Janine Weber

From: Peter Clark [peter.clark@atcassociates.com]
Sent: Monday, July 25, 2005 11:23 AM
To: Janine.Weber@ATCAssociates.com
Subject: FW: ATC - Contact Us

Janine,
Here is the request from the regulator I mentioned earlier. I hope we can find what he wants.
Please let me know.
Thanks,
P.

-----Original Message-----
From: Mike Burt
Sent: Monday, July 25, 2005 7:22 AM
To: Peter Clark
Subject: FW: ATC - Contact Us

-----Original Message-----
From: Linda Bowman [mailto:linda.bowman@atcassociates.com]
Sent: Fri Jul 22 14:39:18 2005
To: Mike Burt
Subject: FW: ATC - Contact Us

Mike:

Can you help out on this request.

Thanks.
Linda

Linda S. Bowman
Director of Marketing Communications
ATC Associates Inc.
Environmental, Health & Safety and Construction Consultants 770-427-9456 extn. 3252 770-427-1907 Fax 1300 Williams Drive Marietta, GA 30066-6299
www.atcassociates.com

-----Original Message-----
From: don.hwang@acgov.org [mailto:don.hwang@acgov.org]
Sent: Friday, July 22, 2005 1:25 PM
To: linda.bowman@atcassociates.com
Subject: ATC - Contact Us

Found it.
Here's a copy for you.
-Janine Weber

Name: Don Hwang
Company: Alameda County Environmental Health
Phone: 510-567-6746
Email: don.hwang@acgov.org
Address:
Suite:
City: Alameda
State: CA
Zip:
County:
Description: Dave Evans,
76 #843/WNO 2807
1629 Webster, Alameda, CA
I'm missing a Request for Closure report dated 9/10/03. Can you get me

TRANSMITTAL

TO: Mr. Amir Gholami
Alameda County Health Care Services Agency
Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

DATE: September 10, 2003
PROJECT NUMBER: 22481412
SUBJECT: Former 76 Service Station 0843, 1629 Webster Street, Alameda, California.

FROM: Mr. Robert A. Saur
TITLE: Project Manager

WE ARE SENDING YOU:

COPIES	DATED	DESCRIPTION
1	September 10, 2003	Request and Work Plan for Case Closure

THESE ARE TRANSMITTED as checked below:

[ ] For review and comment [ ] Approved as submitted [ ] Resubmit __ copies for approval

[ ] As requested [ ] Approved as noted [ ] Submit__ copies for distribution

[ ] For approval [ ] Return for corrections [ ] Return __ corrected prints

[X] For your files [ ] For distribution to regulatory agencies

REMARKS: At the request of ConocoPhillips Company (formerly Tosco Corporation), Environmental Resolutions, Inc. (ERI) is submitting a copy of the above-referenced document directly to your office. Please call me at (415) 382-3591 with questions or comments.

Robert A. Saur, Project Manager

cc: Mr. Dave DeWitt, ConocoPhillips Company
Mr. George Leyva, California Regional Water Quality Control Board, San Francisco Bay Region
Mr. Sam Koka
ERI Project File 224814T10

#2045

ENVIRONMENTAL RESOLUTIONS, INC.

TRANSMITTAL

TO: Mr. Amir Gholami
Alameda County Health Care Services Agency
Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

DATE: September 10, 2003
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Robert A. Saur, Project Manager

cc: Mr. Dave DeWitt, ConocoPhillips Company
Mr. George Leyva, California Regional Water Quality Control Board, San Francisco Bay Region
Mr. Sam Koka
ERI Project File 224814T10

R0 45°

REQUEST AND WORK PLAN FOR CASE CLOSURE

at

FORMER 76 SERVICE STATION 0843
1629 Webster Street
Alameda, California

ERI Job 224814.R06
September 10, 2003

Prepared for

ConocoPhillips Company
76 Broadway Avenue
Sacramento, California

ERI
ENVIRONMENTAL RESOLUTIONS, INC.

ENVIRONMENTAL RESOLUTIONS, INC.

REQUEST AND WORK PLAN FOR CASE CLOSURE

at

Former 76 Service Station 0843
1629 Webster Street
Alameda, California

ERI Job 224814.R06

Prepared for

ConocoPhillips Company
76 Broadway Avenue
Sacramento, California

by

Environmental Resolutions, Inc.

Robert A. Saur
Project Manager

REGISTERED GEOLOGIST
STEVE M. ZIGAN
R.G. 4333
Exp. 03/31/04
STATE OF CALIFORNIA

Steve M. Zigan
R.G. 4333
H.G. 133

September 10, 2003

73 Digital Drive, Suite 100, Novato, California 94949-5791 415-382-9105 (FAX 415-382-1856)
Lake Forest • Novato • Seattle

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REQUEST AND WORK PLAN
FOR CASE CLOSURE

at

Former 76 Service Station 0843
1629 Webster Street
Alameda, California

for

ConocoPhillips Company

1.0 INTRODUCTION

At the request of ConocoPhillips Company (ConocoPhillips) (formerly Tosco Corporation) Environmental Resolutions, Inc. (ERI) has prepared this Request and Work Plan for Case Closure at the subject site. The Request and Work Plan describes previous environmental work performed at the site, existing site conditions, results of the groundwater receptor survey, the results of a Tier II risk-based corrective action (RBCA) analysis, tasks proposed for case closure, and requests removal of ConocoPhillips as a responsible party for the site.

As requested by the Alameda County Health Care Services Agency Environmental Health Services (the County) a completed Case Closure Summary Form and Criteria for Case Closure are provided in Appendix A. Based on the results of the RBCA analysis and a review of site conditions, it is interpreted that ConocoPhillips' past operations at the site pose no significant threat to human health or the environment. Therefore, ConocoPhillips should be removed as a responsible party, case closure should be granted, and no further environmental work should be performed, other than the following:

- Submitting this Request and Work Plan to the County;
- Obtaining permits from the County for the destruction of six groundwater monitoring wells (MW1 through MW6);
- Coordinating field work and observing a licensed well driller destroy MW1 through MW6 in accordance with regulatory requirements;

- Coordinating disposal of stockpiled soil and rinsate water generated during well destruction activities; and,
- Preparing a letter documenting well destruction and requesting that the County issue a letter stating no further action will be required by ConocoPhillips.

2.0 BACKGROUND

2.1 Site Description

The site is located on the southwestern corner of Webster Street and Pacific Avenue in Alameda, California, as shown on the Site Vicinity Map (Plate 1). The locations of the former underground storage tanks (USTs), dispenser islands, and other select site features are shown on the Generalized Site Plan (Plate 2). Properties in the vicinity of the site are occupied by residential and commercial developments.

2.2 Previous Site Investigations

Previous environmental activities at the site are summarized in the following sub-sections:

2.2.1 Replacement of Underground Storage Tanks

In June 1998, Tosco removed two 10,000-gallon gasoline USTs, one 550-gallon used-oil UST, product lines, and dispensers. Two holes approximately ¾-inch in diameter were observed in the used-oil tank during removal. No holes or other evidence of leakage were observed in the remaining tanks or piping (ERI, September 15, 1998). The tanks were transported by Trident Truckline of Hayward, California to Ecology Control Industries (ECI) facility in Richmond, California, for disposal.

Approximately 338 tons of hydrocarbon impacted soil and backfill were removed from beneath the former USTs, dispensers, and product lines during UST removal activities at the site. Fifteen soil samples were collected from the limits of the excavation cavities. The results of laboratory analyses of soil samples are provided in Appendix B. Groundwater was encountered during remedial excavation in

the UST cavity at approximately 8.5 feet below ground surface (bgs). The results of the laboratory analyses of water samples are provided in Appendix C.

2.2.2 Preliminary Soil and Groundwater Investigation

In March 1999, ERI advanced four on-site soil borings (B1 through B4) and constructed four on-site groundwater monitoring wells (MW1 through MW4) at the subject site. Groundwater was encountered during well installation at approximately 8.5 to 15 feet bgs; however, static groundwater level was measured in the well casings at 4.7 to 5.6 feet bgs. The results of laboratory analyses of soil samples are provided in Appendix B. Descriptions of the materials encountered and details of well construction are presented on the boring logs (Appendix D). The locations of wells MW1 through MW4 are shown on Plate 2.

In December 1999, ERI installed two off-site soil borings (B5 and B6) and constructed two off-site groundwater monitoring wells (MW5 and MW6) at the subject site. Groundwater was encountered during well installation at approximately 10 feet bgs; however, static groundwater level was measured in MW5 at approximately 7 feet bgs. Static groundwater was not measured in MW6. The results of laboratory analyses of soil samples are provided in Appendix B. Descriptions of the materials encountered and details of well construction are presented on the boring logs (Appendix D). The locations of wells MW5 and MW6 are shown on Plate 2.

2.2.3 Supplemental Soil and Groundwater Investigation

In March 2001, ERI performed an underground utility survey to identify and locate underground utility lines beneath and in the vicinity of the site that may provide potential preferential pathways for groundwater flow. Results of the underground utility survey are on Plate 3.

In May 2001, ERI performed an off-site supplemental soil and groundwater evaluation, including the advancement of five direct-push soil borings (GP1 through GP5), to evaluate whether underground utility trenches in the vicinity of the site may provide preferential pathways for groundwater flow and the migration of dissolved hydrocarbons. The results of the investigation indicated that there was insufficient evidence to suggest that underground utility lines were providing preferential pathways for

the off-site migration of dissolved petroleum hydrocarbons. The results of laboratory analyses of soil samples are provided in Appendix B. The results of the laboratory analyses of water samples are Appendix C. Descriptions of the materials encountered are presented on the boring logs (Appendix D). The locations of soil borings GP1 through GP5 are shown on Plate 2.

In December 1999, ERI performed an on-site supplemental soil and groundwater evaluation, including the advancement of twelve direct-push soil borings (GP6 through GP17) to further assess the extent of residual hydrocarbons in the vadose zone beneath the site. The results of the investigation indicated that the extent of residual hydrocarbons detected during previous investigations is limited and that remedial action of residual gasoline hydrocarbons at the site is not warranted. The results of laboratory analyses of soil samples are provided in Appendix B. The results of the laboratory analyses of water samples are provided in Appendix C. Descriptions of the materials encountered are presented on the boring logs (Appendix D). The locations of soil borings GP6 through GP17 are shown on Plate 2.

In December 2002, ERI destroyed one on-site monitoring well (MW2), performed a remedial excavation of hydrocarbon-impacted soil in the vicinity of the former eastern dispenser island, and replaced former well MW2 with on-site backfill monitoring well MW2A. Approximately 292 tons of hydrocarbon-impacted soil was removed from beneath the former eastern dispenser island. The results of laboratory analyses of soil samples are provided in Appendix B. The results of the laboratory analyses of water samples are provided in Appendix C. Descriptions of the materials encountered are presented on the boring logs (Appendix D). The location of well MW2A and limits of the remedial excavation are shown on Plate 2.

2.2.4 Groundwater Monitoring and Sampling

Quarterly groundwater monitoring and sampling were initiated in March 1999 to evaluate dissolved-phase hydrocarbons in groundwater and the groundwater flow direction and hydraulic gradient. Cumulative groundwater monitoring and sampling data from the Gettler-Ryan, Inc (GRI) *Groundwater Monitoring and Sampling Report First Quarter - Event March 13, 2003* dated April 21, 2003, are provided in Appendix C.

3.0 SITE CONDITIONS

3.1 Site Geology and Hydrogeology

Sediments encountered in on- and off-site soil borings generally consist of heterogeneous mixtures of fine-grained sand with silt and clay to 21.5 feet bgs. Static groundwater as measured in wells MW1 through MW6 ranges between 4 and 8 feet bgs, and appears to be unconfined. Groundwater flow is generally toward the north northeast as shown on the Groundwater Flow Direction Rose Diagram (Plate 4) with an average hydraulic gradient of 0.007. ERI interpretation of the geology beneath and in the vicinity of the site are shown on Cross Sections A-A' and B-B', Plates 5 and 6, respectively.

3.2 Soil Conditions

Based on ERI's review of previous investigations, the extent of residual hydrocarbons in soil appears to be defined and limited to the northeastern corner of the former UST cavity and west of the former eastern dispenser island. The approximate extent of residual hydrocarbons in soil is shown on Plate 7. The cumulative results of laboratory analyses of soil samples and the soil sample locations are provided in Appendix B.

3.3 Groundwater Conditions

Based on a review of cumulative groundwater monitoring and sampling data (GRI, April 21,2003) (Appendix C), dissolved gasoline; benzene, toluene, ethylbenzene, and total xylenes (BTEX); and methyl tertiary-butyl ether (MTBE) appear to be delineated in the downgradient direction by well MW5 and in the crossgradient direction by well MW1 through MW4. Using the results of the First Quarter 2003 monitoring and sampling event, ERI generated isoconcentrations maps showing the distribution of dissolved hydrocarbons beneath and in the vicinity of the site. The distribution of dissolved total petroleum hydrocarbon as gasoline (TPHg), MTBE, and benzene are shown on Plates 8 through 10, respectively. In addition, graphs showing hydrocarbon concentrations versus time and groundwater elevation data for wells MW1 through MW6 are presented in Hydrographs 1 through 6, respectively.

3.4 Source Removal

Excavation of approximately 338 tons of hydrocarbon-impacted soil and backfill was performed beneath the gasoline and used-oil USTs, and product dispensers during UST removal activities in June 1998. In addition, excavation of approximately 292 tons of hydrocarbon-impacted soil was removed from beneath the former eastern dispenser island during the remedial excavation activities in December 2002.

4.0 GROUNDWATER RECEPTOR SURVEY

4.1 Agency Database Search

In June 2002, ERI contacted the County of Alameda Public Works Agency (Public Works) and requested a well survey report within a ½-mile (2,640 feet) radius of the site. Public Works provided ERI with a report of all irrigation, industrial, municipal and domestic wells in the City of Alameda.

4.2 Field Survey

In July 2002, ERI's representative visited the site and conducted a survey of properties within a ½-mile radius of the site. The survey area was located in a residential and commercial section of the City of Alameda. ERI's representative attempted to contact a resident or employee of the properties which ERI's agency database search identified as having wells for an interview. If a contact person was present, they were questioned about whether a well was located on the property, and if so, if any details regarding the potential receptor could be provided. If no contact person was present, ERI's representative left a self-addressed stamped survey questionnaire at the location. In addition, ERI's representative searched the survey radius for municipal wells, surface water bodies, or any potential receptor to groundwater.

4.3 Survey Results

ERI's agency database search identified three irrigation wells located within the survey radius. However, no contact person was present at the properties for an interview during ERI's field receptor survey. In addition, ERI did not receive a response to the survey questionnaires left at the locations.

ERI's field survey did not identify other wells within the search radius. The results of the agency database search and field receptor survey are summarized in Table 1 and shown on the Water Well Location Map Plate 11. The nearest groundwater receptor to the site appears to be an irrigation well (identified as well A on Plate 11) which is approximately 1, 980 feet west (up and crossgradient) of the site. The other two wells are approximately 2,245 feet west of the site and 2,245 feet southwest of the site.

5.0 RISK-BASED CORRECTIVE ACTION ANALYSIS

ERI conducted a Tier II RBCA analysis for the subject site pursuant to methods described in the American Society for Testing and Materials (ASTM) E-1739 *Standard Guide for Risk-Based Corrective Action Applied at Petroleum Sites (ASTM, 1995),* and California Regional Water Quality Control Board (the Regional Board) document entitled *Application of Risk-Based Screening Levels and Decision Making to Sites With Impacted Soil and Groundwater (Interim Final)* (CRWQCB, December 2001). ERI employed the RBCA Tool Kit for Chemical Releases, Version 1.3a (2000), distributed by Groundwater Services, Inc. (GSI).

5.1 Land Use and Sensitive Receptors

The site is currently operating as an auto repair facility. Adjacent and nearby parcels are occupied by residential and commercial structures.

ERI used 1,980 and 2,245 feet as the distances to the closest groundwater receptors, even though the identified receptors are not downgradient of the site. ERI used a distance of 50 feet as the nearest outdoor air receptor based on a visual reconnaissance of the area. Commercial exposure criteria were used to evaluate on-site receptors and residential criteria were used to evaluate off-site receptors based on the current use of the site and the surrounding area.

5.2 Impacted Media and Chemical Releases

Cumulative results of environmental investigations indicate that groundwater (Appendix C) and soil (Appendix B) underlying the site are impacted by fuel hydrocarbons and associated organic compounds. ERI considered both soil and groundwater as impacted media. A map showing the distribution of residual hydrocarbons in soil is shown on Plate 7; and maps showing the distribution of dissolved TPHg, MTBE,

and benzene in groundwater are shown on Plates 8 through 10, respectively.

5.3 Chemicals of Concern and Representative Point of Exposure Concentrations

Soil and groundwater underlying the site are impacted with residual and dissolved gasoline hydrocarbons and related chemical compounds. ERI therefore included BTEX compounds and MTBE as chemicals of concern (COCs) for the RBCA analysis.

The properties of each COC used in the RBCA analyses are summarized in Chemical Data for Selected COCs, summary sheet, (including the Physical Property Data sheet, Toxicity Data sheet, and Miscellaneous Chemical Data sheet) in the RBCA analysis output documentation (Appendix E). For each COC, ERI input the oral and inhalation slope factors, oral and inhalation reference doses, and other physical properties specified in Table J, Volume 2, of the Regional Board's RBCA guidance document (CRWQCB, December 2001).

For the Tier 2 RBCA spreadsheet analysis, ERI input the maximum concentration of dissolved BTEX and MTBE concentrations reported during the four most recent quarters (second quarter 2002 through first quarter 2003) of groundwater monitoring and sampling (Appendix C) into the RBCA model. ERI input the maximum concentrations of residual BTEX and MTBE in soil from all samples of soil remaining in place (Appendix B).

5.4 Model Input Parameters

Input parameters used for the respective RBCA analyses are summarized in the Input Parameter Summary of the RBCA output documentation (Appendix E). Select model input parameters are discussed in the following sections.

5.4.1 Exposure Parameters

ERI used default exposure parameters specified in ASTM E-1739.

5.4.2 Exposure Pathways

The modeled exposure pathways are graphically summarized on the Exposure Pathway Flowchart in the RBCA output documentation (Appendix E). Based on existing land use, ERI selected commercial receptors for on-site exposure, and residential receptors for off-site exposure. Because no water supply wells currently exist on the site, and no wells are anticipated, ingestion of groundwater from on-site sources is not a complete exposure pathway.

5.4.3 Surface Parameters

Impacted soil underlies the site in two areas, each approximately 5-square feet (Plate 7). ERI input 100 square feet as the approximate area of the source zone area. Default parameters were accepted for the remaining parameters.

5.4.4 Groundwater Parameters

ERI selected physical properties for typical sand underlying the site. ERI input a porosity of 43% a saturated hydraulic conductivity of 0.0035 cm/sec, and a hydraulic gradient of 0.007. The current RBCA analyses included bioattenuation of the COCs; half lives for the COCs were those specified by Howard (1989).

5.4.5 Soil Parameters

ERI input physical properties for sand encountered in the vadose zone underlying the site. ERI input a porosity of 41% and an unsaturated hydraulic conductivity of 0.01 cm/sec.

5.5 RBCA Analyses Results

The GSI RBCA Tool Kit for Chemical Releases, Version 1.3a (2000) calculates site specific target levels (SSTLs) for the selected exposure pathways based on site-specific input parameters. The SSTLs for each COC calculated by the program are tabulated in the RBCA output documentation (Appendix E).

Results of the RBCA analysis indicate that SSTLs for BTEX and MTBE are greater than the respective residual saturation concentration in soil, and are not exceeded by the maximum concentrations for those compounds. The SSTL for BTEX and MTBE is greater than the solubility limits in groundwater, and is not exceeded by the representative concentration.

6.0 DISCUSSION

It is ERI's opinion that ConocoPhillips has performed adequate site characterization and investigation. Furthermore, the soil and groundwater conditions existing beneath the site indicate that no further work related to ConocoPhillips' past operation is necessary. Environmental work performed to date indicates the following:

- Residual hydrocarbons and related constituents in soil are delineated beneath the site. All feasible soil source removal at the site has occurred. The extent of residual hydrocarbons in soil is limited to two areas, each approximately 5-feet square, in the vicinity of the former UST cavity and west of the former eastern dispenser island.

- Dissolved hydrocarbon and related constituents in groundwater are delineated crossgradient and downgradient of the site. In addition, it appears that petroleum hydrocarbons in groundwater have decreased or remained stable in monitoring wells MW1 through MW6 since the initiation of groundwater monitoring and sampling.

- The groundwater receptor survey revealed three irrigation wells within a 1/2-mile radius of the site. However, these wells do not appear to be exposed to residual hydrocarbons at this site due to their distance and location to the site.

- The SSTLs for BTEX and MTBE are greater than the respective residual saturation concentration in soil, and are not exceeded by the maximum concentrations for those compounds by at least one order of magnitude. The SSTLs for BTEX and MTBE are greater than the solubility limits in groundwater, and is not exceeded by the representative concentration by at least one order of magnitude.

It is ERI's opinion that ConocoPhillip's past operations at the site poses no risk to human health or the environment. ERI recommends that ConocoPhillips perform no further environmental work at the site, except for the work proposed in the following section.

7.0 PROPOSED WORK

The specific tasks proposed in this scope of work are summarized below and discussed in the sections that follow.

7.1 Site Safety Plan and Permits

Field work will be performed by ERI personnel in accordance with a site-specific health and safety plan prepared for the site. This plan will describe the basic safety requirements for well destruction activities at the site. The site safety plan is applicable to personnel and subcontractors of ERI. Personnel at the site will be informed of the contents of the site safety plan before work begins. A copy of the site safety plan will be kept at the work site and will be available for reference by appropriate parties during work. An ERI representative will act as the Site Safety Officer.
ERI will complete and submit permit applications for the destruction of the four on-site monitoring wells (MW1 through MW4) and two off-site groundwater monitoring wells (MW5 and MW6).

7.2 Field Mobilization and Well Destruction

After the well destruction permits are approved, a licensed California well driller will be contracted to destroy MW1 through MW6 in accordance with regulatory requirements. The County will be contacted at least 48 hours prior to the date of the scheduled work. The total depths of the monitoring wells are 20.5 and 21.5 feet bgs. The 2-inch diameter well casings were installed in 8-inch bore holes. The 8-inch diameter monitoring well vaults will be removed and disposed. Each well location will be resurfaced to match the surrounding pavement. An ERI geologist will be on site to observe the well destruction.

7.3 Stockpiled Soil and Rinsate Disposal

After the monitoring wells are destroyed, the well cuttings will be placed on plastic sheeting, covered, and left at the site. ERI will coordinate the appropriate disposal of the soil with ConocoPhillips. The asphalt and/or concrete will be washed down after the work is completed, and the site cleaned of any debris related to the well destruction. Auger rinse water will be stored in appropriately labeled drums on site. ERI will apprise ConocoPhillips of appropriate disposal options for the water.

7.4 Case Closure Letter

After the field work is completed, ERI will prepare a final letter documenting the destruction of the groundwater monitoring wells and requesting that a letter stating no further action will be required of ConocoPhillips.

8.0 SCHEDULE OF OPERATIONS

ERI is prepared to implement the scope of work outlined above upon receipt of written approval of this Request and Work Plan from the County and upon receipt of approved drilling permits. Any unreasonable delays of the project will be communicated to ConocoPhillips and the County.

9.0 LIMITATIONS

This Request and Work Plan for Case Closure was prepared in accordance with generally accepted standards of environmental practice in California at the time this work was performed. This work was conducted solely for the purpose of evaluating environmental conditions of soil and groundwater with respect to hydrocarbons. Evaluation of the geologic conditions at the site for the purpose of this investigation is made from a limited number of observation points. Subsurface conditions may vary away from the data points available.

10.0 REFERENCES

American Society for Testing and Materials (ASTM). 1995. Standard Guide for Risk-Based Corrective Action Applied at Petroleum Sites. E-1739

California Regional Water Quality Control Board (the Regional Board). December 2001. Application of Risk-Based Screening Levels and Decision Making to Sites With Impacted Soil and Groundwater (Interim Final), Former Tosco 76 Service Station 0843, 1629 Webster Street, Alameda, California.

Environmental Resolutions, Inc. (ERI). September 15, 1998. Underground Storage Tank, Associated Piping and Dispenser Removal at Former Tosco 76 Service Station 0843, 1629 Webster Street, Alameda, California. ERI 224832.R01.

Environmental Resolutions, Inc. (ERI). April 28, 1999. Evaluation of Soil and Groundwater Report at Former Tosco 76 Service Station 0843, 1629 Webster Street, Alameda, California. ERI 224803.R01.

Environmental Resolutions, Inc. (ERI). March 7, 2000. Supplemental Evaluation of Groundwater, Former Tosco 76 Service Station 0843, 1629 Webster Street, Alameda, California. ERI 224803.R02.

Environmental Resolutions, Inc. (ERI). April 2, 2001. Underground Utility Survey and Work Plan for Supplemental Evaluation of Soil and Groundwater, Former Tosco 76 Service Station 0843, 1629 Webster Street, Alameda, California. ERI 224803.W03.

Environmental Resolutions, Inc. (ERI). July 11, 2001. Supplemental Evaluation of Soil and Groundwater, Former Tosco 76 Service Station 0843, 1629 Webster Street, Alameda, California. ERI 224803.R03.

Environmental Resolutions, Inc. (ERI). February 27, 2003. Supplemental Evaluation of Soil and Groundwater, Former Tosco 76 Service Station 0843, 1629 Webster Street, Alameda, California. ERI 224803.R04.

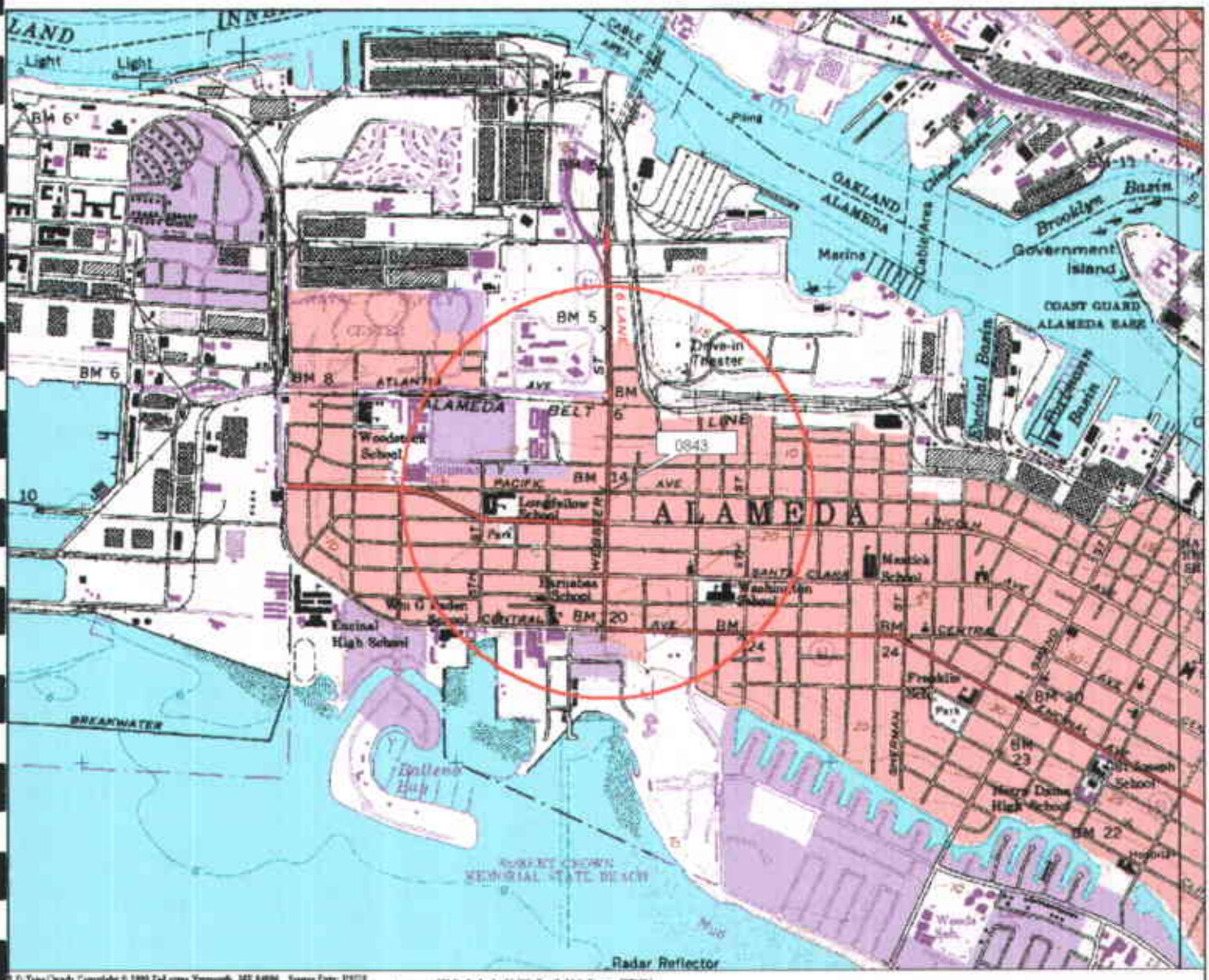
Environmental Resolutions, Inc. (ERI). March 5, 2003. Remedial Excavation, Former 76 Service Station 0843, 1629 Webster Street, Alameda, California. ERI 224814.R05.

Gettler-Ryan, Inc. (GRI). April 21, 2003. Groundwater Monitoring and Sampling Report First Quarter – Event March 13, 2003, Tosco (Unocal) Service Station #0843, 1629 Webster Street, Alameda, California. G-R Job #180203.

United States Geological Survey (USGS). 1980. 7.5-Minute Topographic Quadrangle Map, Dublin, California.

TABLE 1
RESULTS OF GROUNDWATER RECEPTOR SURVEY
Former 76 Service Station 0843
1629 Webster Street
Alameda, California

Plate 3 Callout	Well Owner	Type of Well	Location	Total Depth in feet	Date of Well Driller's Report	Screened Interval in feet
A	John Cavallo	Irrigation	462 Buena Vista, Alameda	23	/35	?
B	G. S Stagnaro	Irrigation	441 Pacific, Alameda	315	/06	?
C	Richard Ruth	Irrigation	1417 5th Street, Alameda	45	11/?/77	35-40 feet



EXPLANATION

1/2-mile radius circle

APPROXIMATE SCALE

0 0.5 1 mile

N

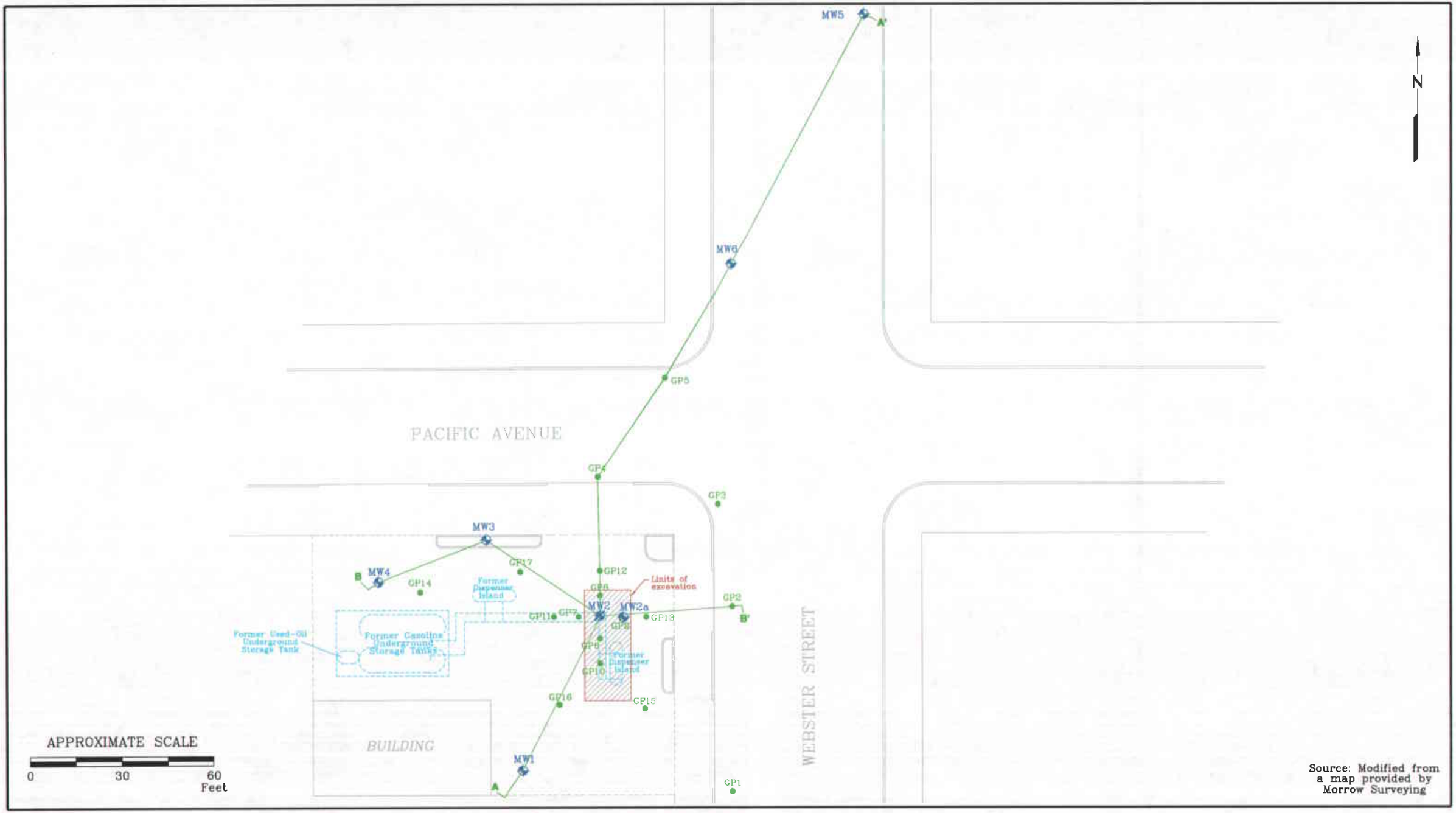
SOURCE:
Modified from a map provided by DeLorme 3-D TopoQuads

ENVIRONMENTAL RESOLUTIONS, INC.

SITE VICINITY MAP

Former 76 Service Station 0843
1629 Webster Street
Alameda, California

PROJECT NO.
2248
PLATE
1



FN: 2248003A

ERI ENVIRONMENTAL RESOLUTIONS, INC.

