EA Engineering, Science, and Technology, Inc.

REPORT OF INVESTIGATION
CHEVRON SS 9-2582
7240 DUBLIN BOULEVARD
DUBLIN, CALIFORNIA

Prepared for

Chevron U.S.A. Inc.

K. G. HUFFMAN

NOV 23 REC'D

Prepared by

EA Engineering, Science, and Technology, Inc.
Western Regional Operations

18 November 1988

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Prepared for

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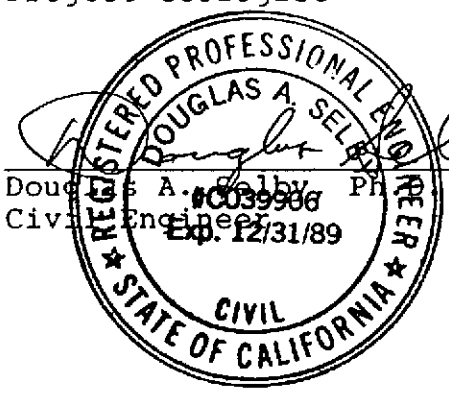

Douglas A. Selby, Ph.D., P.E. — 11/18/88 — Date
Civil Engineer

November 1988

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1. INTRODUCTION

1.1 SCOPE OF WORK

EA Engineering, Science, and Technology, Inc. (EA) was retained by Chevron U.S.A. Inc. to install monitoring wells and sample and analyze soils and groundwater at Chevron Service Station 9-2582. The wells were installed on 17, 20, and 21 October 1988. The soils were sampled and submitted for chemical analysis as the wells were installed. The groundwater was sampled and analyzed on 24 October 1988.

1.2 LOCATION OF SITE

Chevron SS 9-2582 is located at 7240 Dublin Boulevard in Dublin, California (Figure 1). The station dispenses Chevron gasoline products from two pump islands and also sells a variety of car-wash services. Three grades of gasoline are stored in three underground storage tanks located just north of the car wash and office building (Figure 2).

The site is situated on the southwest corner of the intersection of Dublin Boulevard and Village Parkway in a commercial area one block east of Interstate 680. The site lies immediately east of a canal for the control of storm runoff that parallels Interstate 680. Businesses in the area are largely fast food restaurants and small shopping centers. There are residences less than a quarter of a mile to the north and northeast.

The site is located in a relatively flat area at approximately 330 feet above mean sea level. The topographic gradient slopes down to the south-southeast about 10 feet per mile (0.002). The site itself has significant local relief: two landscaped planters along the northern boundary are approximately two feet higher than the car wash and pump islands. The remainder of the lot is covered with concrete that appears to vary in thickness

