ENVIRONMENTAL RESOLUTIONS, INC.

TRANSMITTAL

TO: Ms. Eva Chu
Alameda County Department of
Environmental Health Services
1131 Harbor Bay Parkway, #250
Alameda, California 94502-6577

DATE: January 7, 1999
PROJECT NUMBER: 224803T4
SUBJECT: Former Tosco 76 Service Station 0843
1629 Webster Street, Alameda, California

FROM: Glenn L. Matteucci
TITLE: Assistant Project Manager

WE ARE SENDING YOU:

COPIES	DATED	DESCRIPTION
1	January 7, 1999	Work Plan for Evaluation of Soil and Groundwater

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

REMARKS: At the request of Tosco Marketing Company, ERI is forwarding 1 copy of this Work Plan. Please call with any questions or comments.

Glenn L. Matteucci, Assistant Project Manager

cc: Dave DeWitt, Tosco Marketing Company
1 to ERI project file 224803T4

99 JAN -8 AM 10:51

74 Digital Drive, Suite 6, Novato, California 94949 415-382-9105 (FAX 415-382-1856)
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ENVIRONMENTAL RESOLUTIONS, INC.

January 7, 1999
ERI 224803.W01

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

Subject: Work Plan for Evaluation of Soil and Groundwater at 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 an evaluation of soil and groundwater at the subject site. The Work Plan was prepared in response to a letter from the Alameda County Health Services Agency (County) dated November 6, 1998. The purpose of the work is to evaluate the extent of hydrocarbons noted in soil and groundwater during the underground storage tank (UST) removal.

The scope of work for the investigation includes: obtaining drilling permits from Alameda County Public Works Agency (ACPWA); drilling four on-site soil borings (B1 through B4); collecting soil samples from the borings; constructing groundwater monitoring wells MW1 through MW4 in the borings; developing and purging the wells; collecting groundwater samples from the newly installed wells; submitting soil and groundwater samples for analysis; interpreting the data; and preparing a report presenting the data.

BACKGROUND

The site is 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, 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.

To date, environmental work at the site has included removal of two 10,000-gallon single-walled steel gasoline USTs, one 550-gallon single-wall steel used-oil UST, product lines, and dispensers. Tosco also installed a conductor casing within the former UST cavity backfill to accommodate possible periodic groundwater sampling and/or groundwater extraction (ERI, September 1998). Laboratory analyses of soil samples collected during UST removal detected residual total purgeable petroleum hydrocarbons as gasoline (TPPHg) at 44 parts per million (ppm), benzene at 0.09 ppm, and methyl tertiary butyl ether (MTBE) at 280 ppm. Laboratory analyses of a grab groundwater sample collected from the former UST cavity detected dissolved TPPHg at 19,000 parts per billion (ppb), benzene at 880 ppb, and MTBE at 1,300 ppb. The results of the soil and groundwater sample analyses are attached (Table 1).

PROPOSED WORK

This investigation is proposed to evaluate residual hydrocarbons in soil and groundwater. The specific tasks are summarized below. ERI will perform field work in accordance with ERI's standard protocol (Attachment A), and ERI's site-specific Health and Safety plan. The following tasks will be performed as part of this investigation:

- Prepare and obtain a well installation permit from the ACPWA to install four groundwater monitoring wells at the subject site.

- Observe the drilling of four on-site soil borings (B1 through B4) utilizing a hollow-stem auger drilling rig and constructing groundwater monitoring wells MW1 through MW4 in these borings. The borings will be advanced to a minimum depth of 10 feet below first encountered groundwater. ERI anticipates groundwater to be encountered at approximately 8.5 feet below ground surface (ft bgs). The locations of the proposed wells are shown on Plate 2. Well locations were selected to evaluate soil and groundwater conditions in the inferred downgradient direction of groundwater flow (north) from potential source areas. Gradient information in the vicinity of the site was provided by Ms. Eva Chu of the County.

- Collect soil samples at 5-foot intervals, at obvious changes in lithology as noted by the drillers or field geologist, and directly above first encountered groundwater to evaluate soil stratigraphy.

