ENVIRONMENTAL RESOLUTIONS, INC.

• proposed well is 240' from MW-2.
• DTW ~ 6' bgs. conduits could affect flow if well is placed at NE corner. Recommend well ~150' max at NW corner
10/18/99 Glenn will try to get Caltrans to OK one MW at NW corner.

September 8, 1999
ERI 224803.W02

Mr. Dave DeWitt
Tosco Marketing Company
2000 Crow Canyon Place, Suite 400
San Ramon, California 94583

Subject: Work Plan for Supplemental Evaluation of Groundwater, Former Tosco 76 Service Station 0843, 1629 Webster Street, Alameda, California.

Mr. DeWitt:

At the request of Tosco Marketing Company (Tosco), Environmental Resolutions, Inc. (ERI) is submitting this Work Plan to perform a supplemental evaluation of groundwater in the vicinity of the subject site. The purpose of the work is to evaluate the lateral extent of dissolved hydrocarbons in the downgradient direction (northeast) of groundwater flow from the subject site. Tosco requested that ERI prepare the Work Plan in response to a letter from the Alameda County Health Care Services Agency (the County), dated July 30, 1999 (Attachment A).

The scope of work for the investigation includes:

- Obtaining encroachment permits from the City of Alameda Central Permits Office (the City) and the California Department of Transportation (Caltrans);
- Obtaining a drilling permit from the Alameda County Public Works Agency (the County);
- Drilling one off-site soil borings and constructing groundwater monitoring well MW5 in the boring;
- Developing and purging the well;
- Collecting groundwater samples from the existing and newly installed wells (MW1 through MW5);
- Submitting groundwater samples for analysis of gasoline hydrocarbons and related constituents;
- Interpreting the data; and,
- Preparing a summary report presenting the data.

BACKGROUND

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 former USTs, dispenser islands, existing groundwater monitoring wells and other selected 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.

Previous work performed at the site has included:

- Removal of two 10,000-gallon single-walled steel gasoline USTs, one 550-gallon single-walled steel used-oil UST, product lines, and dispensers; and installation of a conductor casing within the former UST cavity backfill (ERI, September 1998);
- Installation of four on-site groundwater monitoring wells MW1 through MW4 (ERI, April 1999);
- Sediments encountered beneath the site consist of sandy silt and silty sand with traces of silt.
- Quarterly groundwater monitoring and sampling (Gettler-Ryan, Inc. (GRI) July 1999). Cumulative quarterly groundwater monitoring and sampling data are provided in Attachment B (GRI, July 1999). Laboratory results of soil samples collected during the environmental work indicate residual hydrocarbons are delineated at the site. Laboratory results of groundwater samples collected at the site indicate dissolved hydrocarbons are present in groundwater beneath the site. Groundwater flow direction is typically towards the northeast at a gradient of 0.006 to 0.007.

PROPOSED WORK

This investigation is proposed in order to evaluate the lateral extent of dissolved hydrocarbons downgradient (northeast) of the subject site. ERI will perform fieldwork in accordance with ERI's standard field protocol (Attachment C) and ERI's site-specific Health and Safety plan. ERI will perform the following tasks:

- Prepare and obtain encroachment permits from the City and Caltrans to install monitoring well MW5 in the City/Caltrans Webster Street right-of-way.
- Prepare and obtain a well installation permit from the County to install one off-site groundwater monitoring well (MW5).
- Observe the drilling of one off-site soil boring (B5), utilizing a hollow-stem auger drilling rig, and constructing groundwater monitoring well MW5 in the boring. The boring will be advanced to a minimum depth of 10 feet below first-encountered groundwater. ERI anticipates groundwater to be encountered at approximately 8 feet below ground surface (ft bgs). The location of the proposed well is shown on Plate 2. The well location was selected to evaluate groundwater conditions in the downgradient flow direction (northeast) of groundwater flow from the subject site.
- Collect soil samples from boring B5 to evaluate soil stratigraphy.
- Contract with a licensed land surveyor to survey the well location relative to a permanent datum and casing elevations relative to mean sea level.
- Develop newly installed well MW5.
- Collect groundwater samples from on-site wells MW1 through MW4 and off-site well MW5.