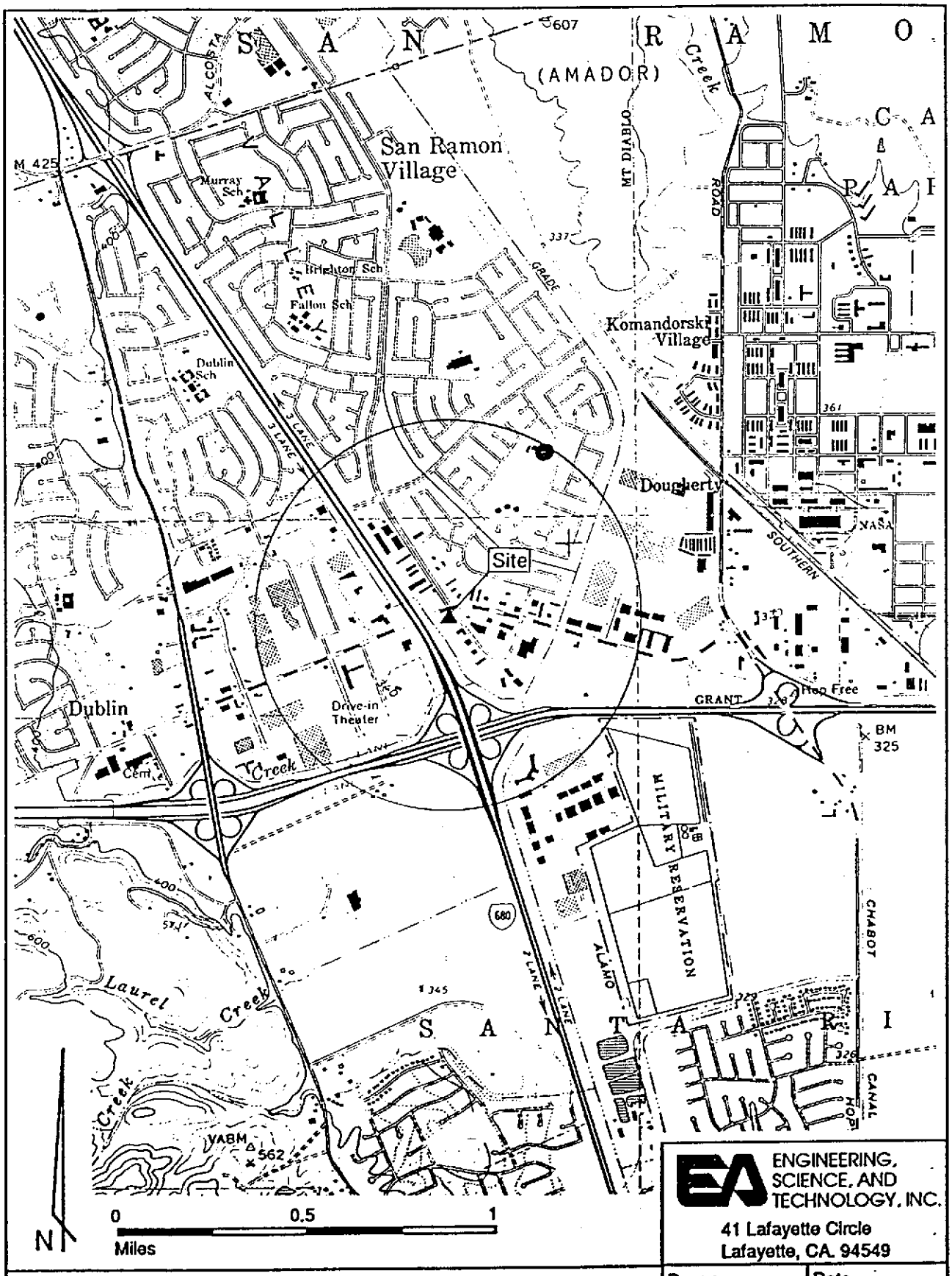

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Figure 1. Location and topography of Chevron SS 9-2582, Dublin ,California.