GENERALIZED SITE PLAN

FORMER 76 SERVICE STAITON 0843
1629 Webster Street
Alameda, California

EXPLANATION

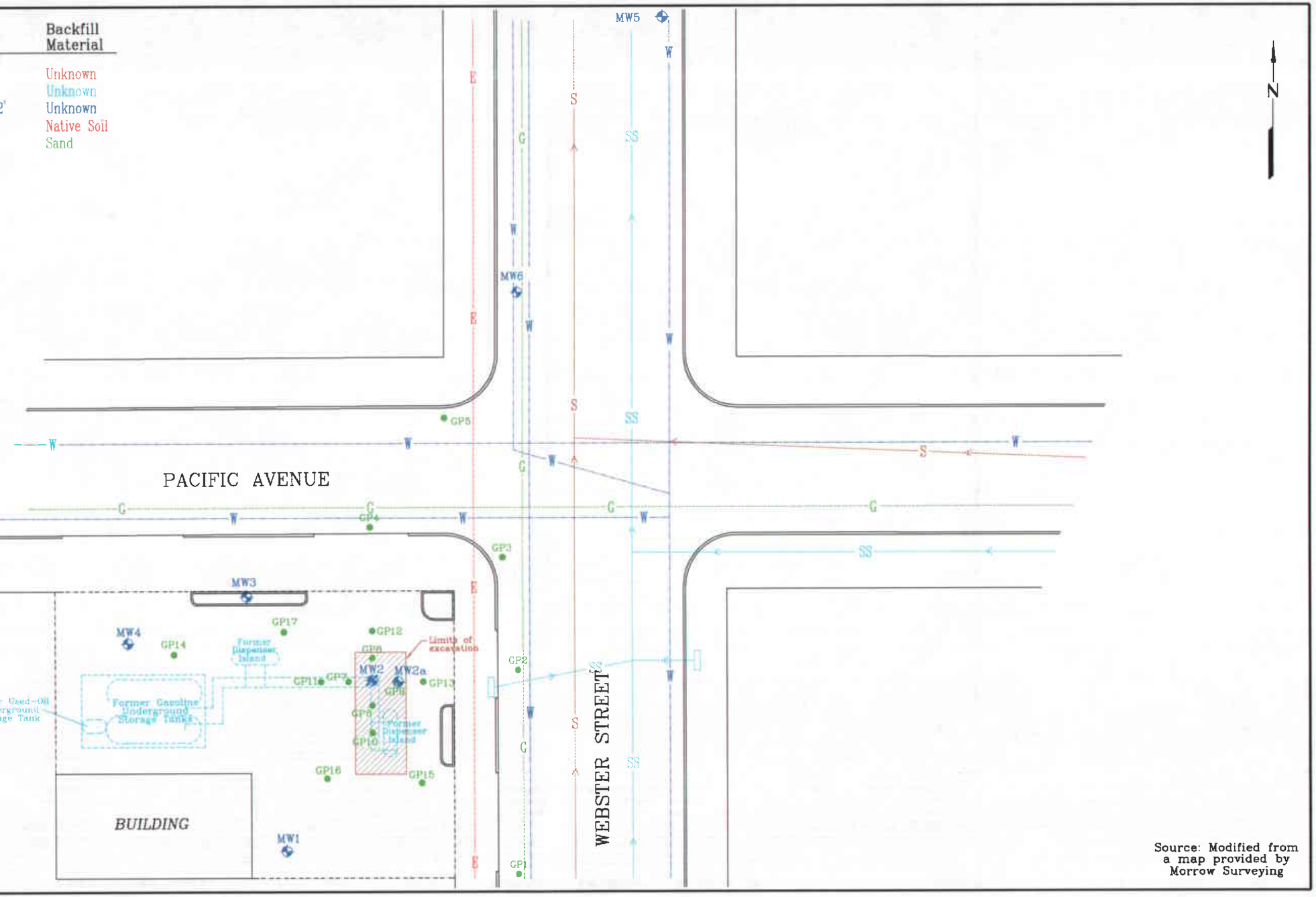
- MW6 — Groundwater Monitoring Well
- MW2 — Destroyed Groundwater Monitoring Well
- GP5 — Direct-Push Soil Boring
- B B' — Cross Section Locations

PROJECT NO. 2248

PLATE 2

July 9, 2001

Symbol	Utility	Depth	Backfill Material
S	Sanitary Sewer	5'-9'	Unknown
SS	Storm Sewer	6'	Unknown
W	Water	2'-5 1/2'	Unknown
E	Electricity	2'	Native Soil
G	Gas	2'-3'	Sand



Source: Modified from a map provided by Morrow Surveying

FN: 2248003A

ERI ENVIRONMENTAL RESOLUTIONS, INC.

MAP OF UNDERGROUND UTILITIES

FORMER 76 SERVICE STAITON 0843
1629 Webster Street
Alameda, California

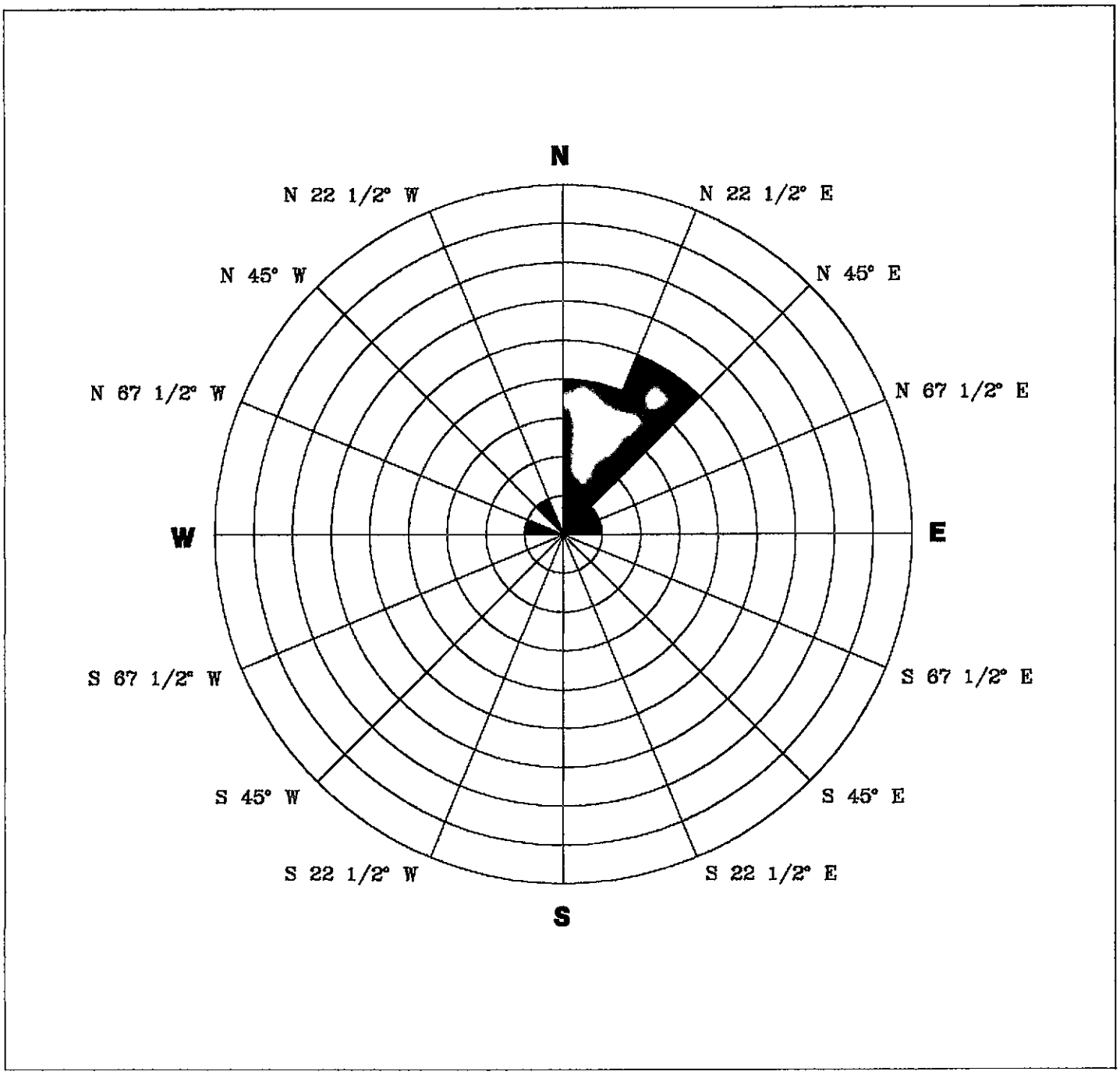
EXPLANATION

- MW6 — Groundwater Monitoring Well
- MW2 — Destroyed Groundwater Monitoring Well
- GP5 — Direct-Push Soil Boring

PROJECT NO. 2248

PLATE 3

July 9, 2001



FN 2248ROSE

EXPLANATION

N Compass Direction

Thirteen Data Points Shown

Rose diagram developed by evaluating the groundwater gradient direction from the quarterly monitoring data. Each circle on the rose diagram represents the number of monitoring events that the gradient plotted in that 22 1/2 degree sector.

ERI ENVIRONMENTAL RESOLUTIONS, INC.

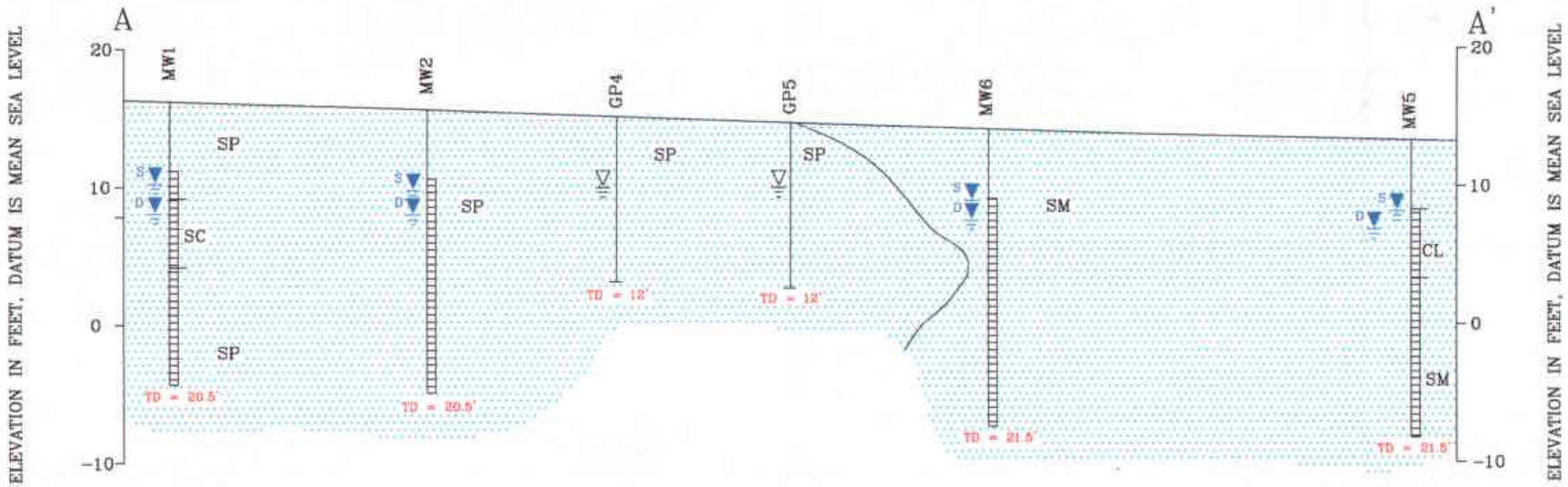
GROUNDWATER FLOW DIRECTION ROSE DIAGRAM

FORMER 76 SERVICE STATION 0843
1629 Webster Avenue
Alameda, California

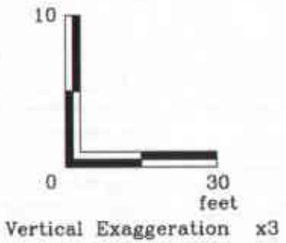
PROJECT NO. 2248

PLATE 4

June 2005



APPROXIMATE SCALE



Vertical Exaggeration x3

FN 2248 XS AA

ENVIRONMENTAL RESOLUTIONS, INC.

CROSS SECTION A - A'

FORMER 76 SERVICE STATION 0843
1629 Webster Street
Alameda, California

EXPLANATION

Sand

TD = Total Depth

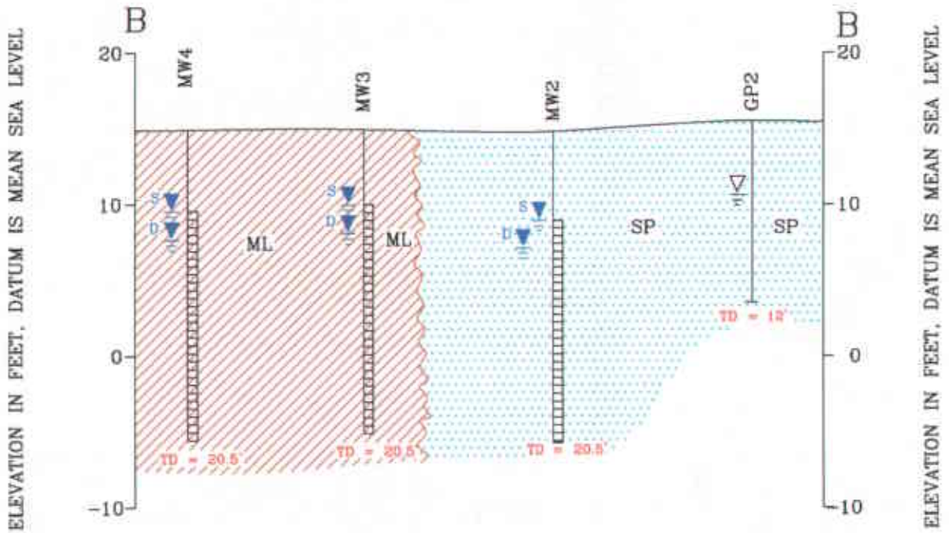
S Shallowest Groundwater Level

D Deepest Groundwater Level

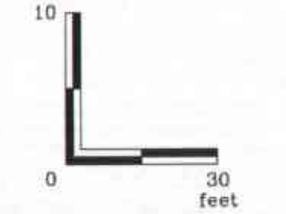
Static Groundwater

PROJECT NO. 2248

PLATE 5



APPROXIMATE SCALE



Vertical Exaggeration x3

FN 2248 XS BB

ERI ENVIRONMENTAL RESOLUTIONS, INC.

CROSS SECTION B - B'

FORMER 76 SERVICE STATION 0843
1629 Webster Street
Alameda, California

EXPLANATION

- Sand
- Clayey Silt

TD = Total Depth

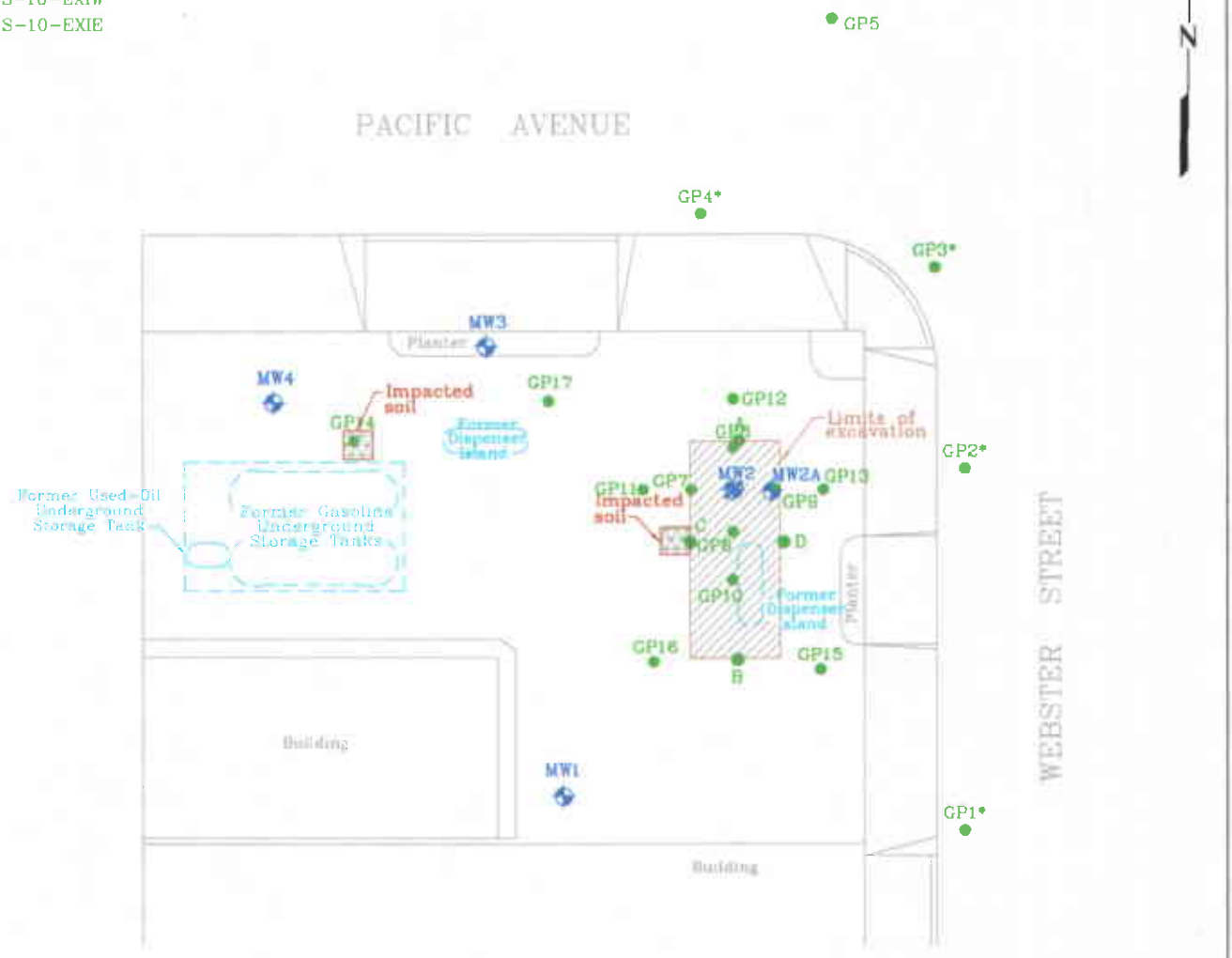
- S — Shallowest Groundwater Level
- D — Deepest Groundwater Level
- Static Groundwater

PROJECT NO. 2248

PLATE 6

SOIL SAMPLES

A S-10-EXIN
B S-10-EXIS
C S-10-EXIW
D S-10-EXIE



APPROXIMATE SCALE

0 30 60
FEET

SOURCE:
Modified from a map provided by Morrow Surveying

FN 22480002

EXPLANATION

MW4 Groundwater Monitoring Well

GP17 Direct-Push Soil Boring

MW2 Destroyed Groundwater Monitoring Well

D Soil Sample

* Drilled on May 23, 2001

ERI ENVIRONMENTAL RESOLUTIONS, INC.

DISTRIBUTION OF RESIDUAL HYRDOCARBONS IN SOIL

FORMER 76 SERVICE STATION 0843
1629 Webster Street
Alameda, California

PROJECT NO. 2248

PLATE 7

February 7, 2002

FN: 2248003A

ERI ENVIRONMENTAL RESOLUTIONS, INC.

TPHg ISOCONCENTRATION MAP
MARCH 13, 2003

FORMER 76 SERVICE STAITON 0843
1629 Webster Street
Alameda, California

EXPLANATION

MW6 — Groundwater Monitoring Well

1,600 — TPHg concentration (ug/L)

MW2 — Destroyed Groundwater Monitoring Well

NS = Not Sampled

500 ----- Line of Equal TPHg Concentration (ug/L)

PROJECT NO. 2248

PLATE 8

July 9, 2001

FN: 2248003A

ERI ENVIRONMENTAL RESOLUTIONS, INC.

MTBE ISOCONCENTRATION MAP
MARCH 13, 2003

FORMER 76 SERVICE STAITON 0843
1629 Webster Street
Alameda, California

EXPLANATION

MW6 — Groundwater Monitoring Well

5,100 — MTBE concentration (ug/L)

1,000----- Line of Equal MTBE Concentration (ug/L)

NS = Not Sampled

MW2 — Destroyed Groundwater Monitoring Well

PROJECT NO. 2248

PLATE 9

July 9, 2001

FN: 2248003A

ERI ENVIRONMENTAL RESOLUTIONS, INC.

BENZENE CONCENTRATION MAP
MARCH 13, 2003

FORMER 76 SERVICE STAITON 0843
1629 Webster Street
Alameda, California

EXPLANATION

NS = Not Sampled

MW6 — Groundwater Monitoring Well

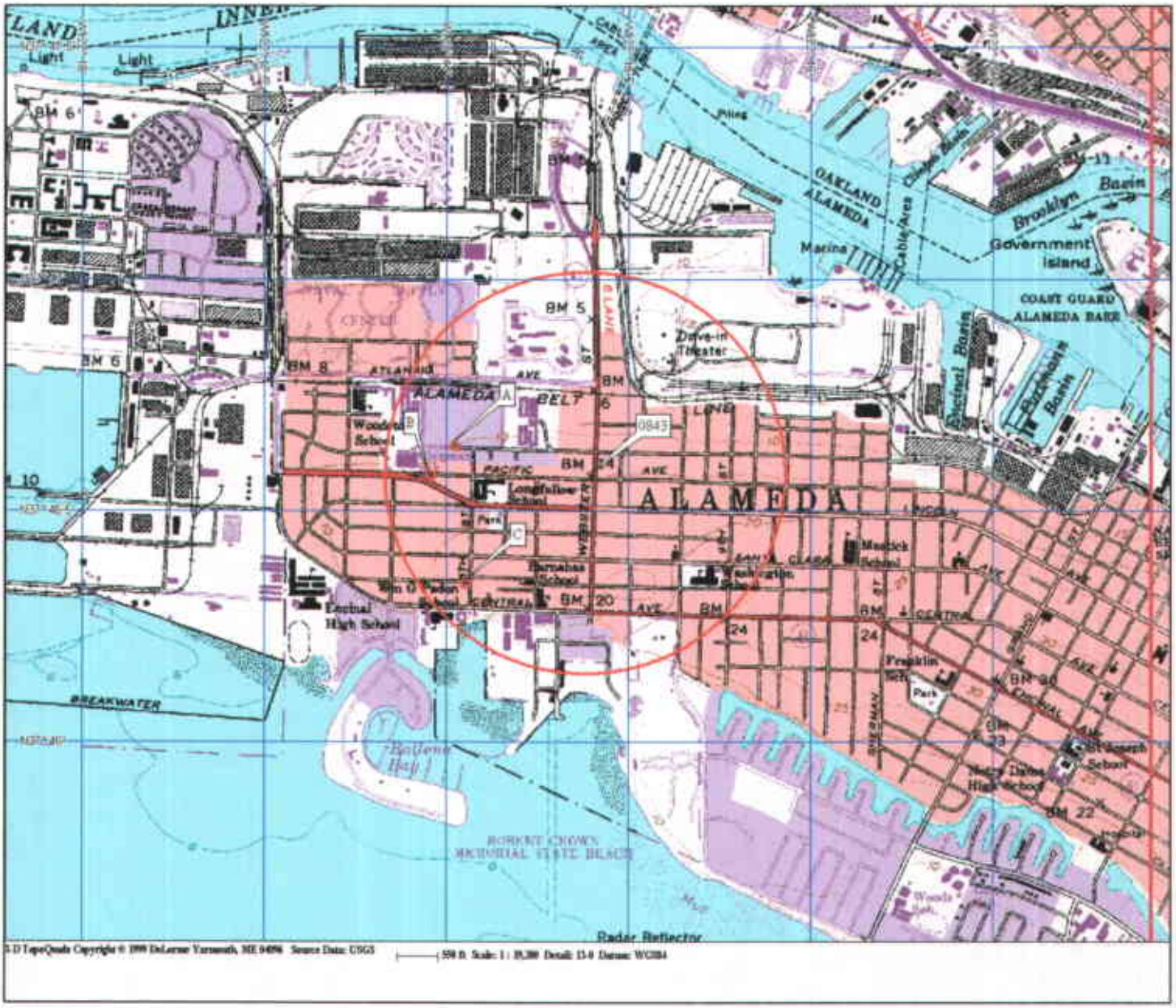
<5.0 — Benzene concentration (ug/L)

MW2 — Destroyed Groundwater Monitoring Well

PROJECT NO. 2248

PLATE 10

July 9, 2001



EXPLANATION

1/2-mile radius circle

Wells

N

APPROXIMATE SCALE

0 0.5 1 mile

SOURCE:
Modified from a map provided by DeLorme 3-D TopoQuads

ENVIRONMENTAL RESOLUTIONS, INC.

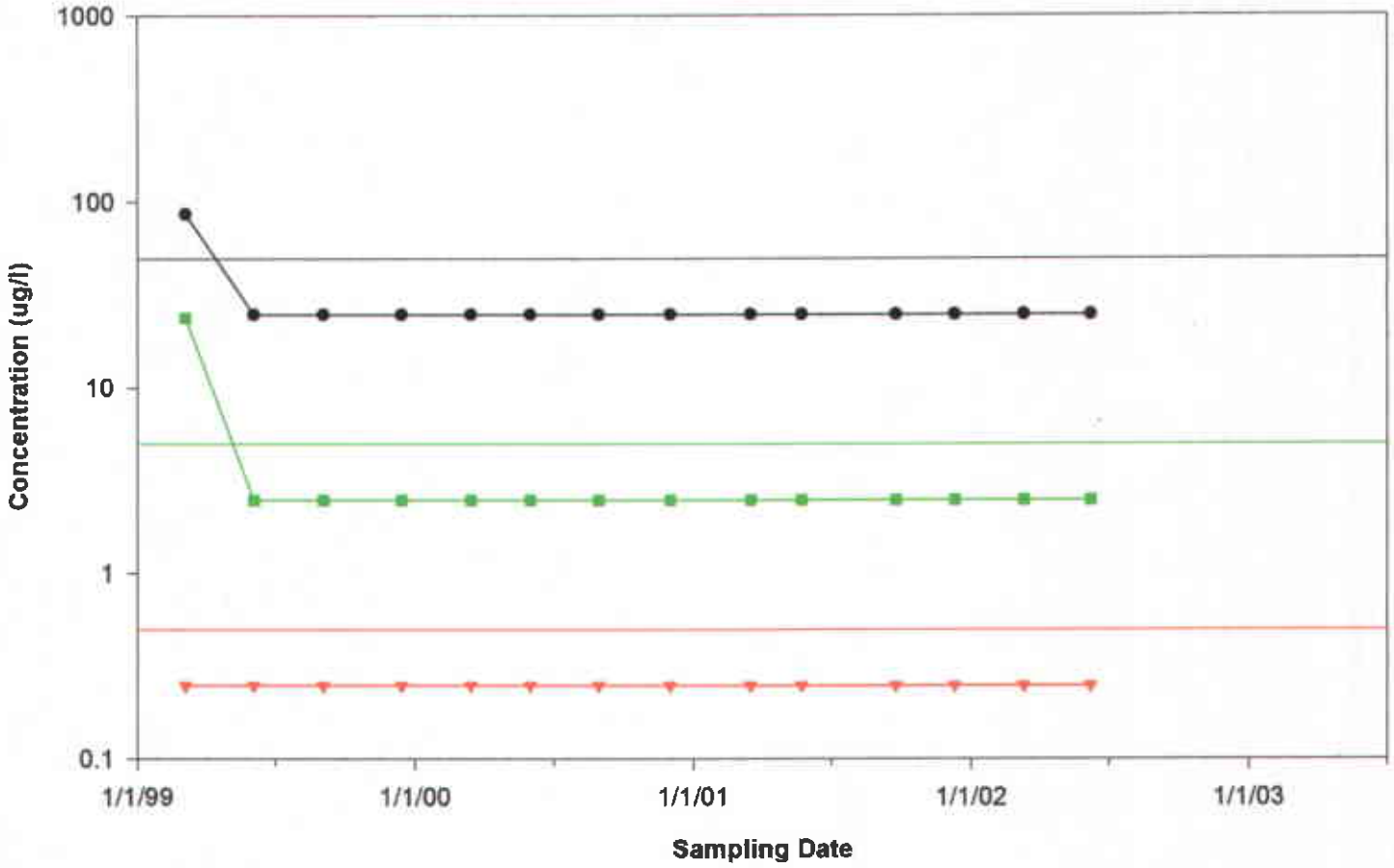
WATER WELL LOCATION MAP

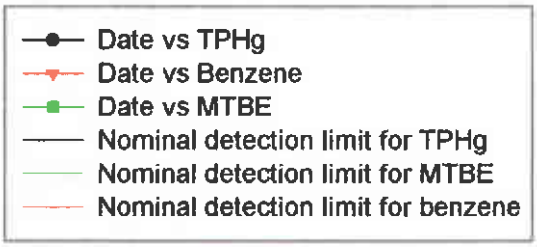
FORMER 76 SERVICE STATION 0843
1629 Webster Street
Alameda, California

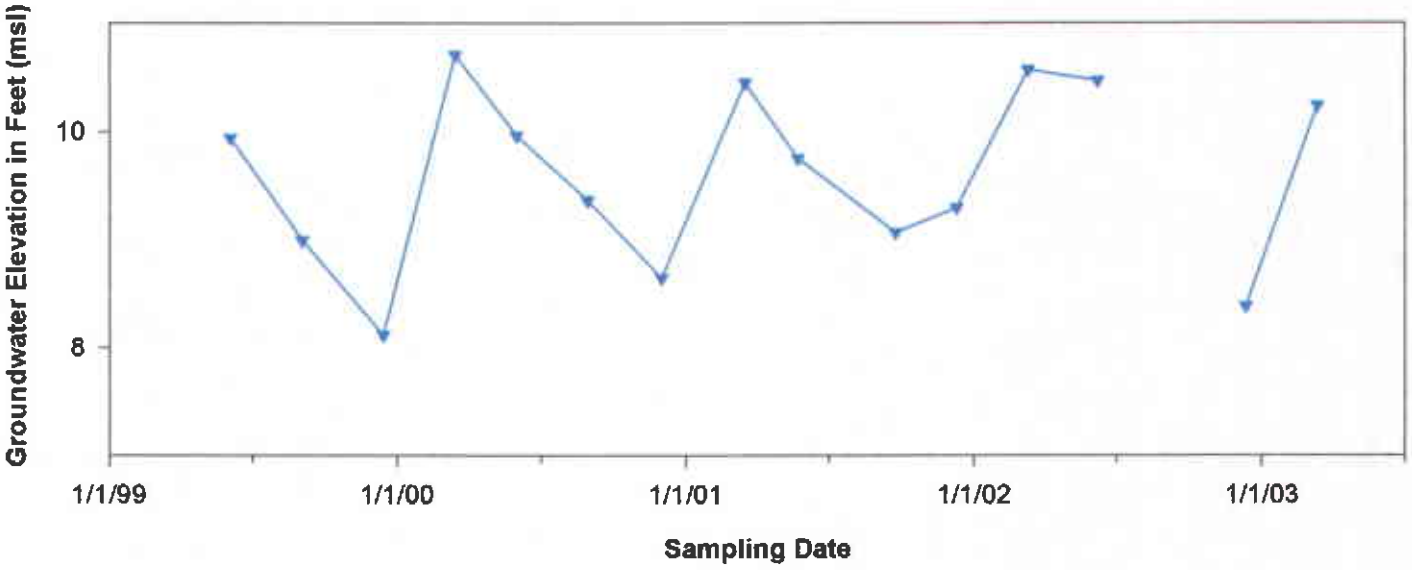
PROJECT NO. 2248

PLATE 11

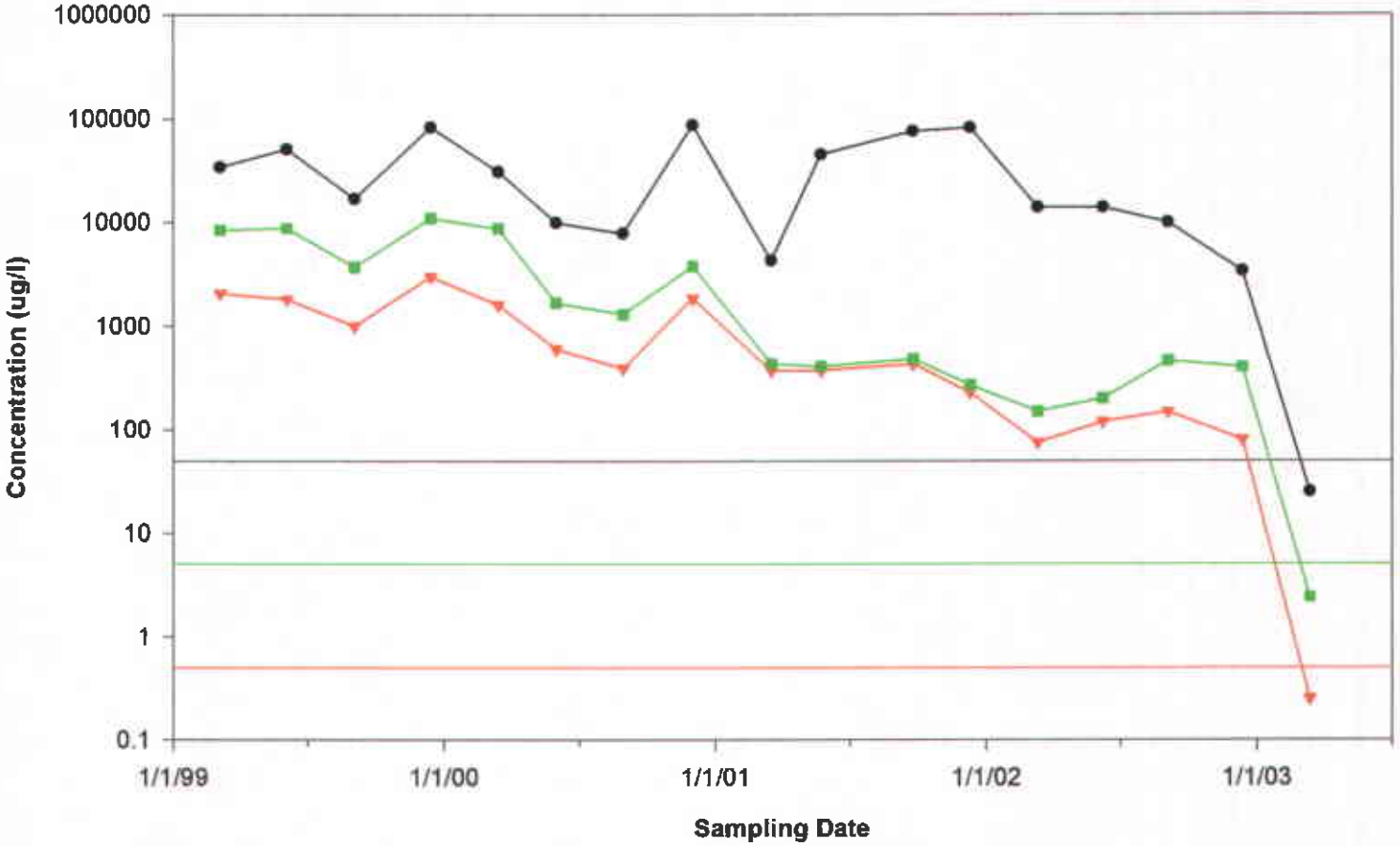
Hydrograph - MW1
Former 76 Service Station 0843
1629 Webster Street
Alameda, California