- Submit collected groundwater samples to Sequoia Analytical Laboratories, Inc. ([Sequoia] California State Certification No. 1271) for analysis of total purgeable petroleum hydrocarbons as gasoline (TPPHg) using Environmental Protection Agency (EPA) Method 8015 modified, benzene, toluene, ethylbenzene, and total xylenes (BTEX), and methyl tertiary butyl ether (MTBE) using EPA Method 8020. Groundwater samples will also be analyzed for MTBE using EPA Method 8260. The sample exhibiting the highest hydrocarbon concentration will be analyzed for oxygenated compounds: tertiary amyl ether, tertiary butyl ether, di-isopropyl ether, ethyl tertiary butyl ether, and lead scavengers: 1,2-dibromoethane and 1,2-dichloroethane using EPA Method 8260.

- A composite soil sample (four brass sleeves) will be collected from the drill cuttings to profile for disposal and will be analyzed for TPPHg, BTEX, and MTBE using the laboratory methods listed above; and it will also be analyzed for total lead using EPA method 6010.

- Interpret field and laboratory data to evaluate groundwater conditions.

- Prepare a report describing groundwater conditions in the vicinity of the site and summarize the findings.

SCHEDULE OF OPERATIONS

ERI is prepared to implement this Work Plan upon regulatory approval and obtaining the appropriate encroachment and well installation permits. However, ERI recommends two additional quarters of groundwater monitoring and sampling prior to implementation of this Work Plan to verify groundwater flow direction and gradient

ERI recommends copies of this Work Plan be forwarded to:

Ms. Eva Chu
Alameda County Health Care Services Agency
Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Ms. Jolanta Goslawska-Uchman
California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, California 94612

Please call Mr. Glenn Matteucci at (415) 382-5994, if you have questions regarding this Work Plan.

Sincerely,
Environmental Resolutions, Inc.

Glenn L. Matteucci
Project Manager

Mark S. Dockum
R.G. 4412
C.E.G. 1675

Attachments: References

Plate 1: Site Vicinity Map
Plate 2: Generalized Site Plan

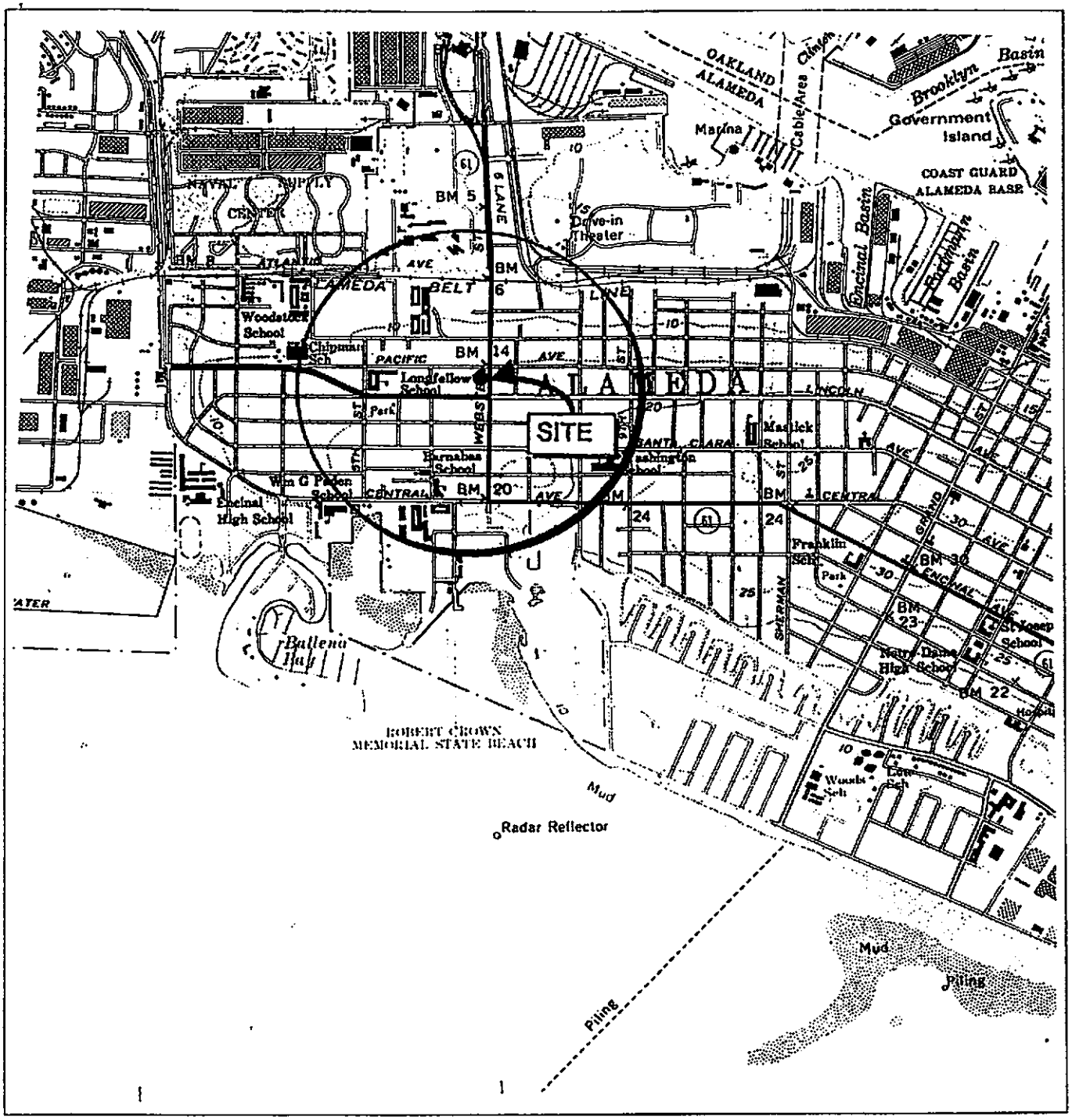
Attachment A: Alameda County Health Care Services Agency Letter (dated July 30, 1999).
Attachment B: Quarterly Groundwater Monitoring and Sampling Data (GRI, July 9, 1999).
Attachment C: Field Protocol