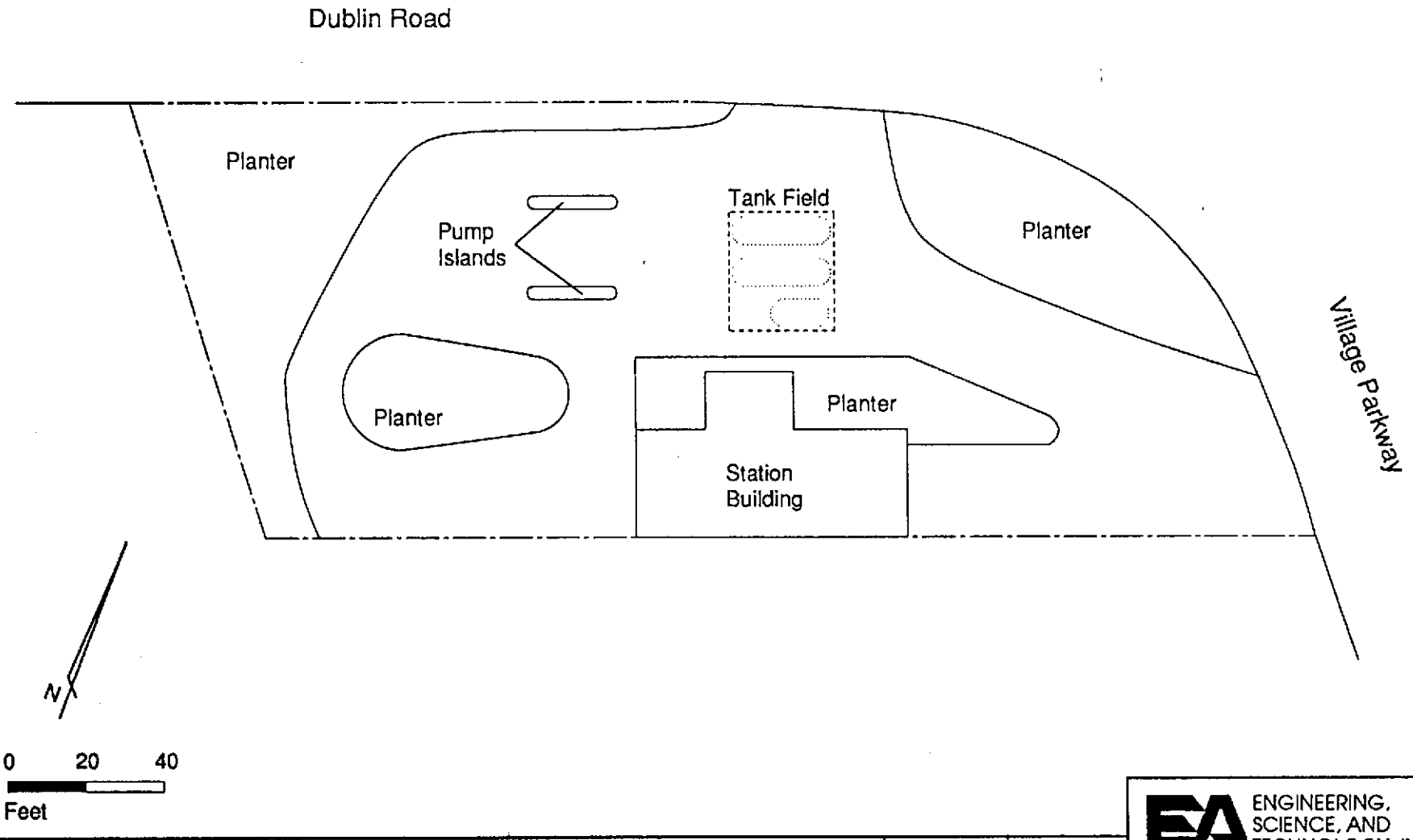

Figure 2. Station facilities and location of underground storage tanks at Chevron SS 9-2582, 7240 Dublin Blvd., Dublin, CA.

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between 6 and 8 inches. The concrete is generally in good repair, containing few cracks, but the ornamental, pebbled concrete is separated from the smooth concrete by expansion joints.

The site lies in the flats of San Ramon Valley between the Dougherty Hills approximately one mile north-northeast and the Diablo Range one mile to the southwest. Laurel Creek, less than one mile to the southwest, is the nearest surface water (Figure 1). The runoff control canal contains water intermittently; the canal controls runoff from rains and protects both Interstate 680 and Interstate 580 from excessive accumulation of rain water.

1.3 HYDROGEOLOGY AND WATER USE

The service station is located on semi-consolidated and unconsolidated alluvium of Quaternary age. The alluvium was deposited in lake, playa, stream, and alluvial environments in the San Ramon Valley.

The City of Dublin has no record of public or private wells within one-half mile of the site (EA 1988). Because businesses and residences in the area are older than the city, undocumented local wells may exist. Municipal water is supplied primarily from reservoirs, but one-third of this water is produced from wells in the area.

