5		57 - 156							
Toluene-d8		103.3		77 - 150							
<b>Test: MTBE by EPA 8260B</b>											
Methyl-t-butyl Ether	EPA 8260B	ND		20		18.1794	LCSD	90.9	3.27	25.00	65.0 - 135.0
<b>Surrogate</b>		<b>Surrogate Recovery</b>		<b>Control Limits (%)</b>							
4-Bromofluorobenzene		101.4		73 - 151							
Dibromofluoromethane		102.5		57 - 156							
Toluene-d8		103.6		77 - 150							



# Weber, Hayes & Associates

## Hydrogeology and Environmental Engineering

120 Westgate Dr., Watsonville, CA 95076  
 (831) 722-3580 (831) 662-3100  
 Fax: (831) 722-1159

# CHAIN -OF-CUSTODY RECORD

PAGE 1 OF 1

PROJECT NAME AND JOB #: Harbert Transportation / H9042.Q

LABORATORY: Entech

SEND CERTIFIED RESULTS TO: Chad Taylor

TURNAROUND TIME: Standard Five-Day 24hr Rush 48hr Rush 72hr Rush

ELECTRONIC DELIVERABLE FORMAT:  YES  NO

GLOBAL I.D.: T0600100475

Sampler: HH, E  
 Date: 12/30/12

Field Point Name (GeoTracker)	Sample Identification	Sample Depth	Date Sampled	Time Sampled	Matrix	SAMPLE CONTAINERS				REQUESTED ANALYSIS										
						40 mL VOAs (preserved)	1 Liter Amber Jars	___ mL Poly Bottle	Liner Acetate or Brass	Total Petroleum Hydrocarbons			Volatile Organics			Additional Analysis				
										Extractable Fuel-Scan	Purgeable Fuel Scan	Gasoline & BTEX- MTBE by EPA Method# 8015M-8-8020	1,2-DCA by EPA Method# 8010	Solvents by EPA Method# 8010	Fuel Oxygenates EPA Method# 8260		Title 22 General, Physical and Inorganic Minerals			
MW-3	MW-3	102.9	12/29/12	21:47	A <sub>g</sub>	5														
MW-4	MW-4	0817		21:65	A <sub>g</sub>	5														002
MW-5	MW-5	1310		26:48	A <sub>g</sub>	5														003
MW-6	MW-6	1110		22:44	A <sub>g</sub>	5														004
MW-7	MW-7	0920		23:28	A <sub>g</sub>	5														005
MW-8	MW-8	0754		23:00	A <sub>g</sub>	5														006
MW-9	MW-9	1332		21:49	A <sub>g</sub>	5														007
MW-10	MW-10	1151		20:49	A <sub>g</sub>	5														008
MW-11	MW-11	0958		21:27	A <sub>g</sub>	5														009
MW-12	MW-12	0848		22:22	A <sub>g</sub>	5														010

001  
002  
003  
004  
005  
006  
007  
008  
009  
010

RELEASED BY: HH, E

1) \_\_\_\_\_  
 2) \_\_\_\_\_  
 3) \_\_\_\_\_  
 4) \_\_\_\_\_  
 5) \_\_\_\_\_

Date & Time  
12/30/12 1552

RECEIVED BY: [Signature]

Date & Time  
12/30/12 1555

SAMPLE CONDITION:  
 (circle 1)

Ambient Refrigerated Frozen  
 Ambient Refrigerated Frozen  
 Ambient Refrigerated Frozen  
 Ambient Refrigerated Frozen  
 Ambient Refrigerated Frozen

**NOTES:**

If MTBE is detected by EPA Method 8020, please confirm detections by EPA Method 8260 with a minimum detection limit of 5 ug/L, and report only confirmed 8260 detections.

For MTBE-analyzed samples with non-detectable results (ND) but having elevated detection limits, please confirm by EPA Method #8260

Please use MDL (Minimum Detection Limit) for any diluted samples

**ADDITIONAL COMMENTS:**

- Please produce and e-mail an EDF of these results to frances@weber-hayes.com.

Proposed Site Specific Cleanup Goals - *Revised*  
Groundwater Monitoring Report - Fourth Quarter 2002  
19984 Meekland Avenue, Hayward, California  
March 27, 2003

## **Appendix D**

### **Summary of Historical Groundwater Analytical Results - AGI Technologies, Inc.**

Table 2  
**Summary of Historical Groundwater Analytical Data**  
 Harbert Transportation/Meekland Avenue  
 Hayward, California



Well	Date Sampled	EPA Test Methods										
		8015 Modified			8020				8010			Other
		TPH-G	TPH-D	TPH-MO	Benzene	Ethylbenzene	Toluene	Total Xylenes	TCE	PCE	1,2-DCA	
µg/L			µg/L				µg/L			µg/L		
MW1	07/86	42,000	NA	NA	5,500	NA	4,900	6,100	NA	NA	NA	
	03/90	27,000	NA	NA	2,700	491	840	800	ND	ND	ND	
	07/90	27,000	11,000	ND	4,000	ND	1,500	4,400	ND	ND	62	
	10/90	43,000	8,500	ND	3,400	1,200	2,700	5,300	0.4	ND	26	
	01/91	22,000	2,700	ND	3,000	990	1,800	2,800	ND	ND	27	
	04/91	42,000	3,100	NA	5,100	1,200	3,700	3,200	ND	ND	120	
	07/91	46,000	4,300	NA	6,500	830	2,900	3,700	ND	ND	64	
	10/91	27,000	4,300	NA	4,400	1,100	1,400	3,200	ND	ND	25	
	01/92	27,000	14,000	NA	3,300	1,200	1,600	3,800	ND	ND	24	
	04/92	33,000	11,000	NA	8,900	1,200	3,500	3,700	ND	ND	120	
07/92	41,000	19,000	NA	5,600	1,300	2,600	4,000	ND	ND	49		
10/92	33,000	3,500	NA	4,400	1,200	2,100	4,000	ND	ND	61		
MW3	11/89	29,000	NA	NA	4,600	680	1,100	1,100	ND	ND	36	Lead 40
	11/89	NA	NA	NA	NA	NA	NA	NA	ND	ND	36	Lead 40
	03/90	12,000	NA	NA	2,300	59	300	490	ND	ND	ND	
	07/90	7,300	990	ND	5,200	ND	440	480	ND	ND	67	
	10/90	6,200	970	ND	75	7.5	150	250	ND	ND	48	
	10/90	NA	NA	NA	NA	NA	NA	NA	ND	ND	22	Lead 3
	01/91	4,600	680	ND	2,200	220	110	89	ND	ND	40	
	04/91	8,300	640	NA	2,800	370	490	760	ND	ND	43	
	07/91	6,600	890	NA	2,000	250	230	380	ND	ND	29	
	10/91	6,300	1,700	NA	2,000	410	330	550	ND	ND	27	
	01/92	4,000	790	NA	1,200	250	60	200	ND	ND	22	
	04/92	7,400	1,800	NA	730	370	180	640	ND	ND	19	
	07/92	3,000	2,400	NA	190	ND	2.8	410	ND	ND	30	
	10/92	5,000	970	NA	1,300	320	.45	340	ND	ND	26	
	01/93	2,300	680	NA (2)	630	180	31	330	ND	ND	13	
06/93	5,000	1,100	ND	730	240	43	380	ND	ND	13		

**Table 2**  
**Summary of Historical Groundwater Analytical Data**  
 Harbert Transportation/Meekland Avenue  
 Hayward, California