- Contract with a licensed land surveyor to survey the well locations relative to a permanent datum and casing elevations relative to mean sea level.

- Develop newly installed wells MW1 through MW4 and collect groundwater samples from the monitoring wells.

- Submit collected soil samples to Sequoia Analytical Laboratories (Sequoia) (California State Certification No. 1210) for analysis of TPPHg using Environmental Protection Agency (EPA) Method 5030/8015 (modified), and benzene, toluene, ethylbenzene, total xylene (BTEX), and MTBE using EPA Method 5030/8020. A composite soil sample (four brass sleeves) will be collected from the drill cuttings to profile the soil for disposal and will be analyzed for TPPHg, BTEX, and MTBE using the laboratory methods listed above. The composite sample will also be analyzed for total lead using EPA method 6010. SS from B1/MW1 should be quantified for various soil parameters, eg. bulk density, TOC, water content, etc.

- Submit collected groundwater samples to Sequoia for analysis of TPPHg, BTEX, and MTBE using the laboratory methods listed above. The groundwater sample exhibiting the highest MTBE concentration will be confirmed for MTBE and analyzed for additional oxygenated compounds using EPA Method 8260.

- Interpret field and laboratory data to evaluate groundwater conditions.

- Prepare a report describing subsurface conditions at the site as observed in borings and wells and summarize the findings.

SCHEDULE OF OPERATIONS

ERI is prepared to implement the work plan upon regulatory approval and obtaining appropriate permits and access agreements.

ERI recommends copies of this report be forwarded to:

Ms. Eva Chu
Alameda County Department of Environmental Health Services
1131 Harbor Bay Parkway, #250
Alameda, California 94502-6577

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

Please call Jim Jacobson at (415) 382-9105 or Glenn Matteucci, ERI's project manager for the site, at (415) 382-5994 if you have questions regarding this work plan.

Sincerely,
Environmental Resolutions, Inc.

Jim D. Jacobson
Staff Geologist

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

Attachments: References

Table 1: Results of Analysis of Soil and Groundwater Samples

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

Attachment A: Field Protocol

REFERENCES

Environmental Resolutions, Inc. September 15, 1998. Underground Storage Tank and Associated Piping and Dispenser Replacement Report. ERI 224832.R01

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

TABLE 1
RESULTS OF ANALYSIS OF SOIL AND GROUNDWATER SAMPLES
Former Tosco 76 Service Station 0843
1629 Webster Street
Alameda, California