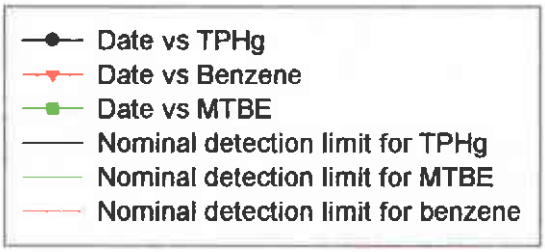


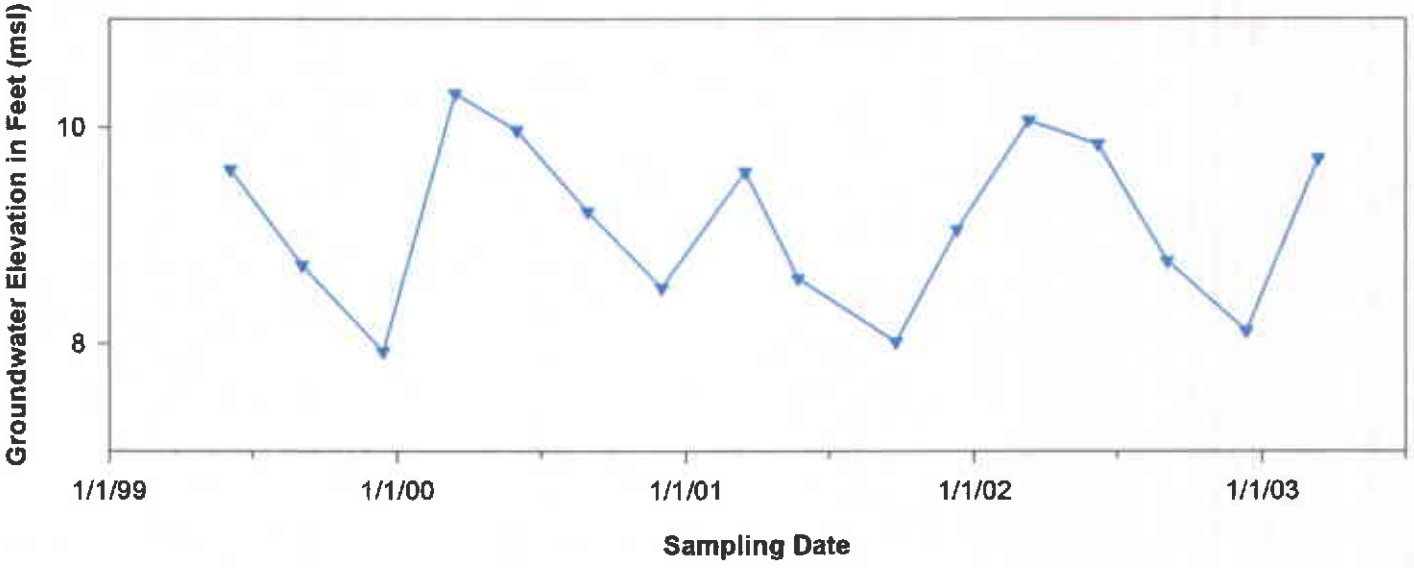




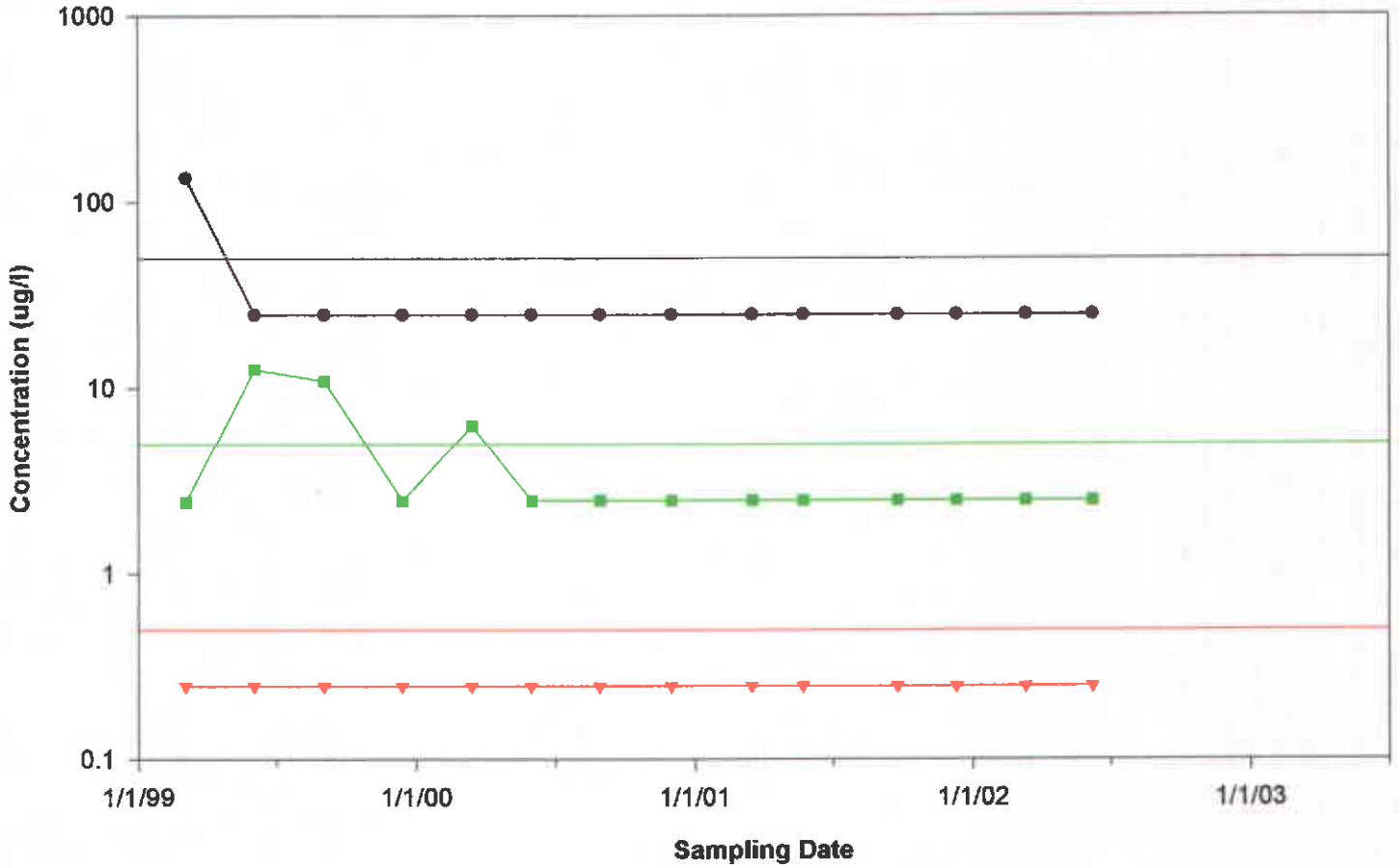
Hydrograph - MW2
Former 76 Service Station 0843
1629 Webster Street
Alameda, California

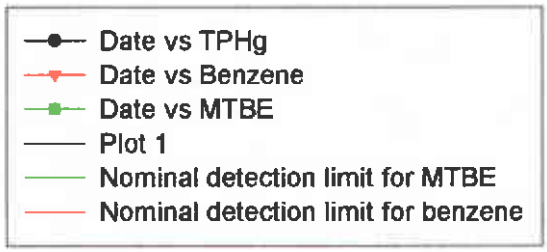


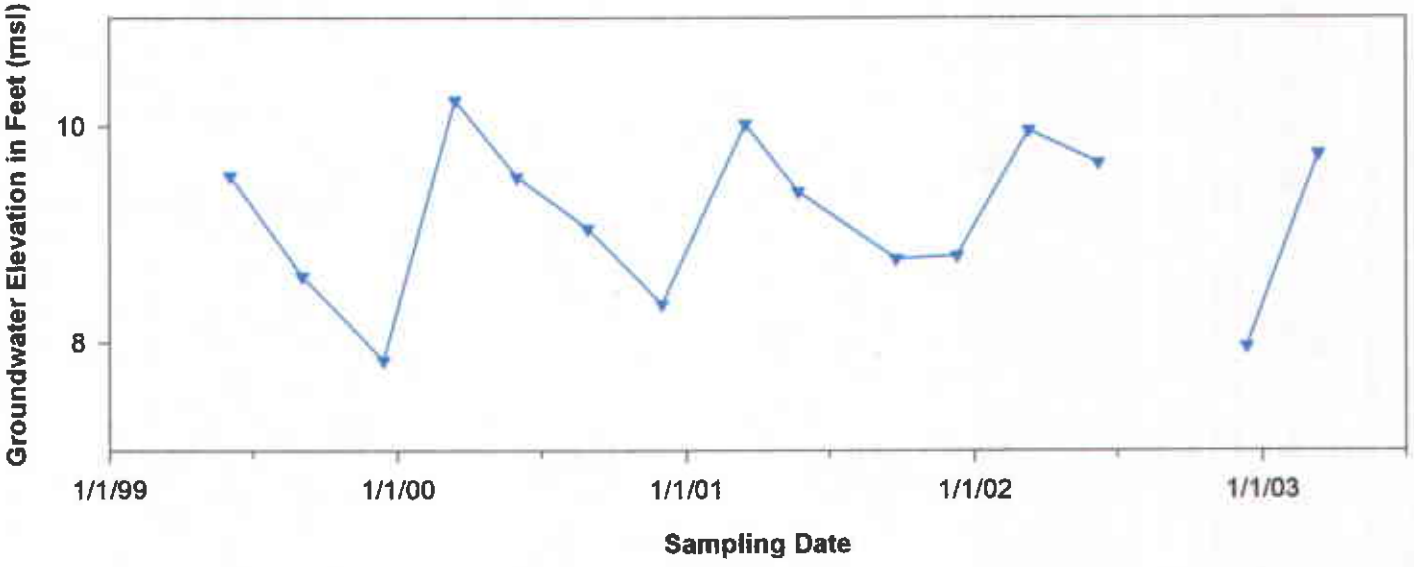




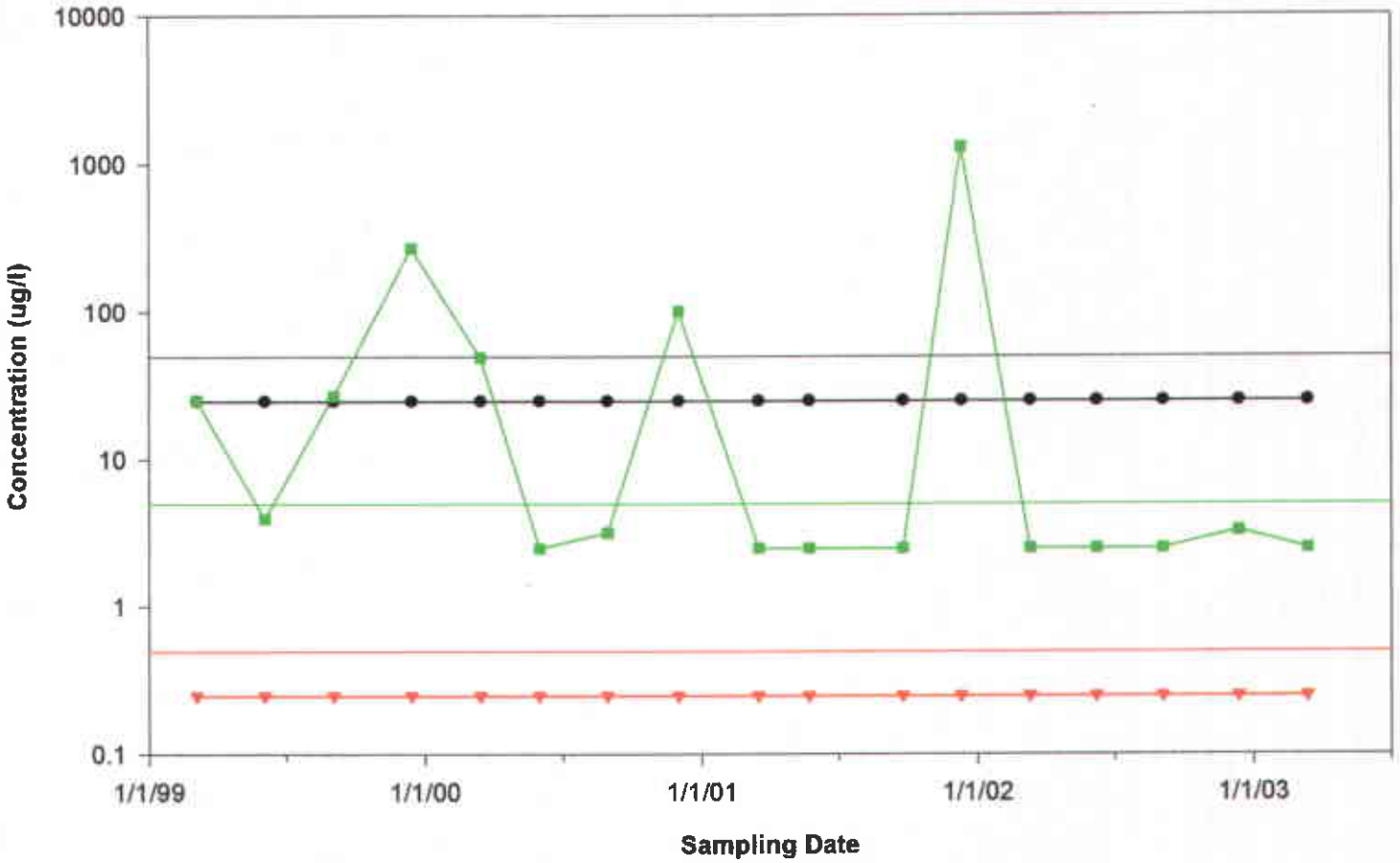
Hydrograph - MW3
Former 76 Service Station 0843
1629 Webster Street
Alameda, California

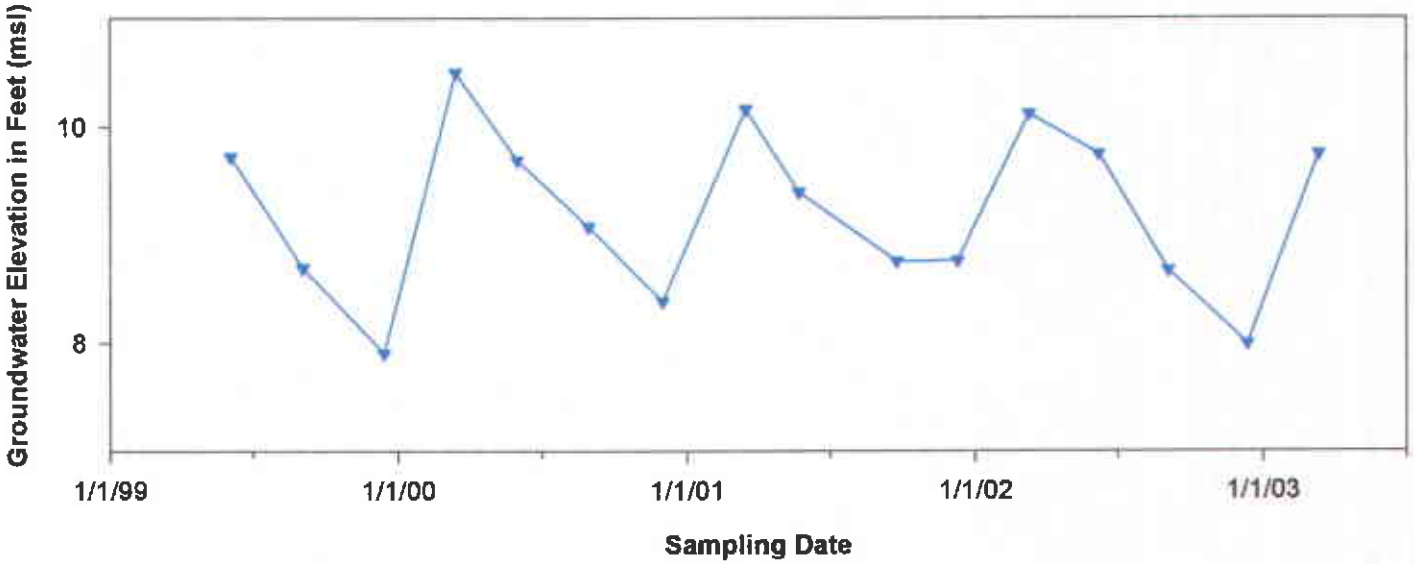




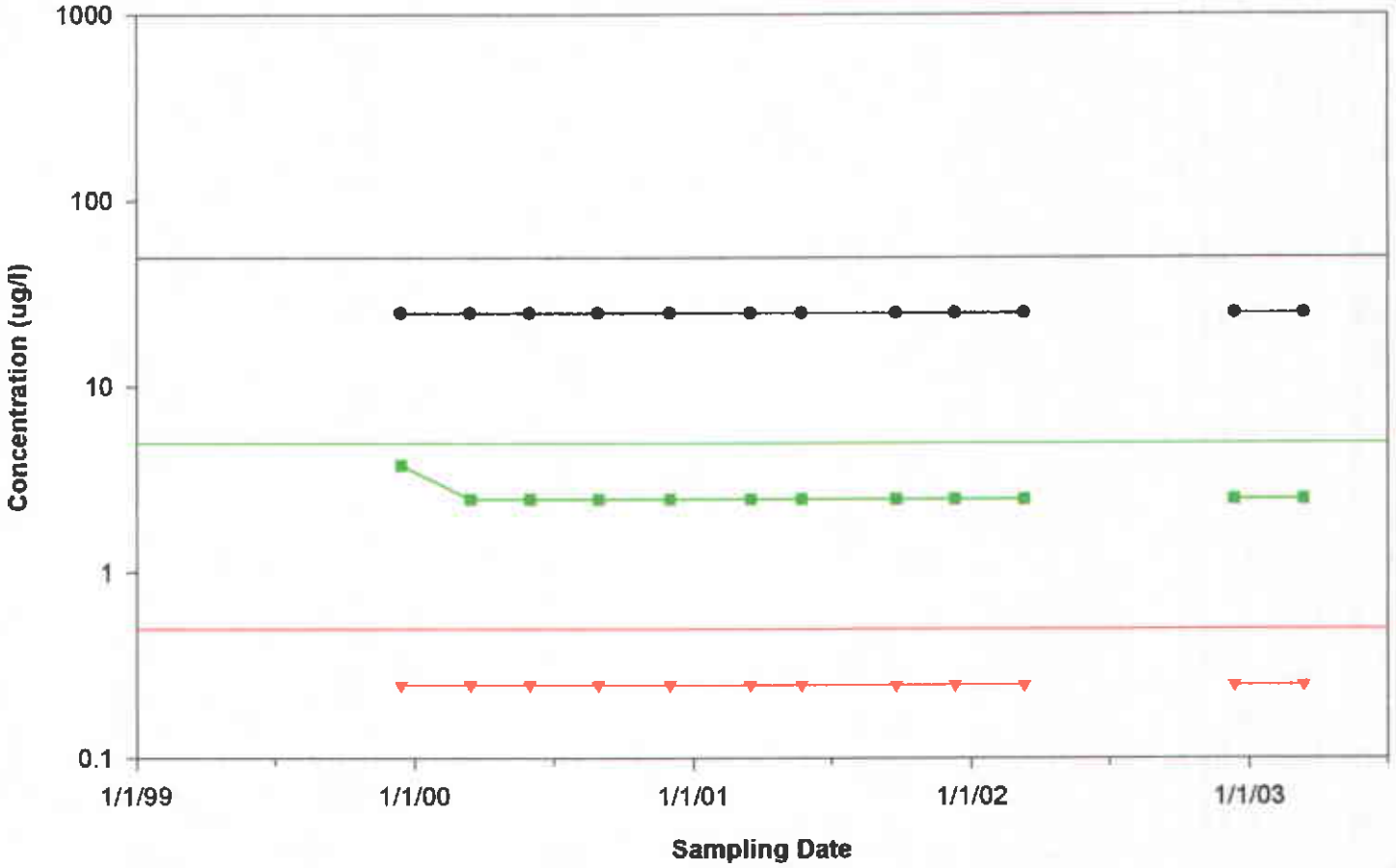


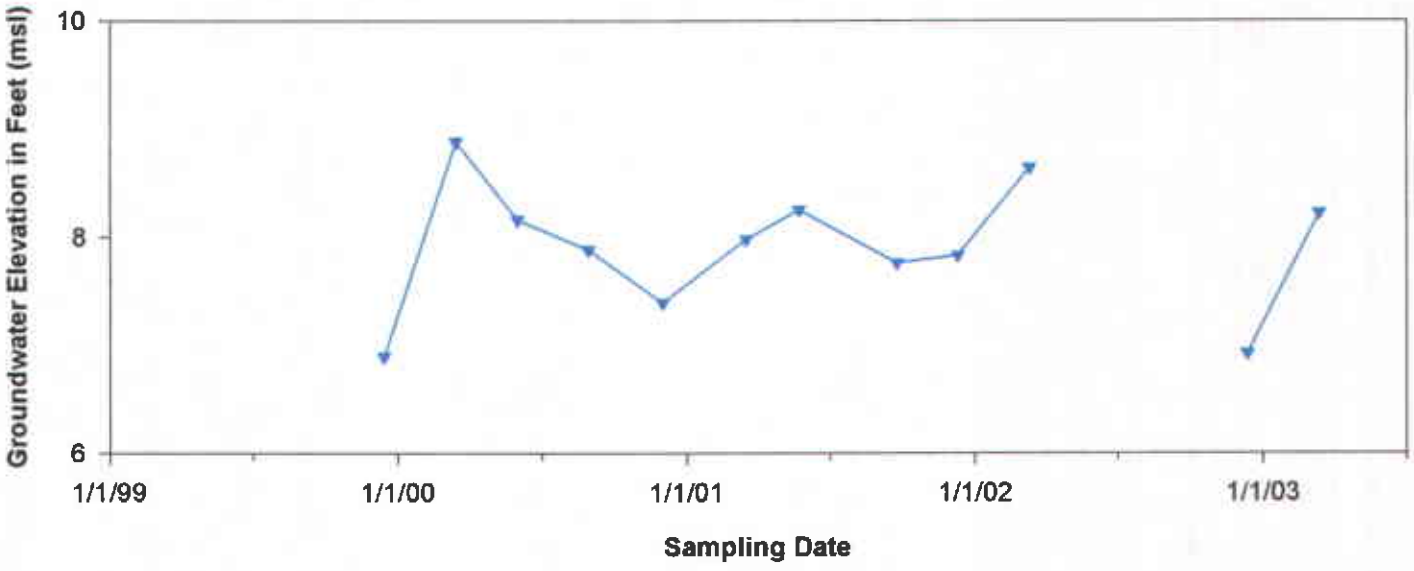
Hydrograph - MW4
Former 76 Service Station 0843
1629 Webster Street
Alameda, California



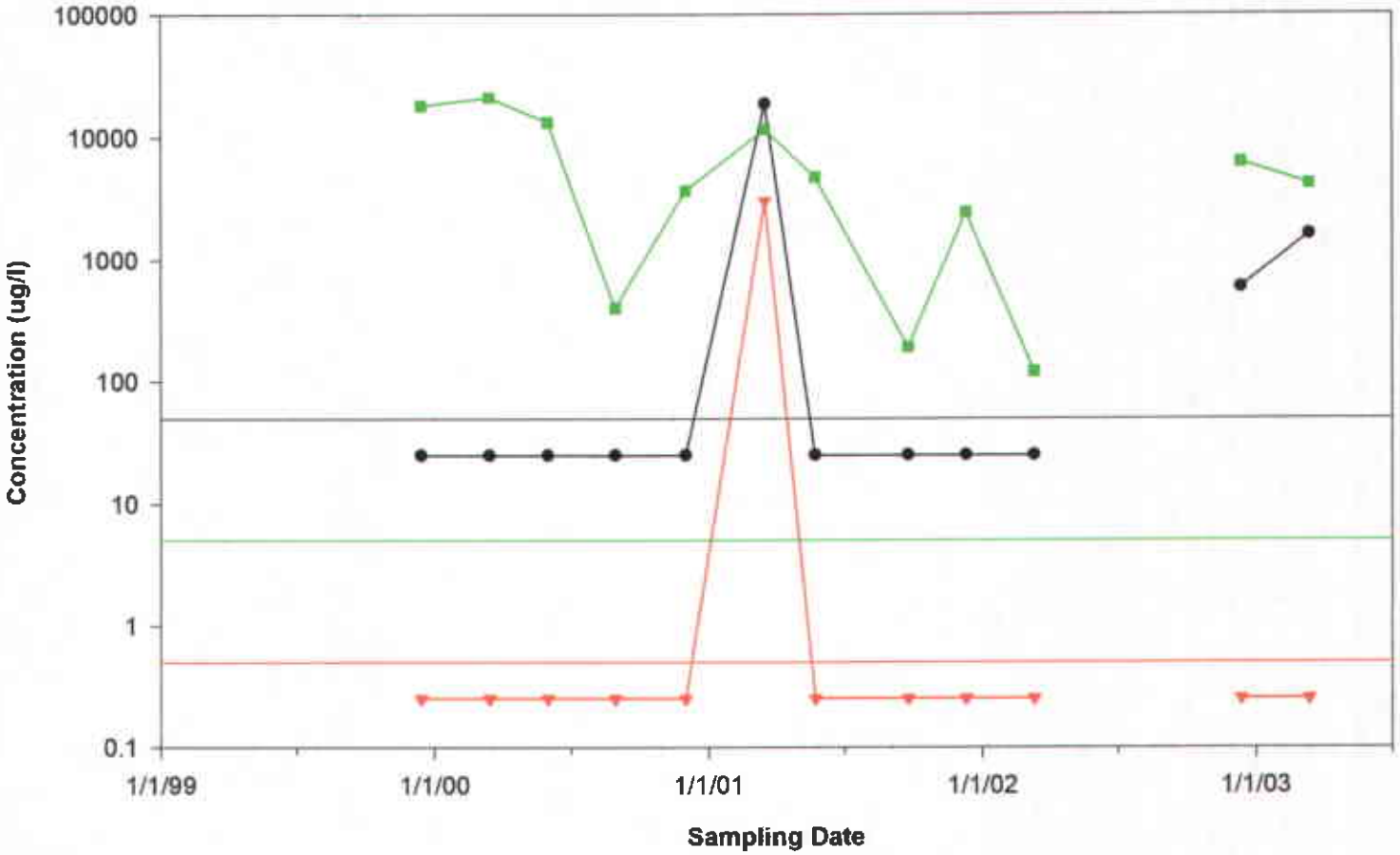


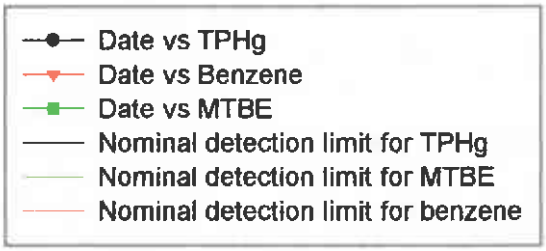
Hydrograph - MW5
Former 76 Service Station 0843
1629 Webster Street
Alameda, California

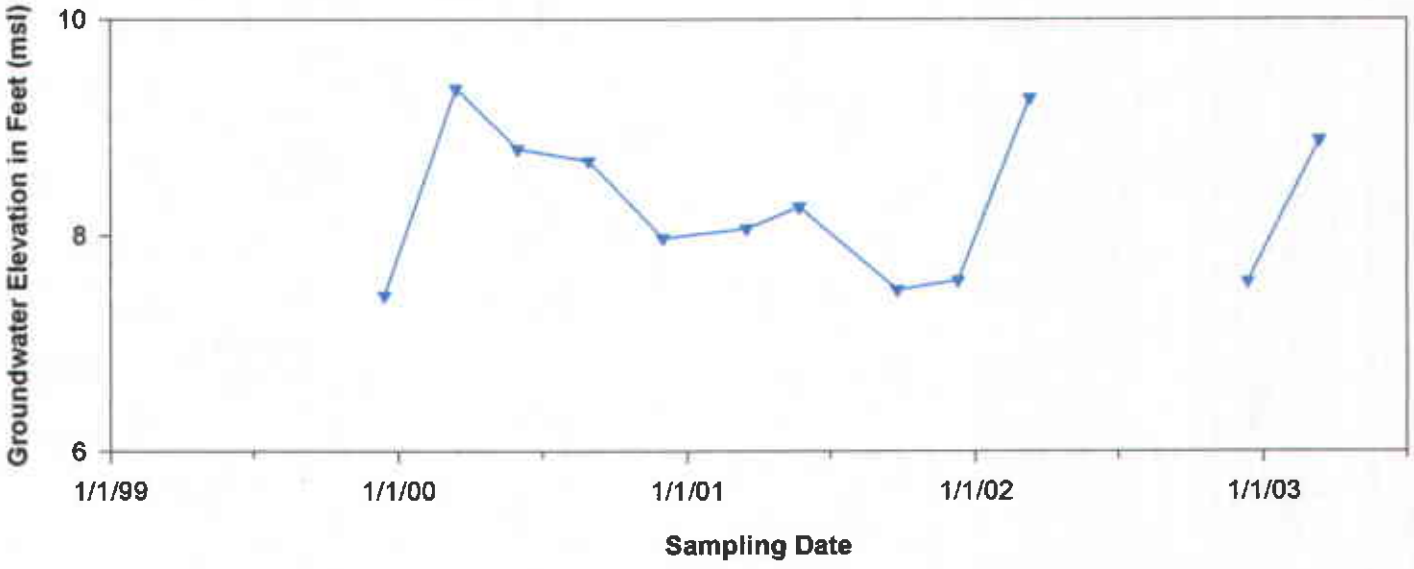




Hydrograph - MW6
Former 76 Service Station 0843
1629 Webster Street
Alameda, California







APPENDIX A

CASE CLOSURE SUMMARY FORM AND CRITERIA FOR CASE CLOSURE

CASE CLOSURE SUMMARY
UNDERGROUND FUEL STORAGE TANK LOCAL OVERSIGHT PROGRAM

I. AGENCY INFORMATIO

Date: 9/10/03

Agency Name: Alameda County Environmental Health	Address: 1131 Harbor Bay Parkway
City/State/Zip: Alameda, CA 94502	Phone: (510) 567-6700
Responsible Staff Person: Amir Gholami	Title: Hazardous Materials Specialist

II. CASE INFORMATION

Site Facility Name: Former 76 Service Station 0843		
Site Facility Address: 1629 Webster Street, Alameda, California		
RB LUSTIS Case No.:	Local Case No.:	LOP Case No.:
URF Filing Date:	SWEEPS No.:	APN:

Responsible Parties	Addresses	Phone Number
ConocoPhillips Company	76 Broadway, Sacramento, California 95818	(916) 558-7666

Tank I.D. No	Size in Gallons	Contents	Closed In Place/Removed?	Date
1	10,000	Gasoline	Removed	1998
2	10,000	Gasoline	Removed	1998
3	550	Use Oil	Removed	1998
Piping and Dispensers			Removed	1998

III. RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and Type of Release: Release from underground storage tanks		
Site characterization complete? Yes	Date Approved By Oversight Agency:	
Monitoring wells installed? Yes	Number: 6	Proper screened interval? Yes
Highest GW Depth Below Ground Surface: 4.46	Lowest Depth:8.07	Flow Direction: N to NE
Most Sensitive Current Use:		

Summary of Production Wells in Vicinity: There are 3 irrigation wells identified within 2,640 feet of the site:
2 irrigation wells are located approximately 1980' and 2245' west (crossgradient) of the site.
1 irrigation well is located approximately 2245' southwest (downgradient/crossgradient) of the site.

These wells do not appear to be receptors due to their distance and location to the site.

Are drinking water wells affected? No	Aquifer Name:
Is surface water affected? No	Nearest SW Name: San Francisco Bay, about ½-mile southwest of site
Off-Site Beneficial Use Impacts (Addresses/Locations): none identified	
Reports on file? Yes	Where are reports filed? County of Alameda Public Works Agency

TREATMENT AND DISPOSAL OF AFFECTED MATERIAL

Material	Amount (Include Units)	Action (Treatment or Disposal w/Destination)	Date
Tank	2 @ 10,000 Gallons 1 @ 550 Gallons	Disposed of at Ecology Control Industries (ECI), Richmond, California	June 1998
Piping	N/A	Disposed of at Ecology Control Industries (ECI), Richmond, California	June 1998
Free Product	None	--------	------
Soil	634.73 tons	Forward Landfill, Manteca, California	June 1998-present
Groundwater	N/A	ConocoPhillips Refinery, Rodeo, California	June 1998-present

MAXIMUM DOCUMENTED CONTAMINANT CONCENTRATIONSCBEFORE AND AFTER CLEANUP

	Soil (ppm)		Water (ppb)			Soil (ppm)		Water (ppb)	
Contaminant	1 Before	2 After	3 Before	4 After	Contaminant	1 Before	2 After	3 Before	4 After
TPH (Gas)	1,700	ND	19,000	1,600	Benzene	0.09	0.04	880	<0.5
TPH (Diesel)	ND	NA	NA	NA	Toluene	0.04	4.1	930	0.54
Oil & Grease	NA	NA	NA	NA	Ethyl Benzene	0.2	20	360	<0.5
Heavy Metals	63	NA	NA	NA	Xylene	0.4	120	2,300	1.8
TPH	ND	NA	NA	NA	MTBE	280	.36	1,300	5,100

NA- Not Analyzed
ND- Not Detected at or above laboratory reporting limit
N/A- Not Available

Site History and Description of Corrective Actions:

In June 1998, Tosco removed two 10,000-gallon gasoline underground storage tanks (USTs), one 550-gallon used-oil UST, product lines, and dispensers. Two holes approximately ¾" in diameter were observed in the used-oil tank during removal. No holes or other evidence of leakage were observed in the remaining tanks or piping. Approximately 338 tons of hydrocarbon impacted soil and backfill were removed from beneath the former USTs, dispensers, and product lines during UST removal activities at the site. Fifteen soil samples were collected from the limits of the excavation cavities. (ERI, September 15, 1998)

In March 1999, ERI advanced four on-site soil borings (B1 through B4) and constructed four on-site groundwater monitoring wells (MW1 through MW4) at the subject site. (ERI, April 29, 1999)

In December 1999, ERI installed two off-site soil borings (B5 and B6) and constructed two off-site groundwater monitoring wells (MW5 and MW6) at the subject site. (ERI, March 7, 2000)

In March 2001, ERI performed an underground utility survey to identify and locate underground utility lines beneath and in the vicinity of the site that may provide potential preferential pathways for groundwater flow. (ERI, April 2, 2001)

In May 2001, ERI performed an off-site supplemental soil and groundwater evaluation, including the advancement of five direct-push soil borings (GP1 through GP5), to evaluate whether underground utility trenches in the vicinity of the site may provide preferential pathways for groundwater flow and the migration of dissolved hydrocarbons. (ERI, July 12, 2001)

In December 2001, ERI performed an on-site supplemental soil and groundwater evaluation, including the advancement of twelve direct-push soil borings (GP6 through GP17) to further assess the extent of residual hydrocarbons in the vadose zone beneath the site. (ERI, February 27, 2002)

In December 2002, ERI destroyed one on-site monitoring well (MW2), performed a remedial excavation of hydrocarbon impacted soil in the vicinity of the former eastern dispenser island, and replaced former well MW2 with on-site backfill monitoring well MW2A. Approximately 292 tons of hydrocarbon impacted soil was removed from beneath the former eastern dispenser island. (ERI, March 5, 2003)

In June and July 2002, ERI performed a well survey with the County of Alameda Public Work Agency and a field receptor survey within a ½-mile radius of the site. Three irrigation wells were located within the search radius. (ERI, August 27, 2003)

IV. CLOSURE

Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? Yes No		
Does completed corrective action protect potential beneficial uses per the Regional Board Basin Plan? Yes No		
Does corrective action protect public health for current land use? Yes		
Site Management Requirements: None		
Should corrective action be reviewed if land use changes? Yes		
Monitoring Wells Decommissioned: No	Number Decommissioned: 0	Number Retained: 6
List Enforcement Actions Taken: None		
List Enforcement Actions Rescinded: None		

V. ADDITIONAL COMMENTS, DATA, ETC.

Please refer to ERI's *Request and Work Plan for Case Closure*, dated September 10, 2003, for cumulative results of environmental investigations performed at the site, results of the RBCA Tier II analysis, and rational for case closure.

VI. LOCAL AGENCY REPRESENTATIVE DATA

Prepared by: Rob Saur, Environmental Resolutions	Title: Project Manager
Signature:	Date:
Reviewed by:	Title:
Signature:	Date:
Approved by: .	Title:
Signature:	Date:

This closure approval is based upon the available information and with the provision that the information provided to this agency was accurate and representative of site conditions.