2. PREVIOUS INVESTIGATION

On 11 February 1988, EA conducted a soil vapor contaminant assessment (SVCA) at Chevron SS 9-2582. Soil vapors were sampled and analyzed from 15 locations (Figure 3 and Table 1). Samples of soil vapors were collected at various depths:

V1-the southeastern corner of the tank field at depths of 3, 5.5, 8, 10.5, and 13 feet

V2-the northwestern corner of the tank field at depths of 3, 10.5, and 15.5 feet

V3-the southwestern corner of the tank field at depths of 3 and 13 feet

V4-the northeastern planter at depths of 3 and 15.5 feet

V7-the southern pump island at depths of 3 and 5.5 feet

V8-the northern pump island at depths of 3 and 5.5 feet.

Soil vapors were sampled at depths of between 3 feet and 13 feet at the other sampling points. The samples of soil vapors were analyzed with an HNU 421 gas chromatograph; the HNU 421 is a laboratory-size, temperature-programmable gas chromatograph equipped with a flame ionization detector (FID). The instrument is operated isothermally at 60 C, and the capillary column flow rate is 10 ml/min. The instrument was calibrated with a multi-component standard consisting of 10 ppm each of benzene, toluene, xylenes, and ethylbenzene.

The results of the SVCA are tabulated and summarized in Table 1: hydrocarbons were detected in three areas (Figure 3). Moderate-to-high levels of hydrocarbons were measured at depths of 6 to 13 feet near the southern pump island, especially at point V7 (150