REFERENCES

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

United States Geological Survey. 1980. 7.5-Minute Topographic Quadrangle Map, Oakland West, California.



FN 22480001

N

APPROXIMATE SCALE

0 1/2 1

MILE

Source: U.S.G.S. 7.5 minute topographic quadrangle map Oakland West, California (Photorevised 1980)

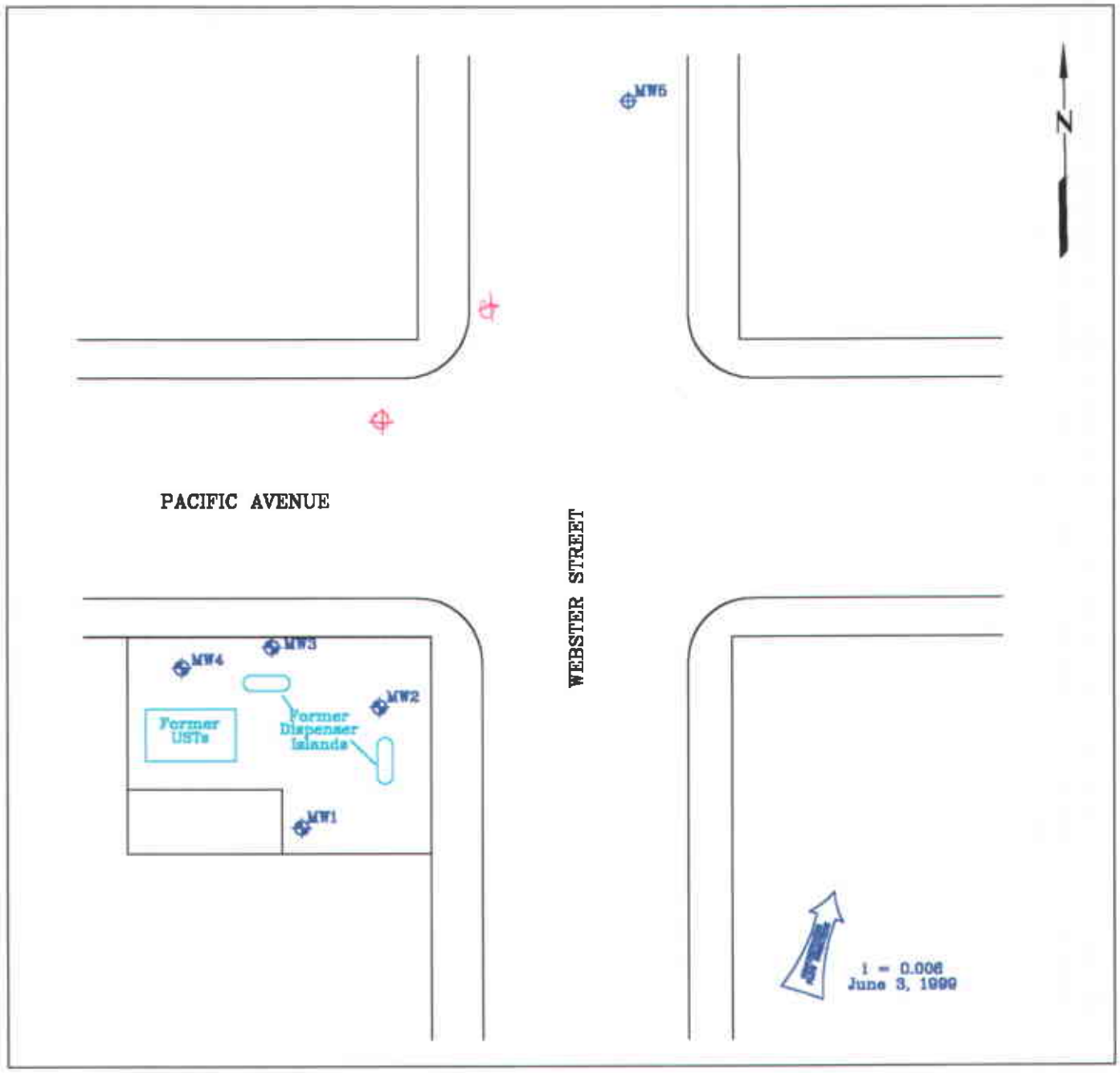
ERI ENVIRONMENTAL RESOLUTIONS, INC.

PROJECT ERI 2248

SITE VICINITY MAP

FORMER TOSCO 76 SERVICE STATION 0843
1629 Webster Street
Alameda, California

PLATE 1



FN 22480003

EXPLANATION

MW4 ⊕ Groundwater Monitoring Well

MW5 ⊕ Proposed Groundwater Monitoring Well

i = Interpreted Groundwater Gradient From the recent Gettler-Ryan Inc. groundwater monitoring and sampling report.

SOURCE: Modified from a map provided by North American Title Company

APPROXIMATE SCALE

0 60 120 FEET

ENVIRONMENTAL RESOLUTIONS, INC.

GENERALIZED SITE PLAN

FORMER TOSCO 76 SERVICE STATION 0843
1629 Webster Street
Alameda, California

PROJECT NO. 2248

PLATE 2

August 16, 1999

ATTACHMENT A

ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY LETTER
(dated July 30, 1999)

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

224803

ENVIRONMENTAL HEALTH SERVICES