Well	Date Sampled	EPA Test Methods										
		8015 Modified			8020				8030			Other
		TPH-G	TPH-D	TPH-MO	Benzene	Ethylbenzene	Toluene	Total Xylenes	TCE	PCE	1,2-DCA	
µg/L			µg/L				µg/L			µg/L		
MW4	11/89	ND	NA	NA	33	1.3	1	5.2	NA	NA	NA	Lead 12
	03/90	ND	NA	NA	7.4	2	2	1.1	ND	ND	ND	
	07/90	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.9	
	10/90	ND	ND	ND	ND	ND	ND	ND	0.7	ND	0.5	
	01/91	80	ND	ND	9.2	2.4	1.7	0.7	ND	ND	ND	
	04/91	1,400	130 <sup>a</sup>	NA	2,200	72	ND	17	ND	ND	ND	
	07/91	130	ND	NA	14	3.3	9.7	ND	ND	ND	0.81	
	10/91	ND	ND	NA	5.3	1	ND	0.8	ND	ND	ND	
	01/92	ND	ND	NA	6.8	1.3	ND	ND	ND	ND	ND	
	04/92	780	130 <sup>a</sup>	NA	ND	51	ND	4.8	ND	ND	1.6	
	07/92	ND	ND	NA	ND	ND	ND	ND	ND	ND	1.3	
	10/92	100	ND	NA	9.5	ND	ND	2.6	ND	ND	ND	
	01/93	960	240 <sup>a</sup>	NA	200	41	4.6	9.4	ND	ND	1	
	06/93	650	140 <sup>a</sup>	ND	150	21	ND	ND	ND	ND	3.7	
MW5	10/90	9,600	1,900	ND	1,200	70	160	520	ND	ND	22	Lead 3
	01/91	10,000	1,200	ND	1,600	720	200	510	ND	ND	33	
	04/91	18,000	860 <sup>a</sup>	NA	2,500	550	580	500	ND	ND	61	
	07/91	15,000	2,200 <sup>a</sup>	NA	4,800	610	1,100	760	ND	ND	62	
	10/91	14,000	3,300 <sup>a</sup>	NA	5,800	530	820	800	ND	ND	49	
	01/92	12,000	1,900 <sup>a</sup>	NA	4,300	390	380	590	ND	ND	56	
	04/92	23,000	6,400 <sup>a</sup>	NA	8,600	ND	2,600	1,900	ND	ND	125	
	07/92	27,000	5,900 <sup>a</sup>	NA	6,000	ND	1,500	1,600	ND	ND	93	
	10/92	13,000	2,100 <sup>a</sup>	NA	4,600	140	470	550	ND	ND	59	
	01/93	18,000	1,900 <sup>a</sup>	NA	5,800	560	1,900	1,600	ND	ND	110	
	01/93	19,000	2,100 <sup>a</sup>	NA	4,600	370	1,600	1,400	ND	ND	120	
	06/93	22,000	2,900 <sup>a</sup>	ND	8,300	740	2,500	1,900	ND	ND	110	
	06/93	23,000	2,300 <sup>a</sup>	ND	9,600	730	3,000	1,900	ND	ND	110	

Table 2  
 Summary of Historical Groundwater Analytical Data  
 Harbert Transportation/Meekland Avenue  
 Hayward, California



Well	Date Sampled	EPA Test Methods										
		8015 Modified			8020				8010			Other
		TPH-G	TPH-D	TPH-MO	Benzene	Ethylbenzene	Toluene	Total Xylenes	TCE	PCE	1,2-DCA	
µg/L			µg/L				µg/L			µg/L		
MW6	10/90	27,000	4,700	ND	2,700	450	2,900	3,300	ND	ND	40	Lead 9
	01/91	7,200	1,600	ND	1,400	ND	200	830	ND	ND	23	
	04/91	17,000	800 <sup>a</sup>	NA	2,800	610	1,200	1,800	ND	ND	53	
	07/91	11,000	1,400 <sup>a</sup>	NA	1,200	ND	380	750	ND	ND	29	
	10/91	4,800	1,600 <sup>a</sup>	NA	380	69	340	730	ND	ND	22	
	01/92	6,100	1,200 <sup>a</sup>	NA	460	180	200	590	ND	ND	26	
	04/92	7,200	1,800 <sup>a</sup>	NA	340	350	460	920	ND	ND	30	
	07/92	8,600	1,700 <sup>a</sup>	NA	1,300	380	280	1,100	ND	ND	35	
	10/92	1,600	110 <sup>a</sup>	NA	230	70	20	88	ND	ND	24	
	01/93	13,000	2,100 <sup>a</sup>	NA	2,500	370	540	2,400	ND	ND	36	
	06/93	7,400	1,900 <sup>a</sup>	ND	1,500	480	120	1,400	ND	ND	29	
MW7	10/90	14,000	2,700	ND	390	ND	18	1,200	ND	1.3	14	Lead 11
	01/91	4,500	1,400	ND	320	42	48	350	ND	ND	10	
	04/91	2,400	NA	NA	320	77	62	130	ND	0.6	11	
	07/91	2,000	910 <sup>a</sup>	NA	470	ND	24	88	ND	ND	9.7	
	10/91	ND	370 <sup>a</sup>	NA	ND	ND	ND	ND	ND	0.68	4.5	
	01/92	1,100	290 <sup>a</sup>	NA	230	45	7	88	ND	3.5	6.4	
	04/92	1,700	520 <sup>a</sup>	NA	310	78	28	170	ND	0.5	3.2	
	07/92	1,900	590 <sup>a</sup>	NA	410	78	21	170	ND	2.1	8.7	
	07/92 (dup)	1,200	700 <sup>a</sup>	NA	21	1	2.6	90	ND	2	8.2	
	10/92	1,800	320 <sup>a</sup>	NA	410	31	11	75	ND	1	7.4	
	01/93	2,100	660 <sup>a</sup>	NA	390	100	21	270	ND	0.6	3.7	
	06/93	4,400	1,100 <sup>a</sup>	ND	830	330	49	620	ND	ND	8.6	

Table 2

Summary of Historical Groundwater Analytical Data

Harbert Transportation/Meekland Avenue

Hayward, California



Well	Date Sampled	EPA Test Methods											
		8015 Modified			8020				8010			Other	
		TPH-G	TPH-D	TPH-MO	Benzene	Ethylbenzene	Toluene	Total Xylenes	TCE	PCE	1,2-DCA		
µg/L			µg/L				µg/L			µg/L			
MW8	02/91	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
	04/91	ND	ND	NA	ND	ND	ND	ND	ND	ND	0.5	ND	ND
	07/91	ND	ND	NA	ND	ND	ND	2	ND	ND	1.2	ND	ND
	10/91	ND	ND	NA	ND	ND	ND	0.6	ND	ND	0.4	ND	ND
	01/92	ND	ND	NA	ND	ND	ND	ND	ND	ND	0.68	ND	ND
	04/92	ND	ND	NA	ND	ND	ND	ND	ND	ND	0.8	ND	ND
	07/92	ND	ND	NA	ND	ND	ND	3.3	ND	ND	1.6	ND	ND
	10/92	ND	ND	NA	ND	ND	ND	ND	ND	ND	1.4	ND	ND
	01/93	ND	ND	NA	ND	ND	ND	ND	ND	ND	0.8	ND	ND
	06/93	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.4	ND	ND
MW9	02/91	6,000	1,600	NA	180	19	170	200	ND	ND	13	ND	ND
	04/91	4,200	410 <sup>a</sup>	NA	520	130	410	580	ND	ND	26	ND	ND
	07/91	1,900	180 <sup>a</sup>	NA	190	12	52	77	ND	ND	6.5	12	ND
	10/91	880	300 <sup>a</sup>	NA	160	31	44	83	ND	ND	10	ND	ND
	01/92	380	120 <sup>a</sup>	NA	14	7.6	2.2	14	ND	ND	9.6	ND	ND
	04/92	2,900	700 <sup>a</sup>	NA	510	80	260	260	ND	ND	11	ND	ND
	07/92	4,400	1,300 <sup>a</sup>	NA	860	210	340	640	ND	ND	22	ND	ND
	10/92	200	290 <sup>a</sup>	NA	6.8	1.4	2.1	7.8	ND	ND	12	ND	ND
	01/93	8,500	740 <sup>a</sup>	NA	2,400	380	620	1,500	ND	ND	29	ND	ND
	06/93	8,200	1,300 <sup>a</sup>	ND	2,400	360	480	1,500	ND	ND	29	ND	ND
MW10	01/92	13,000	3,700 <sup>a</sup>	NA	130	580	110	3,000	ND	ND	33	ND	ND
	05/92	15,000	5,000 <sup>a</sup>	NA	180	ND	18	2,700	ND	ND	20	ND	ND
	05/92 (dup)	13,000	7,500 <sup>a</sup>	NA	240	480	65	2,500	ND	ND	22	ND	ND
	07/92	8,100	4,400 <sup>a</sup>	NA	74	360	ND	1,100	ND	ND	29	ND	ND
	10/92	3,200	1,500 <sup>a</sup>	NA	ND	ND	ND	320	ND	ND	25	ND	ND
	01/93	7,500	2,200 <sup>a</sup>	NA	130	170	20	710	ND	ND	18	ND	ND
	06/93	8,000	2,100 <sup>a</sup>	ND	68	7.8	ND	490	ND	ND	16	ND	ND