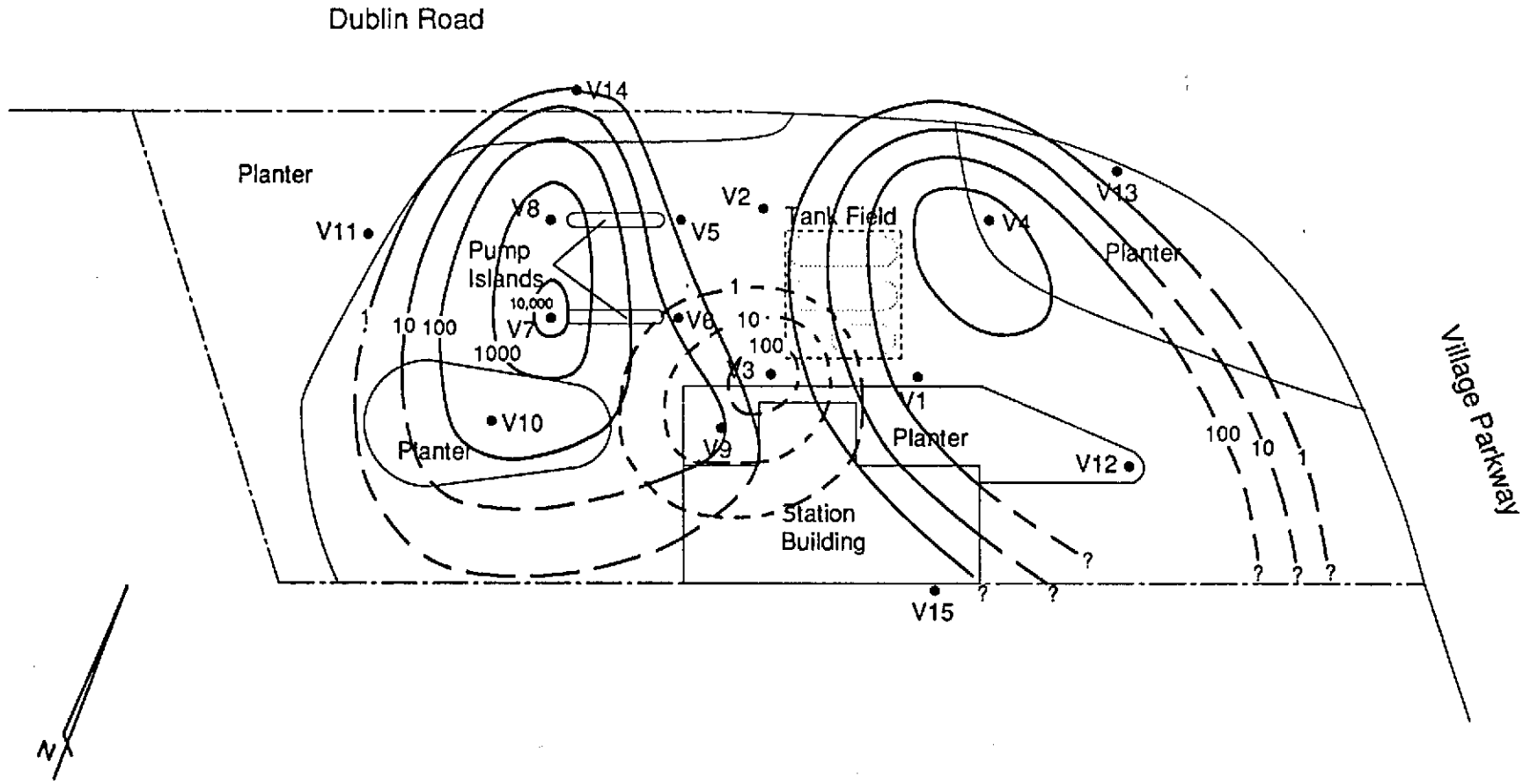

Figure 3. Isoconcentration contours (ppm) of total volatile hydrocarbons in the shallow soil gas at Chevron SS 9-2582, Dublin, CA. February 1988.

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TABLE 1 CONCENTRATIONS OF HYDROCARBON CONSTITUENTS IN SOIL VAPOR AT CHEVRON SS 9-2582, DUBLIN, CALIFORNIA 11 FEBRUARY 1988

Sample Location	Depth (ft)	Peaks Prior[a] to Benzene (ppm)[b]	Benzene (ppm)	Toluene (ppm)	o-Xylene (ppm)	m,p-Xylene (ppm)	Ethyl-benzene (ppm)	Peaks Not Otherwise Identified (ppm)[b]	Total Volatile Hydro-carbons (ppm)[b]
V1/A	3	<1	<1	<1	<1	<1	<1	6	6
V1/B	5.5	<1	<1	<1	<1	<1	<1	<1	<1
V1/C	8	84	<1	<1	<1	<1	<1	<1	85
V1/D	10.5	<1	<1	<1	<1	<1	<1	<1	<1
V1/E	13	330	1	<1	<1	<1	<1	6	340
V2/A	3	<1	<1	<1	<1	<1	<1	<1	1
V2/B	10.5	<1	<1	<1	<1	<1	<1	<1	<1
V2/C	15.5	1	<1	<1	<1	<1	<1	<1	1
V3/A	3	320	<1	<1	<1	<1	<1	14	330
V3/B	13	1	<1	<1	<1	<1	<1	<1	1
V4/A	3	4	<1	<1	<1	<1	<1	<1	5
V4/B	15.5	2,000	11	6	<1	<1	<1	120	2,100
V5	3	1	<1	<1	<1	<1	<1	<1	1
V6	3	<1	<1	5	<1	<1	<1	1	6
V7/A	3	<1	<1	<1	<1	<1	<1	<1	<1
V7/B	5.5	7,500	150	200	<1	<1	3	1,800	9,700
V8/A	3	13	<1	<1	<1	<1	<1	<1	14
V8/B	5.5	1,100	65	140	<1	2	5	860	2,200
V9	4	15	<1	<1	<1	<1	<1	<1	15
V10	6.5	150	<1	<1	<1	<1	<1	<1	150
V11	6.5	<1	<1	<1	<1	<1	<1	<1	<1
V12	13	280	<1	<1	<1	<1	<1	<1	280
V13	15.5	3	<1	<1	<1	<1	<1	<1	3
V14	6.5	78	<1	<1	<1	<1	<1	<1	78
V15	13	<1	<1	<1	<1	<1	<1	<1	<1

a. Early peaks from blank data subtracted from total peaks prior to benzene.
b. Quantification based on V-sec:ppm ratio for benzene (see text).