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
(510) 337-9335 (FAX)

StID 2067

July 30, 1999

Mr. Dave DeWitt
Tosco Marketing Co
2000 Crow Canyon Place, Suite 400
San Ramon, CA 94583

RE: Additional Well for 1629 Webster Street, Alameda, CA

Dear Mr. DeWitt:

I have completed review of Gettler-Ryan Inc.'s July 1999 *Second Quarter 1999 Groundwater Monitoring & Sampling Report* prepared for the above referenced site. After two quarterly sampling events, hydrocarbon carbon constituents remain elevated in Well MW-2. Groundwater appears to flow in the northeasterly direction.

At this time, in order to delineate the extent of the contaminant plume, an additional groundwater monitoring well is required northeast of Well MW-2. A workplan for the delineation of the plume is due within 60 days of the date of this letter, **or by October 4, 1999.**

If you have any questions, I can be reached at (510) 567-6762.

eva chu
Hazardous Materials Specialist

RECEIVED
AUG 06 1999
ENV. COMPLIANCE

tosco#0843-3

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To Glenn M	From Dana D.
Co.	Co.
Dept.	Phone #
Fax #	Fax #

ATTACHMENT B

QUARTERLY GROUNDWATER MONITORING AND SAMPLING DATA
(GRI, July 9, 1999)

GETTLER-RYAN INC.