VII. REGIONAL BOARD NOTIFICATION

Regional Board Staff Name:	Title:
RB Response:	Date Submitted to RB:
Signature:	Date:

Criteria for Case Closure

Former 76 Service Station 0843
1629 Webster Street
Alameda, California

1. **Has the site been adequately investigated?**

   Yes. The extent of residual hydrocarbons in soil is delineated and limited to two areas, each approximately 5 feet square, in the vicinity of the former UST cavity and west of the former eastern dispenser island. The extent of dissolved hydrocarbons in groundwater are delineated downgradient and upgradient of the site. Please refer the in isoconcentration maps for TPHg, MTBE, and benzene (Plates 8 through 10) and the distribution of residual hydrocarbons in soil (Plate 7).

2. **Has the source been removed?**

   Yes. The primary source, the UST system, which consisted of two 10,000-gallon gasoline USTs, one 550-gallon used-oil UST, product lines and dispensers, was removed in June 1998. The secondary source, residual hydrocarbons in soil in the vicinity of the former eastern dispenser island, was removed during the December 2002 remedial excavation.

3. **Is Free Product removed to the extent practicable?**

   Not applicable. Free product has not been encountered during any environmental investigations performed to date.

4. **Do you have a stable or decreasing plume?**

   Yes. Based on cumulative groundwater monitoring and sampling data, concentrations of dissolved hydrocarbons in monitoring wells MW1 through MW6 have been steady and/or decreasing. Please refer to the Hydrographs for wells MW1 through MW6 (Graphs 1 through 6).

5. **Any current / future public health threat?**

   No. Based on the results of the RBCA Tier II analysis, SSTLs for BTEX and MTBE are greater than the respective residual saturation concentration in soil, and are not exceeded by the maximum concentrations for those compounds. The SSTL for BTEX and MTBE is greater than the solubility limits in groundwater, and is not exceeded by the representative concentration. Therefore, subsurface conditions pose no current or future risk to public health.

6. **Any current / future ecological threat?**

   No. Based on the results of the groundwater receptor survey, the only surface water body located within a ½-mile radius of the site is the San Francisco Bay, located approximately ½-mile southwest of the site (Plate 11). However, the surface water body does not appear to be threatened based on the distance and location to the site.

7. **Any current or future water sources threat?**

   No. Based on the results of the groundwater receptor survey, three irrigation wells were revealed within a ½-mile radius of the site (Plate 11 and Table 1). The irrigation wells are located approximately 1980 feet to 2245 feet west and southwest of the site. However, the wells do not appear to be threatened based on their distance and location to the site

APPENDIX B

CUMMULATIVE RESULTS OF SOIL SAMPLES AND SAMPLE LOCATIONS

RESULTS OF ANALYSIS OF SOIL AND GROUNDWATER SAMPLES
Former Tosco 76 Service Station 0843
1629 Webster Street
Alameda, California
(Page 1 of 2)

Sample#	Plate 2 Callout	Depth	Date	TEPHd	TPPHg	B	T	E	X	TRPH	MTBE	SVOC's	HVOC's	Total Lead/ Soluble Lead
				<.....ppm (unless otherwise noted).....>										
Gasoline USTs														
S-8-T1N	C	8	6/17/98	NA	44	0.09	0.04	0.2	0.4	NA	280*	NA	NA	27/NA
S-5.5-T1E	F	5.5	6/17/98	NA	ND	ND	ND	ND	ND	NA	ND*	NA	NA	NA
S-2-T1N	B	2	6/17/98	NA	ND	0.04	ND	0.08	0.08	NA	ND*	NA	NA	63/NA
S-5.5-T2S	D	5.5	6/17/98	NA	ND	ND	ND	ND	ND	ND	ND*	NA	NA	NA
S-6-T2E	E	6	6/17/98	NA	ND	ND	ND	ND	ND	NA	ND*	NA	NA	NA
Used - Oil UST														
S-6-T3	A	6	6/17/98	ND**	ND	ND	ND	ND	ND	ND	ND*	ND	ND	21/NA
Product Lines and Dispensers														
S-3-D1	G	3	6/17/98	NA	ND	ND	ND	ND	ND	NA	ND	NA	NA	NA
S-3-D2	H	3	6/17/98	NA	ND	ND	ND	ND	ND	NA	ND	NA	NA	NA
S-4-D3	K	4	6/17/98	NA	ND	ND	ND	ND	ND	NA	ND	NA	NA	NA
S-3.5-D4	L	3.5	6/17/98	NA	ND	ND	ND	ND	ND	NA	ND	NA	NA	NA
S-3-P1	I	3	6/17/98	NA	ND	ND	ND	ND	ND	NA	ND	NA	NA	NA
S-3.5-P2	J	3.5	6/17/98	ND	ND	ND	ND	ND	ND	NA	ND	NA	NA	NA
Stockpiles														
SP-1-(1-4)	NA	NA	6/17/98	NA	1,700	3.6	57	21	170	NA	ND	NA	NA	42/NA
SP-2 -(1-4)	NA	NA	6/17/98	NA	460	0.7	4.6	3.5	36	NA	ND	NA	NA	64/2.4
SP-3-(1-4)	NA	NA	6/17/98	26	2	ND	0.18	0.005	0.046	1,193	ND	ND-2	ND	110/3.5
WATER														
S-8.5-TP	NA	8.5	6/17/98	NA	19,000	880	930	360	2,300	NA	1,300			

TABLE 1

RESULTS OF ANALYSIS OF SOIL AND GROUNDWATER SAMPLES

Former Tosco 76 Service Station 0843

1629 Webster Street

Alameda, California

Notes:

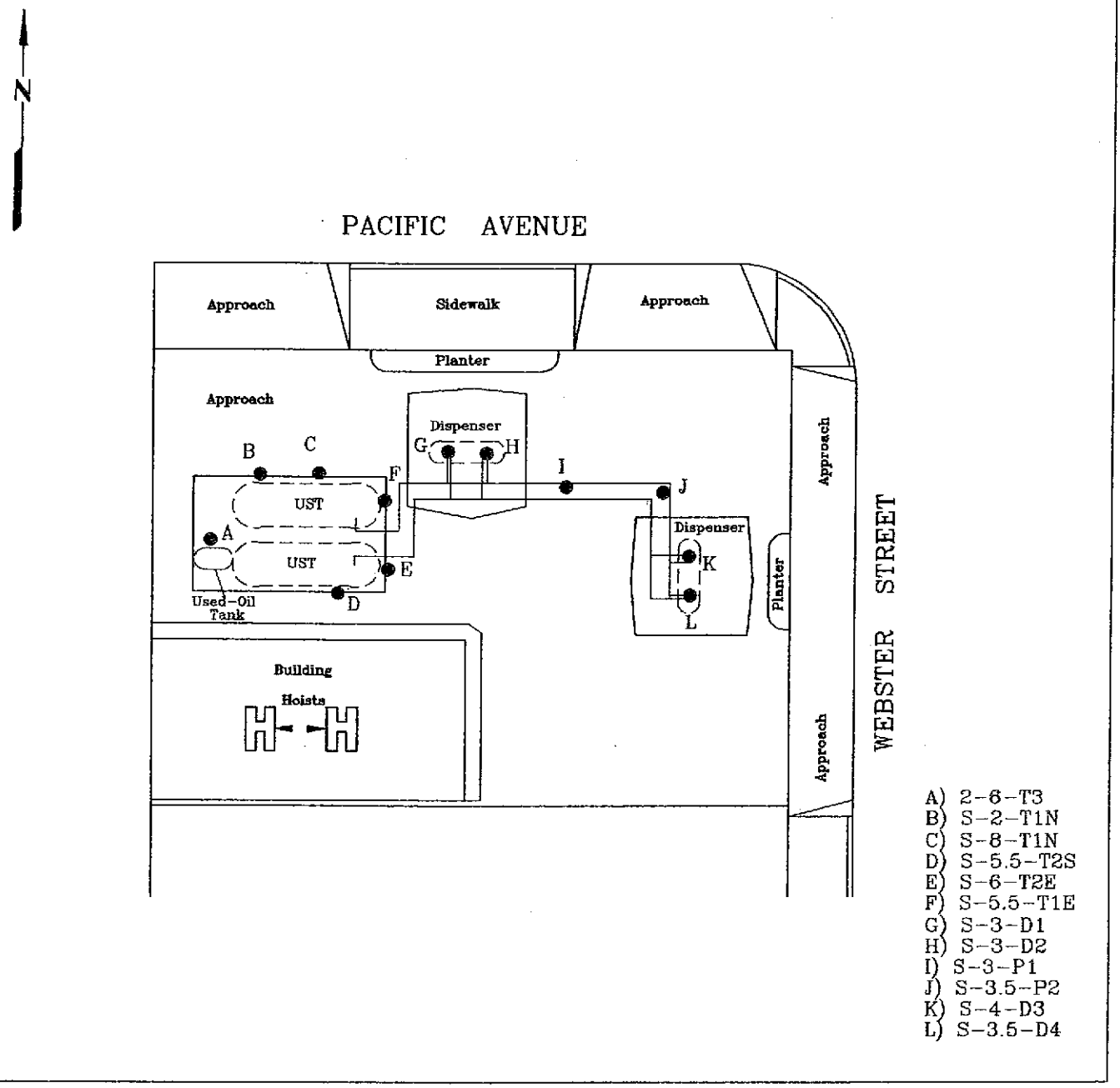
Soil Samples reported in parts per million (ppm) unless otherwise noted

Water Samples reported in parts per billion (ppb) unless otherwise noted

S-8-T1N	=	Soil-depth-Tank T1 North
D4	=	Dispenser #4
PL	=	Product Line
TEPHd	=	Total extractable petroleum hydrocarbons as diesel analyzed using EPA method 8015
TPPHg	=	Total purgeable petroleum hydrocarbons as gasoline analyzed using EPA method 8015
BTEX	=	Benzene, toluene, ethylbenzene, total xylenes analyzed using EPA mehod 8020
TRPH	=	Total recoverable petroleum hydrocarbon analyzed using EPA method 5520 E&F
MTBE	=	Methyl tertiany butyl ether analyzed using EPA method 8020
*	=	MTBE analyzed using EPA method 8260
SVOCs	=	Semivolatile organic compounds analyzed using EPA method 8270
HVOCs	=	Halogenated volatile organic compounds analyzed using EPA method 8010
Total Lead	=	Analyzed using EPA method 6010
Soluble Lead	=	Analyzed using the California Waste Extraction Test (WET)
ND	=	Not detected above laboratory method detection limits
NA	=	Not Applicable
**	=	Sample analyzed 7/17/98 for TEPHd after expiration of hold time

Sample SP-3-(1-4) ND for SVOCs except for Phenanthrene = 0.5 ppm; Fluoranthene = 0.3 ppm; Pyrene = 0.4 ppm; Cadmium = ND; Chromium = 23 ppm ; Nickel = 25 ppm; Zinc = 110 ppm

Sample S-6-T3 Analyzed For Cadmium = ND; Chromium = 26 ppm; nickel = 19 ppm ; Zinc =33 using EPA method 6010 and MTBE = ND using EPA method 8260



FN 22480002

EXPLANATION

L● Sample Location

S-3.5-D4 — Dispenser D4
Sample Depth
Soil

APPROXIMATE SCALE

0 30 60
FEET

SOURCE:
Modified from a map
provided by
TOSCO

ENVIRONMENTAL RESOLUTIONS, INC.

GENERALIZED SITE PLAN

TOSCO (UNION) 76 SERVICE STATION 0843
1629 Webster Street
Alameda, California

PROJECT NO.
2248

PLATE
2

June 24, 1998

TABLE 1

ANALYTICAL RESULTS of SOIL SAMPLES

Former Tosco 76 Service Station 0843
1629 Webster Street
Alameda, California

Sample Number	Plate Call-out	Date Sampled	TPPHg	MTBE	B	T	E	X	Lead
			<.....ppm.....>						
Soil - Borings									
S-10.5-B1	MW1	3/2/99	ND	ND	ND	ND	ND	ND	ND
S-10.5-B2	MW2	3/2/99	ND	0.561	0.0295	0.0658	0.0359	0.119	ND
S-10.5-B3	MW3	3/2/99	ND	ND	ND	ND	ND	ND	ND
S-10.5-B4	MW4	3/2/99	ND	0.109	ND	ND	ND	ND	ND
Soil-Stockpiles									
Comp SP1-(1-4)	----	3/2/99	ND	0.0108	ND	0.00351	ND	0.0304	29

Notes:

ppm	=	Parts per million.
S-10.5-B1	=	Soil Sample-depth in feet-Boring 1.
Comp SP1-(1-4)	=	Stock Pile 1, 1 through 4 composite samples.
TPPHg	=	Total purgeable petroleum hydrocarbons as gasoline analyzed using EPA method 8015/8020 modifi
BTEX	=	Benzene, toluene, ethylbenzene, and total xylenes analyzed using EPA method 8015/8020 modified.
MTBE	=	Methyl tertiary butyl ether analyzed using EPA method 8015/8020 modified .
Lead	=	Lead analyzed using EPA method 6010 A.
ND	=	Not detected at or above laboratory reporting limit.
Plate call out	=	MW1 (Monitoring Well 1).
---	=	Not applicable.

TABLE 1
RESULTS OF LABORATORY ANALYSES OF SOIL SAMPLES
Former Tosco 76 Service Station 0843
1629 Webster Street
Alameda, California

Sample Designation	Depth (feet bgs)	Date Sampled	TPHg	B	T	E	X	MTBE	Lead
			<.....ppm.....>						
Soil Boring Samples									
S-4-GP1	4	05/23/01	ND	ND	ND	ND	ND	ND/ND*	NA
S-5-GP2	5	05/23/01	ND	ND	ND	ND	ND	ND/ND*	NA
S-10-GP2	10	05/23/01	ND	ND	ND	ND	ND	ND/ND*	NA
S-5-GP3	5	05/23/01	ND	ND	ND	ND	0.011	ND/ND*	NA
S-5-GP4	5	05/23/01	ND	ND	ND	ND	ND	ND/ND*	NA
S-4-GP5	4	05/23/01	ND	ND	ND	ND	ND	ND/ND*	NA
S-10-GP5	10	05/23/01	ND	ND	ND	ND	ND	0.18/ND*	NA
Soil Stockpile Sample									
S-SP1-(1-4)	NA	05/23/01	1.2	0.0065	ND	0.013	0.079	ND	1.1

Notes:

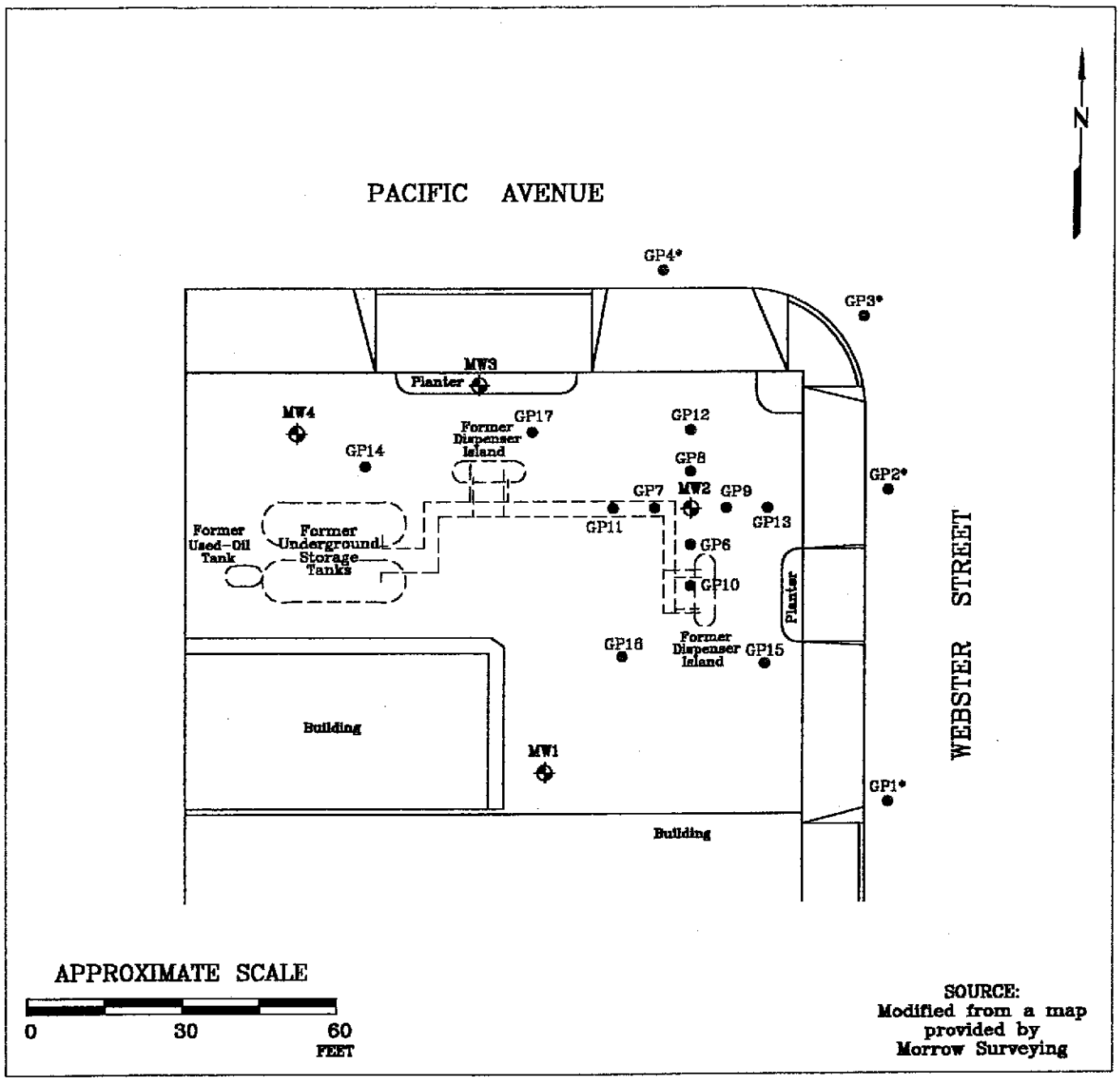
S-4-GP1	= Soil sample-depth-boring number.
S-SP1-(1-4)	= Composited stockpiled soil sample-stockpile number-sample sleeve numbers.
TPHg	= Total petroleum hydrocarbons as gasoline analyzed using EPA Method 8015M.
BTEX	= Benzene, toluene, ethylbenzene, and total xylenes analyzed using EPA Method 8020.
MTBE	= Methyl tertiary butyl ether analyzed using EPA Method 8020.
Lead	= Total lead analyzed using EPA Method 6010A.
bgs	= Below ground surface.
ppm	= Parts per million.
ND	= Not detected at or above the laboratory reporting limit.
NA	= Not applicable/Not Analyzed.
*	= MTBE confirmed using EPA Method 8260A.

TABLE 1
RESULTS OF LABORATORY ANALYSES OF SOIL SAMPLES
Former Tosco Service Station 0843
1629 Webster Street
Alameda, California

Sample Designation	Depth (feet bgs)	Date Sampled	TPHg	B	T	E	X	MTBE
			<.....ppm.....>					
Soil Boring Samples								
S-6.5-GP6	6.5	12/04/01	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
S-6.5-GP7	6.5	12/04/01	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
S-6-GP8	6	12/04/01	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
S-6-GP9	6	12/04/01	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
S-6.5-GP10	6.5	12/04/01	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
S-6.5-GP11	6.5	12/04/01	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
S-6-GP12	6	12/04/01	<1.0	<0.0050	<0.0050	0.010	0.015	<0.050
S-12-GP12	12	12/04/01	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
S-6.5-GP13	6.5	12/04/01	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
S-12-GP13	12	12/04/01	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
S-7-GP14	7	12/04/01	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
S-6-GP15	6	12/04/01	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
S-16-GP15	16	12/04/01	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
S-6.5-GP16	6.5	12/04/01	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
S-12-GP16	12	12/04/01	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
S-6.5-GP17	6.5	12/04/01	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.050

Notes:

S-6.5-GP6 = Soil sample-depth-boring number.
TPHg = Total petroleum hydrocarbons as gasoline analyzed using EPA Method 8015M.
BTEX = Benzene, toluene, ethylbenzene, and total xylenes analyzed using EPA Method 8020.
MTBE = Methyl tertiary butyl ether analyzed using EPA Method 8020.
bgs = Below ground surface.
ppm = Parts per million.
< = Less than dthe stated laboratory reporting limit.



FN 22480002

EXPLANATION

MW4 ⊕ Groundwater Monitoring Well

GP17 ● Direct--Push Soil Boring

* Drilled on May 23, 2001

ERI ENVIRONMENTAL RESOLUTIONS, INC.

GENERALIZED SITE PLAN

FORMER TOSCO SERVICE STATION 0843
1629 Webster Street
Alameda, California

PROJECT NO. 2248

PLATE 2

February 7, 2002

TABLE 1
RESULTS OF LABORATORY ANALYSES OF SOIL SAMPLES
Former 76 Service Station 0843
1629 Webster Street
Alameda, California
(Page 1 of 1)

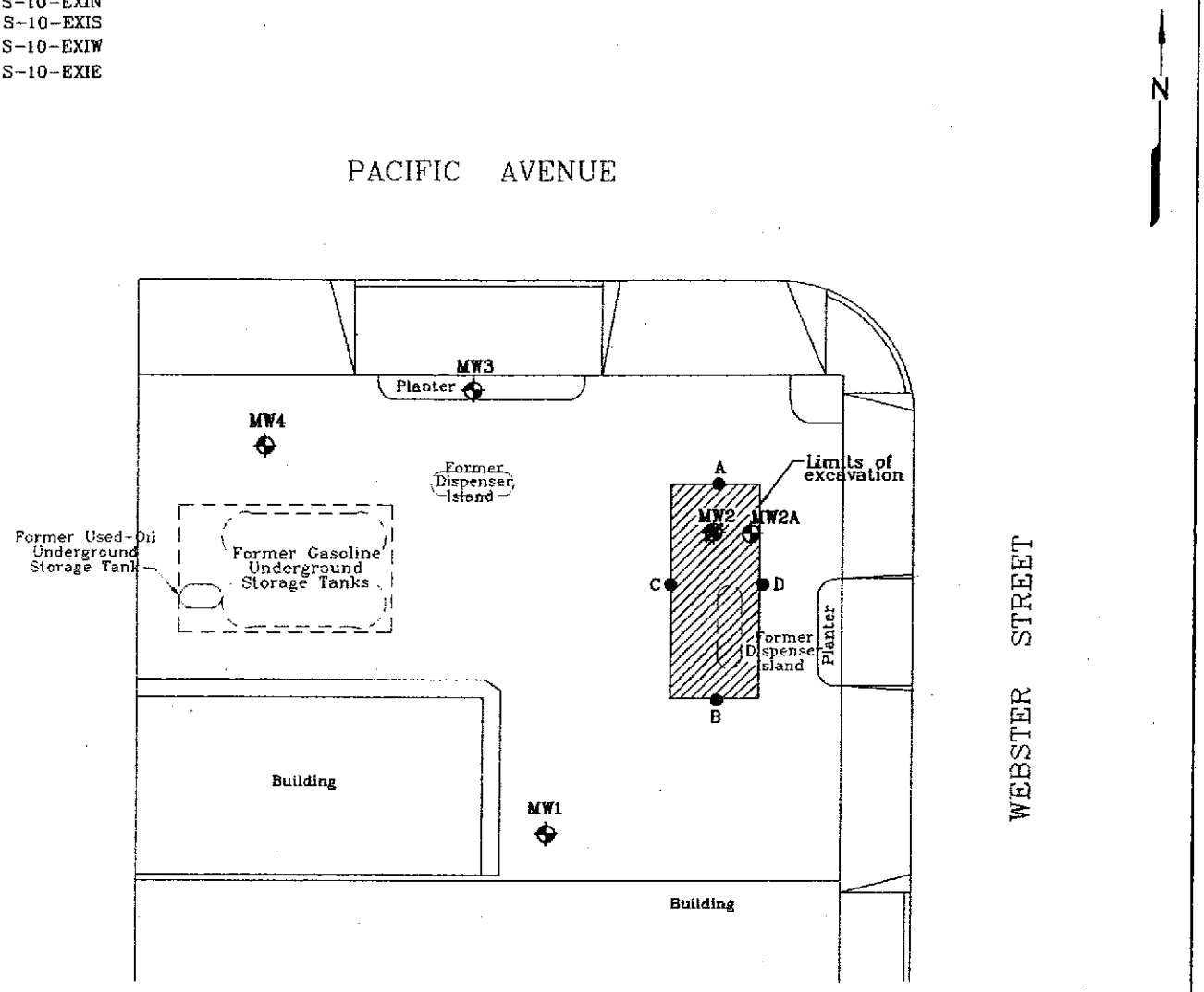
Sample Designation	Plate 2 Call Out	Depth (feet bgs)	Date Sampled	TPHg	B	T	E	X	MTBE
				<.....ppm.....					
Soil Boring Samples									
S-10-EX1N	A	10	12/04/02	<50	<0.25	<0.25	0.73	4.9	<0.25
S-10-EX1S	B	10	12/04/02	<1.0	<0.0050	<0.0050	<0.0053	<0.010	<0.0050
S-10-EX1W	C	10	12/04/02	<1,000	<0.25	4.1	20	120	<0.25
S-10-EX1E	D	10	12/04/02	<50	<0.25	1.2	0.34	0.82	0.36

Notes:

S-10-EX1N = Soil sample-depth-excavation sample location.
TPHg = Total petroleum hydrocarbons as gasoline analyzed using EPA Method 8260B.
BTEX = Benzene, toluene, ethylbenzene, and total xylenes analyzed using EPA Method 8260B.
MTBE = Methyl tertiary butyl ether analyzed using EPA Method 8260B.
bgs = Below ground surface.
ppm = Parts per million.
ND = Not detected at or above the laboratory reporting limit.

SOIL SAMPLES

A S-10-EXIN
B S-10-EXIS
C S-10-EXIW
D S-10-EXIE



APPROXIMATE SCALE

0 30 60
FEET

SOURCE:
Modified from a map provided by Morrow Surveying

FN 22480002

EXPLANATION

MW4 Groundwater Monitoring Well

MW2 Destroyed Groundwater Monitoring Well

D Soil Sample

ERI ENVIRONMENTAL RESOLUTIONS, INC.

GENERALIZED SITE PLAN

FORMER 76 SERVICE STATION 0843
1629 Webster Street
Alameda, California

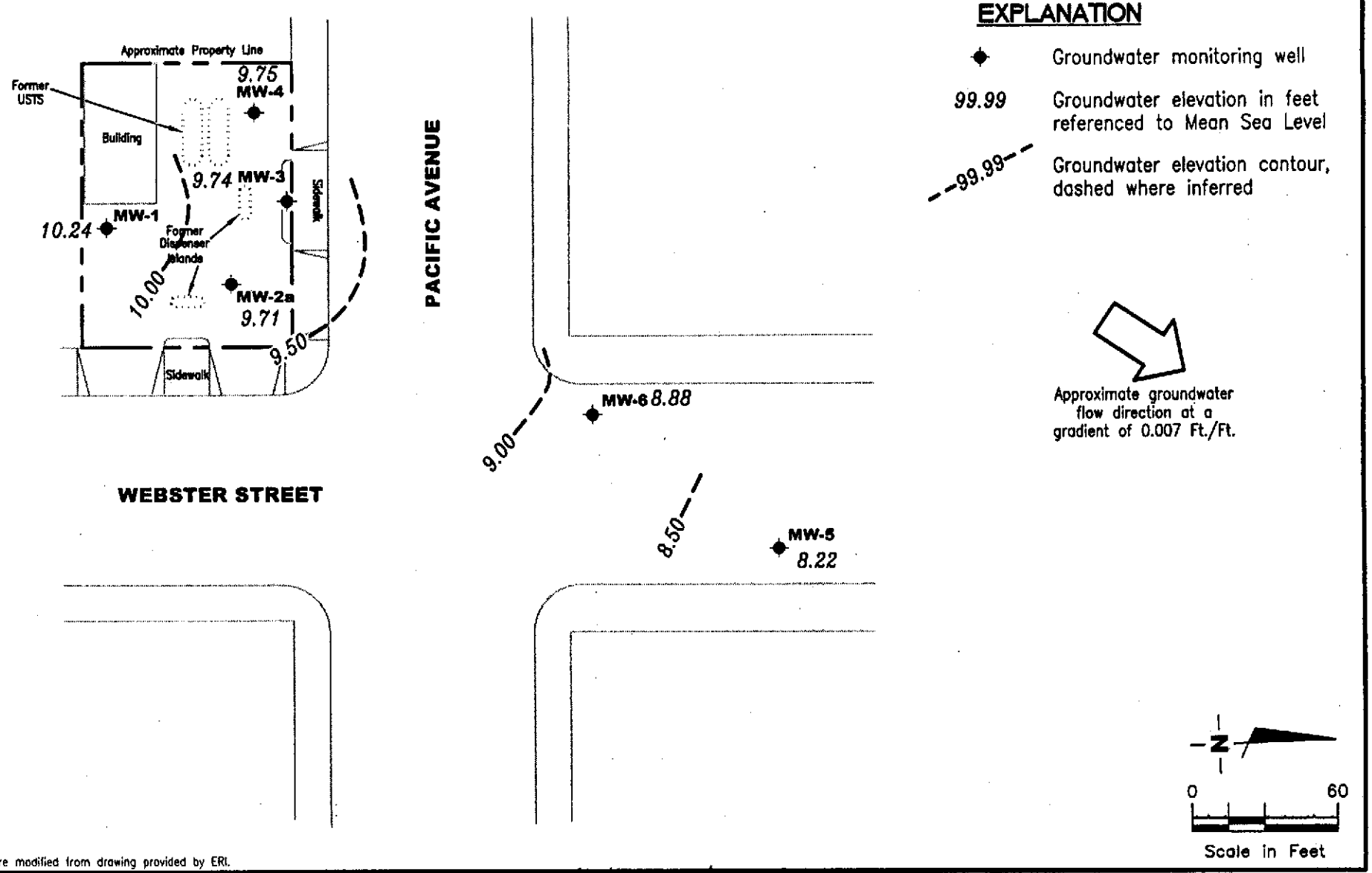
PROJECT NO.
2248

PLATE
2

February 7, 2002

APPENDIX C

CUMMULATIVE RESULTS OF GROUNDWATER SAMPLES AND GROUNDWATER MONITORING AND SAMPLING



Source: Figure modified from drawing provided by ERI.

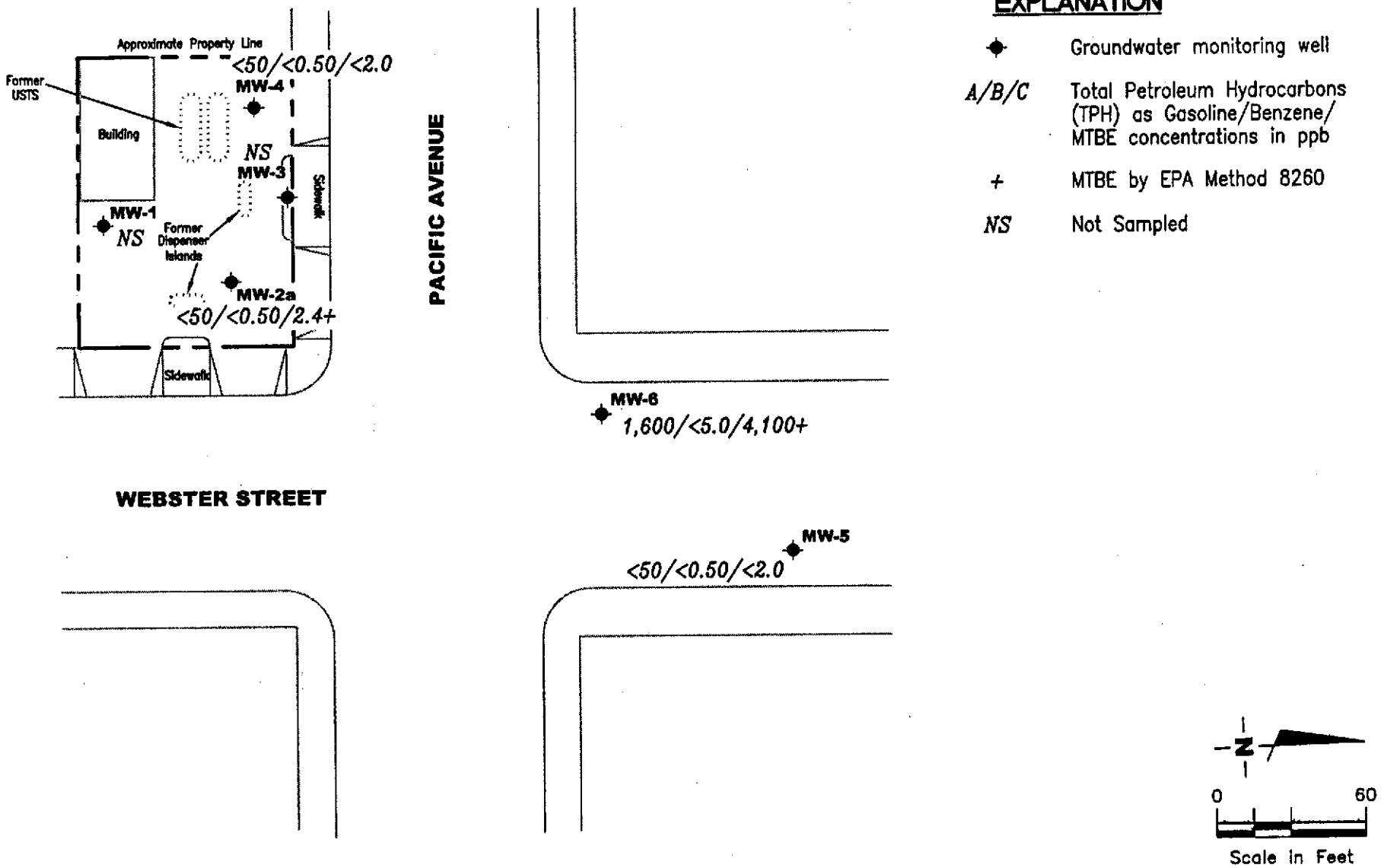
GETTLER - RYAN INC.
6747 Sierra Ct., Suite J
Dublin, CA 94568
(925) 551-7555

POTENTIOMETRIC MAP
Former Tosco 76 Service Station #0843
1629 Webster Street
Alameda, California

FIGURE
1

PROJECT NUMBER	REVIEWED BY	DATE	REVISED DATE
180203		March 13, 2003	

FILE NAME: P:\ENVIRO\TOSCO\0843\Q03-0843.DWG | Layout Tab: Pot1



Source: Figure modified from drawing provided by ERI.