**Table 2**  
**Summary of Historical Groundwater Analytical Data**  
 Harbert Transportation/Meekland Avenue  
 Hayward, California

Well	Date Sampled	EPA Test Methods										
		8015 Modified			8020				8010			Other
		TPH-G	TPH-D	TPH-MO	Benzene	Ethylbenzene	Toluene	Total Xylenes	TCE	PCE	1,2-DCA	
µg/L			µg/L				µg/L			µg/L		
MW11	01/92	8,200	3,200 <sup>a</sup>	NA	23	250	ND	1,100	ND	ND	ND	
	04/92	160	1,200 <sup>a</sup>	NA	ND	ND	ND	ND	ND	ND	ND	
	07/92	2,100	710 <sup>a</sup>	NA	38	100	2.3	53	ND	ND	ND	
	10/92	660	220 <sup>a</sup>	NA	2.9	19	ND	3.8	ND	ND	ND	
	10/92	770	230 <sup>a</sup>	NA	3.2	26	ND	5.7	ND	ND	ND	
	01/93	780	370 <sup>a</sup>	NA	10	2.1	ND	39	ND	ND	ND	
	06/93	2,500	160 <sup>a</sup>	ND	27	99	ND	34	ND	ND	ND	
MW12	12/92	2,800	1,700 <sup>a</sup>	NA	14	ND	ND	ND	ND	ND	ND	
	06/93	1,100	750 <sup>a</sup>	ND	19	21	ND	57	ND	ND	ND	
B1	01/93	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	
	06/93	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
F3	02/93	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Well Abandoned	12/89	1,800	NA	NA	200	24	18	34	ND	ND	0.15	Lead 2,100
Average <sup>b</sup>		8,865	1,883	250	1,562	235	517	871	0.21	0.41	24.8	
Laboratory Detection Limit		50	50	500	0.5	0.5	0.5	0.5	0.4	0.4	0.4	

Notes:

a) The detection for petroleum hydrocarbons as diesel appears to be due to the presence of lighter hydrocarbons rather than diesel.

b) Average of sampled data, ND equals 1/2 detection limit.

µg/L - Micrograms per liter is approximately equivalent to parts per billion, depending on density of water.

NA - Not analyzed.

ND - Not detected.

TPH-G - Total petroleum hydrocarbons quantified as gasoline.

TPH-D - Total petroleum hydrocarbons quantified as diesel.

TPH-MO - Total petroleum hydrocarbons quantified as motor oil.

TCE - Trichloroethylene.

PCE - Tetrachloroethylene.

1,2-DCA - 1,2-Dichloroethane.

**Table 2**  
**Summary of Groundwater Chemical Analyses**  
 Harbert Transportation/Meekland Avenue  
 Hayward, California

Well	Date Sampled	EPA Test Methods								
		8015 M		PETX 5030/8020				8010		
		TPH Gasoline µg/L	TPH Diesel µg/L	Benzene µg/L	Ethylbenzene µg/L	Toluene µg/L	Xylenes µg/L	1,2-DCA µg/L	PCE µg/L	TCE µg/L
MW3	07/28/94	7,700	970 <sup>a</sup>	1,800	810	ND	600	22	ND	ND
	10/21/94	7,400	810	1,900	900	37	780	25	ND	ND
	09/15/95	NS	NS	NS	NS	NS	NS	NS	NS	NS
	03/14/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
	09/26/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW4	07/28/94	120	ND	7.9	0.7	1.1	ND	ND	ND	ND
	10/21/94	69	ND	3.4	ND	ND	ND	ND	ND	ND
	09/15/95	110	ND	2.5	ND	0.85	ND	2.3	ND	ND
	03/14/96	300	69 <sup>b</sup>	3.3	0.74	ND	ND	1.6	ND	ND
	09/26/96	ND	ND	ND	ND	ND	ND	1.2	ND	ND
MW5	07/29/94	30,000	2,200 <sup>a</sup>	9,300	1,100	1,800	2,300	110	ND	ND
	10/21/94	23,000	1,500	7,900	780	1,500	2,900	85	ND	ND
	09/15/95	NS	NS	NS	NS	NS	NS	NS	NS	NS
	03/14/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
	09/26/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW6	07/29/94	15,000	2,100 <sup>b</sup>	3,100	1,100	71	2,000	37	ND	ND
	10/21/94	18,000	1,500	3,900	1,200	170	3,200	35	ND	ND
	09/15/95	NS	NS	NS	NS	NS	NS	NS	NS	NS
	03/14/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
	09/26/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW7	07/29/94	2,600	530 <sup>c</sup>	470	220	ND	310	2.7	6	ND
	10/21/94	1,700	280	290	140	4.5	240	1.8	0.74	ND
	09/15/95	NS	NS	NS	NS	NS	NS	NS	NS	NS
	03/14/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
	09/26/96	NS	NS	NS	NS	NS	NS	NS	NS	NS

**Table 2**  
**Summary of Groundwater Chemical Analyses**  
 Harbert Transportation/Meekland Avenue  
 Hayward, California

Well	Date Sampled	EPA Test Methods								
		8015 M		BETX 5030/8020				8010		
		TPH Gasoline	TPH Diesel	Benzene	Ethylbenzene	Toluene	Xylenes	1,2-DCA	PCE	TCE
		µg/L	µg/L	µg/L				µg/L	µg/L	µg/L
MW8	07/28/94	ND	78 <sup>a</sup>	ND	ND	ND	ND	ND	ND	ND
	10/21/94	ND	ND	ND	ND	ND	ND	ND	0.72	ND
	09/15/95	ND	ND	ND	ND	ND	ND	ND	0.74	ND
	03/14/96	ND	ND	ND	ND	ND	ND	ND	0.63	ND
	09/26/96	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW9	07/28/94	6,000	1,300 <sup>c</sup>	90	170	27	370	26	ND	ND
	10/21/94	6,900	800	1,800	280	220	1,500	31	ND	ND
	09/15/95	NS	NS	NS	NS	NS	NS	NS	NS	NS
	03/14/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
	09/26/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW10	07/28/94	6,700	2,000 <sup>c</sup>	99	180	57	430	13	ND	ND
	10/21/94	8,600	2,000	93	200	ND	680	12	ND	ND
	09/15/95	2,100	1,900	9.9	49	ND	4.9	ND	ND	ND
	03/14/96	6,800	2,000 <sup>b</sup>	64	98	ND	33	6.5	ND	ND
	09/26/96	7,100	420	140	210	ND	32	9.1	ND	5.9
MW11	07/28/94	450	150 <sup>a</sup>	6.2	20	1.1	6.6	ND	ND	ND
	10/21/94	460	190	4.9	14	ND	12	ND	ND	ND
	09/15/95	9,600	550	130	180	ND	130	8.8	ND	5.6
	03/15/96	780	310 <sup>b</sup>	0.74	25	ND	1.8	ND	ND	ND
	09/26/96	480	710	ND	50	ND	ND	ND	ND	ND