July 9, 1999
G-R Job #180203

Mr. David B. De Witt
Tosco Marketing Company
2000 Crow Canyon Place, Suite 400
San Ramon, California 94583

RE: Second Quarter 1999 Groundwater Monitoring & Sampling Report
Former Tosco 76 Service Station #0843
1629 Webster Street
Alameda, California

Dear Mr. De Witt:

This report documents the quarterly groundwater monitoring and sampling event performed by Gettler-Ryan Inc. (G-R). On June 3, 1999, field personnel monitored and sampled four wells (MW-1 through MW-4) at the above referenced site.

Static groundwater levels were measured and all wells were checked for the presence of separate-phase hydrocarbons. Separate-phase hydrocarbons were not present in the wells. Static water level data and groundwater elevations are summarized in Table 1. A Potentiometric Map is included as Figure 1.

Groundwater samples were collected from the monitoring wells as specified by G-R Standard Operating Procedure - Groundwater Sampling (attached). The field data sheets are also attached. The samples were analyzed by Sequoia Analytical. Analytical results are summarized in Table 1, and a Concentration Map is included as Figure 2. The chain of custody document and laboratory analytical reports are also attached.

Sincerely,

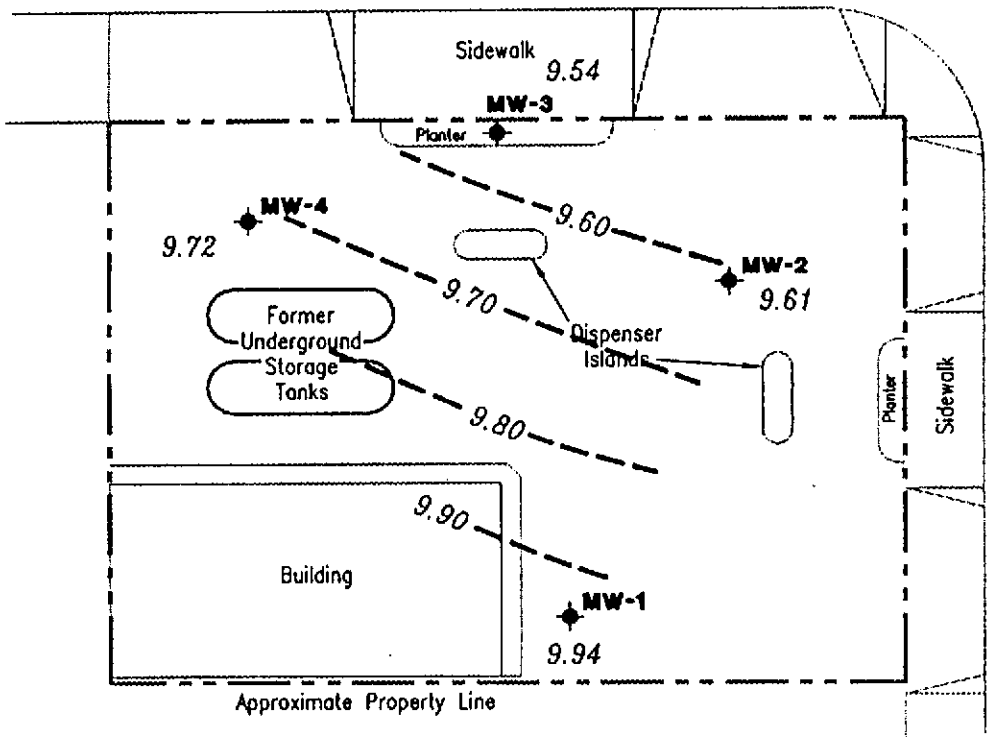
Deanna L. Harding
Project Coordinator

Douglas J. Lee
Senior Geologist, R.G. No. 6882

REGISTERED GEOLOGIST
DOUGLAS J. LEE
No. 6882
STATE OF CALIFORNIA

Figure 1: Potentiometric Map
Figure 2: Concentration Map
Table 1: Groundwater Monitoring Data and Analytical Results
Attachments: Standard Operating Procedure - Groundwater Sampling
Field Data Sheets
Chain of Custody Document and Laboratory Analytical Reports

0843.qml



WEBSTER STREET

EXPLANATION

- ✦ Groundwater monitoring well
- 99.99 Groundwater elevation in feet referenced to Mean Sea Level (MSL)
- 99.99 Groundwater elevation contour, dashed where inferred.