GETTLER - RYAN INC.
6747 Sierra Ct., Suite J
Dublin, CA 94568
(925) 551-7555

CONCENTRATION MAP
Former Tosco 76 Service Station #0843
1629 Webster Street
Alameda, California

FIGURE
2

PROJECT NUMBER
180203

REVIEWED BY

DATE
March 13, 2003

REVISED DATE

FILE NAME: P:\ENVIRO\TOSCO\0843\Q03-0843.DWG | Layout Tab: Con1

Groundwater Monitoring Data and Analytical Results

Former Tosco 76 Service Station #0843

1629 Webster Street

Alameda, California

WELL ID/ TOC* (ft.)	DATE	DTW (ft.)	S.I. (ft.bgs)	GWE (msl)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
MW-1										
16.18	03/05/99[1]	--	4.5-20.5	--	86.6[3]	ND	2.04	ND	4.06	23.9[2]
	06/03/99	6.24		9.94	ND	ND	ND	ND	ND	ND/ND[2]
	09/02/99	7.19		8.99	ND	ND	ND	ND	ND	ND/ND[2]
	12/14/99	8.07		8.11	ND	ND	ND	ND	ND	ND
	03/14/00	5.47		10.71	ND	ND	ND	ND	ND	ND
	05/31/00	6.22		9.96	ND	ND	ND	ND	ND	ND
	08/29/00	6.82		9.36	ND	ND	ND	ND	ND	ND
	12/01/00	7.54		8.64	ND	ND	ND	ND	ND	ND
	03/17/01	5.73		10.45	ND	ND	ND	ND	ND	ND
	05/23/01	6.43		9.75	ND	ND	ND	ND	ND	ND
	09/24/01	7.12		9.06	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	12/10/01	6.89		9.29	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	03/11/02	5.61		10.57	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	06/07/02	5.71		10.47	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	09/03/02	NOT MONITORED/SAMPLED			--	--	--	--	--	--
	12/12/02	7.80		8.38	NO LONGER SAMPLED		--	--	--	--
	03/13/03	**5.94**		**10.24**	--	--	--	--	--	--
MW-2	03/05/99[1]	--	4.5-20.5	--	34,400	2,070	7,710	2,340	8,240	8,460[2]
15.57	06/03/99	5.96		9.61	51,200[4]	1,820	7,570	2,510	7,320	6,460/8,800[2]
	09/02/99	6.85		8.72	17,000[5]	1,000	3,100	1,400	3,700	4,000/3,720[2]
	12/14/99	7.65		7.92	83,000[5]	3,000	22,000	4,500	17,000	9,100/11,000[2]
	03/14/00	5.26		10.31	31,000[5]	1,600	4,600	2,300	7,300	5,700/8,700[2]
	05/31/00	5.60		9.97	9,970[5]	598	1,030	487	2,060	2,500/1,670[2]
	08/29/00	6.35		9.22	7,900[5]	390	1,500	280	1,900	1,800/1,300[2]
	12/01/00	7.06		8.51	87,500[5]	1,860	17,400	5,590	19,400	6,220/3,790[2]
	03/17/01	5.98		9.59	4,310[5]	371	59.0	280	682	321/433[2]
	05/23/01	6.97		8.60	45,400[5]	374	4,490	2,790	10,900	[7]ND/406[2]
	09/24/01	7.56		8.01	76,000[3]	430	13,000	4,700	18,000	<2,000/480[2]
	12/10/01	6.52		9.05	82,000[3]	320	9,100	4,400	16,000	<2,500/270[2]

Groundwater Monitoring Data and Analytical Results
Former Tosco 76 Service Station #0843
1629 Webster Street
Alameda, California

WELL ID/ TOC* *(ft.)*	DATE	DTW *(ft.)*	S.I. *(ft.bgs)*	GWE *(msl)*	TPH-G *(ppb)*	B *(ppb)*	T *(ppb)*	E *(ppb)*	X *(ppb)*	MTBE *(ppb)*
MW-2	03/11/02	5.51	4.5-20.5	10.06	14,000[3]	75	1,400	1,100	3,600	<250/150[2]
(cont)	06/07/02	5.73		9.84	14,000	120	1,200	1,400	4,700	540/200[2]
	09/03/02	6.81		8.76	10,000[11]	150	1,200	610	2,800	510/460[2]
	DESTROYED (This well has been replaced, new well ID MW-2a)									
MW-2a										
15.56	12/12/02	7.45	5-11.5	8.11	3,400	80	260	210	1,000	380/400[2]
	03/13/03	**5.85**		**9.71**	**<50**	**<0.50**	**<0.50**	**<0.50**	**1.8**	**2.4/2.4[2]**
MW-3	03/05/99[1]	--	5.0-20.0	--	135[3]	ND	ND	ND	4.84	2.46[2]
15.11	06/03/99	5.57		9.54	ND	ND	ND	ND	ND	5.23/12.7[2]
	09/02/99	6.50		8.61	ND	ND	ND	ND	ND	13/11.0[2]
	12/14/99	7.28		7.83	ND	ND	ND	ND	ND	ND
	03/14/00	4.87		10.24	ND	ND	ND	ND	ND	7.2/6.3[2]
	05/31/00	5.58		9.53	ND	ND	ND	ND	ND	ND
	08/29/00	6.06		9.05	ND	ND	ND	ND	ND	ND
	12/01/00	6.76		8.35	ND	ND	ND	ND	ND	ND
	03/17/01	5.09		10.02	ND	ND	ND	ND	ND	ND
	05/23/01	5.72		9.39	ND	ND	ND	ND	ND	ND
	09/24/01	6.34		8.77	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	12/10/01	6.31		8.80	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	03/11/02	5.15		9.96	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	06/07/02	5.45		9.66	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	09/03/02	NOT MONITORED/SAMPLED			--	--	--	--	--	--
	12/12/02	7.15		7.96	NO LONGER SAMPLED		--	--	--	--
	03/13/03	**5.37**		**9.74**	--	--	--	--	--	--

Groundwater Monitoring Data and Analytical Results
Former Tosco 76 Service Station #0843
1629 Webster Street
Alameda, California

WELL ID/ TOC* *(ft.)*	DATE	DTW *(ft.)*	S.I. *(ft.bgs)*	GWE *(msl)*	TPH-G *(ppb)*	B *(ppb)*	T *(ppb)*	E *(ppb)*	X *(ppb)*	MTBE *(ppb)*
MW-4	03/05/99[1]	--	5.0-20.5	--	ND	ND	ND	ND	2.44	25.2[2]
15.17	06/03/99	5.45		9.72	ND	ND	ND	ND	ND	ND/3.96[2]
	09/02/99	6.48		8.69	ND	ND	ND	ND	ND	23/27.0[2]
	12/14/99	7.27		7.90	ND	ND	ND	ND	ND	200/270[2]
	03/14/00	4.67		10.50	ND	ND	ND	ND	ND	46/49[2]
	05/31/00	5.48		9.69	ND	ND	ND	ND	ND	ND
	08/29/00	6.10		9.07	ND	ND	ND	ND	ND	6.1/3.2[2]
	12/01/00	6.79		8.38	ND	ND	ND	ND	ND	152/101[2]
	03/17/01	5.01		10.16	ND	ND	ND	ND	ND	ND
	05/23/01	5.78		9.39	ND	ND	ND	ND	ND	ND
	09/24/01	6.42		8.75	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	12/10/01	6.41		8.76	<50	<0.50	<0.50	<0.50	<0.50	1,700/1,300[2]
	03/11/02	5.05		10.12	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	06/07/02	5.42		9.75	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	09/03/02	6.50		8.67	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	12/12/02	7.18		7.99	<50	<0.50	<0.50	<0.50	<0.50	2.9/3.3[2]
	03/13/03	**5.42**		**9.75**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<2.0**
MW-5	12/14/99	6.45	5-20	6.89	ND	ND	ND	ND	ND	3.5/3.8[2]
13.34	03/14/00	4.46		8.88	ND	ND	ND	ND	ND	ND
	05/31/00	5.18		8.16	ND	ND	ND	ND	ND	ND
	08/29/00	5.46		7.88	ND	ND	ND	ND	ND	ND
	12/01/00	5.95		7.39	ND	ND	ND	ND	ND	ND
	03/17/01	5.36		7.98	ND	ND	ND	ND	ND	ND
	05/23/01	5.09		8.25	ND	ND	ND	ND	ND	ND
	09/24/01	5.58		7.76	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	12/10/01	5.51		7.83	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	03/11/02	4.70		8.64	<50	<0.50	<0.50	<0.50	<0.50	<5.0
	06/07/02	INACCESSIBLE - PAVED OVER			--	--	--	--	--	--
	09/03/02	INACCESSIBLE - PAVED OVER			--	--	--	--	--	--
	12/12/02	6.42		6.92	<50	<0.50	<0.50	<0.50	<0.50	<2.0
	03/13/03	**5.12**		**8.22**	**<50**	**<0.50**	**0.54**	**<0.50**	**<0.50**	**<2.0**

Groundwater Monitoring Data and Analytical Results
Former Tosco 76 Service Station #0843
1629 Webster Street
Alameda, California

WELL ID/ TOC*(ft.)		DATE	DTW (ft.)	S.I. (ft.bgs)	GWE (msl)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
MW-6		12/14/99	6.64	5-20	7.44	ND	ND	ND	ND	ND	11,000/18,000[2]
14.08		03/14/00	4.72		9.36	ND[7]	ND[7]	ND[7]	ND[7]	ND[7]	19,000/21,000[2,6]
		05/31/00	5.28		8.80	ND[7]	ND[7]	ND[7]	ND[7]	ND[7]	13,200
		08/29/00	5.39		8.69	ND	ND	ND	ND	ND	270/400[2]
		12/01/00	6.11		7.97	ND	ND	ND	ND	ND	6,330/3,640[2]
		03/17/01	6.02		8.06	18,700[5]	2,950	989	1,040	3,000	10,200/11,500[2]
		05/23/01	5.82		8.26	ND[7]	ND[7]	ND[7]	ND[7]	ND[7]	4,660[8]
		09/24/01[10]	6.59		7.49	<50	<0.50	<0.50	<0.50	<0.50	160/190[9]
		12/10/01	6.50		7.58	<50	<0.50	<0.50	<0.50	<0.50	3,200/2,400[2]
		03/11/02	4.81		9.27	<50	<0.50	<0.50	<0.50	<0.50	92/120[2]
		06/07/02	INACCESSIBLE - PAVED OVER			--	--	--	--	--	--
		09/03/02	INACCESSIBLE - PAVED OVER			--	--	--	--	--	--
		12/12/02	6.51		7.57	590[12]	<0.50	<0.50	<0.50	<0.50	1,500/6,200[2]
	(S)	**03/13/03**	**5.20**		**8.88**	**1,600[13]**	**<5.0**	**<5.0**	**<5.0**	**<5.0**	**4,900/4,100[2]**
	(K)	**03/13/03**	**--**		**--**	**--**	**--**	**--**	**--**	**--**	**--/5,100[2]**
Trip Blank		03/05/99[1]	--	--	--	ND	ND	ND	ND	ND	ND[2]
TB-LB		06/03/99	--		--	ND	ND	ND	ND	ND	ND
		09/02/99	--		--	ND	ND	ND	ND	ND	ND
		12/14/99	--		--	ND	ND	ND	ND	ND	ND
		03/14/00	--		--	ND	ND	ND	ND	ND	ND
		05/31/00	--		--	ND	ND	ND	ND	ND	ND
		08/29/00	--		--	ND	ND	ND	ND	ND	ND
		12/01/00	--		--	ND	ND	ND	ND	ND	ND
		03/17/01	--		--	ND	ND	ND	ND	ND	ND
		05/23/01	--		--	ND	ND	ND	ND	ND	ND
		09/24/01	--		--	<50	<0.50	<0.50	<0.50	<0.50	<5.0
		12/10/01	--		--	<50	<0.50	<0.50	<0.50	<0.50	<5.0
		03/11/02	--		--	<50	<0.50	<0.50	<0.50	<0.50	<5.0
		06/07/02	--		--	<50	<0.50	<0.50	<0.50	<0.50	<2.5

Groundwater Monitoring Data and Analytical Results
Former Tosco 76 Service Station #0843
1629 Webster Street
Alameda, California

WELL ID/ TOC* (ft.)		DATE	DTW (ft.)	S.I. (ft.bgs)	GWE (msl)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
QA		09/03/02	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	<2.5
		12/12/02	--		--	<50	<0.50	<0.50	<0.50	<0.50	<2.0
	(S)	03/13/03	--		--	<50	<0.50	<0.50	<0.50	<0.50	<2.0
	(K)	03/13/03	--		--	--	--	--	--	--	--/<0.50[2]

EXPLANATIONS:

Groundwater monitoring data and laboratory analytical results prior to June 3, 1999, were compiled from reports prepared by ERI, Inc.

TOC = Top of Casing
(ft.) = Feet
DTW = Depth to Water
S.I. = Screen Interval
(ft.bgs) = Feet Below Ground Surface
GWE = Groundwater Elevation
(msl) = Mean sea level

TPH-G = Total Petroleum Hydrocarbons as Gasoline
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylenes
MTBE = Methyl tertiary butyl ether

(ppb) = Parts per billion
ND = Not Detected
-- = Not Measured/Not Analyzed
(S) = Sequoia Analytical
(K) = Kiff Analytical
QA = Quality Assurance/Trip Blank

* TOC elevations are based on USC&GS Benchmark WEB PAC - 1947 - R 1951; (Elevation = 14.054 feet).

1 BTEX by EPA Method 8260.
2 MTBE by EPA Method 8260.
3 Laboratory report indicates weathered gasoline C6-C12.
4 Laboratory report indicates chromatogram pattern C6-C12.
5 Laboratory report indicates gasoline C6-C12.
6 Laboratory report indicates sample was analyzed 03/28/00 but required reanalysis at a dilution. The dilution was analyzed outside of the EPA recommended holding time.
7 Detection limit raised. Refer to analytical reports.
8 Laboratory did not perform analysis for MTBE by EPA Method 8260 as requested on the Chain of Custody for 8020 MTBE hits.
9 MTBE by EPA Method 8260 was analyzed past the EPA recommended holding time.
10 Due to laboratory error, MW-6 was not analyzed within the EPA recommended holding time.
11 Laboratory report indicates gasoline C6-C10.
12 Laboratory report indicates discrete peak @ C5.
13 Laboratory report indicates discrete peak @ MTBE.

Groundwater Analytical Results - Oxygenate Compounds

Former Tosco 76 Service Station #0843

1629 Webster Street

Alameda, California

WELL ID	DATE	ETHANOL (ppb)	TBA (ppb)	MTBE (ppb)	DIPE (ppb)	ETBE (ppb)	TAME (ppb)	1,2-DCA (ppb)	EDB (ppb)
MW-1	09/02/99	ND	ND	ND	ND	ND	ND	--	--
MW-2	09/02/99	ND[1]	ND[1]	3,720	ND[1]	ND[1]	ND[1]	--	--
	12/14/99	ND[1]	ND[1]	11,000	ND[1]	ND[1]	ND[1]	ND[1]	ND[1]
	03/14/00	ND[1]	1,300	8,700	ND[1]	ND[1]	ND[1]	ND[1]	ND[1]
	05/31/00	ND[1]	ND[1]	1,670	ND[1]	ND[1]	ND[1]	ND[1]	ND[1]
	08/29/00	ND	250	1,300	ND	ND	ND	ND	ND
	12/01/00	ND[1]	ND[1]	3,790	ND[1]	ND[1]	ND[1]	ND[1]	ND[1]
	03/17/01	ND[1]	ND[1]	433	14.8	ND[1]	ND[1]	ND[1]	ND[1]
	05/23/01	ND[1]	ND[1]	406	ND[1]	ND[1]	ND[1]	ND[1]	ND[1]
	09/24/01	<50,000	<5,000	480	<100	<100	<100	<100	<100
	12/10/01	<12,000	<500	270	<25	<25	<25	<25	<25
	03/11/02	<5,000	<1,000	150	<20	<20	<20	<20	<20
	06/07/02	<2,000	<1,000	200	<25	<25	<25	<25	<25
	09/03/02	<5,000	<1,000	460	<20	<20	<20	<20	<20
	DESTROYED	(This well has been replaced, new well ID MW-2a)			--	--	--	--	--
MW-2a	12/12/02	<500	<100	400	<2.0	<2.0	<2.0	2.3	<2.0
	03/13/03	**<500**	**<100**	**2.4**	**<2.0**	**<2.0**	**<2.0**	**<2.0**	**<2.0**
MW-3	09/02/99	ND	ND	11.0	ND	ND	ND	--	--
	03/14/00	--	--	6.3	--	--	--	--	--
MW-4	09/02/99	ND	ND	27.0	ND	ND	ND	--	--
	12/14/99	--	--	270	--	--	--	--	--
	03/14/00	--	--	49	--	--	--	--	--
	08/29/00	--	--	3.2	--	--	--	--	--
	12/10/01	<7,100	<290	1,300	<14	<14	<14	<14	<14
	12/12/02	<500	<100	3.3	<2.0	<2.0	<2.0	<2.0	<2.0

Groundwater Analytical Results - Oxygenate Compounds
Former Tosco 76 Service Station #0843
1629 Webster Street
Alameda, California

WELL ID	DATE	ETHANOL (ppb)	TBA (ppb)	MTBE (ppb)	DIPE (ppb)	ETBE (ppb)	TAME (ppb)	1,2-DCA (ppb)	EDB (ppb)
MW-5	12/14/99	--	--	3.8	--	--	--	--	--
	12/12/02								
MW-6	12/14/99	--	--	18,000	--	--	--	--	--
	03/14/00	--	--	21,000[2]	--	--	--	--	--
	08/29/00	--	--	400	--	--	--	--	--
	03/17/01	ND[1]	ND[1]	11,500	ND[1]	ND[1]	ND[1]	219	ND[1]
	05/23/01[3]	--	--	--	--	--	--	--	--
	09/24/01[4]	<1,000	<100	190	<2.0	<2.0	<2.0	<2.0	<2.0
	12/10/01	<12,000	<500	2,400	<25	<25	<25	<25	<25
	03/11/02	<500	<100	120	<2.0	<2.0	<2.0	<2.0	<2.0
	12/12/02	<50,000	<10,000	6,200	<200	<200	<200	<200	<200
(S)	03/13/03	<25,000	<5,000	4,100	<100	<100	<100	<100	<100
(K)	03/13/03	--	--	5,100	--	--	--	--	--

EXPLANATIONS:

TBA = Tertiary butyl alcohol
MTBE = Methyl tertiary butyl ether
DIPE = Di-isopropyl ether
ETBE = Ethyl tertiary butyl ether
TAME = Tertiary amyl methyl ether
1,2-DCA = 1,2-Dichloroethane
EDB = 1,2-Dibromoethane
(ppb) = Parts per billion
-- = Not Analyzed
ND = Not Detected
(S) = Sequoia Analytical
(K) = Kiff Analytical

1 Detection limit raised. Refer to analytical reports.
2 Laboratory report indicates sample was analyzed 03/28/00 but required reanalysis at a dilution. The dilution was analyzed outside of the EPA recommended holding time.
3 Laboratory did not perform analyzsis for oxygenates as requested on the Chain of Custody, on all 8020 MTBE hits.
4 Laboratory report indicates sample was analyzed past the EPA recommended holding time.

ANALYTICAL METHOD:

EPA Method 8260 for Oxygenate Compounds

STANDARD OPERATING PROCEDURE - GROUNDWATER SAMPLING

Gettler-Ryan Inc. field personnel adhere to the following procedures for the collection and handling of groundwater samples prior to analysis by the analytical laboratory. Prior to sample collection, the type of analysis to be performed is determined. Loss prevention of volatile compounds is controlled and sample preservation for subsequent analysis is maintained.

Prior to sampling, the presence or absence of free-phase hydrocarbons is determined using an interface probe. Product thickness, if present, is measured to the nearest 0.01 foot and is noted in the field notes. In addition, all depth to water level measurements are collected with a static water level indicator and are also recorded in the field notes, prior to purging and sampling any wells.

After water levels are collected and prior to sampling, temperature, pH and electrical conductivity are measured. If purging is to occur, each well is purged a minimum of three well casing volumes of water using pre-cleaned pumps (stack, suction, Grundfos), or disposable bailers. The measurements are taken a minimum of three times during the purging. Purging continues until these parameters stabilize.

Groundwater samples are collected using disposable bailers. The water samples are transferred from the bailer into appropriate containers. Pre-preserved containers, supplied by analytical laboratories, are used when possible. When pre-preserved containers are not available, the laboratory is instructed to preserve the sample as appropriate. Duplicate samples are collected for the laboratory to use in maintaining quality assurance/quality control standards. The samples are labeled to include the job number, sample identification, collection date and time, analysis, preservation (if any), and the sample collector's initials. The water samples are placed in a cooler, maintained at 4°C for transport to the laboratory. Once collected in the field, all samples are maintained under chain of custody until delivered to the laboratory.

The chain of custody document includes the job number, type of preservation, if any, analysis requested, sample identification, date and time collected, and the sample collector's name. The chain of custody is signed and dated (including time of transfer) by each person who receives or surrenders the samples, beginning with the field personnel and ending with the laboratory personnel.

A laboratory supplied trip blank accompanies each sampling set and is labeled as QA. For sampling sets greater than 20 samples, 5% trip blanks are included. The trip blank is analyzed for some or all of the same compounds as the groundwater samples.

As requested by Phillips 66 Company, the purge water and decontamination water generated during sampling activities is transported to Phillips 66 - San Francisco Refinery, located in Rodeo, California.

TABLE 2
RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES
Former Tosco 76 Service Station 0843
1629 Webster Street
Alameda, California

Sample Designation	Depth (feet bgs)	Date Sampled	TPHg	B	T	E	X	MTBE
			<.....ppb.....>					
W-10-GP1	10	05/23/01	ND	ND	ND	ND	ND	3.7/3.7*
W-10-GP2	10	05/23/01	ND	1.1	0.67	ND	ND	ND/ND*
W-9-GP3	9	05/23/01	ND	1.2	ND	0.55	3.9	ND/2.1*
W-6-GP4	6	05/23/01	ND	0.70	ND	ND	0.011	96/72*
W-10-GP5	10	05/23/01	2,100	39	16	ND	17	2,200/2,000*

Notes:

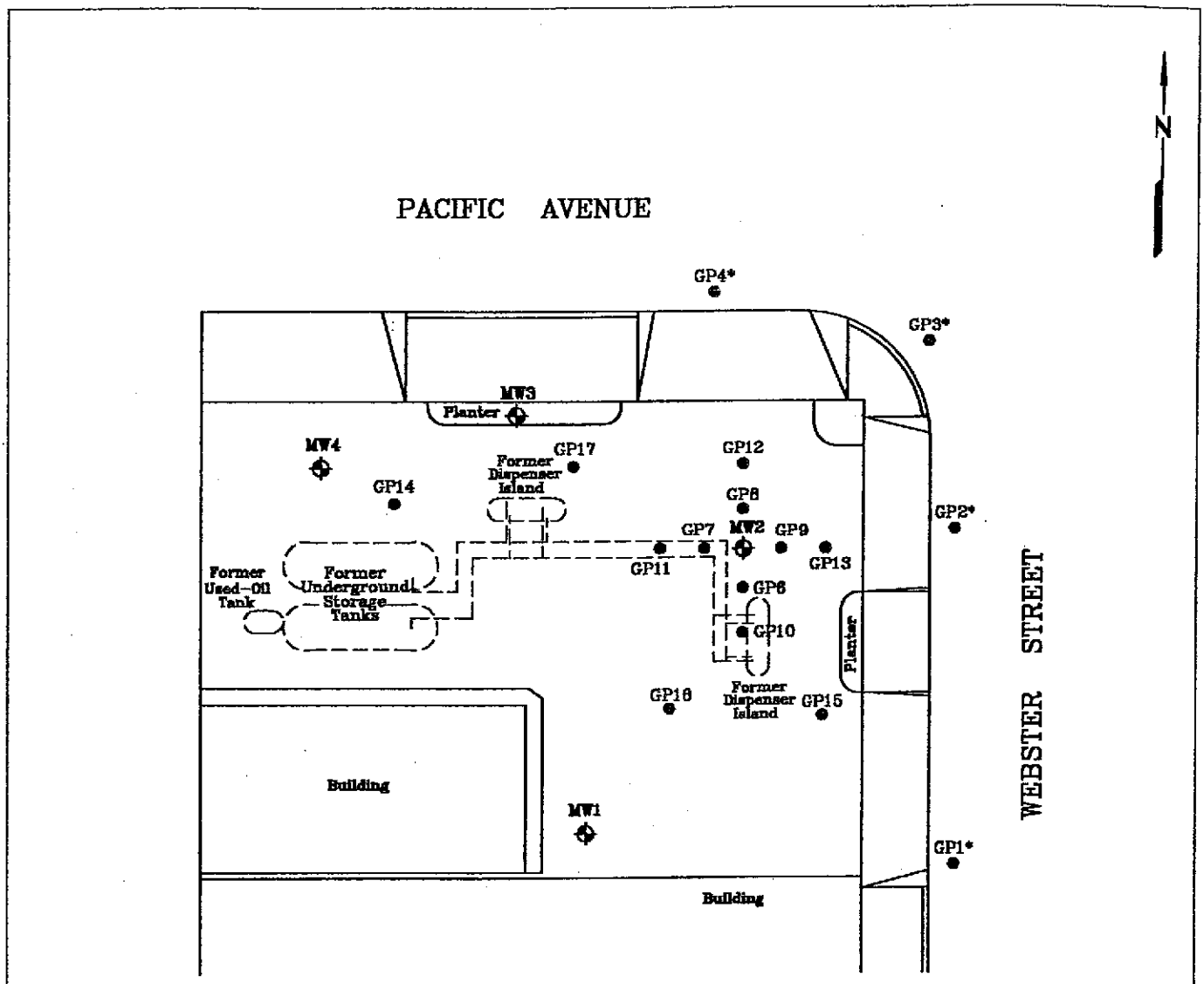
W-10-GP1 = Groundwater sample-depth-boring number.
TPHg = Total petroleum hydrocarbons as gasoline analyzed using EPA Method 8015M.
BTEX = Benzene, toluene, ethylbenzene, and total xylenes analyzed using EPA Method 8020.
MTBE = Methyl tertiary butyl ether analyzed using EPA Method 8020.
bgs = Below ground surface.
ppb = Parts per billion.
ND = Not detected at or above the laboratory reporting limit.
* = MTBE confirmed using EPA Method 8260A.

TABLE 2
RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES
Former Tosco Service Station 0843
1629 Webster Street
Alameda, California

Sample Designation	Depth (feet bgs)	Date Sampled	TPHg	B	T	E	X	MTBE
			<.....ppb.....>					
Soil Boring Samples								
W-7-GP14	7	12/04/01	<50	<0.50	<0.50	<0.50	<0.50	6.4/5.1a
W-7-GP15	7	12/04/01	<50	<0.50	<0.50	<0.50	<0.50	<2.5
W-7-GP16	7	12/04/01	<50	<0.50	<0.50	<0.50	<0.50	<2.5

Notes:

W-7-GP14 = Water sample-depth-boring number.
TPHg = Total petroleum hydrocarbons as gasoline analyzed using EPA Method 8015M.
BTEX = Benzene, toluene, ethylbenzene, and total xylenes analyzed using EPA Method 8020.
MTBE = Methyl tertiary butyl ether analyzed using EPA Method 8020.
a = MTBE analyzed using EPA Method 8260B.
bgs = Below ground surface.
ppb = Parts per billion.
< = Less than the stated laboratory reporting limit.



FN 22480002

EXPLANATION

MW4 Groundwater Monitoring Well

GP17 Direct–Push Soil Boring

* Drilled on May 23, 2001

ENVIRONMENTAL RESOLUTIONS, INC.

GENERALIZED SITE PLAN

FORMER TOSCO SERVICE STATION 0843
1629 Webster Street
Alameda, California

PROJECT NO. 2248

PLATE 2

February 7, 2002

RESULTS OF ANALYSIS OF SOIL AND GROUNDWATER SAMPLES
Former Tosco 76 Service Station 0843
1629 Webster Street
Alameda, California
(Page 1 of 2)

Sample#	Plate 2 Callout	Depth	Date	TEPHd	TPPHg	B	T	E	X	TRPH	MTBE	SVOC's	HVOC's	Total Lead/ Soluble Lead
				<.....ppm (unless otherwise noted).....>										
Gasoline USTs														
S-8-T1N	C	8	6/17/98	NA	44	0.09	0.04	0.2	0.4	NA	280*	NA	NA	27/NA
S-5.5-T1E	F	5.5	6/17/98	NA	ND	ND	ND	ND	ND	NA	ND*	NA	NA	NA
S-2-T1N	B	2	6/17/98	NA	ND	0.04	ND	0.08	0.08	NA	ND*	NA	NA	63/NA
S-5.5-T2S	D	5.5	6/17/98	NA	ND	ND	ND	ND	ND	ND	ND*	NA	NA	NA
S-6-T2E	E	6	6/17/98	NA	ND	ND	ND	ND	ND	NA	ND*	NA	NA	NA
Used - Oil UST														
S-6-T3	A	6	6/17/98	ND**	ND	ND	ND	ND	ND	ND	ND*	ND	ND	21/NA
Product Lines and Dispensers														
S-3-D1	G	3	6/17/98	NA	ND	ND	ND	ND	ND	NA	ND	NA	NA	NA
S-3-D2	H	3	6/17/98	NA	ND	ND	ND	ND	ND	NA	ND	NA	NA	NA
S-4-D3	K	4	6/17/98	NA	ND	ND	ND	ND	ND	NA	ND	NA	NA	NA
S-3.5-D4	L	3.5	6/17/98	NA	ND	ND	ND	ND	ND	NA	ND	NA	NA	NA
S-3-P1	I	3	6/17/98	NA	ND	ND	ND	ND	ND	NA	ND	NA	NA	NA
S-3.5-P2	J	3.5	6/17/98	ND	ND	ND	ND	ND	ND	NA	ND	NA	NA	NA
Stockpiles														
SP-1-(1-4)	NA	NA	6/17/98	NA	1,700	3.6	57	21	170	NA	ND	NA	NA	42/NA
SP-2 -(1-4)	NA	NA	6/17/98	NA	460	0.7	4.6	3.5	36	NA	ND	NA	NA	64/2.4
SP-3-(1-4)	NA	NA	6/17/98	26	2	ND	0.18	0.005	0.046	1,193	ND	ND-2	ND	110/3.5
WATER														
S-8.5-TP	NA	8.5	6/17/98	NA	19,000	880	930	360	2,300	NA	1,300			

APPENDIX D

BORING LOGS

Project No.: 2248 Boring: B1/MW1 Plate: APPENDIX
Site: Former Tosco 76 Service Station 0843 Date: 3/2/99
Drill Contractor: Woodward Drilling
Sample Method: Split Spoon Geologist: MARK S. DOCKUM
Drill Rig: B57 Bore Hole Diameter: 8" Signature:
Location: South End of Site Approximately 50 Feet West of Southern Driveway Registration: R.G. 4412
Logged by: Dylan Crouse

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						3" asphalt	
					SP	Sand, trace of silt, yellowish brown, moist	
5	5	0					
						Sands, trace of silt and some clay, brown, moist, some plasticity	
10	38	0			SC		
						Sand, trace of silt, light yellowish brown, wet	
15	35	0			SP		
						sand, trace of silt, olive, wet	
20	40	0					
						Total depth at 20.5 feet. Groundwater encountered at 12 feet. Static groundwater encountered at 5.6 feet.	

Casing Diameter: 2" Slot Size: 0.020 , Sand Size: #3 , Grout: Portland I,II

FN: 2248B001

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2248 Boring: B2/MW2 Plate: APPENDIX
Site: Former Tosco 76 Service Station 0843 Date: 3/2/99
Drill Contractor: Woodward Drilling
Sample Method: Split Spoon Geologist: MARK S. DOCKUM
Drill Rig: B57 Bore Hole Diameter: 8" Signature:
Location: Northeast Corner of Site Approximately 10 Feet North of East Dispenser Registration: R.G. 4412
Logged by: Dylan Crouse

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						Sand, fine-grained, trace of silt, yellowish brown, very moist	
5	2	0 ▽					
		▼			SP	sand, trace of silt, olive gray, very moist	
10	27	1023				sand, trace of silt, dark yellowish brown, wet	
15	43	46				sand, trace of silt, light olive yellow, wet	
20	86	9					
						Total depth at 20.5 feet. Groundwater encountered at 8.5 feet. Static groundwater encountered at 5.3 feet.	

Casing Diameter: 2" Slot Size: 0.020 , Sand Size: #3 , Grout: Portland I/II

FN: 22483003

ENVIRONMENTAL RESOLUTIONS, INC.

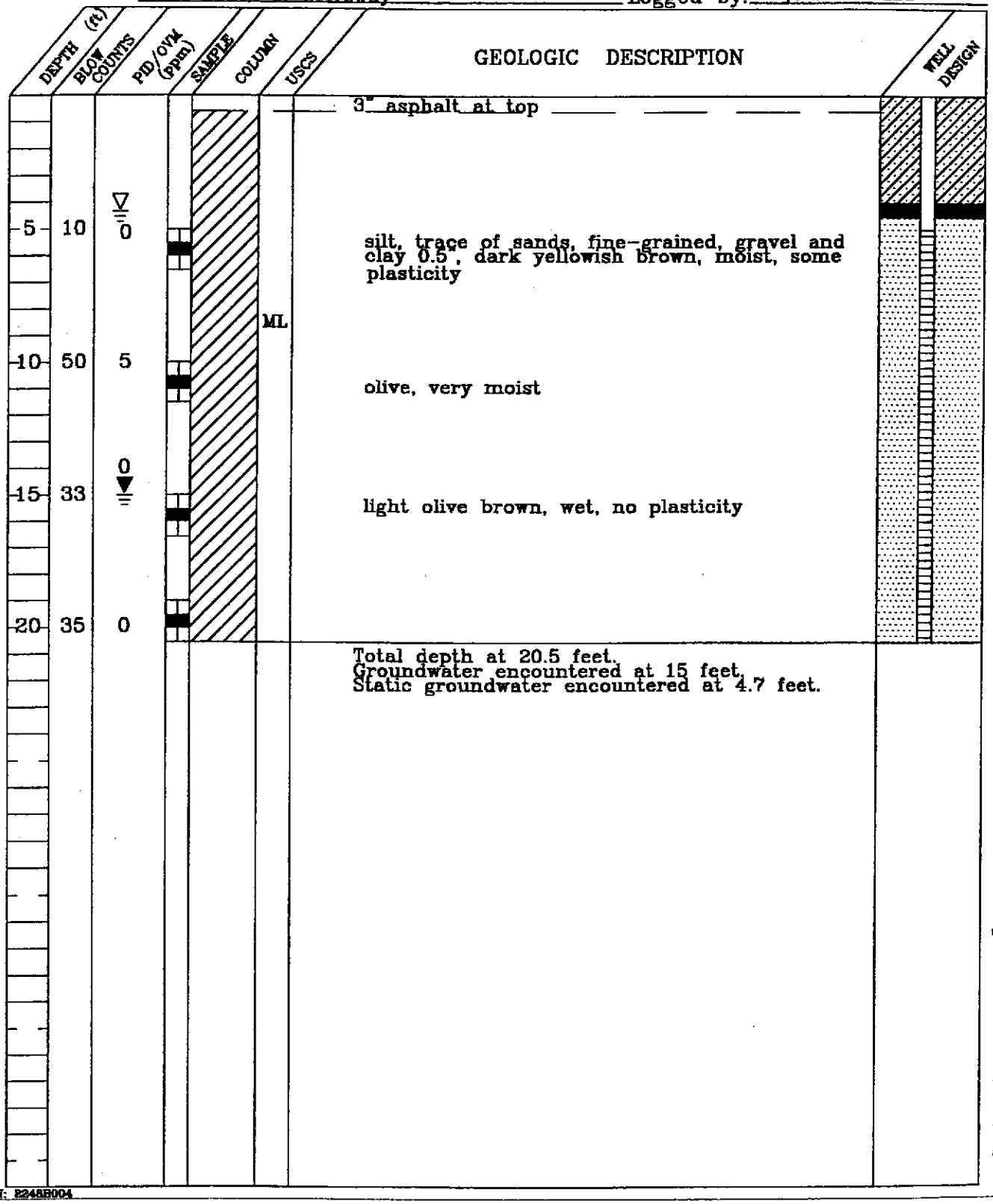
Project No.: 2248 Boring: B3/MW3 Plate: APPENDIX
Site: Former Tosco 76 Service Station 0843 Date: 3/2/99
Drill Contractor: Woodward Drilling
Sample Method: Split Spoon Geologist: MARK S. DOCKUM
Drill Rig: B57 Bore Hole Diameter: 8" Signature:
Location: North Center in the Planter Approximately 1 Foot South of the Sidewalk Registration: R.G. 4412
Logged by: Dylan Crouse

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						3" planter soil	
						Silt, trace of sand and clay, fine-grained, dark yellowish brown, very moist, some plasticity	
5	5	▽ 0			ML		
10	35	0					
		▼					
15	20	1				silt, trace of sand, fine-grained, dark yellowish brown, wet, no plasticity	
20	37	7				very moist	
						Total depth at 20.5 feet. Groundwater encountered at 12 feet. Static groundwater encountred at 4.9 feet.	