**Table 2**  
**Summary of Groundwater Chemical Analyses**  
 Harbert Transportation/Meekland Avenue  
 Hayward, California

Well	Date Sampled	EPA Test Methods								
		8015 M		BETX 5030/8020				8010		
		TPH Gasoline µg/L	TPH Diesel µg/L	Benzene	Ethylbenzene	Toluene	Xylenes	1,2-DCA µg/L	PCE µg/L	TCE µg/L
MW12	07/28/94	240	160	1.9	12	ND	5.8	ND	ND	ND
	10/21/94	280	190	1.9	4.5	ND	6.8	ND	ND	ND
	09/15/95	NS	NS	NS	NS	NS	NS	NS	NS	NS
	03/14/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
	09/26/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
Method Detection Limit		50	50	0.5	0.5	0.5	0.5	0.5	0.5	0.5

Notes:

- a) Hydrocarbons quantified as diesel are primarily due to discrete peaks not indicative of diesel fuel.
- b) Hydrocarbons quantified as diesel are primarily due to the presence of a lighter petroleum product (C<sub>8</sub>-C<sub>12</sub>), possibly gasoline.
- c) Hydrocarbons quantified as diesel are due to the presence of a lighter petroleum product (C<sub>8</sub>-C<sub>12</sub>) and discrete peaks not indicative of diesel fuel.

1,2-DCE - 1,2-dichloroethane.

PCE - Tetrachloroethene.

TCE - Trichloroethene.

ND - Not detected at or above method detection limit.

NS - Not sampled.

TPH-Gasoline - Total petroleum hydrocarbons quantified as gasoline.

TPH-Diesel - Total petroleum hydrocarbons quantified as diesel.

µg/L - Micrograms per liter, equivalent to parts per billion.