Approximate groundwater flow direction at a gradient of 0.006 Ft./Ft.

N

0 30

Scale in Feet

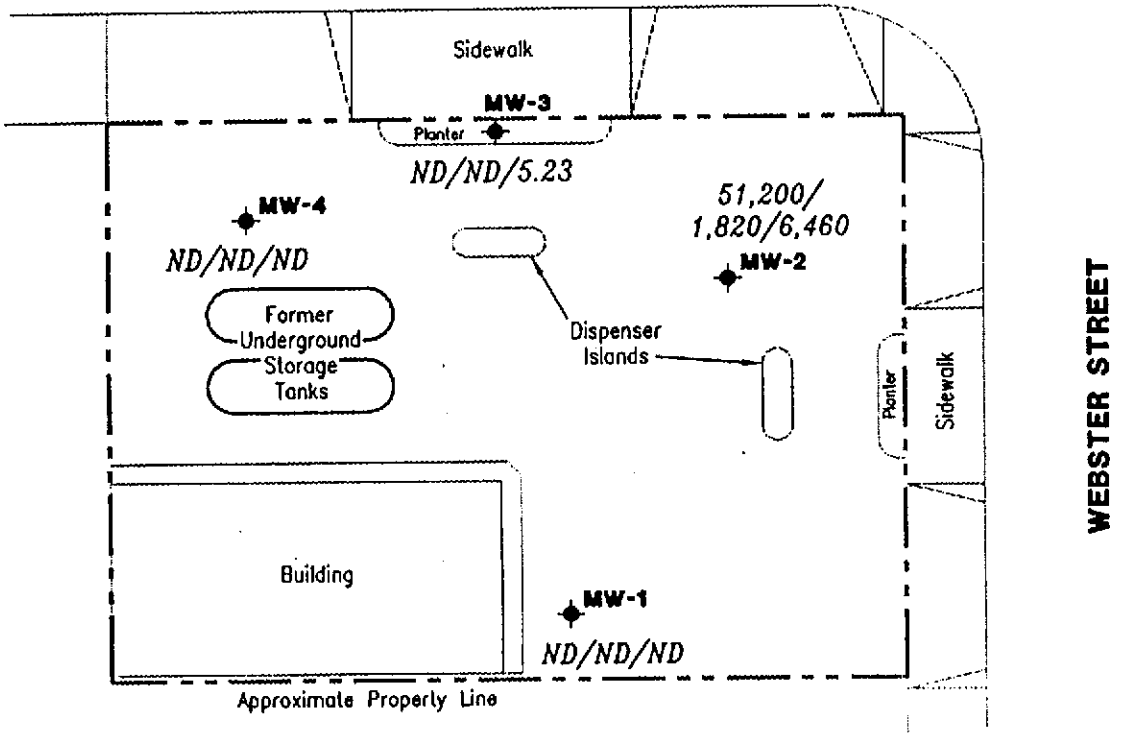
Base Map: ERI, Generalized Site Plan

Gettler - Ryan Inc.
6747 Sierra Ct., Suite J (925) 551-7555
Dublin, CA 94568

POTENTIOMETRIC MAP
Former Tosco 76 Service Station No. 0843
1629 Webster Street
Alameda, California

FIGURE 1

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
180203		June 3, 1999	



EXPLANATION

- ✦ Groundwater monitoring well
- *A/B/C* TPH(G) (Total Petroleum Hydrocarbons as Gasoline)/Benzene/MTBE concentrations in ppb
- *ND* Not Detected

N

0 30

Scale in Feet

Base Map: ERI, Generalized Site Plan

Gettler - Ryan Inc.