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			

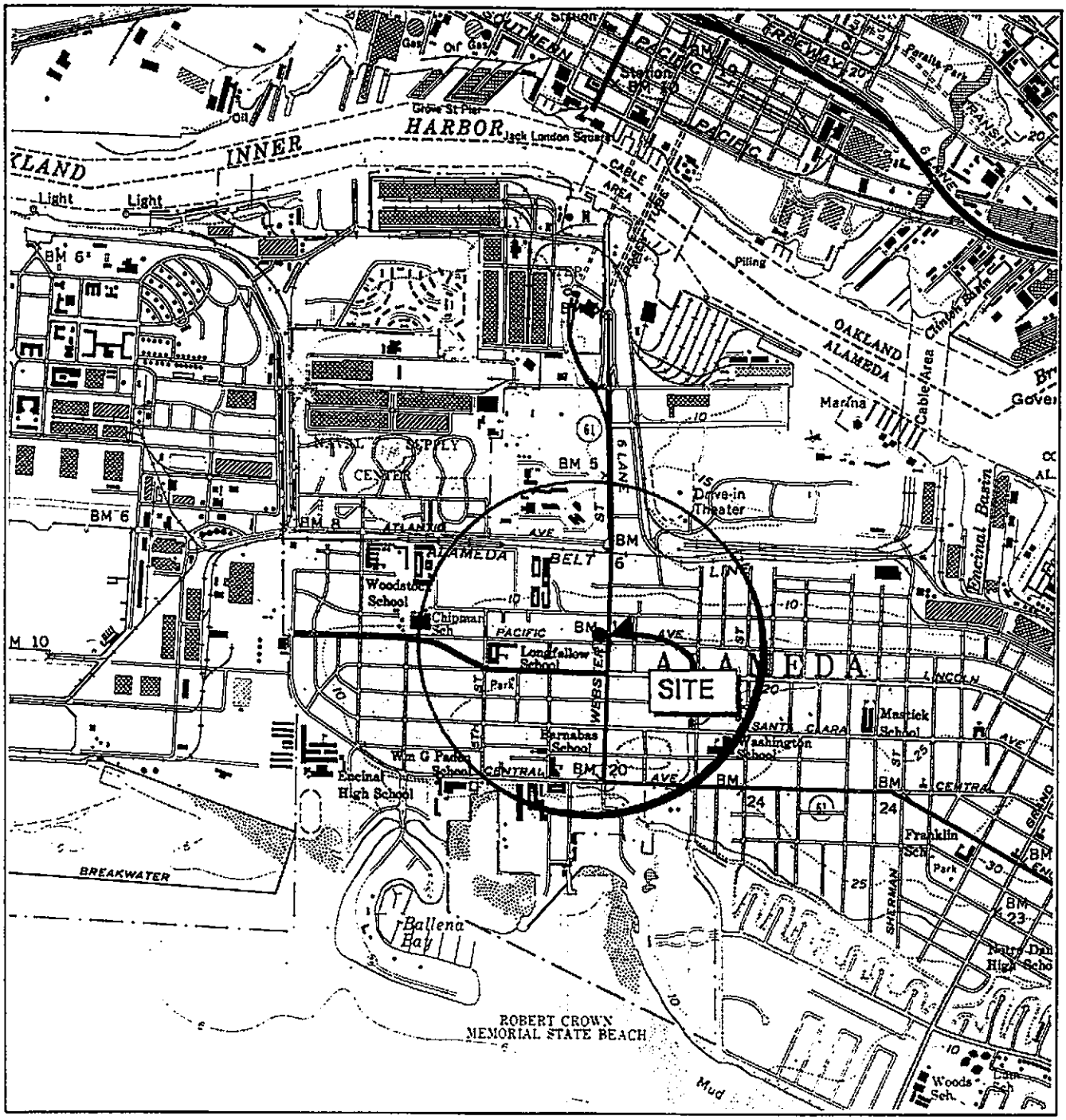
TABLE 1
RESULTS OF ANALYSIS OF SOIL AND GROUNDWATER SAMPLES
Former Tosco 76 Service Station 0843
1629 Webster Street
Alameda, California

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-TIN	=	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