B 93  
E 200  
T ND  
X 680  
TPH-G 8,600  
TPH-D 2,000  
1,2 DCA 12  
PCE ND

MW10

B 4.9  
E 14  
T ND  
X 12  
TPH-G 460  
TPH-D 190  
1,2 DCA ND  
PCE ND

B 1,900  
E 900  
T 37  
X 780  
TPH-G 7,400  
TPH-D 810  
1,2 DCA 25  
PCE ND

MW3

MW6

B 3,900  
E 1,200  
T 170  
X 3,200  
TPH-G 18,000  
TPH-D 1,500  
1,2 DCA 35  
PCE ND

B 1.9  
E 4.5  
T ND  
X 6.8  
TPH-G 260  
TPH-D 190  
1,2 DCA ND  
PCE ND

MW12

MW7

B 290  
E 140  
T 4.5  
X 240  
TPH-G 1,700  
TPH-D 280  
1,2 DCA 1.8  
PCE 0.74

B 1,800  
E 280  
T 220  
X 1,500  
TPH-G 6,900  
TPH-D 600  
1,2 DCA 31  
PCE ND

MW9

B 7,900  
E 780  
T 1,500  
X 2,900  
TPH-G 23,000  
TPH-D 1,500  
1,2 DCA 85  
PCE ND

MW5

B ND  
E ND  
T ND  
X ND  
TPH-G ND  
TPH-D ND  
1,2 DCA ND  
PCE 0.72

MW8

MW4

B 3.4  
E ND  
T ND  
X ND  
TPH-G 69  
TPH-D ND  
1,2 DCA ND  
PCE ND

**LEGEND**

MW10 Monitoring Well number and approximate location

All values expressed as µg/L - micrograms per liter

ND Not Detected above method detection limit

Mekland Avenue

Blossom Way

Sump

Tank Excavation

Tank Excavation

Fence



**AGI**  
TECHNOLOGIES

siteplan.cdr

PROJECT NO  
15,833.002

DRAWN  
DFF/ALW

DATE  
01 February 95

**Site Plan**

Harbert Transportation/Mekland Avenue  
Hayward, California

APPROVED

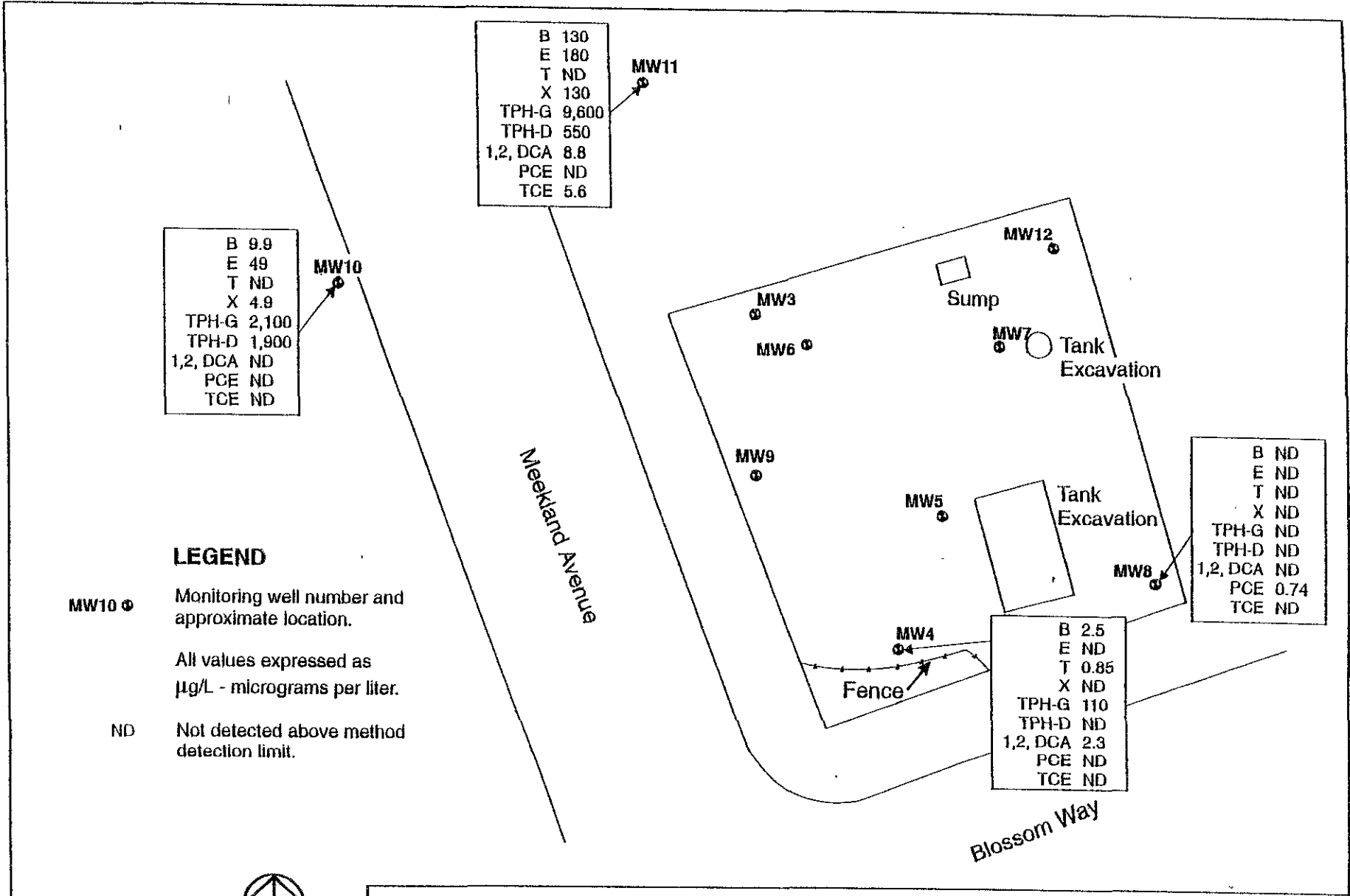
REVISED

FIGURE

**4**

DATE

10.20.94



B 9.9  
E 49  
T ND  
X 4.9  
TPH-G 2,100  
TPH-D 1,900  
1,2, DCA ND  
PCE ND  
TCE ND

B 130  
E 180  
T ND  
X 130  
TPH-G 9,600  
TPH-D 550  
1,2, DCA 8.8  
PCE ND  
TCE 5.6

B 2.5  
E ND  
T 0.85  
X ND  
TPH-G 110  
TPH-D ND  
1,2, DCA 2.3  
PCE ND  
TCE ND

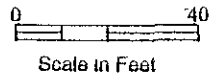
B ND  
E ND  
T ND  
X ND  
TPH-G ND  
TPH-D ND  
1,2, DCA ND  
PCE 0.74  
TCE ND

**LEGEND**

MW10 ● Monitoring well number and approximate location.

All values expressed as µg/L - micrograms per liter.

ND Not detected above method detection limit.



	<b>Groundwater Chemical Analysis Results - 9/15/95</b>			FIGURE <b>4</b>
	Harbert Transportation/Meekland Avenue Hayward, California			
PROJECT NO. 15,833,002	DRAWN DFF	DATE 1 Feb 95	APPROVED <i>[Signature]</i>	REVISED B,IA
83300201.cdr				DATE 8 Nov 95

B	0.74
E	25
T	ND
X	1.8
TPH-G	780
TPH-D	310
1, 2, DCA	ND
PCE	ND
TCE	ND

MW11

Property Line

Sump  
MW7

Former Waste  
Oil Tank

Former  
USTs

MW12

MW3

MW6

MW5

MW8

MW9

Meekland Avenue

Sidewalk

Sidewalk

Blossom Way

MW4

B	64
E	98
T	ND
X	33
TPH-G	6,800
TPH-D	2,000
1, 2, DCA	65
PCE	ND
TCE	ND

MW10

**LEGEND**

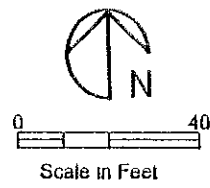
MW10 ⊕ Monitoring Well number and approximate location

All values expressed as μg/L - micrograms per liter.

ND Not detected above method detection limit.

B	ND
E	ND
T	ND
X	ND
TPH-G	ND
TPH-D	ND
1, 2, DCA	ND
PCE	0.63
TCE	ND

B	3.3
E	0.74
T	ND
X	ND
TPH-G	300
TPH-D	69
1, 2, DCA	1.6
PCE	ND
TCE	ND



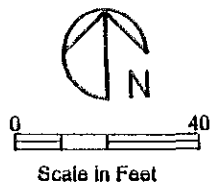
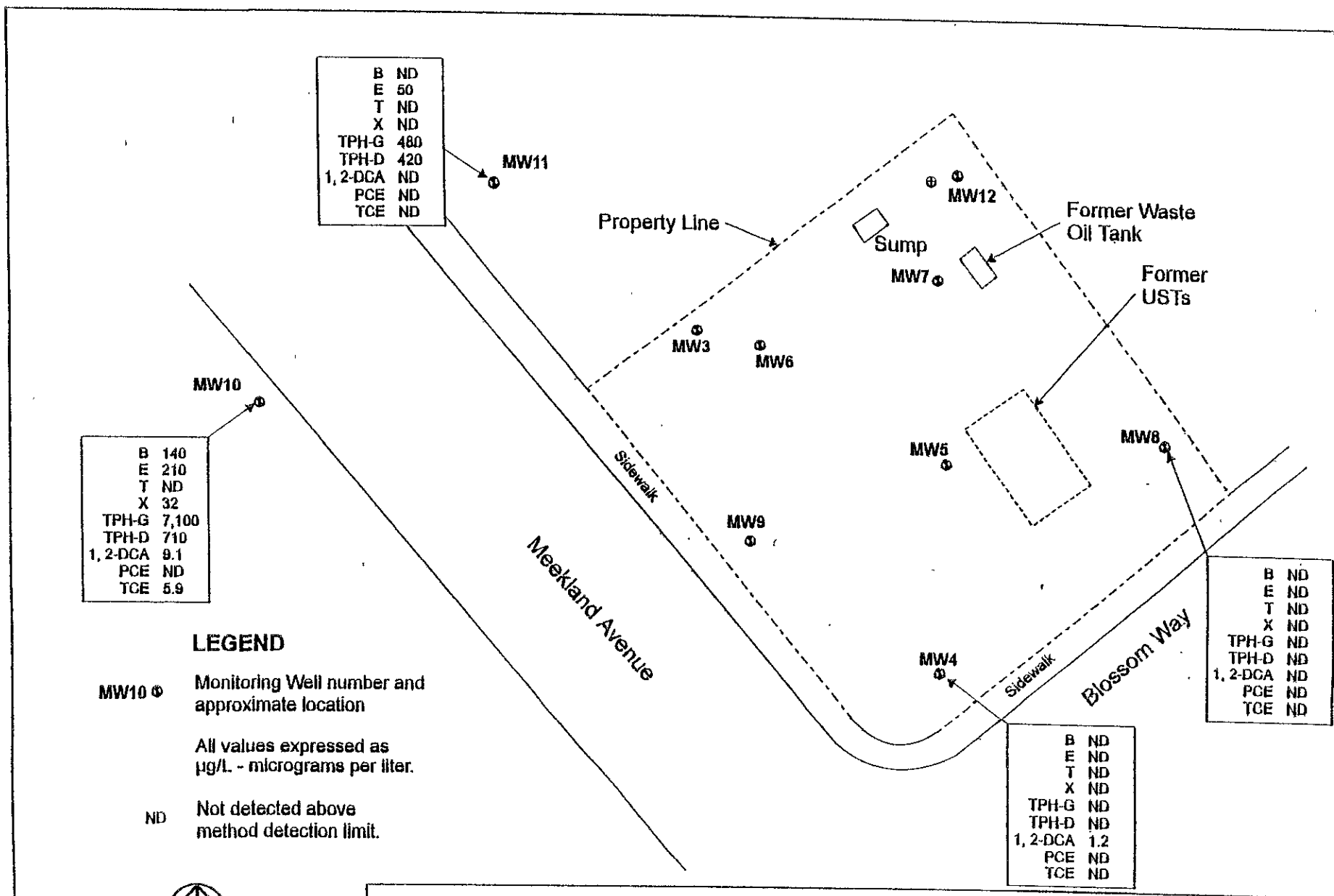
**Groundwater Chemical Analysis Results - March 1996**

Harbert Transportation/Meekland Avenue  
Hayward, California

FIGURE

**4**

PROJECT NO. 15,833.002	DRAWN DFF	DATE 29 August 94	APPROVED 	REVISED ALW	DATE 15 Apr 96
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**AGI** Groundwater Chemical Analysis Results - September 1996 **FIGURE 4**

Harbert Transportation/Meekland Avenue  
Hayward, California

PROJECT NO. 15,833.002    DRAWN DFF    DATE 29 August 94    APPROVED *[Signature]*    REVISED ALW    DATE 15 Apr 96

gw-anal.cdr



Proposed Site Specific Cleanup Goals - *Revised*  
Groundwater Monitoring Report - Fourth Quarter 2002  
19984 Meekland Avenue, Hayward, California  
March 27, 2003