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

CONCENTRATION MAP
Former Tosco 76 Service Station No. 0843
1629 Webster Street
Alameda, California

FIGURE
2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
180203		June 3, 1999	

Table 1

Groundwater Monitoring Data and Analytical Results

Former Tosco 76 Service Station #0843

1629 Webster Street

Alameda, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (msl)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
MW-1									
16.18	03/05/99[1]	--	--	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]**
MW-2									
15.57	03/05/99[1]	--	--	34,400	2,070	7,710	2,340	8,240	8,460[2]
	06/03/99	**5.96**	**9.61**	**51,200[4]**	**1,820**	**7,570**	**2,510**	**7,320**	**6,460/8,800[2]**
MW-3									
15.11	03/05/99[1]	--	--	135[3]	ND	ND	ND	4.84	2.46[2]
	06/03/99	**5.57**	**9.54**	**ND**	**ND**	**ND**	**ND**	**ND**	**5.23/12.7[2]**
MW-4									
15.17	03/05/99[1]	--	--	ND	ND	ND	ND	2.44	25.2[2]
	06/03/99	**5.45**	**9.72**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND/3.96[2]**
Trip Blank									
TB-LB	03/05/99[1]	--	--	ND	ND	ND	ND	ND	ND[2]
	06/03/99	**--**	**--**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**

Table 1

Groundwater Monitoring Data and Analytical Results

Former Tosco 76 Service Station #0843

1629 Webster Street

Alameda, California

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 elevation
DTW = Depth to Water
(ft.) = Feet
GWE = Groundwater Elevation
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

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

[1] Benzene, toluene, ethylbenzene and total xylenes by EPA Method 8260A.

[2] MTBE by EPA Method 8260A.

[3] Laboratory report indicates weathered gasoline C6-C12.

[4] Laboratory report indicates chromatogram pattern C6-C12.

ATTACHMENT C

FIELD PROTOCOL

FIELD PROTOCOL

Site Safety Plan

Field work will be performed by ERI personnel in accordance with a site safety plan developed for the site. This plan describes the basic safety requirements for the subsurface investigation and the drilling of soil borings at the work site. The site safety plan is applicable to personnel and subcontractors of ERI. Personnel at the site are informed of the contents of the site safety plan before work begins. A copy of the site safety plan is kept at the work site and is available for reference by appropriate parties during the work. The ERI geologist will act as the Site Safety Officer. The site safety plan is attached.

Soil Borings

Prior to drilling of the boring and construction of the well, ERI will acquire necessary permits from the appropriate agency(ies). ERI will also contact Underground Service Alert (USA) and a private underground utility locator before drilling to help locate public utility lines at the site. ERI will observe the driller clear boring locations to a depth of approximately 4 feet before drilling to reduce the risk of damaging underground structures.

The soil boring will be drilled with a CME-55 (or similar) drill rig with hollow-stem auger. Auger flights and sampling equipment will be steam-cleaned before use to minimize the possibility of crosshole contamination. The rinsate will be containerized and stored on site. ERI will coordinate with Tosco for appropriate disposal or recycling of the rinsate.

Drilling will be performed under the observation of a field geologist, and the earth materials in the borings will be identified using visual and manual methods, and classified as drilling progresses using the Unified Soil Classification System. Soil boring MW5 will be drilled to approximately 10 feet below first-encountered groundwater or 5 feet into any competent clay layer (aquitard) encountered beneath the water-bearing zone. If an aquitard is encountered, the boring will be terminated and backfilled with bentonite before installing a groundwater monitoring well.

During drilling, soil samples will be collected at 5-foot intervals, obvious changes in lithology, and just above the groundwater surface. Samples will be collected with a California-modified, split-spoon sampler equipped with laboratory-cleaned brass sleeves. Samples will be collected by advancing the auger to a point just above the sampling depth and driving the sampler into the soil. The sampler will be driven 18 inches with a standard 140-pound hammer repeatedly dropped 30 inches. The number of blows required to drive the sampler each successive 6-inch interval will be counted and recorded to give an indication of soil consistency.

Soil samples will be monitored with a photoionization detector (PID), which measures hydrocarbon concentrations in the ambient air or headspace above the soil sample. Field instruments such as the PID are useful for indicating relative levels of hydrocarbon vapors, but do not detect concentrations of hydrocarbons with the same precision as laboratory analyses. Soil samples selected for possible chemical analysis will be sealed promptly with Teflon® tape and plastic caps. The samples will be labeled and placed in iced storage for transport to the laboratory. Chain of Custody Records will be initiated by the geologist in the field, updated throughout handling of the samples, and sent with the samples to the laboratory. Copies of these records will be in the final report. Cuttings generated

during drilling will be placed on plastic sheeting and covered and left at the site. ERI will coordinate with Tosco for the soil to either be treated on site or removed to an appropriate disposal or recycling facility.