Casing Diameter: 2" Slot Size: 0.020 . Sand Size: #3 , Grout: Portland I/II

FN: 2248B003

Project No.: 2248 Boring: B4/MW4 Plate: APPENDIX
Site: Former Tosco 76 Service Station 0843 Date: 3/2/99
Drill Contractor: Woodward Drilling
Sample Method: Split Spoon Geologist: MARK S. DOCKUM
Drill Rig: B57 Bore Hole Diameter: 8" Signature:
Location: Northeast Corner of Site Approximately 13 Feet South of Driveway Registration: R.G. 4412
Logged by: Dylan Crouse



Casing Diameter: 2" Slot Size: 0.020 , Sand Size: #3 , Grout: Portland 1 II

FN: 2248B004

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2248 Boring: MW-2 Page:

Site: Former Tosco 76 Service Station 0843 Date: 12/8/99

Drill Contractor: Woodward Drilling

Sample Method: Split Spoon Geologist: MARK S. DOCKUM

Drill Rig: B57 Bore Hole Diameter: 8" Signature:

Location: 6.3 Feet from Curb 215 North and 95 Feet East of Northeast Site Boundary Registration: R.G. 4412

Logged by: Dylan Crouse

DEPTH (ft.)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						1' asphalt	
						Fill, sand	
5	9	0			CL	*Sand with some clay, olive gray, moist, slight plasticity, (25% clay, 75% sand), very fine-grained	
10	26	0			SM	Sand with some silt, yellowish orange, (25% silt, 75% sand), very fine-grained, wet, red staining	
15	36	0				same as above	
20	50	0				same as above	
						Total depth at 21.5 feet. First encountered groundwater at 10 feet. Static groundwater at 6.9 feet.	

*Soil description modified following field work. Original field log available upon request from ERI.

Casing Diameter: 2" Slot Size: 010 , Sand Size: 2/12 , Grout: Portland I,II

FN: 2248B005

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: [illegible] Boring: [illegible]

Site: Former Tosco 76 Service Station 0843 Date: 12/8/99

Drill Contractor: Woodward Drilling

Sample Method: Split Spoon Geologist: MARK S. DOCKUM

Drill Rig: B57 Bore Hole Diameter: 8" Signature:

Location: 6.5 Feet from Curb 130 Feet North and 18 Feet East of Northeast Site Boundary Registration: R.G. 4412

Logged by: Dylan Crouse

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						6" asphalt, 6" concrete Fill, sand with some gravel	
5	8					no recovery Sand with some silt, yellowish orange, (25% silt, 75% sand), very fine-grained, wet	
10	21	5			SM	same as above	
15	19	28				same as above	
20	80	3				same as above	
						Total depth at 21.5 feet. First encountered groundwater at 9.8 feet.	

Casing Diameter: 2' Slot Size: 0.010 , Sand Size: 2/12 , Grout: Portland I,II

FN: 2248B006

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 224803 Boring: GP1 Plate: 1 OF 1
Site: Former Tosco 76 Service Station 0843 Date: 5/23/01
Drill Contractor: Gregg Drilling & Testing, Inc.
Sample Method: Direct-Push Geologist: John B. Bobbitt
Drill Rig: Maryl 25 Key Bore Hole Diameter: 2" Signature:
Location: Western side of Webster Street on southern property line Registration: R.G. 4313
Logged by: Rob Saur

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						6-inches of asphalt	
					SP		
5		0				Sand, medium-grained, brown, well sorted, trace of silt, wet at 4 feet	
10							
						Total depth at 12 feet bgs.	
						Boring grouted to ground surface.	
15							
20							
25							
30							
35							
40							

Casing Diameter: N/A Slot Size: N/A, Sand Size: N/A, Grout: Portland I, II

FN: 2248gp1

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 224803 Boring: GP2 Plate: 1 OF 1
Site: Former Tosco 76 Service Station 0843 Date: 5/23/01
Drill Contractor: Gregg Drilling & Testing, Inc.
Sample Method: Direct-Push Geologist: John B. Bobbitt
Drill Rig: Maryl 25 Key Bore Hole Diameter: 2" Signature:
Location: Approximately 60 feet north of GP1 Registration: R.G. 4313
Logged by: Rob Saur

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						6-inches of asphalt	
5		0 ▽			SP	Sand medium-grained, brown, well sorted, trace of silt, wet at 5 feet 6 to 8 feet slightly stained blue-green Same, brown	
10		0					
15						Total depth at 12 feet bgs. Boring grouted to ground surface.	
20							
25							
30							
35							
40							

Casing Diameter: N/A Slot Size: N/A , Sand Size: N/A , Grout: Portland I/II

FN: 2248gp2

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 224803 Boring: GP3 Plate: 1 OF 1
Site: Former Tosco 76 Service Station 0843 Date: 5/23/01
Drill Contractor: Gregg Drilling & Testing, Inc.
Sample Method: Direct-Push Geologist: John B. Bobbitt
Drill Rig: Maryl 25 Key Bore Hole Diameter: 2" Signature:
Location: Adjacent to curb on Southwest corner of Webster Street and Pacific Avenue Registration: R.G. 4313
Logged by: Rob Saur

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						6-inches of asphalt	
					SP		
5		0 ▽				Sand, medium-grained, brown, well sorted, trace of silt, wet at 5 feet	
						At 6 feet blue-green color	
10						Unable to get soil from sampler	
						Total Depth 12 feet	
						Boring grouted to ground surface.	
15							
20							
25							
30							
35							
40							

Casing Diameter: N/A Slot Size: N/A, Sand Size: N/A, Grout: Portland I/II

FN: 2248gp3

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 224803 Boring: GP4 Plate: 1 OF 1
Site: Former Tosco 76 Service Station 0843 Date: 5/23/01
Drill Contractor: Gregg Drilling & Testing, Inc.
Sample Method: Direct-Push Geologist: John R. Robbitt
Drill Rig: Maryl 25 Key Bore Hole Diameter: 2" Signature:
Location: Adjacent to th curb on southern side of Pacific Avenue Registration: R.G. 4313
Logged by: Rob Saur

DEPTH (ft.)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						6 inch asphalt	
					SP		
5		0 ▽				Sand, medium-grained, well-sorted, trace of silt, wet at 5 feet, at 6 feet green color	
						Same, at 8 feet brown color	
10		124				Same	
						Total depth at 12 feet bgs.	
						Boring grouted to ground surface.	
15							
20							
25							
30							
35							
40							

Casing Diameter: N/A Slot Size: N/A, Sand Size: N/A, Grout: Portland I/II

FN: 2248gp4

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 224803 Boring: GP5 Plate: 1 OF 1
Site: Former Tosco 76 Service Station 0843 Date: 5/23/01
Drill Contractor: Gregg Drilling & Testing, Inc.
Sample Method: Direct-Push Geologist: John R. Bobbitt
Drill Rig: Maryl 25 Key Bore Hole Diameter: 2" Signature:
Location: Adjacent to curb on northern side of Pacific Avenue Registration: R.G. 4313
Logged by: Rob Saur

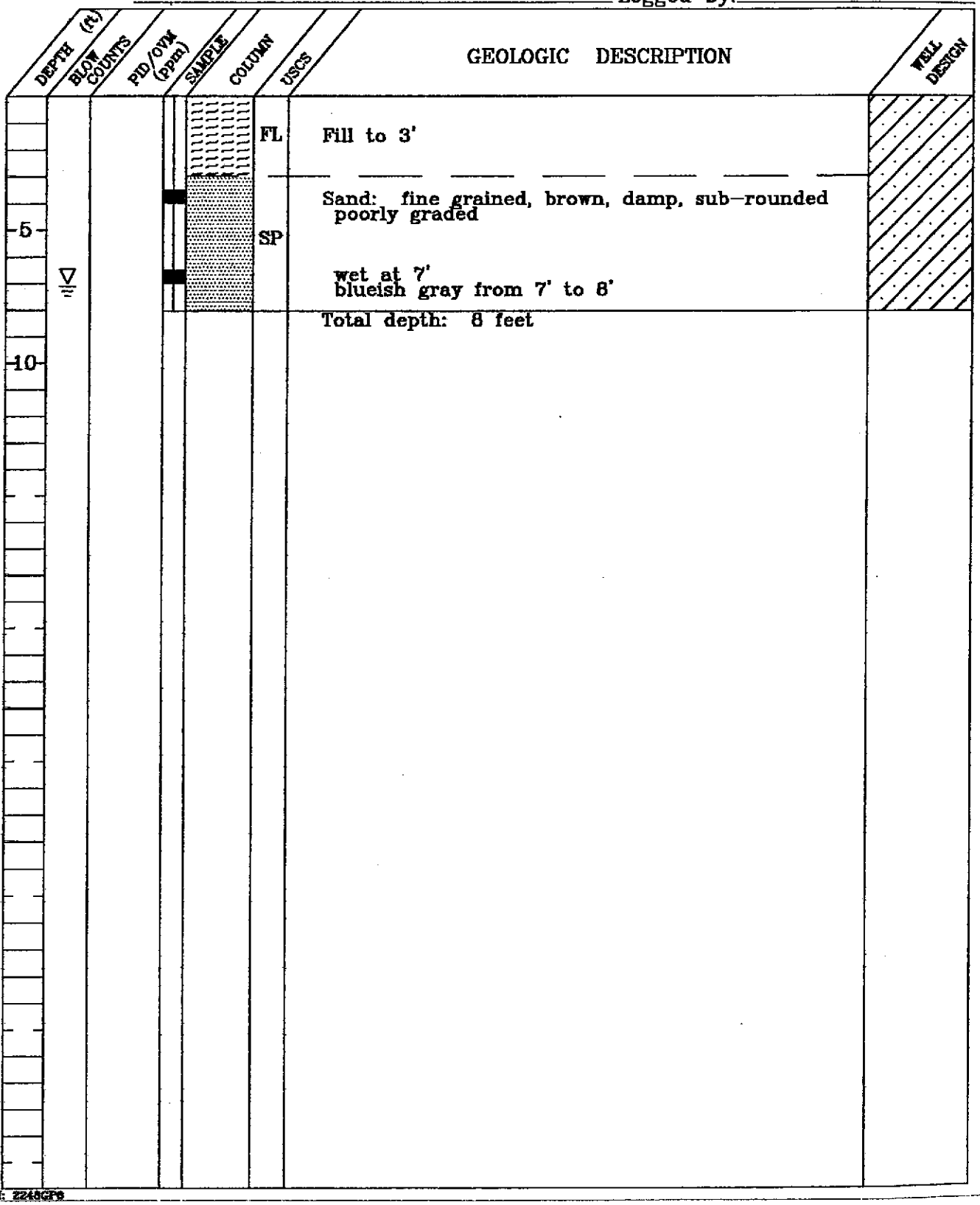
DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						6-inches of asphalt	
					SP		
5		0 ▽				Sand, medium-grained, brown, well-sorted, trace of silt, wet at 5 feet	
						Bluish-green at 6 feet, strong odor	
10		106					
						Total depth at 12 feet bgs.	
15						Boring grouted to ground surface.	
20							
25							
30							
35							
40							

Casing Diameter: N/A Slot Size: N/A , Sand Size: N/A , Grout: Portland I/II

FN: 2248gp5

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2248 Boring: GP6 Plate: 1 OF 1
Site: Former Tosco Service Station 0843 Date: 12/4/01
Drill Contractor: Gregg Drilling & Testing, Inc.
Sample Method: Direct Push Geologist: John B. Robbitt
Drill Rig: Marl 2.5 Bore Hole Diameter: 2" Signature:
Location: 7' South of MW2 Registration: R.G. 4313
Logged by: Rob A. Saur



Casing Diameter: NA Slot Size: NA, Sand Size: NA, Grout: Portland I/II

FN: 2248GP6

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2248 Boring: GP7 Plate: 1 OF 1
Site: Former Tosco Service Station 0843 Date: 12/4/01
Drill Contractor: Gregg Drilling & Testing, Inc.
Sample Method: Direct Push Geologist: John B. Babbitt
Drill Rig: Marl 2.5 Bore Hole Diameter: 2" Signature: JBB
Location: 7' West of MW2 Registration: R.G. 4313
Logged by: Rob A. Saur

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
0						Sand: fine grained, brown, damp, sub-rounded, poorly graded	
		0			SP		
5							
	▽	0				wet	
						Total depth = 8 feet	
10							

Casing Diameter: NA Slot Size: NA, Sand Size: NA, Grout: Portland I/II

FN: 2248GP7

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2248 Boring: GP8 Plate: 1 OF 1
Site: Former Tosco Service Station 0843 Date: 12/4/01
Drill Contractor: Gregg Drilling & Testing, Inc.
Sample Method: Direct Push Geologist: John B. Bobbitt
Drill Rig: Marl 2.5 Bore Hole Diameter: 2" Signature:
Location: 7' North of MW2 Registration: R.G. 4313
Logged by: Rob A. Saur

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
5		0			SP	Sand: fine grained, brown, damp, sub-rounded, poorly graded	
	▽	0				wet at 6.5'	
						blueish green from 7' to 8'	
10						Total depth = 8 feet	

Casing Diameter: NA Slot Size: NA, Sand Size: NA, Grout: Portland I,II

FN: 2248GP8

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2248 Boring: GP9 Plate: 1 OF 1
Site: Former Tosco Service Station 0843 Date: 12/4/01
Drill Contractor: Gregg Drilling & Testing, Inc.
Sample Method: Direct Push Geologist: John B. Bobbitt
Drill Rig: Marl 2.5 Bore Hole Diameter: 2" Signature: JB Bobbitt
Location: 7' East of MW2 Registration: R.G. 4313
Logged by: Rob A. Saur

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
5	▽				SP	Sand: fine grained, brown, damp, sub--rounded, poorly graded wet at 6.5' blueish green from 7' to 8'	
10						Total depth = 8 feet	

Casing Diameter: NA Slot Size: NA, Sand Size: NA, Grout: Portland I/II

FN: 2248GP9

Project No.: 2248 Boring: GP10 Plate: 1 OF 1

Site: Former Tosco Service Station 0843 Date: 12/4/01

Drill Contractor: Gregg Drilling & Testing, Inc.

Sample Method: Direct Push Geologist: John B. Bobbitt

Drill Rig: Marl 2.5 Bore Hole Diameter: 2" Signature: JB Bobbitt

Location: 15' South of MW2 Registration: R.G. 4313

Logged by: Rob A. Saur

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
					FL	Fill to 3'	
		0				Sand: fine grained, brown, damp sub-rounded poorly graded	
5					SP		
	▽	0				wet at 7' slight blue-green staining from 7' to 8'	
						Total depth = 8 feet	
10							

Casing Diameter: NA Slot Size: NA, Sand Size: NA, Grout: Portland I,II

FN: 2248GP10

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2248 Boring: GP11 Plate: 1 OF 1
Site: Former Tosco Service Station 0843 Date: 12/4/01
Drill Contractor: Gregg Drilling & Testing, Inc.
Sample Method: Direct Push Geologist: John B. Bobbitt
Drill Rig: Marl 2.5 Bore Hole Diameter: 2" Signature:
Location: 15' West of MW2 Registration: R.G. 4313
Logged by: Rob A. Saur

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
5		0			SP	Sand: fine grained, brown, damp, sub-rounded, poorly graded	
	▽	0				wet at 7' slight blue-green staining from 7' to 8'	
10						Total depth = 8 feet	

Casing Diameter: NA Slot Size: NA, Sand Size: NA, Grout: Portland I/II

FN: 2248GP11

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2248 Boring: GP12 Plate: 1 OF 1
Site: Former Tosco Service Station 0843 Date: 12/4/01
Drill Contractor: Gregg Drilling & Testing, Inc.
Sample Method: Direct Push Geologist: John B. Bobbitt
Drill Rig: Marl 2.5 Bore Hole Diameter: 2" Signature:
Location: 15' North of MW2 Registration: R.G. 4313
Logged by: Rob A. Saur

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
5					SP	Sand: fine grained, brown, damp, sub-rounded, poorly graded wet at 6.5' blueish green at 7'	
10							
15						brown at 15'	
						Total depth = 16 feet	

Casing Diameter: NA Slot Size: NA, Sand Size: NA, Grout: Portland I,II

FN: 2248GP12

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2248 Boring: GP13 Plate: 1 OF 1
Site: Former Tosco Service Station 0843 Date: 12/4/01
Drill Contractor: Gregg Drilling & Testing, Inc.
Sample Method: Direct Push Geologist: John B. Bobbitt
Drill Rig: Marl 2.5 Bore Hole Diameter: 2" Signature: JB Bobbitt
Location: 15' East of MW2 Registration: R.G. 4313
Logged by: Rob A. Saur

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
5					SP	Sand: fine grained, brown, damp, sub-rounded, poorly graded	
	▽					wet at 7' slight blueish green from 7' to 8'	
10						Total depth = 8 feet	
15							

Casing Diameter: NA Slot Size: NA, Sand Size: NA, Grout: Portland I/II

FN: 2248GP13

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2248 Boring: GP14 Plate: 1 OF 1
Site: Former Tosco Service Station 0843 Date: 12/4/01
Drill Contractor: Gregg Drilling & Testing, Inc.
Sample Method: Direct Push Geologist: John B. Bobbitt
Drill Rig: Marl 2.5 Bore Hole Diameter: 2" Signature: JB Bobbitt
Location: 10' Southeast of MW4 Registration: R.G. 4313
Logged by: Rob A. Saur

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
0		0			SP	Sand: fine grained, brown, damp, sub-rounded, poorly graded	
5	▽	▼0				wet at 7.5'	
10						Total depth = 8 feet	

Casing Diameter: NA Slot Size: NA, Sand Size: NA, Grout: Portland I/II

FN: 2248GP14

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2248 Boring: GP15 Plate: 1 OF 1
Site: Former Tosco Service Station 0843 Date: 12/4/01
Drill Contractor: Gregg Drilling & Testing, Inc.
Sample Method: Direct Push Geologist: John B. Bobbitt
Drill Rig: Marl 2.5 Bore Hole Diameter: 2" Signature: JB Bobbitt
Location: 30' Southeast of MW4 Registration: R.G. 4313
Logged by: Rob A. Saur

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
0		0			SP	Sand: fine grained, brown, damp, sub-rounded, poorly graded	
5	▽	0 ▼				wet at 7'	
10		0					
15		0				Total depth = 16 feet	

Casing Diameter: NA Slot Size: NA, Sand Size: NA, Grout: Portland I,II

FN: 2248GP15

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2248 Boring: GP16 Plate: 1 OF 1
Site: Former Tosco Service Station 0843 Date: 12/4/01
Drill Contractor: Gregg Drilling & Testing, Inc.
Sample Method: Direct Push Geologist: John B. Bobbitt
Drill Rig: Marl 2.5 Bore Hole Diameter: 2" Signature: JB Bobbitt
Location: 30' Southwest of MW1 Registration: R.G. 4313
Logged by: Rob A. Saur

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
0		0			SP	Sand: fine grained, brown, damp, sub-rounded, poorly graded	
5	▽	0				wet at 7'	
10		0				very slight blueish-green tint from 10' to 11' brown	
15		0					
						Total depth = 16 feet	

Casing Diameter: NA Slot Size: NA, Sand Size: NA, Grout: Portland I/II

FN: 2248GP16

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2248 Boring: GP17 Plate: 1 OF 1
Site: Former Tosco Service Station 0843 Date: 12/4/01
Drill Contractor: Gregg Drilling & Testing, Inc.
Sample Method: Direct Push Geologist: John B. Bobbitt
Drill Rig: Marl 2.5 Bore Hole Diameter: 2" Signature:
Location: 10' Southeast of MW3 Registration: R.G. 4313
Logged by: Rob A. Saur

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
5	▽				SP	Sand: fine grained, brown, damp, sub-rounded, poorly graded wet at 7'	
10						Total depth = 8 feet	

Casing Diameter: NA Slot Size: NA, Sand Size: NA, Grout: Portland I,II

FN: 2248GP17

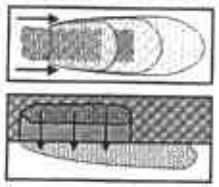
APPENDIX E

RBCA OUTPUT FILES

Exposure Pathway Identification

Site Name: Former 76 Service Station 0843
Location: 1629 Webster Street, Alameda, California
Compl. By: Rob Saur
Job ID: 22481412 Date: 23-Jun-03

1. Groundwater Exposure



Groundwater Ingestion/ Surface Water Impact

Receptor Type:	None	Res.	Res.
	On-site	Off-site1	Off-site2

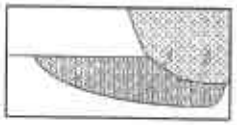
Source Media:

- [x] Affected Groundwater
- [x] Affected Soils Leaching to Groundwater

Distance to GW receptors

	0	1980	2110 (ft)
	On-site	Off-site1	Off-site2
	0	1980	2110 (ft)

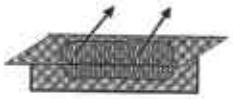
GW Discharge to Surface Water Exposure



- [ ] Swimming
- [ ] Fish Consumption
- [ ] Aquatic Life Protection

Enter ALP Criteria

2. Surface Soil Exposure

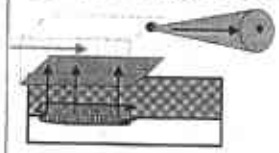


Direct Ingestion and Dermal Contact

Receptor Type:	Com.	No off-site receptors
	On-site	

Construction Worker [x]

3. Air Exposure

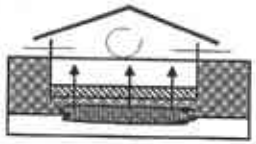


Volatilization and Particulates to Outdoor Air Inhalation

Receptor Type:	Com.	Res.	None
	On-site	Off-site1	Off-site2
	0	50	0 (ft)

Construction worker [ ]

- [x] Affected Soils--Volatilization to Ambient Outdoor Air
- [x] Affected Groundwater--Volatilization to Ambient Outdoor Air
- [x] Affected Surface Soils--Particulates to Ambient Outdoor Air



Volatilization to Indoor Air Inhalation

Receptor Type:	Com.	No off-site receptors
	On-site	

- [x] Affected Soils--Volatilization to Enclosed Space
- [x] Affected Groundwater--Volatilization to Enclosed Space

4. Commands and Options

Main Screen | Print Sheet | Set Units | Help

Exposure Factors & Target Risks | Exposure Flowchart

RBCA Tool Kit for Chemical Releases, Version 1.3a

Site Name: Former 76 Service Station 0843 | Job ID: 22481412
Location: 1629 Webster Street, Alameda, California | Date: 23-Jun-03
Compl. By: Rob Saur

Commands and Options: Main Screen | Print Sheet | Help

Source Media Constituents of Concern (COCs)

Apply Raoult's Law ?

Selected COCs

COC Select: | Sort List: ?

Add/Insert | Top | MoveUp
Delete | Bottom | MoveDown

Representative COC Concentration ?

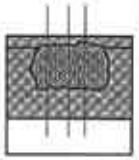
Selected COCs	Groundwater Source Zone			Soil Source Zone			Mole Fraction in Source Material
	Calculate / Enter Site Data			Calculate / Enter Site Data			
	(mg/L)	note		(mg/kg)	note		(-)
Benzene*	1.5E-1	Max		4.0E-2	Max		
Toluene*	1.2E+0	Max		4.1E+0	Max		
Ethylbenzene*	1.4E+0	Max		2.0E+1	Max		
Xylene (mixed isomers)*	4.7E+0	Max		1.2E+2	Max		
Methyl t-Butyl ether*	6.2E+0	Max		3.6E-1	Max		

* = Chemical with user-specified data

Transport Modeling Options

Site Name: Former 76 Service Station 0843 Job ID: 22481412
Location: 1629 Webster Street, Alameda, California Date: 23-Jun-03
Compl. By: Rob Saur

1. Vertical Transport, Surface Soil Column



Outdoor Air Volatilization Factors ?

- ○ Surface soil volatilization model only
- ◉ Combination surface soil/Johnson & Ettinger models
  Thickness of surface soil zone [7] *(ft)*
- ○ User-specified VF from other model [Enter VF Values]

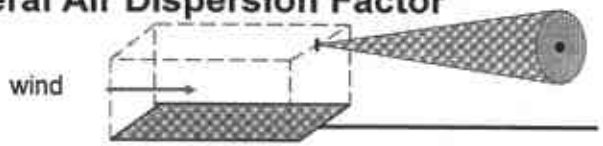
Indoor Air Volatilization Factors ?

- ◉ Johnson & Ettinger model
- ○ User-specified VF from other model [Enter VF Values]

Soil-to-Groundwater Leaching Factor ?

- ◉ ASTM Model
  - ☑ Apply Soil Attenuation Model (SAM)
  - ☑ Allow first-order biodecay [■ □ Enter Decay Rates]
- ○ User-specified LF from other model [Enter LF Values]

2. Lateral Air Dispersion Factor

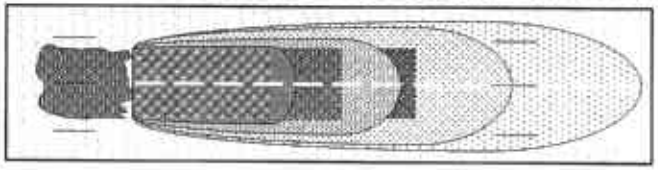


?

- ○ 3-D Gaussian dispersion model
- ◉ User-Specified ADF

Off-site 1	Off-site 2	
1.0E+0	1.00E+0	*(-)*

3. Groundwater Dilution Attenuation Factor



Calculate DAF using Domenico Model ?

- ◉ Domenico equation with dispersion only (no biodegradation)
- ○ Domenico equation first-order decay [Enter Decay Rates]
- ○ Modified Domenico equation using electron acceptor superposition [Enter Site Data]

[Enter Directly] Biodegradation Capacity [NC] *(mg/L)*

— or —

User-Specified DAF Values

- ○ DAF values from other model or site data [Enter DAF Values]

n o

4. Commands and Options

Main Screen **Print Sheet** ***Help***

Site-Specific Soil Parameters

Site Name: Former 76 Service Station 0843 | Job ID: 22481412
Location: 1629 Webster Street, Alameda, California | Date: 23-Jun-03
Compl. By: Rob Saur

1. Soil Source Zone Characteristics

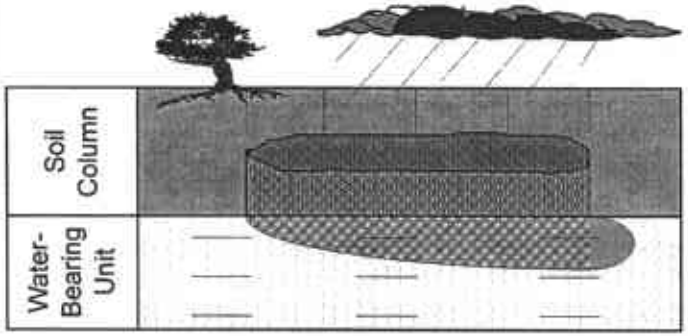
Hydrogeology

General Case Construction

Depth to water-bearing unit	7	(ft)
Capillary zone thickness	0.164041995	(ft)
Soil column thickness	6.835958005	(ft)

Affected Soil Zone

Depth to top of affected soils	0		(ft)
Depth to base of affected soils	7		(ft)
Affected soil area	100	100	(ft^2)
Length of affected soil parallel to assumed wind direction	10	10	(ft)
Length of affected soil parallel to assumed GW flow direction	10		(ft)



2. Surface Soil Column

	Vadose Zone	Capillary Fringe	
Predominant USCS Soil Type	SW/SP: Sand		
or Enter Directly			
Total porosity	0.41		(-)
Volumetric water content	0.08	0.369	(-)
Volumetric air content	0.33	0.041	(-)
Dry bulk density	1.7		(kg/L)
Vertical hydraulic conductivity	1.0E-2		(cm/s)
Vapor permeability	1.1E-11		(ft^2)
Capillary zone thickness	1.6E-1		(ft)

Net Rainfall Infiltration

Net infiltration estimate	11.81102362	(in/yr)
or Calculate		
Average annual precipitation	0	(in/yr)

Partitioning Parameters

Fraction organic carbon	0.001	(-)
Soil/water pH	6.8	(-)

3. Commands and Options

Main Screen | Use Default Values | Print Sheet
Set Units | | Help

Site-Specific Groundwater Parameters

Site Name: Former 76 Service Station 0843 | Job ID: 22481412
Location: 1629 Webster Street, Alameda, California | Date: 23-Jun-03
Compl. By: Rob Saur

1. Water-Bearing Unit

Hydrogeology

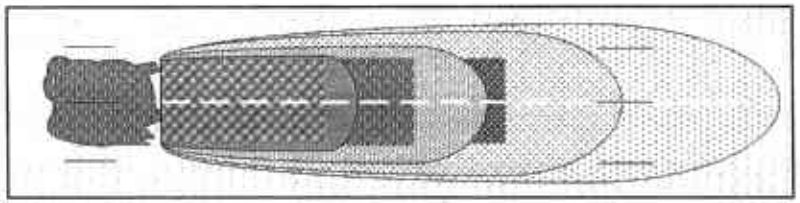
Groundwater Darcy velocity	2.5E-5	(cm/s)
Groundwater seepage velocity	5.7E-5	(cm/s)
or Enter Directly	↑ or	
Hydraulic conductivity	3.5E-3	(cm/s)
Hydraulic gradient	7.0E-3	(-)
Effective porosity	0.43	(-)

Sorption

Fraction organic carbon--saturated zone	0.001	(-)
Groundwater pH	6.20	(-)

2. Groundwater Source Zone

Groundwater plume width at source	30	(ft)
Plume (mixing zone) thickness at source	7	(ft)
or Calculate	↑ or	
Saturated thickness	10	(ft)
Length of source zone		(ft)



3. Groundwater Dispersion

Model: ASTM Default

	GW Ingestion		Soil Leaching to GW		
	Off-site 1	Off-site 2	Off-site 1	Off-site 2	
Distance to GW receptors	1980	2110	1980	2110	(ft)
or Enter Directly	↓ or	↓	↓ or	↓	
Longitudinal dispersivity	198	211	198	211	(ft)
Transverse dispersivity	65.34	69.63	65.34	69.63	(ft)
Vertical dispersivity	9.9	10.55	9.9	10.55	(ft)

4. Groundwater Discharge to Surface Water

	Off-site 2	
Distance to GW/SW disharge point	NA	(ft)
Plume width at GW/SW discharge	0	(ft)
Plume thickness at GW/SW discharge	0	(ft)
Surface water flowrate at GW/SW discharge	0.0E+0	(ft^3/s)

5. Commands and Options

Main Screen | Use Default Values | Print Sheet
Set Units | | Help

Site-Specific Air Parameters

Site Name: Former 76 Service Station 0843 Job ID: 22481412
Location: 1629 Webster Street, Alameda, California Date: 23-Jun-03
Compl. By: Rob Saur

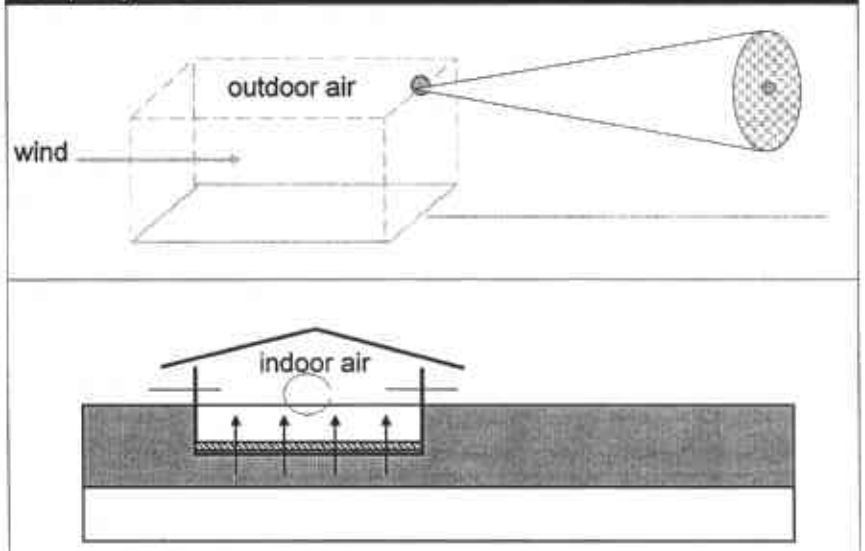
1. Outdoor Air Pathway

Dispersion in Air

	Off-site 1	Off-site 2	
Distance to offsite air receptor			(ft)
or NA		or	
Horizontal dispersivity			(ft)
Vertical dispersivity			(ft)

Air Source Zone

Air mixing zone height	6.56167979	(ft)
Ambient air velocity in mixing zone	7.381889764	(ft/s)
Areal particulate emission flux	6.9E-14	(g/cm^2/s)