## Appendix E

### ***Risk Based Screening Levels from Application of Risk-Based Screening Levels and Decision Making to Sites with Impacted Soil and Groundwater***

**TABLE A. SURFACE SOIL ( $\leq 3m$  bgs) AND GROUNDWATER  
RISK-BASED SCREENING LEVELS (RBSLs)  
(Groundwater IS a Current or Potential Source of Drinking Water)**

CHEMICAL PARAMETER	SURFACE SOIL RBSLs		GROUNDWATER RBSLs	
	Residential Land Use Permitted (mg/kg)	Commercial/Industrial Land Use Only (mg/kg)	Drinking Water Resource Threatened (ug/L)	Elevated Threat To Surface Water (ug/L)
ACENAPHTHENE	16	16	20	-
ACENAPHTHYLENE	120	120	280	-
ACETONE	0.24	0.24	700	-
ALDRIN	0.029	0.15	0.002	0.00014
ANTHRACENE	2.9	2.9	0.73	-
ANTIMONY	6.3	40	6.0	-
ARSENIC	0.39	2.7	36	-
BARIUM	750	1500	3.9	-
BENZENE	0.045	0.045	1.0	-
BENZO(a)ANTHRACENE	0.38	1.8	0.029	-
BENZO(b)FLUORANTHENE	0.38	1.8	0.029	-
BENZO(k)FLUORANTHENE	0.38	1.8	0.029	0.049
BENZO(g,h,i)PERYLENE	5.3	5.3	0.02	-
BENZO(a)PYRENE	0.038	0.18	0.014	-
BERYLLIUM	4.0	8.0	4.0	-
BIPHENYL, 1,1-	0.65	0.65	0.50	-
BIS(2-CHLOROETHYL)ETHER	0.0002	0.0002	0.014	-
BIS(2-CHLOROISOPROPYL)ETHER	0.005	0.005	0.50	-
BIS(2-ETHYLHEXYL)PHTHALATE	160	200	12	-
BORON	1.6	2.0	1.6	-
BROMODICHLOROMETHANE	0.025 (0.48)	0.098 (1.1)	100	-
BROMOFORM	2.2	2.2	100	-
BROMOMETHANE	0.38 (0.39)	0.39	9.8	-
CADMIUM	1.7	12	1.1	-
CARBON TETRACHLORIDE	0.021 (0.059)	0.074 (0.11)	0.50	-
CHLORDANE	0.44	2.9	0.004	0.00059
CHLOROANILINE, p-	0.11	0.11	10	-
CHLOROBENZENE	3.0	3.0	50	-
CHLOROETHANE	0.85	0.85	12	-
CHLOROFORM	0.079	0.26	28	-
CHLOROMETHANE	0.42	0.42	2.7	-
CHLOROPHENOL, 2-	0.012	0.012	0.18	-
CHROMIUM (Total - assumes 1/6 ratio Cr6/Cr3)	13	13	50	-
CHROMIUM III	750	750	180	-
CHROMIUM VI	1.8	1.8	11	-
CHRYSENE	3.8	18	0.29	0.049
COBALT	40	80	3.0	-
COPPER	225	225	3.1	-
CYANIDE (Free)	100	500	1.0	-
DIBENZO(a,h)ANTHTRACENE	0.11	0.51	0.0085	0.049
DIBROMOCHLOROMETHANE	0.98	2.3	100	46
1,2-DIBROMO-3-CHLOROPROPANE	0.001	0.001	0.20	-
DIBROMOETHANE, 1,2-	0.0003	0.0003	0.05	-
DICHLOROBENZENE, 1,2-	0.75	0.75	10	-
DICHLOROBENZENE, 1,3-	0.47	0.47	6.3	-
DICHLOROBENZENE, 1,4-	0.13 (0.59)	0.49 (0.59)	5.0	-

**TABLE A. SURFACE SOIL ( $\leq 3m$  bgs) AND GROUNDWATER  
RISK-BASED SCREENING LEVELS (RBSLs)  
(Groundwater IS a Current or Potential Source of Drinking Water)**

CHEMICAL PARAMETER	SURFACE SOIL RBSLs		GROUNDWATER RBSLs	
	Residential Land Use Permitted (mg/kg)	Commercial/Industrial Land Use Only (mg/kg)	Drinking Water Resource Threatened (ug/L)	Elevated Threat To Surface Water (ug/L)
DICHLOROBENZIDINE, 3,3-	0.008	0.008	0.029	0.077
DICHLORODIPHENYLDICHLOROETHANE (DDD)	2.4	17	0.06	0.00084
DICHLORODIPHENYLDICHLOROETHYLENE (DDE)	1.7	4.0	0.10	0.00059
DICHLORODIPHENYLTRICHLOROETHANE (DDT)	1.7	4.0	0.001	0.00059
DICHLOROETHANE, 1,1-	0.22	0.22	5.0	-
DICHLOROETHANE, 1,2-	0.006	0.006	0.50	-
DICHLOROETHYLENE, 1,1-	0.018 (0.028)	0.062 (0.12)	6.0	3.2
DICHLOROETHYLENE, Cis 1,2-	0.19	0.19	6.0	-
DICHLOROETHYLENE, Trans 1,2-	0.65	0.65	10	-
DICHLOROPHENOL, 2,4-	0.30	0.30	0.30	-
DICHLOROPROPANE, 1,2-	0.049 (0.13)	0.13	5.0	-
DICHLOROPROPENE, 1,3-	0.055 (0.057)	0.057	0.50	-
DIELDRIN	0.002	0.002	0.0019	0.00014
DIETHYLPHTHALATE	0.070	0.070	3.0	-
DIMETHYLPHTHALATE	0.070	0.070	3.0	-
DIMETHYLPHENOL, 2,4-	0.68	0.68	100	-
DINITROPHENOL, 2,4-	0.040	0.040	14	-
DINITROTOLUENE, 2,4-	0.0008	0.0008	0.11	-
1,4 DIOXANE	0.0018	0.0018	3.0	-
DIOXIN (2,3,7,8-TCDD)	0.0000045	0.000032	<0.00001	0.00000014
ENDOSULFAN	0.005	0.005	0.0087	-
ENDRIN	0.0006	0.0006	0.0023	-
ETHYLBENZENE	2.5	2.5	30	-
FLUORANTHENE	40	40	8.1	-
FLUORENE	5.1	5.1	3.9	-
HEPTACHLOR	0.013	0.013	0.0036	0.00021
HEPTACHLOR EPOXIDE	0.014	0.014	0.0036	0.00011
HEXACHLOROBENZENE	0.27	1.4	1.0	0.00077
HEXACHLOROBUTADIENE	2.2	2.2	0.45	-
HEXACHLOROCYCLOHEXANE (gamma) LINDANE	0.049	0.049	0.08	0.063
HEXACHLOROETHANE	3.0	3.0	0.90	8.9
INDENO(1,2,3-cd)PYRENE	0.38	1.8	0.029	0.049
LEAD	200	750	3.2	-
MERCURY	4.7	10	0.012	-
METHOXYCHLOR	19	19	0.03	-
METHYLENE CHLORIDE	0.076	0.076	5.0	-
METHYL ETHYL KETONE	3.8	3.8	4200	-
METHYL ISOBUTYL KETONE	2.7	2.7	120	-
METHYL MERCURY	1.2	10	0.003	-
METHYLNAPHTHALENE (total 1- & 2-)	0.25	0.25	2.1	-
METHYL TERT BUTYL ETHER	0.028	0.028	5.0	-
MOLYBDENUM	40	40	35	-
NAPHTHALENE	1.7 (4.3)	4.3	21	-
NICKEL	150	150	8.2	-
PENTACHLOROPHENOL	4.4	5.0	1.0	-
PERCHLORATE	0.036	0.036	18	-
PHENANTHRENE	11	11	4.6	-
PHENOL	0.076	0.076	5.0	-
POLYCHLORINATED BIPHENYLS (PCBs)	0.22	1.0	0.014	0.00017
PYRENE	55	55	0.40	-