22480001

EXPLANATION

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

N

APPROXIMATE SCALE

0 1/2 1

MILE

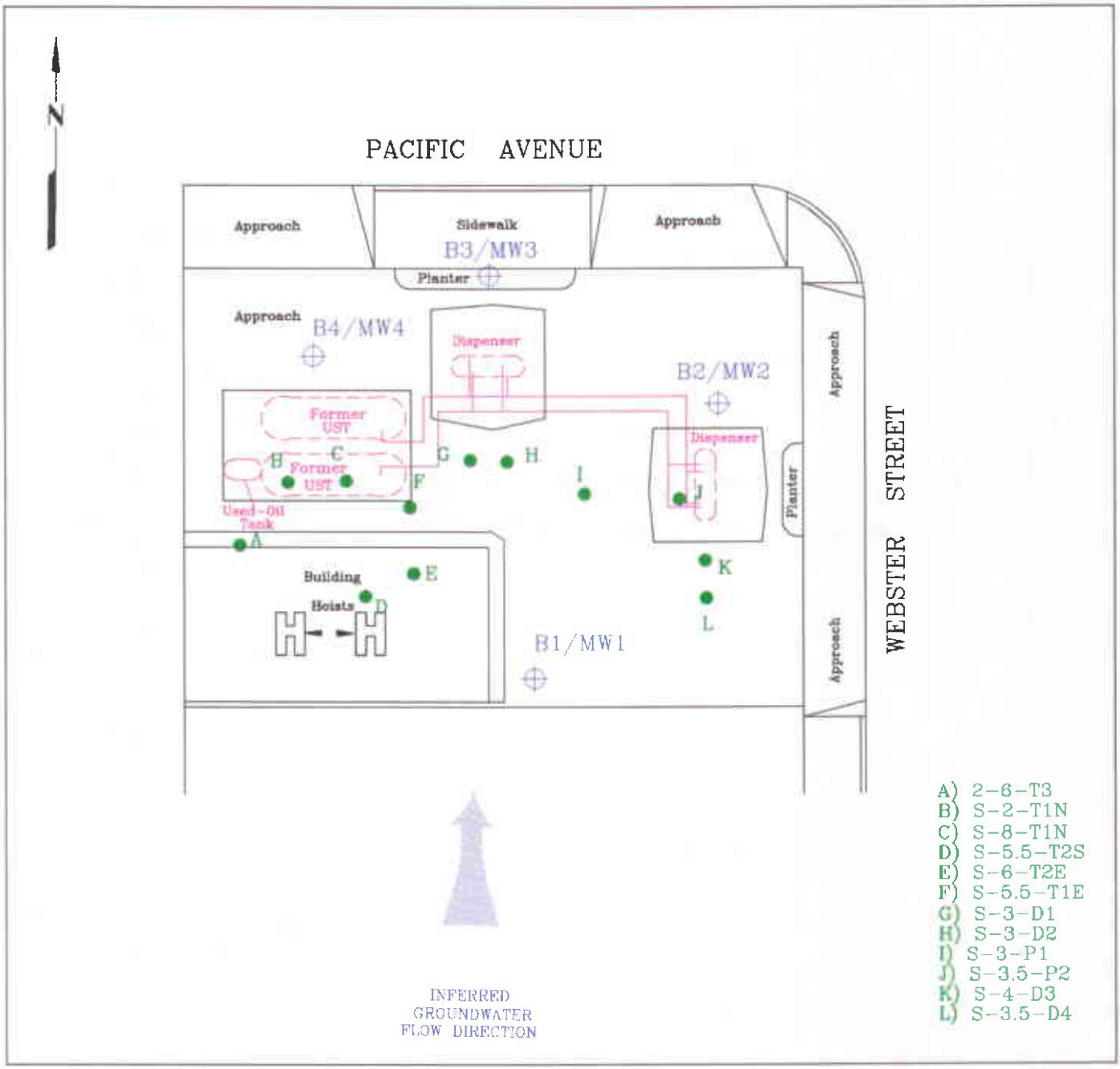
ENVIRONMENTAL RESOLUTIONS, INC.

PROJECT ERI 2248

SITE VICINITY MAP

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

PLATE 1



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EXPLANATION

⊕ Proposed Groundwater Monitoring Well

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

ERI ENVIRONMENTAL RESOLUTIONS, INC.

GENERALIZED SITE PLAN

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

PROJECT NO. 2248

PLATE 2

January 4, 1998

ATTACHMENT A

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 borings and construction of wells, 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.

Soil borings 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 rinseate will be containerized and stored on site. ERI will coordinate with Tosco for appropriate disposal or recycling of the rinseate.

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 borings B1 through B4 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

Monitoring wells will be constructed in borings 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 slurry of cement and bentonite powder.

The monitoring wells 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 3 to 5 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, 1 liter amber bottles and 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.

Gradient Evaluation

ERI will evaluate the direction of flow and gradient at the site. The elevation of the top of each well casing will be measured relative to mean sea level by a licensed land surveyor. Water-depth measurements will be made from the top of the casing in the well to the nearest 0.01 foot with an electronic water-level indicator. The well will be vented to atmosphere for a minimum of 0.5 to 1 hour before obtaining depth-to-water measurements. Venting is conducted to allow the groundwater to equilibrate with barometric pressure. These data will be combined to evaluate the relative elevation of the groundwater surface in each well and the slope of the groundwater surface across the site.

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.