2. Indoor Air Pathway

Building Parameters

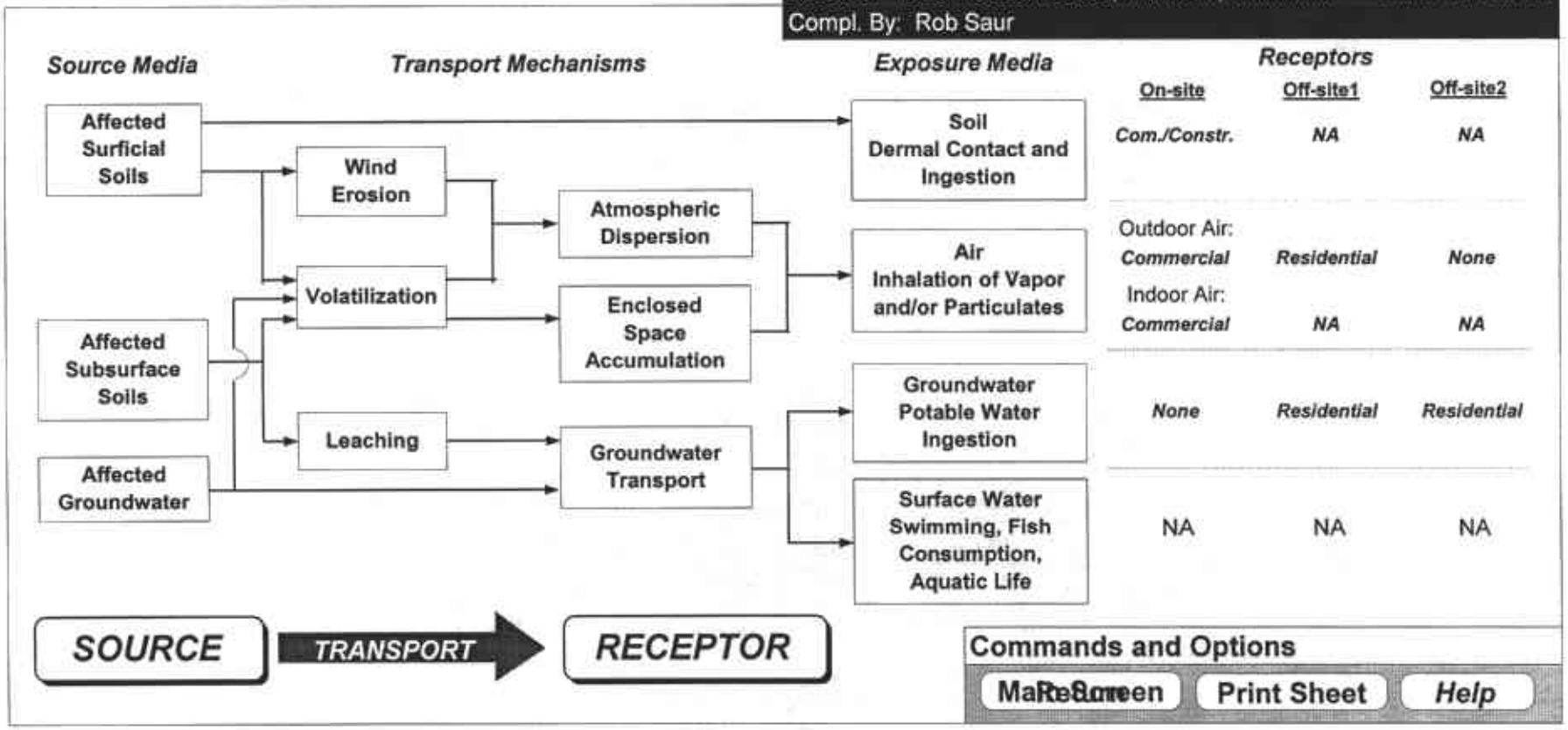
	Residential	Commercial	
Building volume/area ratio	6.56168	9.84252	(ft)
Foundation area	753.474	1800	(ft^2)
Foundation perimeter	111.549	180	(ft)
Building air exchange rate	1.4E-4	5.6E-4	(1/s)
Depth to bottom of foundation slab	0.49213	0.5	(ft)
Convective air flow through cracks	0.0E+0	0.0E+0	(ft^3/s)
Foundation thickness	0.5		(ft)
Foundation crack fraction	0.0003		(-)
Volumetric water content of cracks	0.12		(-)
Volumetric air content of cracks	0.26		(-)
Indoor/Outdoor differential pressure	0		(g/cm/s^2)

3. Commands and Options

Main Screen | Use Default Values | Print Sheet
Set Units | | *Help*

Exposure Pathway Flowchart

Site Name: Former 76 Service Station 0843 Job ID: 22481412
Location: 1629 Webster Street, Alameda, California Date: 23-Jun-03
Compl. By: Rob Saur



Receptors	On-site	Off-site1	Off-site2
Soil Dermal Contact and Ingestion	Com./Constr.	NA	NA
Air Inhalation of Vapor and/or Particulates — Outdoor Air:	Commercial	Residential	None
Air Inhalation of Vapor and/or Particulates — Indoor Air:	Commercial	NA	NA
Groundwater Potable Water Ingestion	None	Residential	Residential
Surface Water Swimming, Fish Consumption, Aquatic Life	NA	NA	NA

Commands and Options

Main Screen | Print Sheet | Help

CHEMICAL DATA FOR SELECTED COCs

Physical Property Data

Constituent	CAS Number	type	Molecular Weight (g/mole) MW	ref	Diffusion Coefficients in air (cm2/s) Dair	ref	Diffusion Coefficients in water (cm2/s) Dwat	ref	log (Koc) or log(Kd) (@ 20 - 25 C) log(L/kg) partition		ref	Henry's Law Constant (@ 20 - 25 C) (atm-m3) mol	(unitless)	ref	Vapor Pressure (@ 20 - 25 C) (mm Hg)	ref	Solubility (@ 20 - 25 C) (mg/L)	ref	acid pKa	base pKb	ref
Benzene*	71-43-2	A	78.1	PS	8.80E-02	R2	9.80E-06	R2	1.79	Koc	R2	5.53E-03	2.28E-01	R2	9.52E+01	PS	1.80E+03	R2	-	-	-
Toluene*	108-88-3	A	92.4	5	8.70E-02	R2	8.60E-06	R2	2.15	Koc	R2	6.57E-03	2.71E-01	R2	3.00E+01	4	5.26E+02	R2	-	-	-
Ethylbenzene*	100-41-4	A	106.2	PS	7.50E-02	R2	7.80E-06	R2	2.30	Koc	R2	7.83E-03	3.23E-01	R2	1.00E+01	PS	1.69E+02	R2	-	-	-
Xylene (mixed isomers)*	1330-20-7	A	106.2	5	7.00E-02	R2	7.80E-06	R2	2.30	Koc	R2	7.25E-03	2.99E-01	R2	7.00E+00	4	1.61E+02	R2	-	-	-
Methyl t-Butyl ether*	1634-04-4	A	88.146	5	8.10E-02	R2	9.41E-05	R2	1.07	Koc	R2	5.84E-04	2.41E-02	R2	2.49E+02	-	4.80E+04	R2	-	-	-

* = Chemical with user-specified data

Site Name: Former 76 Service Station 0843

Site Location: 1629 Webster Street, Alameda, California

Completed By: Rob Saur

Date Completed: 23-Jun-03

Job ID: 22481412

CHEMICAL DATA FOR SELECTED COCs

Toxicity Data

Constituent	Reference Dose (mg/kg/day) Oral RfD_oral	ref	Reference Dose (mg/kg/day) Dermal RfD_dermal	ref	Reference Conc. (mg/m3) Inhalation RfC_Inhal	ref	Slope Factors 1/(mg/kg/day) Oral SF_oral	ref	Slope Factors 1/(mg/kg/day) Dermal SF_dermal	ref	Unit Risk Factor 1/(µg/m3) Inhalation URF_Inhal	ref	EPA Weight of Evidence	Is Constituent Carcinogenic ?
Benzene*	3.00E-03	R2	-	-	5.95E-03	R	1.00E-01	R2	2.99E-02	TX	8.29E-06	PS	A	TRUE
Toluene*	2.00E-01	R2	1.60E-01	0.16	4.00E-01	-	-	-	-	-	-	-	D	FALSE
Ethylbenzene*	1.00E-01	R2	9.70E-02	0.1	1.00E+00	PS	-	-	-	-	-	-	D	FALSE
Xylene (mixed isomers)*	2.00E+00	R2	1.84E+00	1.84	7.00E+00	A	-	-	-	-	-	-	D	FALSE
Methyl t-Butyl ether*	1.00E-02	R2	8.00E-03	0.01	3.00E+00	R	1.80E-03	R2	-	-	-	-	A	TRUE

* = Chemical with user-specified

Site Name: Former 76 Service S

Site Location: 1629 Webster

Miscellaneous Chemical Data

Constituent	Maximum Contaminant Level MCL (mg/L)	ref	Time-Weighted Average Workplace Criteria TWA (mg/m3)	ref	Aquatic Life Prot. Criteria AQL (mg/L)	ref	Biocon-centration Factor (L-wat/kg-fish)
Benzene*	1.00E-03	-	3.25E+00	-	4.60E-02	R2	12.6
Toluene*	1.50E-01	-	1.47E+02	ACGIH	1.30E-01	R2	70
Ethylbenzene*	7.00E-01	-	4.35E+02	-	2.90E-01	R2	1
Xylene (mixed isomers)*	1.75E+00	-	4.34E+02	ACGIH	1.30E-02	R2	1
Methyl t-Butyl ether*	5.00E-03	-	6.00E+01	NIOSH	8.00E+00	R2	1

* = Chemical with user-specified

Site Name: Former 76 Service S

Site Location: 1629 Webster

CHEMICAL DATA FOR SELECTED COCs

Miscellaneous Chemical Data

Constituent	Dermal Relative Absorp. Factor (unitless)	Water Dermal Permeability Data: Dermal Permeability Coeff. (cm/hr)	Lag time for Dermal Exposure (hr)	Critical Exposure Time (hr)	Relative Contr of Derm Perm Coeff (unitless)	Water/Skin Derm Adsorp Factor (cm/event)	ref	Detection Limits: Groundwater (mg/L)	ref	Soil (mg/kg)	ref	Half Life (First-Order Decay) (days): Saturated	Unsaturated	ref
Benzene*	0.5	0.021	0.26	0.63	0.013	7.3E-2	D	0.0005	S	0.5	S	1440	1440	E1
Toluene*	0.5	0.045	0.32	0.77	0.054	1.6E-1	D	0.0005	S	0.5	S	28	28	H
Ethylbenzene*	0.5	0.074	0.39	1.3	0.14	2.7E-1	D	0.0005	S	0.5	S	228	228	H
Xylene (mixed isomers)*	0.5	0.08	0.39	1.4	0.16	2.9E-1	D	0.0005	S	0.5	S	360	360	H
Methyl t-Butyl ether*	0.5	-	-	-	-	-	-	0.0005	-	0.5	L1	1440	1440	E1

* = Chemical with user-specified

Site Name: Former 76 Service S

Site Location: 1629 Webster

RBCA SITE ASSESSMENT

Input Parameter Summary

Site Name: Former 76 Service Station 0843
Site Location: 1629 Webster Street, Alameda, California

Completed By: Rob Saur
Date Completed: 23-Jun-03

Job ID: 22481412

Exposure Parameters		Residential			Commercial/Industrial	
		Adult	(1-6yrs)	(1-16 yrs)	Chronic	Construc.
AT_c	Averaging time for carcinogens (yr)	70				
AT_n	Averaging time for non-carcinogens (yr)	30			25	1
BW	Body weight (kg)	70	15	35	70	
ED	Exposure duration (yr)	30	6	16	25	1
τ	Averaging time for vapor flux (yr)	30			25	1
EF	Exposure frequency (days/yr)	350			250	180
EF_D	Exposure frequency for dermal exposure	350			250	
IR_w	Ingestion rate of water (L/day)	2			1	
IR_s	Ingestion rate of soil (mg/day)	100	200		50	100
SA	Skin surface area (dermal) (cm^2)	5800		2023	5800	5800
M	Soil to skin adherence factor	1				
ET_{swim}	Swimming exposure time (hr/event)	3				
EV_{swim}	Swimming event frequency (events/yr)	12	12	12		
IR_{swim}	Water ingestion while swimming (L/hr)	0.05	0.5			
SA_{swim}	Skin surface area for swimming (cm^2)	23000		8100		
IR_{fish}	Ingestion rate of fish (kg/yr)	0.025				
FI_{fish}	Contaminated fish fraction (unitless)	1				

Complete Exposure Pathways and Receptors	On-site	Off-site 1	Off-site 2
Groundwater:			
Groundwater Ingestion	None	Residential	Residential
Soil Leaching to Groundwater Ingestion	None	Residential	Residential
Applicable Surface Water Exposure Routes:			
Swimming			NA
Fish Consumption			NA
Aquatic Life Protection			NA
Soil:			
Direct Ingestion and Dermal Contact	Com./Constr.		
Outdoor Air:			
Particulates from Surface Soils	Commercial	Residential	None
Volatilization from Soils	Commercial	Residential	None
Volatilization from Groundwater	Commercial	Residential	None
Indoor Air:			
Volatilization from Subsurface Soils	Commercial	NA	NA
Volatilization from Groundwater	Commercial	NA	NA

Receptor Distance from Source Media	On-site	Off-site 1	Off-site 2	(Units)
Groundwater receptor	NA	1980	2110	(ft)
Soil leaching to groundwater receptor	NA	1980	2110	(ft)
Outdoor air inhalation receptor	0	50	NA	(ft)

Target Health Risk Values		Individual	Cumulative
TR_{ab}	Target Risk (class A&B carcinogens)	1.0E-6	1.0E-5
TR_c	Target Risk (class C carcinogens)	1.0E-5	
THQ	Target Hazard Quotient (non-carcinogenic risk)	1.0E+0	1.0E+0

Modeling Options	
RBCA tier	Tier 2
Outdoor air volatilization model	Surface & subsurface models
Indoor air volatilization model	Johnson & Ettinger model
Soil leaching model	ASTM leaching model
Use soil attenuation model (SAM) for leachate?	Yes
Air dilution factor	User-specified ADF
Groundwater dilution-attenuation factor	Domenico model

NOTE: NA = Not applicable

Surface Parameters		General	Construction	(Units)
A	Source zone area	1.0E+2	NA	(ft^2)
W	Length of source-zone area parallel to wind	1.0E+1	NA	(ft)
W_{gw}	Length of source-zone area parallel to GW flow	1.0E+1		(ft)
U_{air}	Ambient air velocity in mixing zone	7.4E+0		(ft/s)
δ_{air}	Air mixing zone height	6.6E+0		(ft)
P_e	Areal particulate emission rate	6.9E-14		(g/cm^2/s)
L_{ss}	Thickness of affected surface soils	7.0E+0		(ft)

Surface Soil Column Parameters		Value			(Units)
h_{cap}	Capillary zone thickness	1.6E-1			(ft)
h_v	Vadose zone thickness	6.8E+0			(ft)
ρ_s	Soil bulk density	1.7E+0			(g/cm^3)
f_{oc}	Fraction organic carbon	1.0E-3			(-)
θ_T	Soil total porosity	4.1E-1			(-)
K_{vs}	Vertical hydraulic conductivity	1.0E-2			(cm/s)
k_v	Vapor permeability	1.1E-11			(ft^2)
L_{gw}	Depth to groundwater	7.0E+0			(ft)
L_s	Depth to top of affected soils	0.0E+0			(ft)
L_{base}	Depth to base of affected soils	7.0E+0			(ft)
L_{subs}	Thickness of affected soils	7.0E+0			(ft)
pH	Soil/groundwater pH	6.8E+0			(-)
		capillary	vadose	foundation	
θ_w	Volumetric water content	0.369	0.08	0.12	(-)
θ_a	Volumetric air content	0.041	0.33	0.26	(-)

Building Parameters		Residential	Commercial	(Units)
L_b	Building volume/area ratio	NA	9.84E+0	(ft)
A_b	Foundation area	NA	1.80E+3	(ft^2)
X_{crk}	Foundation perimeter	NA	1.80E+2	(ft)
ER	Building air exchange rate	NA	5.60E-4	(1/s)
L_{crk}	Foundation thickness	NA	5.00E-1	(ft)
Z_{crk}	Depth to bottom of foundation slab	NA	5.00E-1	(ft)
η	Foundation crack fraction	NA	3.00E-4	(-)
dP	Indoor/outdoor differential pressure	NA	0.00E+0	(g/cm/s^2)
Q_s	Convective air flow through slab	NA	0.00E+0	(ft^3/s)

Groundwater Parameters		Value	(Units)
δ_{gw}	Groundwater mixing zone depth	7.0E+0	(ft)
I_r	Net groundwater infiltration rate	1.2E+1	(in/yr)
U_{gw}	Groundwater Darcy velocity	2.5E-5	(cm/s)
V_{gw}	Groundwater seepage velocity	5.7E-5	(cm/s)
K_s	Saturated hydraulic conductivity	3.5E-3	(cm/s)
i	Groundwater gradient	7.0E-3	(-)
S_w	Width of groundwater source zone	3.0E+1	(ft)
S_d	Depth of groundwater source zone	7.0E+0	(ft)
θ_{eff}	Effective porosity in water-bearing unit	4.3E-1	(-)
f_{oc-sat}	Fraction organic carbon in water-bearing unit	1.0E-3	(-)
pH_{sat}	Groundwater pH	6.2E+0	(-)
	Biodegradation considered?	No	

Transport Parameters		Off-site 1	Off-site 2	Off-site 1	Off-site 2	(Units)
Lateral Groundwater Transport		Groundwater Ingestion		Soil Leaching to GW		
α_x	Longitudinal dispersivity	2.0E+2	2.1E+2	2.0E+2	2.1E+2	(ft)
α_y	Transverse dispersivity	6.5E+1	7.0E+1	6.5E+1	7.0E+1	(ft)
α_z	Vertical dispersivity	9.9E+0	1.1E+1	9.9E+0	1.1E+1	(ft)
Lateral Outdoor Air Transport		Soil to Outdoor Air Inhal.		GW to Outdoor Air Inhal.		
σ_y	Transverse dispersion coefficient	NA	NA	NA	NA	(ft)
σ_z	Vertical dispersion coefficient	NA	NA	NA	NA	(ft)
ADF	Air dispersion factor	1.0E+0	NA	1.0E+0	NA	(-)

Surface Water Parameters		Off-site 2	(Units)
Q_{sw}	Surface water flowrate	NA	(ft^3/s)
W_{pl}	Width of GW plume at SW discharge	NA	(ft)
δ_{pl}	Thickness of GW plume at SW discharge	NA	(ft)
DF_{sw}	Groundwater-to-surface water dilution factor	NA	(-)

RBCA SITE ASSESSMENT | **User-Specified COC Data**

REPRESENTATIVE COC CONCENTRATIONS IN SOURCE MEDIA

CONSTITUENT	Representative COC Concentration			
	Groundwater		Soils (0 - 7 ft)	
	value (mg/L)	note	value (mg/kg)	note
Benzene*	1.5E-1	Max	4.0E-2	Max
Toluene*	1.2E+0	Max	4.1E+0	Max
Ethylbenzene*	1.4E+0	Max	2.0E+1	Max
Xylene (mixed isomers)*	4.7E+0	Max	1.2E+2	Max
Methyl t-Butyl ether*	6.2E+0	Max	3.6E-1	Max

*** = Chemical with user-specified data**

Site Name: Former 76 Service Station 0843
Site Location: 1629 Webster Street, Alameda, California
Completed By: Rob Saur

Date Completed: 23-Jun-03
Job ID: 22481412

RBCA SITE ASSESSMENT | **User-Specified COC Data**

CONSTITUENT HALF-LIFE VALUES

CONSTITUENT	Saturated Zone Half-Life (days)	Unsaturated Zone Half-Life (days)
Benzene*	1440	1440
Toluene*	28	28
Ethylbenzene*	228	228
Xylene (mixed isomers)*	360	360
Methyl t-Butyl ether*	1440	1440

*** = Chemical with user-specified data**

Site Name: Former 76 Service Station 0843
Site Location: 1629 Webster Street, Alameda, California
Completed By: Rob Saur

Date Completed: 23-Jun-03
Job ID: 22481412

RBCA SITE ASSESSMENT | **Tier 2 Domenico Groundwater Modeling Summary**

Site Name: Former 76 Service Stat Site Location: 1629 Webster Street, Alameda Completed By: Rob Saur Date Completed: 23-Jun-03

DOMENICO GROUNDWATER MODELING SUMMARY

OFF-SITE GROUNDWATER EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAY IS ACTIVE)**

SOILS LEACHING TO GROUNDWATER:

INGESTION

Constituents of Concern	1) Source Medium	2) Steady-state Exposure Concentration Groundwater: POE Conc. (mg/L)		3) POE Concentration Limit Groundwater: POE Conc. (mg/L)		4) Time to Reach POE Conc. Limit Conc. limit reached? ("■" if yes) ; Time (yr)	
	Soil Conc. (mg/kg)	Off-site 1 (1980 ft) Residential	Off-site 2 (2110 ft) Residential	Off-site 1 (1980 ft) Residential	Off-site 2 (2110 ft) Residential	Off-site 1 (1980 ft) Residential	Off-site 2 (2110 ft) Residential
Benzene*	4.0E-2	6.6E-6	5.8E-6	8.5E-4	8.5E-4	☐ NA	☐ NA
Toluene*	4.1E+0	2.5E-15	2.2E-15	7.3E+0	7.3E+0	☐ NA	☐ NA
Ethylbenzene*	2.0E+1	3.5E-5	3.1E-5	3.7E+0	3.7E+0	☐ NA	☐ NA
Xylene (mixed isomers)*	1.2E+2	1.0E-3	9.0E-4	7.3E+1	7.3E+1	☐ NA	☐ NA
Methyl t-Butyl ether*	3.6E-1	1.7E-4	1.5E-4	4.7E-2	4.7E-2	☐ NA	☐ NA

NOTE: POE = Point of exposure

RBCA SITE ASSESSMENT | **Tier 2 Domenico Groundwater Modeling Summary**

Site Name: Former 76 Service Stat Site Location: 1629 Webster Street, Alameda Completed By: Rob Saur Date Completed: 23-Jun-03

DOMENICO GROUNDWATER MODELING SUMMARY

OFF-SITE GROUNDWATER EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAY IS ACTIVE)**

GROUNDWATER:

INGESTION

Constituents of Concern	1) Source Medium	2) Steady-state Exposure Concentration Groundwater: POE Conc. (mg/L)		3) POE Concentration Limit Groundwater: POE Conc. (mg/L)		4) Time to Reach POE Conc. Limit Conc reaches limit? ("■" If yes) ; Time (yr)	
	Groundwater Conc. (mg/L)	Off-site 1 (1980 ft) Residential	Off-site 2 (2110 ft) Residential	Off-site 1 (1980 ft) Residential	Off-site 2 (2110 ft) Residential	Off-site 1 (1980 ft) Residential	Off-site 2 (2110 ft) Residential
Benzene*	1.5E-1	1.0E-4	8.8E-5	8.5E-4	8.5E-4	□ NA	□ NA
Toluene*	1.2E+0	8.0E-4	7.0E-4	7.3E+0	7.3E+0	□ NA	□ NA
Ethylbenzene*	1.4E+0	9.3E-4	8.2E-4	3.7E+0	3.7E+0	□ NA	□ NA
Xylene (mixed isomers)*	4.7E+0	3.1E-3	2.7E-3	7.3E+1	7.3E+1	□ NA	□ NA
Methyl t-Butyl ether*	6.2E+0	4.1E-3	3.6E-3	4.7E-2	4.7E-2	□ NA	□ NA

NOTE: POE = Point of exposure

RBCA SITE ASSESSMENT

TIER 2 TRANSIENT DOMENICO ANALYSIS

Site Name: Former 76 Service Station 0843 | Completed By: Rob Saur | Job ID: 22481412

Site Location: 1629 Webster Street, Alameda, California | Date Completed: 23-Jun-03

Constiuent: Benzene*

Source Medium: Affected Groundwater

Biodegredation: None

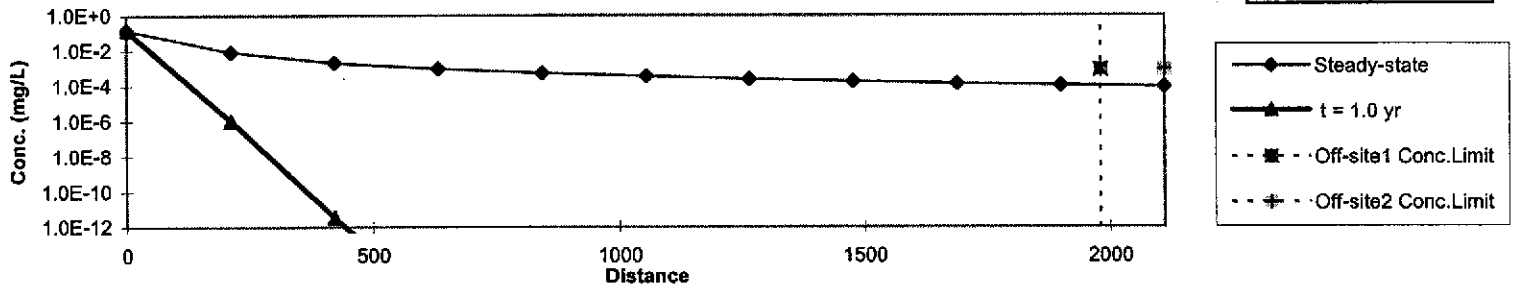
Concentration vs. Distance from Source (for given time)

Time (yr): 1.0

Distance (ft)		0	211	422	633	844	1055	1266	1477	1688	1899	2110
t = 1.0 yr	Conc. (mg/L)	1.5E-1	1.1E-6	3.4E-12	1.9E-17	0.0E+0	0.0E+0	0.0E+0	0.0E+0	0.0E+0	0.0E+0	0.0E+0
Steady-state		1.5E-1	8.5E-3	2.2E-3	9.7E-4	5.5E-4	3.5E-4	2.4E-4	1.8E-4	1.4E-4	1.1E-4	8.8E-5

Off-site1	Off-site2
Residential	Residential
1980	2110
0.0E+0	0.0E+0
1.0E-4	8.8E-5
8.5E-4	8.5E-4

POE Concentration Limit (mg/L)

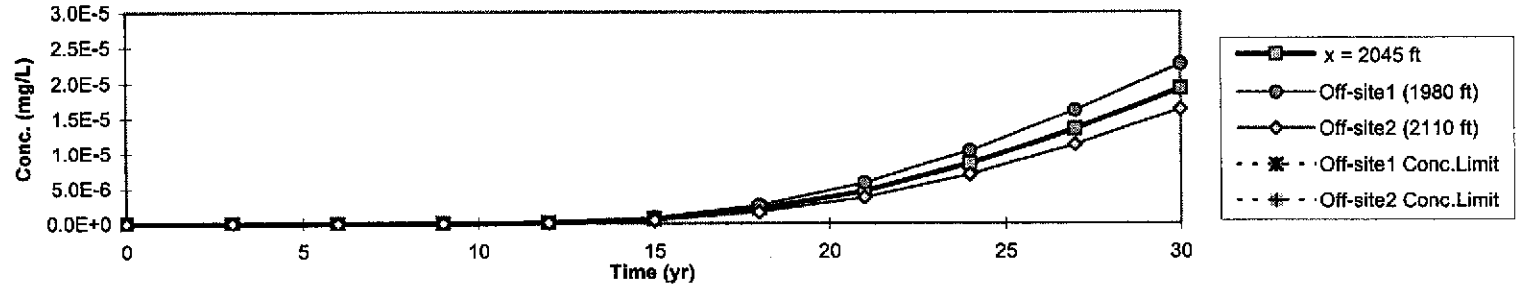


Concentration vs. Time (for given distance from source)

Distance (ft): 2045

Time (yr)		0	3	6	9	12	15	18	21	24	27	30
x = 2045 ft	Conc. (mg/L)	0.0E+0	1.4E-19	1.1E-11	5.0E-9	1.0E-7	6.2E-7	2.0E-6	4.7E-6	8.5E-6	1.4E-5	1.9E-5
Off-site1 (1980 ft)		0.0E+0	4.7E-19	2.2E-11	7.8E-9	1.5E-7	8.3E-7	2.6E-6	5.8E-6	1.0E-5	1.6E-5	2.3E-5
Off-site2 (2110 ft)		0.0E+0	3.9E-20	5.9E-12	3.2E-9	7.2E-8	4.6E-7	1.6E-6	3.7E-6	7.0E-6	1.1E-5	1.6E-5

Time to Reach Conc. Limit (yr)	
Off-site1	NA
Off-site2	NA



RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS (0 - 7 ft):
VAPOR AND DUST INHALATION

Constituents of Concern	1) Source Medium	2) NAF Value (m^3/kg) Receptor				3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2)			
	Soil Conc. (mg/kg)	On-site (0 ft)		Off-site 1 (50 ft)	Off-site 2 (0 ft)	On-site (0 ft)		Off-site 1 (50 ft)	Off-site 2 (0 ft)
		Commercial	Construction Worker	Residential	None	Commercial	Construction Worker	Residential	None
Benzene*	4.0E-2	3.2E+5		3.9E+5		1.2E-7		1.0E-7	
Toluene*	4.1E+0	3.2E+5		3.9E+5		1.3E-5		1.1E-5	
Ethylbenzene*	2.0E+1	3.2E+5		3.9E+5		6.2E-5		5.2E-5	
Xylene (mixed isomers)*	1.2E+2	3.2E+5		3.9E+5		3.7E-4		3.1E-4	
Methyl t-Butyl ether*	3.6E-1	3.2E+5		3.9E+5		1.1E-6		9.3E-7	

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: Former 76 Service Station 0843
Site Location: 1629 Webster Street, Alameda, California
Completed By: Rob Saur

Date Completed: 23-Jun-03
Job ID: 22481412

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

SURFACE SOILS (0 - 7 ft):

VAPOR AND DUST INHALATION (cont'd)

Constituents of Concern	4) Exposure Multiplier (EFxED)/(ATx365) (unitless)				5) Average Inhalation Exposure Concentration (mg/m^3) (3) X (4)			
	On-site (0 ft)		Off-site 1 (50 ft)	Off-site 2 (0 ft)	On-site (0 ft)		Off-site 1 (50 ft)	Off-site 2 (0 ft)
	Commercial	Construction Worker	Residential	None	Commercial	Construction Worker	Residential	None
Benzene*	2.4E-1		4.1E-1		3.0E-8		4.3E-8	
Toluene*	6.8E-1		9.6E-1		8.8E-6		1.0E-5	
Ethylbenzene*	6.8E-1		9.6E-1		4.3E-5		5.0E-5	
Xylene (mixed isomers)*	6.8E-1		9.6E-1		2.6E-4		3.0E-4	
Methyl t-Butyl ether*	6.8E-1		9.6E-1		7.7E-7		9.0E-7	

* = Chemical with user-specified data

NOTE: AT = Averaging time (days) EF = Exposure frequency (days/yr) ED = Exposure duration (yr)

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RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ☐ (CHECKED IF PATHWAY IS ACTIVE)

SUBSURFACE SOILS (7 - 7 ft):

VAPOR INHALATION

Constituents of Concern	1) Source Medium	2) NAF Value (m^3/kg) Receptor			3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2)		
	Soil Conc. (mg/kg)	On-site (0 ft) Commercial	Off-site 1 (50 ft) Residential	Off-site 2 (0 ft) None	On-site (0 ft) Commercial	Off-site 1 (50 ft) Residential	Off-site 2 (0 ft) None
Benzene*	4.0E-2						
Toluene*	4.1E+0						
Ethylbenzene*	2.0E+1						
Xylene (mixed isomers)*	1.2E+2						
Methyl t-Butyl ether*	3.6E-1						

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: Former 76 Service Station 0843
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RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

SUBSURFACE SOILS (7 - 7 ft):

VAPOR INHALATION (cont'd)

Constituents of Concern	4) Exposure Multiplier (EFxED)/(ATx365) (unitless)			5) Average Inhalation Exposure Concentration (mg/m^3) (3) X (4)		
	On-site (0 ft) Commercial	Off-site 1 (50 ft) Residential	Off-site 2 (0 ft) None	On-site (0 ft) Commercial	Off-site 1 (50 ft) Residential	Off-site 2 (0 ft) None
Benzene*						
Toluene*						
Ethylbenzene*						
Xylene (mixed isomers)*						
Methyl t-Butyl ether*						

NOTE: AT = Averaging time (days) EF = Exposure frequency (days/yr) ED = Exposure duration (yr)

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RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER: VAPOR INHALATION

Exposure Concentration

Constituents of Concern	1) Source Medium	2) NAF Value (m^3/L) Receptor			3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2)		
	Groundwater Conc. (mg/L)	On-site (0 ft) Commercial	Off-site 1 (50 ft) Residential	Off-site 2 (0 ft) None	On-site (0 ft) Commercial	Off-site 1 (50 ft) Residential	Off-site 2 (0 ft) None
Benzene*	1.5E-1	5.3E+4	5.3E+4		2.8E-6	2.8E-6	
Toluene*	1.2E+0	5.0E+4	5.0E+4		2.4E-5	2.4E-5	
Ethylbenzene*	1.4E+0	5.1E+4	5.1E+4		2.8E-5	2.8E-5	
Xylene (mixed isomers)*	4.7E+0	5.6E+4	5.6E+4		8.4E-5	8.4E-5	
Methyl t-Butyl ether*	6.2E+0	4.7E+4	4.7E+4		1.3E-4	1.3E-4	

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: Former 76 Service Station 0843
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RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

GROUNDWATER: VAPOR INHALATION (cont'd)

Constituents of Concern	4) Exposure Multiplier (EFxED)/(ATx365) (unitless)			5) Average Inhalation Exposure Concentration (mg/m^3) (3) X (4)		
	On-site (0 ft) Commercial	Off-site 1 (50 ft) Residential	Off-site 2 (0 ft) None	On-site (0 ft) Commercial	Off-site 1 (50 ft) Residential	Off-site 2 (0 ft) None
Benzene*	2.4E-1	4.1E-1		6.9E-7	1.2E-6	
Toluene*	6.8E-1	9.6E-1		1.6E-5	2.3E-5	
Ethylbenzene*	6.8E-1	9.6E-1		1.9E-5	2.6E-5	
Xylene (mixed isomers)*	6.8E-1	9.6E-1		5.7E-5	8.0E-5	
Methyl t-Butyl ether*	6.8E-1	9.6E-1		9.0E-5	1.3E-4	

NOTE: AT = Averaging time (days) EF = Exposure frequency (days/yr) ED = Exposure duration (yr)

Site Name: Former 76 Service Station 0843
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RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

TOTAL PATHWAY EXPOSURE (mg/m^3)

(Sum average expsosure concentrations from soil and groundwater routes.)