**TABLE A. SURFACE SOIL ( $\leq 3$ m bgs) AND GROUNDWATER  
RISK-BASED SCREENING LEVELS (RBSLs)  
(Groundwater IS a Current or Potential Source of Drinking Water)**

CHEMICAL PARAMETER	SURFACE SOIL RBSLs		GROUNDWATER RBSLs	
	Residential Land Use Permitted (mg/kg)	Commercial/ Industrial Land Use Only (mg/kg)	Drinking Water Resource Threatened (ug/L)	Elevated Threat To Surface Water (ug/L)
SELENIUM	10	10	5.0	-
SILVER	20	40	0.12	-
STYRENE	1.7	1.7	10	-
TETRACHLOROETHANE, 1,1,1,2-	0.020	0.020	1.3	-
TETRACHLOROETHANE, 1,1,2,2-	0.015	0.015	1.0	-
TETRACHLOROETHYLENE	0.15 (0.80)	0.53 (0.80)	5.0	-
THALLIUM	1.0	27	2.0	-
TOLUENE	2.6	2.6	40	-
TPH (gasolines)	100	100	100	-
TPH (middle distillates)	100	100	100	-
TPH (residual fuels)	500	1000	100	-
TRICHLOROBENZENE, 1,2,4-	15	15	50	-
TRICHLOROETHANE, 1,1,1-	8.0	8.0	62	-
TRICHLOROETHANE, 1,1,2-	0.055 (0.091)	0.091	5.0	-
TRICHLOROETHYLENE	0.40	0.40	5.0	-
TRICHLOROPHENOL, 2,4,5-	0.18	0.18	11	-
TRICHLOROPHENOL, 2,4,6-	0.17	0.17	0.50	-
VANADIUM	110	200	19	-
VINYL CHLORIDE	0.011	0.04	0.50	-
XYLENES	1.0	1.0	13	-
ZINC	600	600	23	-
Electrical Conductivity (mS/cm, USEPA Method 120.1 MOD)	2.0	4.0	no criteria	no criteria
Sodium Adsorption Ratio	5.0	12	no criteria	no criteria

**Notes:**

Source of soil RBSLs: Refer to Tables A-1 and A-2 in Appendix 1.

Source of groundwater RBSLs: Refer to Table F-1 Appendix 1.

Category "Residential Land Use Permitted" based on residential land-use scenario and generally considered adequate for unrestricted land use.

Surface soil less than or equal to 3 meters (approximately 10 feet) below ground surface.

Soil data should be reported on dry-weight basis (see Appendix 1, Section 1.2).

Soil RBSLs intended to address direct-exposure, indoor-air impact, groundwater protection, ecologic (urban areas) and nuisance concerns under noted land-use scenarios. Refer to appendices for summary of RBSL components.

Groundwater RBSLs intended to be protective of drinking water resources, surface water quality, indoor-air impacts and nuisance concerns.

Value in parentheses applicable if vadose zone soils are predominantly fine-grained, silty, clayey loams (<20% sand-size (0.075mm) or larger material; i.e.  $\geq 80\%$  of soil material will pass through 200 mesh sieve).

Category "Elevated Threat To Surface Water" screening levels address potential long-term impacts to surface water bodies and bioaccumulation concerns in aquatic organisms potentially consumed by humans. Not addressed in soil RBSLs.

TPH -Total Petroleum Hydrocarbons. See Appendix 1, Chapter 4 for discussion of different TPH categories.

**TABLE F-1. COMPONENTS FOR GROUNDWATER SCREENING LEVELS**  
(groundwater IS a current or potential drinking water resource)  
(ug/l)

CHEMICAL PARAMETER	1Final RSBL Drinking Water Resource Threatened	Ceiling Value (taste & odors, etc.)	Human Toxicity	Indoor Air Impacts	Aquatic Life Protection	2Elevated Threat to Surface Water
		Table F-1	Table F-3	USEPA Model	Table F-4a	Table F-4d
ACENAPHTHENE	20	20	420	4200 sol	23	2700
ACENAPHTHYLENE	280	2000	280	-	280	-
ACETONE	700	20000	700	4.6E+06 (4.3E+08)	1500	-
ALDRIN	0.002	8.5	0.002	-	0.13	0.00014
ANTHRACENE	0.73	22	2100	43 sol	0.73	110000
ANTIMONY	6.0	50000	6.0	-	30	4300
ARSENIC	36	50000	50	-	36	-
BARIUM	3.9	50000	1000	-	3.9	-
BENZENE	1.0	170	1.0	84 (5800)	46	71
BENZO(a)ANTHRACENE	0.029	5.0	0.029	-	0.027	0.049
BENZO(b)FLUORANTHENE	0.029	7.0	0.029	-	30	0.049
BENZO(k)FLUORANTHENE	0.029	0.40	0.029	-	0.74	0.049
BENZO(g,h,i)PERYLENE	0.02	0.13	280	-	0.02	-
BENZO(a)PYRENE	0.014	1.9	0.20	-	0.014	0.049
BERYLLIUM	4.0	50000	4.0	-	5.1	-
BIPHENYL, 1,1-	0.50	0.50	350	-	14	-
BIS(2-CHLOROETHYL)ETHER	0.014	360	0.014	690 (7700)	122	1.4
BIS(2-CHLOROISOPROPYL)ETHER	0.50	320	0.50	-	122	170000
BIS(2-ETHYLHEXYL)PHTHALATE	12	650	12	-	32	5.9
BORON	1.6	50000	630	-	1.6	-
BROMODICHLOROMETHANE	100	50000	100	420 (2600)	6400	-
BROMOFORM	100	510	100	-	6400	360
BROMOMETHANE	9.8	50000	9.8	930 (13000)	320	4000
CADMIUM	1.1	50000	5.0	-	1.1	-
CARBON TETRACHLORIDE	0.50	520	0.50	12 (260)	9.8	4.4
CHLORDANE	0.004	2.5	0.10	-	0.004	0.00059
CHLOROANILINE, p-	10	50000	28	-	10	-
CHLOROBENZENE	50	50	70	23000 (280000)	50	21000
CHLOROETHANE	12	16	12	30 (740)	100	-
CHLOROFORM	28	2400	100	590 (7900)	28	470
CHLOROMETHANE	2.7	50000	2.7	5.6 (130)	6400	-
CHLOROPHENOL, 2-	0.18	0.18	35	6.6E+04 (5.1E+05)	440	400
CHROMIUM (Total - assumes 1/6 ratio Cr6/Cr3)	50	50000	50	-	180	-
CHROMIUM III	180	50000	200000	-	180	-
CHROMIUM VI	11	50000	-	-	11	-
CHRYSENE	0.29	0.80	0.29	-	0.07	0.049
COBALT	3.0	50000	420	-	3.0	-
COPPER	3.1	1000	1300	-	3.1	-
CYANIDE (Free)	1.0	170	200	-	1.0	700
DIBENZO(a,h)ANTHRACENE	0.0085	0.25	0.0085	-	1.5	0.049
DIBROMOCHLOROMETHANE	100	50000	100	-	6400	46
1,2-DIBROMO-3-CHLOROPROPANE	0.20	10	0.20	-	0.20	-
DIBROMOETHANE, 1,2-	0.05	50000	0.05	84 (5100)	280	-
DICHLOROBENZENE, 1,2-	10	10	600	160000 sol	14	17000
DICHLOROBENZENE, 1,3-	6.3	50000	6.3	-	71	2600
DICHLOROBENZENE, 1,4-	5.0	5.0	5.0	690 (7100)	15	2600
DICHLOROBENZIDINE, 3,3'-	0.029	1600	0.029	-	50	0.077
DICHLORODIPHENYLDICHLOROETHANE (DDD)	0.06	80	0.15	-	0.06	0.0084
DICHLORODIPHENYLDICHLOROETHYLENE (DDE)	0.10	20	0.10	-	1.4	0.0059
DICHLORODIPHENYLTRICHLOROETHANE (DDT)	0.001	1.5	0.10	-	0.001	0.00059
DICHLOROETHANE, 1,1-	5.0	50000	5.0	1700 (22000)	47	-
DICHLOROETHANE, 1,2-	0.50	7000	0.50	600 (4700)	910	99
DICHLOROETHYLENE, 1,1-	6.0	1500	6.0	9.6 (200)	25	3.2
DICHLOROETHYLENE, Cis 1,2-	6.0	50000	6.0	11000 (130000)	590	-
DICHLOROETHYLENE, Trans 1,2-	10	260	10	9800 (150000)	590	140000
DICHLOROPHENOL, 2,4-	0.30	0.30	21	-	365	790
DICHLOROPROPANE, 1,2-	5.0	10	5.0	290 (3400)	3040	39
DICHLOROPROPENE, 1,3-	0.50	50000	0.50	65 (1200)	244	1700
DIELDRIN	0.0019	41	0.0022	-	0.0019	0.00014
DIETHYLPHTHALATE	3.0	50000	5600	-	3.0	120000
DIMETHYLPHTHALATE	3.0	50000	70000	-	3.0	2800000
DIMETHYLPHENOL, 2,4-	100	400	100	3.7E+06 (7.9E+06 sol)	110	2300
DINITROPHENOL, 2,4-	14	50000	14	-	150	14000
DINITROTOLUENE, 2,4-	0.11	50000	0.11	-	230	9.1
1,4-DIOXANE	3.0	50000	3.0	-	335	-
DIOXIN (2,3,7,8-TCDD)	<0.00001	50000	0.00003	-	<0.00001	0.000000014
ENDOSULFAN	0.0087	75	42	-	0.0087	240
ENDRIN	0.0023	41	2.0	-	0.0023	0.81
ETHYLBENZENE	30	30	700	170000 sol	290	29000