Monitoring Well Construction

The monitoring well will be constructed in the boring using thread-jointed, 2-inch inner diameter, Schedule 40 polyvinyl chloride (PVC) casing. No chemical cements, glues, or solvents will be used in well construction. The screened portion of each well will consist of factory-perforated casing with 0.010-inch wide slots. If unconfined aquifer conditions exist, the well screen will be installed from the total depth of each well to approximately 5 feet above the uppermost water-bearing unit. If confined conditions exist, the uppermost water-bearing unit will be screened exclusively. Unperforated casing will be installed from the top of each screen to the ground surface. The annular space in the well will be packed with number 2/12 sand to approximately one foot above the slotted interval and a surged and refilled bentonite plug will be added above the sand pack to prevent cement from entering the well pack. The remaining annulus will be backfilled to grade with a cement/bentonite slurry cement.

The monitoring well will be protected with a locking cap and a traffic-rated, cast-aluminum utility box equipped with a PVC skirt. The box has a watertight seal to protect against surface-water infiltration and must be opened with a special wrench. The design of this box discourages vandalism and reduces the possibility of accidental disturbance of the well.

Well Development and Sampling

ERI will wait a minimum of 24 hours before development of the monitoring wells to allow the grout to set. Initially, a water sample will be collected for subjective analysis before development of the monitoring wells. This sample will be collected from near the water surface in the well with a new disposable Teflon® bailer. The wells will be developed with a surge block and pump. Well development will continue until the discharge water is clear of silt and sand. Clay-size sediments derived from the screened portion of the formation cannot be eliminated by well development. After the well has been allowed to stabilize, the well will be checked for separate-phase hydrocarbons using an interface probe. The thickness of any free-phase hydrocarbons detected in the well will be recorded. If free-phase hydrocarbons are encountered in the well, the well will not be purged, and the water will not be sampled for chemical analysis.

If no free-phase hydrocarbons are detected after development, the well will be purged of stagnant water and a sample will be collected for laboratory analysis. The well will be purged of approximately three to five well volumes of water with a submersible pump, or until pH, conductivity, and temperature of the purged water have stabilized. Water purged from the wells will be stored in labeled, 55-gallon, steel drums approved for this use by the Department of Transportation until suitable disposal or recycling options can be selected based on laboratory analysis. ERI will coordinate with Tosco for disposal or recycling of the purged water.

The wells will be allowed to recover to at least 80 percent of static conditions, and a sample of the formation water will be collected with a Teflon® bailer cleaned with a laboratory-grade detergent and deionized water. The water will be transferred slowly from the bailer to laboratory-cleaned 40-milliliter glass vials for analyses by the laboratory. The glass vials will contain hydrochloric acid as a

preservative. The sampler will check to see if headspace is present. If headspace is present, the sampler will collect more samples until none is present. Chain of Custody Records will be initiated in the field by the sampler, updated throughout handling of the samples, and sent along with the samples to the laboratory. Copies of Chain of Custody Records will be included in our final report.

Quality Assurance/Quality Control

The sampling and analysis procedures employed by ERI for groundwater monitoring and sampling follow regulatory guidance documents for quality assurance/quality control (QA/QC). Quality control is maintained by site-specific field protocols and quality control checks performed by the laboratory. Laboratory and field handling of samples may be monitored by including QC samples for analysis. QC samples may include any combination of the following. The number and types of QC samples are selected and analyzed on a project-specific basis.

Trip Blanks - Trip blanks are sent to the project site, and travel with samples collected from the project site to the laboratory. They are not opened, and are returned from the project site with the samples for analysis.

Field Blank - Prepared in the field using organic-free water. Field blanks accompany samples collected at the project site to the laboratory and are analyzed periodically for specific chemical compounds present at the project site where they were prepared.

Duplicates - Duplicate samples are collected from a selected well and project site. They are analyzed at two different laboratories, or at the same laboratory under different labels.

Equipment Blank - Periodic QC samples are collected from field equipment rinsate to verify adequate cleaning procedures.