Constituents of Concern	On-site (0 ft) Commercial	On-site (0 ft) Construction Worker	Off-site 1 (50 ft) Residential	Off-site 2 (0 ft) None
Benzene*	7.2E-7		1.2E-6	
Toluene*	2.5E-5		3.3E-5	
Ethylbenzene*	6.2E-5		7.6E-5	
Xylene (mixed isomers)*	3.1E-4		3.8E-4	
Methyl t-Butyl ether*	9.0E-5		1.3E-4	

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RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAYS ARE ACTIVE)**

CARCINOGENIC RISK

Constituents of Concern	(1) EPA Carcinogenic Classification	(2) Total Carcinogenic Exposure (mg/m^3)				(3) Inhalation Unit Risk Factor (µg/m^3)^-1	(4) Individual COC Risk (2) x (3) x 1000			
		On-site (0 ft)		Off-site 1 (50 ft)	Off-site 2 (0 ft)		On-site (0 ft)		Off-site 1 (50 ft)	Off-site 2 (0 ft)
		Commercial	Construction Worker	Residential	None		Commercial	Construction Worker	Residential	None
Benzene*	A	7.2E-7		1.2E-6		8.3E-6	6.0E-9		1.0E-8	
Toluene*	D									
Ethylbenzene*	D									
Xylene (mixed isomers)*	D									
Methyl t-Butyl ether*	A									
Total Pathway Carcinogenic Risk =							**6.0E-9**		**1.0E-8**	

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RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAYS ARE ACTIVE)

TOXIC EFFECTS

Constituents of Concern	(5) Total Toxicant Exposure (mg/m^3) On-site (0 ft) Commercial	On-site (0 ft) Construction Worker	Off-site 1 (50 ft) Residential	Off-site 2 (0 ft) None	(6) Inhalation Reference Conc. (mg/m^3)	(7) Individual COC Hazard Quotient (5) / (6) On-site (0 ft) Commercial	On-site (0 ft) Construction Worker	Off-site 1 (50 ft) Residential	Off-site 2 (0 ft) None
Benzene*	2.0E-6		2.8E-6		6.0E-3	3.4E-4		4.7E-4	
Toluene*	2.5E-5		3.3E-5		4.0E-1	6.3E-5		8.3E-5	
Ethylbenzene*	6.2E-5		7.6E-5		1.0E+0	6.2E-5		7.6E-5	
Xylene (mixed isomers)*	3.1E-4		3.8E-4		7.0E+0	4.5E-5		5.4E-5	
Methyl t-Butyl ether*	9.0E-5		1.3E-4		3.0E+0	3.0E-5		4.2E-5	
Total Pathway Hazard Index =						**5.4E-4**		**7.3E-4**	

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Site Location: 1629 Webster Street, Alameda, California

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RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

SOILS (0 - 7 ft): VAPOR INTRUSION INTO ON-SITE BUILDINGS

Constituents of Concern	1) Source Medium Soil Conc. (mg/kg)	2) NAF Value (m^3/kg) Receptor Commercial	3) Exposure Medium Indoor Air: POE Conc. (mg/m^3) (1) / (2) Commercial	4) Exposure Multiplier (EFxED)/(ATx365) (unitless) Commercial	5) Average Inhalation Exposure Concentration (mg/m^3) (3) X (4) Commercial
Benzene*	4.0E-2	8.4E+2	4.8E-5	2.4E-1	1.2E-5
Toluene*	4.1E+0	1.1E+3	3.7E-3	6.8E-1	2.5E-3
Ethylbenzene*	2.0E+1	1.4E+3	1.4E-2	6.8E-1	9.8E-3
Xylene (mixed isomers)*	1.2E+2	1.6E+3	7.5E-2	6.8E-1	5.2E-2
Methyl t-Butyl ether*	3.6E-1	3.5E+3	1.0E-4	6.8E-1	7.0E-5

* = Chemical with user-specified data

NOTE: AT = Averaging time (days) EF = Exposure frequency (days/yr) ED = Exposure duration (yr) NAF = Natural attenuation factor POE = Point of exposure

Site Name: Former 76 Service Station 0843
Site Location: 1629 Webster Street, Alameda, California
Completed By: Rob Saur

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RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER: VAPOR INTRUSION INTO ON-SITE BUILDINGS

Constituents of Concern	Exposure Concentration 1) Source Medium Groundwater Conc. (mg/L)	2) NAF Value (m^3/L) Receptor Commercial	3) Exposure Medium Indoor Air: POE Conc. (mg/m^3) (1) / (2) Commercial	4) Exposure Multiplier (EFxED)/(ATx365) (unitless) Commercial	5) Average Inhalation Exposure Concentration (mg/m^3) (3) X (4) Commercial
Benzene*	1.5E-1	5.6E+3	2.7E-5	2.4E-1	6.5E-6
Toluene*	1.2E+0	4.8E+3	2.5E-4	6.8E-1	1.7E-4
Ethylbenzene*	1.4E+0	4.7E+3	3.0E-4	6.8E-1	2.0E-4
Xylene (mixed isomers)*	4.7E+0	5.4E+3	8.7E-4	6.8E-1	5.9E-4
Methyl t-Butyl ether*	6.2E+0	5.6E+4	1.1E-4	6.8E-1	7.6E-5

NOTE: AT = Averaging time (days) EF = Exposure frequency (days/yr) ED = Exposure duration (yr) NAF = Natural attenuation factor POE = Point of exposure

Site Name: Former 76 Service Station 0843
Site Location: 1629 Webster Street, Alameda, California
Completed By: Rob Saur

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RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS

Constituents of Concern	TOTAL PATHWAY EXPOSURE (mg/m^3) *(Sum average exposure concentrations from soil and groundwater routes.)* Commercial
Benzene*	1.8E-5
Toluene*	2.7E-3
Ethylbenzene*	1.0E-2
Xylene (mixed isomers)*	5.2E-2
Methyl t-Butyl ether*	1.5E-4

Site Name: Former 76 Service Station 0843 Date Completed: 23-Jun-03
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RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

INDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAYS ARE ACTIVE)

CARCINOGENIC RISK

Constituents of Concern	(1) EPA Carcinogenic Classification	(2) Total Carcinogenic Exposure (mg/m^3) Commercial	(3) Inhalation Unit Risk Factor (µg/m^3)^-1	(4) Individual COC Risk (2) x (3) x 1000 Commercial
Benzene*	A	1.8E-5	8.3E-6	1.5E-7
Toluene*	D			
Ethylbenzene*	D			
Xylene (mixed isomers)*	D			
Methyl t-Butyl ether*	A			

Total Pathway Carcinogenic Risk = **1.5E-7**

Site Name: Former 76 Service Station 0843
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RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

INDOOR AIR EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAYS ARE ACTIVE)**

Constituents of Concern	(5) Total Toxicant Exposure (mg/m^3) Commercial	(6) Inhalation Reference Concentration (mg/m^3)	(7) Individual COC Hazard Quotient (5) / (6) Commercial
	TOXIC EFFECTS		
Benzene*	5.1E-5	6.0E-3	8.6E-3
Toluene*	2.7E-3	4.0E-1	6.7E-3
Ethylbenzene*	1.0E-2	1.0E+0	1.0E-2
Xylene (mixed isomers)*	5.2E-2	7.0E+0	7.4E-3
Methyl t-Butyl ether*	1.5E-4	3.0E+0	4.9E-5

Total Pathway Hazard Index = **3.3E-2**

Site Name: Former 76 Service Station 0843
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RBCA SITE ASSESSMENT

Site Name: Former 76 Service Station 0843 Site Location: 1629 Webster Street, Alame Completed By: Rob Saur Date Completed: 23-Jun-03

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

SOIL EXPOSURE PATHWAY ■ (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS OR SEDIMENTS: ON-SITE INGESTION AND DERMAL CONTACT

Constituents of Concern	1) Source/Exposure Medium	2) Exposure Multiplier (IR+SAxMxRAF)xEFxED/(BWxAT) (kg/kg/day)		3) Average Daily Intake Rate (mg/kg/day) (1) x (2)	
	Surface Soil Conc. (mg/kg)	Commercial	Construction Worker	Commercial	Construction Worker
Benzene*	4.0E-2	1.0E-5	4.2E-7	4.1E-7	1.7E-8
Toluene*	4.1E+0	2.9E-5	2.9E-5	1.2E-4	1.2E-4
Ethylbenzene*	2.0E+1	2.9E-5	2.9E-5	5.8E-4	5.8E-4
Xylene (mixed isomers)*	1.2E+2	2.9E-5	2.9E-5	3.5E-3	3.5E-3
Methyl t-Butyl ether*	3.6E-1	1.0E-5	4.2E-7	3.7E-6	1.5E-7

NOTE: RAF = Relative absorption factor (-) AT = Averaging time (days) ED = Exposure duration (yrs) IR = Soil ingestion rate (mg/day)
M = Adherence factor (mg/cm^2) BW = Body weight (kg) EF = Exposure frequencey (days/yr) SA = Skin exposure area (cm^2/day)

RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

SOIL EXPOSURE PATHWAY ■ (CHECKED IF PATHWAY IS ACTIVE)

CARCINOGENIC RISK

Constituents of Concern	(1) EPA Carcinogenic Classification	(2) Total Carcinogenic Intake Rate (mg/kg/day)				(3) Slope Factor (mg/kg/day)^-1		(4) Individual COC Risk	
		(a) via Ingestion	(b) via Dermal Contact	(c) via Ingestion	(d) via Dermal Contact	(a) Oral	(b) Dermal	(2a)x(3a) + (2b)x(3b) Commercial	(2c)x(3a) + (2d)x(3b) Construction Worker
		Commercial		Construction Worker					
Benzene*	A	7.0E-9	4.1E-7	4.0E-10	1.6E-8	1.0E-1	3.0E-2	1.3E-8	5.3E-10
Toluene*	D								
Ethylbenzene*	D								
Xylene (mixed isomers)*	D								
Methyl t-Butyl ether*	A	6.3E-8	3.6E-6	3.6E-9	1.5E-7	1.8E-3	1.8E-3*	6.7E-9	2.7E-10

* No dermal slope factor available--oral slope factor used.

Total Pathway Carcinogenic Risk = **1.9E-8** **7.9E-10**

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RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

SOIL EXPOSURE PATHWAY ■ **(CHECKED IF PATHWAY IS ACTIVE)**

TOXIC EFFECTS

Constituents of Concern	(5) Total Toxicant Intake Rate (mg/kg/day)				(6) Oral Reference Dose (mg/kg-day)		(7) Individual COC Hazard Quotient	
	(a) via Ingestion	(b) via Dermal Contact	(c) via Ingestion	(d) via Dermal Contact	(a) Oral	(b) Dermal	(5a)/(6a) + (5b)/(6b)	(5c)/(6a) + (5d)/(6b)
	Commercial		Construction Worker				Commercial	Construction Worker
Benzene*	2.0E-8	1.1E-6	2.8E-8	1.1E-6	3.0E-3	3.0E-3*	3.8E-4	3.9E-4
Toluene*	2.0E-6	1.2E-4	2.9E-6	1.2E-4	2.0E-1	1.6E-1	7.4E-4	7.4E-4
Ethylbenzene*	9.8E-6	5.7E-4	1.4E-5	5.7E-4	1.0E-1	9.7E-2	5.9E-3	6.0E-3
Xylene (mixed isomers)*	5.9E-5	3.4E-3	8.5E-5	3.4E-3	2.0E+0	1.8E+0	1.9E-3	1.9E-3
Methyl t-Butyl ether*	1.8E-7	1.0E-5	2.5E-7	1.0E-5	1.0E-2	8.0E-3	1.3E-3	1.3E-3

* No dermal reference dose available--oral reference dose used.

Total Pathway Hazard Index = **1.0E-2** **1.0E-2**

Site Name: Former 76 Service Station 0843
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RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAY IS ACTIVE)**

SOILS (0 - 7 ft): LEACHING TO GROUNDWATER INGESTION

	1) Source Medium	2) NAF Value (L/kg) Receptor			3) Exposure Medium Groundwater: POE Conc. (mg/L) (1)/(2)		
Constituents of Concern	Soil Conc. (mg/kg)	On-site (0 ft) None	Off-site 1 (1980 ft) Residential	Off-site 2 (2110 ft) Residential	On-site (0 ft) None	Off-site 1 (1980 ft) Residential	Off-site 2 (2110 ft) Residential
Benzene*	4.0E-2		6.1E+3	6.9E+3		6.6E-6	5.8E-6
Toluene*	4.1E+0		1.6E+15	1.9E+15		2.5E-15	2.2E-15
Ethylbenzene*	2.0E+1		5.7E+5	6.5E+5		3.5E-5	3.1E-5
Xylene (mixed isomers)*	1.2E+2		1.2E+5	1.3E+5		1.0E-3	9.0E-4
Methyl t-Butyl ether*	3.6E-1		2.1E+3	2.4E+3		1.7E-4	1.5E-4

* = Chemical with user-specified data

NOTE: NAF = Natural attenuation factor POE = Point of exposure

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RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS

SOILS (0 - 7 ft): LEACHING TO GROUNDWATER INGESTION (cont'd)

Constituents of Concern	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (L/kg-day)			5) Average Daily Intake Rate (mg/kg/day) (3) x (4)		
	On-site (0 ft) None	Off-site 1 (1980 ft) Residential	Off-site 2 (2110 ft) Residential	On-site (0 ft) None	Off-site 1 (1980 ft) Residential	Off-site 2 (2110 ft) Residential
Benzene*		1.2E-2	1.2E-2		7.7E-8	6.8E-8
Toluene*		2.7E-2	2.7E-2		6.9E-17	6.0E-17
Ethylbenzene*		2.7E-2	2.7E-2		9.6E-7	8.5E-7
Xylene (mixed isomers)*		2.7E-2	2.7E-2		2.8E-5	2.5E-5
Methyl t-Butyl ether*		1.2E-2	1.2E-2		2.0E-6	1.8E-6

* = Chemical with user-specified data

NOTE: AT = Averaging time (days) ED = Exposure duration (yr) IR = Ingestion rate (mg/day)
BW = Body weight (kg) EF = Exposure frequency (days/yr)

Site Name: Former 76 Service Station 0843 Completed By: Rob Saur Job ID: 22481412
Site Location: 1629 Webster Street, Alameda, California Date Completed: 23-Jun-03

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAY IS ACTIVE)**

GROUNDWATER: INGESTION

Constituents of Concern	1) Source Medium	2) NAF Value (unitless) Receptor			3) Exposure Medium Groundwater: POE Conc. (mg/L) (1)/(2)		
	Groundwater Conc. (mg/L)	On-site (0 ft) None	Off-site 1 (1980 ft) Residential	Off-site 2 (2110 ft) Residential	On-site (0 ft) None	Off-site 1 (1980 ft) Residential	Off-site 2 (2110 ft) Residential
Benzene*	1.5E-1		1.5E+3	1.7E+3		1.0E-4	8.8E-5
Toluene*	1.2E+0		1.5E+3	1.7E+3		8.0E-4	7.0E-4
Ethylbenzene*	1.4E+0		1.5E+3	1.7E+3		9.3E-4	8.2E-4
Xylene (mixed isomers)*	4.7E+0		1.5E+3	1.7E+3		3.1E-3	2.7E-3
Methyl t-Butyl ether*	6.2E+0		1.5E+3	1.7E+3		4.1E-3	3.6E-3

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: Former 76 Service Station 0843
Site Location: 1629 Webster Street, Alameda, California
Completed By: Rob Saur

Date Completed: 23-Jun-03
Job ID: 22481412

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS

GROUNDWATER INGESTION (cont'd)

Constituents of Concern	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (L/kg/day)			5) Average Daily Intake Rate (mg/kg/day) (3) x (4)		
	On-site (0 ft) None	Off-site 1 (1980 ft) Residential	Off-site 2 (2110 ft) Residential	On-site (0 ft) None	Off-site 1 (1980 ft) Residential	Off-site 2 (2110 ft) Residential
Benzene*		1.2E-2	1.2E-2		1.2E-6	1.0E-6
Toluene*		2.7E-2	2.7E-2		2.2E-5	1.9E-5
Ethylbenzene*		2.7E-2	2.7E-2		2.5E-5	2.2E-5
Xylene (mixed isomers)*		2.7E-2	2.7E-2		8.5E-5	7.5E-5
Methyl t-Butyl ether*		1.2E-2	1.2E-2		4.8E-5	4.3E-5

* = Chemical with user-specified data

NOTE: AT = Averaging time (days) ED = Exposure duration (yr) IR = Ingestion rate (mg/day)
BW = Body weight (kg) EF = Exposure frequency (days/yr)

Site Name: Former 76 Service Station 0843 Completed By: Rob Saur Job ID: 22481412
Site Location: 1629 Webster Street, Alameda, California Date Completed: 23-Jun-03

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS

MAXIMUM PATHWAY INTAKE (mg/kg/day)
(Maximum intake of active pathways soil leaching & groundwater routes.)

Constituents of Concern	On-site (0 ft) None	Off-site 1 Residential	Off-site 2 Residential
Benzene*		1.2E-6	1.0E-6
Toluene*		2.2E-5	1.9E-5
Ethylbenzene*		2.5E-5	2.2E-5
Xylene (mixed isomers)*		8.5E-5	7.5E-5
Methyl t-Butyl ether*		4.8E-5	4.3E-5

* = Chemical with user-specified data

Site Name: Former 76 Service Station 0843
Site Location: 1629 Webster Street, Alameda, California
Completed By: Rob Saur

Date Completed: 23-Jun-03
Job ID: 22481412

RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

GROUNDWATER EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAYS ARE ACTIVE)**

CARCINOGENIC RISK

Constituents of Concern	(1) EPA Carcinogenic Classification	(2) Maximum Carcinogenic Intake Rate (mg/kg/day)			(3) Oral Slope Factor (mg/kg-day)^-1	(4) Individual COC Risk (2) x (3)		
		On-site (0 ft) None	Off-site 1 Residential	Off-site 2 Residential		On-site (0 ft) None	Off-site 1 Residential	Off-site 2 Residential
Benzene*	A		1.2E-6	1.0E-6	1.0E-1		1.2E-7	1.0E-7
Toluene*	D							
Ethylbenzene*	D							
Xylene (mixed isomers)*	D							
Methyl t-Butyl ether*	A		4.8E-5	4.3E-5	1.8E-3		8.7E-8	7.7E-8
Total Pathway Carcinogenic Risk =							**2.0E-7**	**1.8E-7**

Site Name: Former 76 Service Station 0843
Site Location: 1629 Webster Street, Alameda, California
Completed By: Rob Saur

Date Completed: 23-Jun-03
Job ID: 22481412

RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

GROUNDWATER EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAYS ARE ACTIVE)**

	TOXIC EFFECTS						
	(5) Maximum Toxicant Intake Rate (mg/kg/day)			(6) Oral Reference Dose (mg/kg/day)	(7) Individual COC Hazard Quotient (5) / (6)		
Constituents of Concern	On-site (0 ft) None	Off-site 1 Residential	Off-site 2 Residential		On-site (0 ft) None	Off-site 1 Residential	Off-site 2 Residential
Benzene*		2.7E-6	2.4E-6	3.0E-3		9.1E-4	8.0E-4
Toluene*		2.2E-5	1.9E-5	2.0E-1		1.1E-4	9.6E-5
Ethylbenzene*		2.5E-5	2.2E-5	1.0E-1		2.5E-4	2.2E-4
Xylene (mixed isomers)*		8.5E-5	7.5E-5	2.0E+0		4.3E-5	3.8E-5
Methyl t-Butyl ether*		1.1E-4	9.9E-5	1.0E-2		1.1E-2	9.9E-3
Total Pathway Hazard Index =						**1.3E-2**	**1.1E-2**

Site Name: Former 76 Service Station 0843
Site Location: 1629 Webster Street, Alameda, California
Completed By: Rob Saur

Date Completed: 23-Jun-03
Job ID: 22481412

RBCA SITE ASSESSMENT | **Baseline Risk Summary-All Pathways**

Site Name: Former 76 Service Station 0843
Site Location: 1629 Webster Street, Alameda, California

Completed By: Rob Saur
Date Completed: 23-Jun-03

TIER 2 BASELINE RISK SUMMARY TABLE

EXPOSURE PATHWAY	BASELINE CARCINOGENIC RISK: Individual COC Risk – Maximum Value	Individual COC Risk – Target Risk	Cumulative COC Risk – Total Value	Cumulative COC Risk – Target Risk	Risk Limit(s) Exceeded?	BASELINE TOXIC EFFECTS: Hazard Quotient – Maximum Value	Hazard Quotient – Applicable Limit	Hazard Index – Total Value	Hazard Index – Applicable Limit	Toxicity Limit(s) Exceeded?
OUTDOOR AIR EXPOSURE PATHWAYS										
Complete:	1.0E-8	1.0E-6	1.0E-8	1.0E-5	☐	4.7E-4	1.0E+0	7.3E-4	1.0E+0	☐
INDOOR AIR EXPOSURE PATHWAYS										
Complete:	1.5E-7	1.0E-6	1.5E-7	1.0E-5	☐	1.0E-2	1.0E+0	3.3E-2	1.0E+0	☐
SOIL EXPOSURE PATHWAYS										
Complete:	1.3E-8	1.0E-6	1.9E-8	1.0E-5	☐	6.0E-3	1.0E+0	1.0E-2	1.0E+0	☐
GROUNDWATER EXPOSURE PATHWAYS										
Complete:	1.2E-7	1.0E-6	2.0E-7	1.0E-5	☐	1.1E-2	1.0E+0	1.3E-2	1.0E+0	☐
SURFACE WATER EXPOSURE PATHWAYS										
Complete:	NA	NA	NA	NA	☐	NA	NA	NA	NA	☐
CRITICAL EXPOSURE PATHWAY (Maximum Values From Complete Pathways)										
	1.5E-7	*1.0E-6*	*2.0E-7*	*1.0E-5*	☐	*1.1E-2*	*1.0E+0*	*3.3E-2*	*1.0E+0*	☐
	Indoor Air		*Groundwater*			*Groundwater*		*Indoor Air*		

RBCA SITE ASSESSMENT

Chemical-Specific Tier 2 Cleanup Summary

Site Name: Former 76 Service Station 0843 | Completed By: Rob Saur | Job ID: 22481412

Site Location: 1629 Webster Street, Alameda, California | Date Completed: 23-Jun-03

Constituent: Benzene* **CAS No.: 71-43-2**

Site-Specific Target Level (SSTL) Concentrations

		On-site	Off-site1	Off-site2
Groundwater Ingestion				
Receptor Type / Distance (ft)		None	Residential / 1980	Residential / 2110
$SSTL_{gw}$	#VALUE!	NA	1.7E+2	1.9E+2
(mg/L)	#VALUE!	NA	1.3E+0	1.5E+0
Soil Leaching to Groundwater Ingestion				
Receptor Type / Distance (ft)		None	Residential / 1980	Residential / 2110
$SSTL_s$	#VALUE!	NA	>2.8E+2	>2.8E+2
(mg/kg)	#VALUE!	NA	5.2E+0	5.9E+0
Surface Soil Inhalation, Ingestion,Dermal Contact				
Receptor Type / Distance (ft)		Com./Constr. / 0	No Off-site Receptors	
$SSTL_{ss}$	#VALUE!	1.0E+2		
(mg/kg)	#VALUE!	3.1E+0		
Outdoor Air Inhalation				
Receptor Type / Distance (ft)		Commercial / 0	Residential / 50	None
$RBEL_{air}$	#VALUE!	8.7E+0	6.2E+0	NA
($\mu g/m^3$)	#VALUE!	4.9E-1	2.9E-1	NA
Soil Volatilization/Particulates to Outdoor Air Inhalation				
Receptor Type / Distance (ft)		Commercial / 0	Residential / 50	None
$SSTL_s$	#VALUE!	>2.8E+2	>2.8E+2	NA
(mg/kg)	#VALUE!	1.6E+2	1.1E+2	NA
Groundwater Volatilization to Outdoor Air Inhalation				
Receptor Type / Distance (ft)		Commercial / 0	Residential / 50	None
$SSTL_{gw}$	#VALUE!	4.6E+2	3.3E+2	NA
(mg/L)	#VALUE!	2.6E+1	1.6E+1	NA
Indoor Air Inhalation				
Receptor Type / Distance (ft)		Commercial / 0	No Off-site Receptors	
$RBEL_{air}$	#VALUE!	8.7E+0		
($\mu g/m^3$)	#VALUE!	4.9E-1		
Soil Volatilization to Indoor Air Inhalation				
Receptor Type / Distance (ft)		Commercial / 0	No Off-site Receptors	
$SSTL_s$	#VALUE!	7.3E+0		
(mg/kg)	#VALUE!	4.1E-1		
Groundwater Volatilization to Indoor Air Inhalation				
Receptor Type / Distance (ft)		Commercial / 0	No Off-site Receptors	
$SSTL_{gw}$	#VALUE!	4.9E+1		
(mg/L)	#VALUE!	2.8E+0		

Chemical Parameters

	Units	Value	Reference
Physical Properties			
MW	(g/mol)	7.8E+1	PS
Sol	(mg/L)	1.8E+3	R2
P_{vap}	(mmHg)	9.5E+1	PS
H_{atm}	(atm-m^3/mol)	5.5E-3	R2
pK_a	(log[mol/mol])	-	-
pK_b	(log[mol/mol])	-	-
$log(K_{oc})$	(log[L/kg])	1.8E+0	R2
D_{air}	(cm^2/sec)	8.8E-2	R2
D_{wat}	(cm^2/sec)	9.8E-6	R2
Toxicity Data			
Wt of Evd.		A	
SF_o	(1/[mg/kg/day])	1.0E-1	R2
SF_d	(1/[mg/kg/day])	3.0E-2	TX
URF_I	(1/[$\mu g/m^3$])	8.3E-6	PS
RfD_o	(mg/kg/day)	3.0E-3	R2
RfD_d	(mg/kg/day)	-	-
RfC_I	(mg/m^3)	6.0E-3	R
Dermal Exposure Parameters			
RAF_d	(mg/mg)	5.0E-1	D
K_p	(cm/hr)	2.1E-2	
tau_d	(hr/event)	2.6E-1	
t_{crit}	(hr)	6.3E-1	
B	(-)	1.3E-2	
Regulatory Standards			
MCL	(mg/L)	1.0E-3	*
TWA	(mg/m^3)	3.3E+0	-
AQL	(mg/L)	4.6E-2	R2
Miscellaneous Parameters			
ADL_{gw}	(mg/L)	5.0E-4	S
ADL_s	(mg/kg)	5.0E-1	S
$t_{1/2,sat}$	(d)	1.4E+3	E1
$t_{1/2,unsat}$	(d)	1.4E+3	E1

* MCL ref = -

	Units	Residential	Commercial	Construction
Cross-Media Transfer Factors				
VF_{ss}	(kg-soil/m3-air)	2.6E-6	3.1E-6	NA
VF_{samb}	(kg-soil/m3-air)	2.6E-6	3.1E-6	NA
VF_{wamb}	(m3-wat/m3-air)	1.9E-5	1.9E-5	NA
VF_{besp}	(kg-soil/m3-air)	NA	1.2E-3	NA
VF_{wesp}	(m3-wat/m3-air)	NA	1.8E-4	NA
LF	(kg-soil/L-wat)	All exposures: 2.5E-1		NA

	Units	On-Site	Off-Site1	Off-Site2
Lateral Transport Factors				
DAFgw	(-)	NA	1.5E+3	1.7E+3
DAFs/gw	(-)	NA	1.5E+3	1.7E+3

	Units	Value
Derived Parameters		
H	(L-wat/L-air)	2.3E-1
K_{sw}	(L-wat/kg-soil)	6.5E+0
C_{sat}	(mg/kg-soil)	2.8E+2
$C_{sat,vap}$	($\mu g/m^3$-air)	4.0E+8
$D_{eff,s}$	(cm^2/sec)	1.3E-2
$D_{eff,crk}$	(cm^2/sec)	6.9E-3
$D_{eff,cap}$	(cm^2/sec)	2.2E-5
$D_{eff,ws}$	(cm^2/sec)	8.7E-4
R_{sat}	(-)	1.2E+0
R_{unsat}	(-)	2.3E+0
Z	(cm/event)	7.3E-2

Notes: 1) NA = Not applicable; NC = Not calculated.

2) Definitions and references presented on page 6 of 6.

RBCA SITE ASSESSMENT

Site Name: Former 76 Service Station 0843
Site Location: 1629 Webster Street, Alameda, California

Completed By: Rob Saur
Date Completed: 23-Jun-03

Job ID: 22481412

SOIL (0 - 7 ft) SSTL VALUES

Target Risk (Class A & B) 1.0E-6
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

Groundwater DAF Option: Domenico - No Decay
(One-directional vert. dispersion)

SSTL Results For Complete Exposure Pathways ("X" if Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	X Soil Leaching to Groundwater Ingestion			X Soil Vol. to Indoor Air	X Soil Volatilization and Surface Soil Particulates to Outdoor Air				X Surface Soil Inhalation, Ingestion, Dermal Contact		Applicable SSTL	SSTL Exceeded ?	Required CRF
			On-site (0 ft)	Off-site 1 (1980 ft)	Off-site 2 (2110 ft) *	On-site (0 ft)	On-site (0 ft)		Off-site 1 (50 ft)	Off-site 2 (0 ft)	On-site (0 ft)				Only if "yes" left
CAS No.	Name	(mg/kg)	None	Residential	Residential	Commercial	Commercial	Construction Worker	Residential	None	Commercial	Construction Worker	(mg/kg)	"■" if yes	
71-43-2	Benzene*	4.0E-2	NA	5.2E+0	5.9E+0	4.1E-1	1.6E+2	NA	1.1E+2	NA	3.1E+0	7.6E+1	4.1E-1	☐	<1
108-88-3	Toluene*	4.1E+0	NA	>1.3E+2	>1.3E+2	>1.3E+2	>1.3E+2	NA	>1.3E+2	NA	5.4E+3	5.5E+3	5.4E+3	☐	<1
100-41-4	Ethylbenzene*	2.0E+1	NA	>5.2E+1	>5.2E+1	>5.2E+1	>5.2E+1	NA	>5.2E+1	NA	3.3E+3	3.3E+3	3.3E+3	☐	<1
1330-20-7	Xylene (mixed isomers)*	1.2E+2	NA	>4.9E+1	>4.9E+1	>4.9E+1	>4.9E+1	NA	>4.9E+1	NA	6.3E+4	6.3E+4	6.3E+4	☐	<1
1634-04-4	Methyl t-Butyl ether*	3.6E-1	NA	9.9E+1	1.1E+2	>3.0E+3	>3.0E+3	NA	>3.0E+3	NA	2.8E+2	2.8E+2	9.9E+1	☐	<1

* = Chemical with user-specified data

">" indicates risk-based target concentration greater than constituent residual saturation value. NA = Not applicable. NC = Not calculated.

RBCA SITE ASSESSMENT

Site Name: Former 76 Service Station 0843
Site Location: 1629 Webster Street, Alameda, California

Completed By: Rob Saur
Date Completed: 23-Jun-03

Job ID: 22481412

GROUNDWATER SSTL VALUES

Target Risk (Class A & B) 1.0E-6
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

Groundwater DAF Option: Domenico - No Decay (One-directional vert. dispersion)

SSTL Results For Complete Exposure Pathways ("X" if Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	X	Groundwater Ingestion			X	GW Vol. to Indoor Air	X	Groundwater Volatilization to Outdoor Air			Applicable SSTL	SSTL Exceeded ?	Required CRF
				On-site (0 ft)	Off-site 1 (1980 ft)	Off-site 2 (2110 ft)		On-site (0 ft)		On-site (0 ft)	Off-site 1 (50 ft)	Off-site 2 (0 ft)			Only if "yes" left
CAS No.	Name	(mg/L)		None	Residential	Residential		Commercial		Commercial	Residential	None	(mg/L)	"■" if yes	
71-43-2	Benzene*	1.5E-1		NA	1.3E+0	1.5E+0		2.8E+0		2.6E+1	1.6E+1	NA	1.3E+0	☐	<1
108-88-3	Toluene*	1.2E+0		NA	>5.3E+2	>5.3E+2		>5.3E+2		>5.3E+2	>5.3E+2	NA	>5.3E+2	☐	NA
100-41-4	Ethylbenzene*	1.4E+0		NA	>1.7E+2	>1.7E+2		>1.7E+2		>1.7E+2	>1.7E+2	NA	>1.7E+2	☐	NA
1330-20-7	Xylene (mixed isomers)*	4.7E+0		NA	>1.6E+2	>1.6E+2		>1.6E+2		>1.6E+2	>1.6E+2	NA	>1.6E+2	☐	NA
1634-04-4	Methyl t-Butyl ether*	6.2E+0		NA	7.1E+1	8.1E+1		>4.8E+4		>4.8E+4	>4.8E+4	NA	7.1E+1	☐	<1

* = Chemical with user-specified data

">" indicates risk-based target concentration greater than constituent solubility value. NA = Not applicable. NC = Not calculated.

RBCA SITE ASSESSMENT	Cumulative Risk Worksheet

Site Name: Former 76 Service Station 0843 | Completed By: Rob Saur | Job ID: 22481412

Site Location: 1629 Webster Street, Alameda, California | Date Completed: 23-Jun-03

CUMULATIVE RISK WORKSHEET

CONSTITUENTS OF CONCERN		Representative Concentration		Proposed CRF		Resultant Target Concentration	
CAS No.	Name	Soil (mg/kg)	Groundwater (mg/L)	Soil	GW	Soil (mg/kg)	Groundwater (mg/L)
71-43-2	Benzene*	4.0E-2	1.5E-1			4.0E-2	1.5E-1
108-88-3	Toluene*	4.1E+0	1.2E+0			4.1E+0	1.2E+0
100-41-4	Ethylbenzene*	2.0E+1	1.4E+0			2.0E+1	1.4E+0
1330-20-7	Xylene (mixed isomers)*	1.2E+2	4.7E+0			1.2E+2	4.7E+0
1634-04-4	Methyl t-Butyl ether*	3.6E-1	6.2E+0			3.6E-1	6.2E+0

Cumulative Values:

RBCA SITE ASSESSMENT | **Cumulative Risk Worksheet**

Site Name: Former 76 Service Station 0843 Site Name: Former 76 Service Station 0843 Completed By: Rob Saur Job ID: 22481412

Site Location: 1629 Webster Street, Alameda, Califc Site Location: 1629 Webster Street, Alameda, Califor Date Completed: 23-Jun-03

CUMULATIVE RISK WORKSHEET

Cumulative Target Risk: 1.0E-5 Target Hazard Index: 1.0E+0

ON-SITE RECEPTORS

CONSTITUENTS OF CONCERN		Outdoor Air Exposure: Commercial		Indoor Air Exposure: Commercial		Soil Exposure: Commercial		Groundwater Exposure: None	
		Target Risk: 1.0E-6 / 1.0E-5	Target HQ: 1.0E+0	Target Risk: 1.0E-6 / 1.0E-5	Target HQ: 1.0E+0	Target Risk: 1.0E-6 / 1.0E-5	Target HQ: 1.0E+0	Target Risk: 1.0E-6 / 1.0E-5	Target HQ: 1.0E+0
CAS No.	Name	Carcinogenic Risk	Hazard Quotient	Carcinogenic Risk	Hazard Quotient	Carcinogenic Risk	Hazard Quotient	Carcinogenic Risk	Hazard Quotient
71-43-2	Benzene*	6.3E-9	3.6E-4	1.5E-7	8.6E-3	1.3E-8	3.8E-4		
108-88-3	Toluene*		8.5E-5		6.7E-3		7.4E-4		
100-41-4	Ethylbenzene*		1.0E-4		1.0E-2		5.9E-3		
1330-20-7	Xylene (mixed isomers)*		8.1E-5		7.4E-3		1.9E-3		
1634-04-4	Methyl t-Butyl ether*		3.0E-5		4.9E-5	6.7E-9	1.3E-3		
Cumulative Values:		**6.3E-9**	**6.6E-4**	**1.5E-7**	**3.3E-2**	**1.9E-8**	**1.0E-2**	**0.0E+0**	**0.0E+0**

■ indicates risk level exceeding target risk

RBCA SITE ASSESSMENT | **Cumulative Risk Worksheet**

Site Name: Former 76 Service Station 0843 Site Name: Former 76 Service Station 0843 Completed By: Rob Saur Job ID: 22481412

Site Location: 1629 Webster Street, Alameda, Calif Site Location: 1629 Webster Street, Alameda, Californ Date Completed: 23-Jun-03 *3 OF 3*

CUMULATIVE RISK WORKSHEET

Cumulative Target Risk: 1.0E-5 Target Hazard Index: 1.0E+0

Groundwater DAF Option: Domenico - No Decay

OFF-SITE RECEPTORS

CONSTITUENTS OF CONCERN		Outdoor Air Exposure: Residential (50 ft) Target Risk: 1.0E-6 / 1.0E-5	Target HQ: 1.0E+0	Outdoor Air Exposure: None Target Risk: 1.0E-6 / 1.0E-5	Target HQ: 1.0E+0	Groundwater Exposure: Residential (1980 ft) Target Risk: 1.0E-6 / 1.0E-5	Target HQ: 1.0E+0	Groundwater Exposure: Residential (2110 ft) Target Risk: 1.0E-6 / 1.0E-5	Target HQ: 1.0E+0
CAS No.	Name	Carcinogenic Risk	Hazard Quotient	Carcinogenic Risk	Hazard Quotient	Carcinogenic Risk	Hazard Quotient	Carcinogenic Risk	Hazard Quotient
71-43-2	Benzene*	1.0E-8	4.9E-4			1.2E-7	9.1E-4	1.0E-7	8.0E-4
108-88-3	Toluene*		1.1E-4				1.1E-4		9.6E-5
100-41-4	Ethylbenzene*		1.3E-4				2.5E-4		2.2E-4
1330-20-7	Xylene (mixed isomers)*		9.7E-5				4.3E-5		3.8E-5
1634-04-4	Methyl t-Butyl ether*		4.2E-5			8.7E-8	1.1E-2	7.7E-8	9.9E-3
	Cumulative Values:	**1.0E-8**	**8.6E-4**	**0.0E+0**	**0.0E+0**	**2.0E-7**	**1.3E-2**	**1.8E-7**	**1.1E-2**

■ indicates risk level exceeding target risk