**TABLE F-1. COMPONENTS FOR GROUNDWATER SCREENING LEVELS**  
(groundwater IS a current or potential drinking water resource)  
(ug/l)

CHEMICAL PARAMETER	Final RSBL Drinking Water Resource Threatened	Ceiling Value (taste & odors, etc.)		Indoor Air Impacts	Aquatic Life Protection	Elevated Threat to Surface Water
		Table I-1	Table F-3			
FLUORANTHENE	8.1	130	280	-	8.1	370
FLUORENE	3.9	950	280	1900 sol	3.9	14000
HEPTACHLOR	0.0036	20	0.01	-	0.0036	0.00021
HEPTACHLOR EPOXIDE	0.0036	180	0.01	-	0.0036	0.00011
HEXACHLOROBENZENE	1.0	55	1.0	-	3.68	0.00077
HEXACHLOROBUTADIENE	0.45	6.0	0.45	-	9.3	50
HEXACHLOROXYCLOHEXANE (gamma) LINDANE	0.08	3500	0.20	-	0.08	0.063
HEXACHLOROETHANE	0.90	10	0.90	-	12	8.9
INDENO(1,2,3-cd)PYRENE	0.029	0.27	0.029	-	30	0.049
LEAD	3.2	50000	15	-	3.2	-
MERCURY	0.012	28	2.0	-	0.012	0.051
METHOXYCHLOR	0.03	20	40	-	0.03	-
METHYLENE CHLORIDE	5.0	9100	5.0	5000 (54000)	2200	1600
METHYL ETHYL KETONE	4200	8400	4200	-	14000	-
METHYL ISOBUTYL KETONE	120	1300	120	-	170	-
METHYL MERCURY	0.003	50000	0.07	-	0.003	-
METHYLNAPHTHALENE (total 1- & 2-)	2.1	10	280	26000 sol	2.1	-
METHYL TERT BUTYL ETHER	5.0	5.0	13	50000 (4.9E+05)	8000	-
MOLYBDENUM	35	50000	35	-	240	-
NAPHTHALENE	21	21	170	9200 (31000 sol)	24	-
NICKEL	8.2	50000	100	-	8.2	4600
PENTACHLOROPHENOL	1.0	30	1.0	-	7.9	8.2
PERCHLORATE	18	50000	18	-	600	-
PHENANTHRENE	4.6	410	280	-	4.6	-
PHENOL	5.0	5.0	4200	-	2560	4600000
POLYCHLORINATED BIPHENYLS (PCBs)	0.014	16	0.50	-	0.014	0.00017
PYRENE	0.40	68	210	140 sol	0.40	11000
SELENIUM	5.0	50000	50	-	5.0	-
SILVER	0.12	100	100	-	0.12	-
STYRENE	10	10	100	310000 sol	100	-
TETRACHLOROETHANE, 1,1,1,2-	1.3	50000	1.3	-	930	-
TETRACHLOROETHANE, 1,1,2,2-	1.0	500	1.0	840 (5400)	420	11
TETRACHLOROETHYLENE	5.0	170	5.0	170 (3200)	120	8.85
THALLIUM	2.0	50000	2.0	-	40	6.3
TOLUENE	40	40	150	76000 (530000 sol)	130	200000
TPH (gasolines)	100	100	100	-	500	-
TPH (middle distillates)	100	100	100	-	640	-
TPH (residual fuels)	100	100	100	-	640	-
TRICHLOROBENZENE, 1,2,4-	50	3000	70	300000 sol	50	-
TRICHLOROETHANE, 1,1,1-	62	970	200	77000 (1.3E+06 sol)	62	-
TRICHLOROETHANE, 1,1,2-	5.0	50000	5.0	930 (8200)	9400	42
TRICHLOROETHYLENE	5.0	310	5.0	750 (13000)	360	81
TRICHLOROPHENOL, 2,4,5-	11	200	700	1200000 sol	11	-
TRICHLOROPHENOL, 2,4,6-	0.50	100	0.50	-	970	6.5
VANADIUM	19	50000	63	-	19	-
VINYL CHLORIDE	0.50	3400	0.50	4.9 (126)	782	525
XYLENES	13	20	1750	150000 (160000 sol)	13	-
ZINC	23	5000	5000	-	23	-

**Notes:**

Red: Updated with respect to RBSLs presented in August 2000 RBSL document.

1. Final groundwater RBSL is lowest of Human Toxicity, Indoor Air Impact, Aquatic Life Protection and Ceiling Level. Used to develop soil leaching levels for protection of groundwater quality.

2. Elevated threat to surface water: based on potential bioaccumulation in aquatic organisms and subsequent consumption of organisms by humans. Considered separately in final lookup tables (see Tables A through D in main text).

TPH - Total Petroleum Hydrocarbons. See text for discussion of different TPH categories.

sol - solubility threshold

Ceiling Level: Odor threshold, 1/2 solubility or 50000 ug/L maximum, whichever is lower. Intended to limit general groundwater resource degradation.

Odor-thresholds assume no dilution.

Human Toxicity: Based on primary maximum concentration levels (MCLs) considered protective of human health.

Indoor Air Impact: Addresses potential emission of volatile chemicals from groundwater and subsequent impact on indoor air. Value outside of brackets is for coarse-grained soils, value inside brackets is for fine-grained soils. Physio-chemical constants not available for some chemicals.

Aquatic Life Protection: Addresses potential discharge of groundwater to surface waterbody and subsequent impact on aquatic life;

screening levels assume no dilution upon discharge to surface water unless otherwise noted

Method detection limits and background concentrations replace final screening level as appropriate