TABLE 1 (CONT.)

BLANK DATA

Time	Peaks Prior[a] to Benzene (ppm)[b]	Benzene (ppm)	Toluene (ppm)	o-Xylene (ppm)	m,p-Xylene (ppm)	Ethyl-benzene (ppm)	Peaks Not Otherwise Identified (ppm)[b]	Total Volatile Hydro-carbons (ppm)[b]
1040	1	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	1
1232*	1	<0.1	--	--	--	--	--	--
1528*	1	<0.1	--	--	--	--	--	--

PERCENTAGE OF STANDARD RECOVERED

Test Time	Benzene (ppm)	Toluene (ppm)	o-Xylene (ppm)	m,p-Xylene (ppm)	Ethyl-benzene (ppm)
1010	100	100	100	100	100
1337	104	107	137	115	126

GASOLINE STANDARD

Sample	Peaks Prior[a] to Benzene (ppm)[b]	Benzene (ppm)	Toluene (ppm)	o-Xylene (ppm)	m,p-Xylene (ppm)	Ethyl-benzene (ppm)	Peaks Not Otherwise Identified (ppm)[b]	Total Volatile Hydro-carbons (ppm)[b]
Regular	150,000	4,600	6,200	550	1,700	380	13,000	180,000

Note: * indicates an abbreviated blank chromatogram, used to determine peaks eluting prior to benzene.

ppm benzene, 200 ppm toluene, and 9,700 ppm total volatile hydrocarbons). Low levels of hydrocarbons were detected at V4 in the planter at the northeast corner of the site and at V1 at the southeast corner of the tank field. Low-to-moderate concentrations of compounds that elute prior to benzene were found between the pump islands and the tank field at V3, at shallow depths of 3 to 4 feet.

Because little benzene and ethylbenzene (relative to the low-molecular-weight compounds which eluted prior to benzene) were detected at the northeastern planter and the tank field, the hydrocarbons appear to be weathered residues rather than product of recent origin. The hydrocarbons detected at V7 contain more benzene and toluene and therefore appear to be fresher. The hydrocarbons detected at V3 contain relatively less benzene or toluene, and no vapors were detected at a depth of 13 feet. The source of the detected vapors here is unclear, because the vapors measured elsewhere were detected at deeper levels of 13 feet.

3. CURRENT INVESTIGATION

3.1 INSTALLATION OF MONITORING WELLS

Based on the results of the SVCA, four monitoring wells were proposed. Three soil borings were drilled and the wells installed by HEW Drilling Company, Inc., C57 license: 384167 (Figure 4):

EA1 was installed north of vapor point V10 in a grass-covered planter, on Monday, 17 October 1988; the canopy above the pump islands and a laminated wood beam that supported a vacuum system precluded siting a well at V7, and redwood trees and the entrance to the car wash prevented locating a well as proposed south of vapor point V10; the location of EA1 was therefore a compromise in an attempt sample an area that would represent soils beneath the pump island.

EA2 was installed on Thursday, 20 October, near vapor point V1 at the southeast corner of the tank field; the proposed location was adjusted in the field in order to create a broader spread of wells that would help in more efficiently establishing a plane at the top of the groundwater.

EA3 was located and drilled on Friday, 21 October, at the northeast corner of the tank field, near vapor point V4 as proposed; the well was not placed in the grass because the grass was elevated above the curb high enough to make working with the augers at the back of the rig awkward.

The soil borings were drilled with a CME 75 rotary drill with a 10-inch outside diameter, hollow-stem continuous-flight auger. The augers had been steam cleaned before drilling the first boring at EA1; they were steam cleaned after use in each boring to diminish the possibility of cross-contamination.

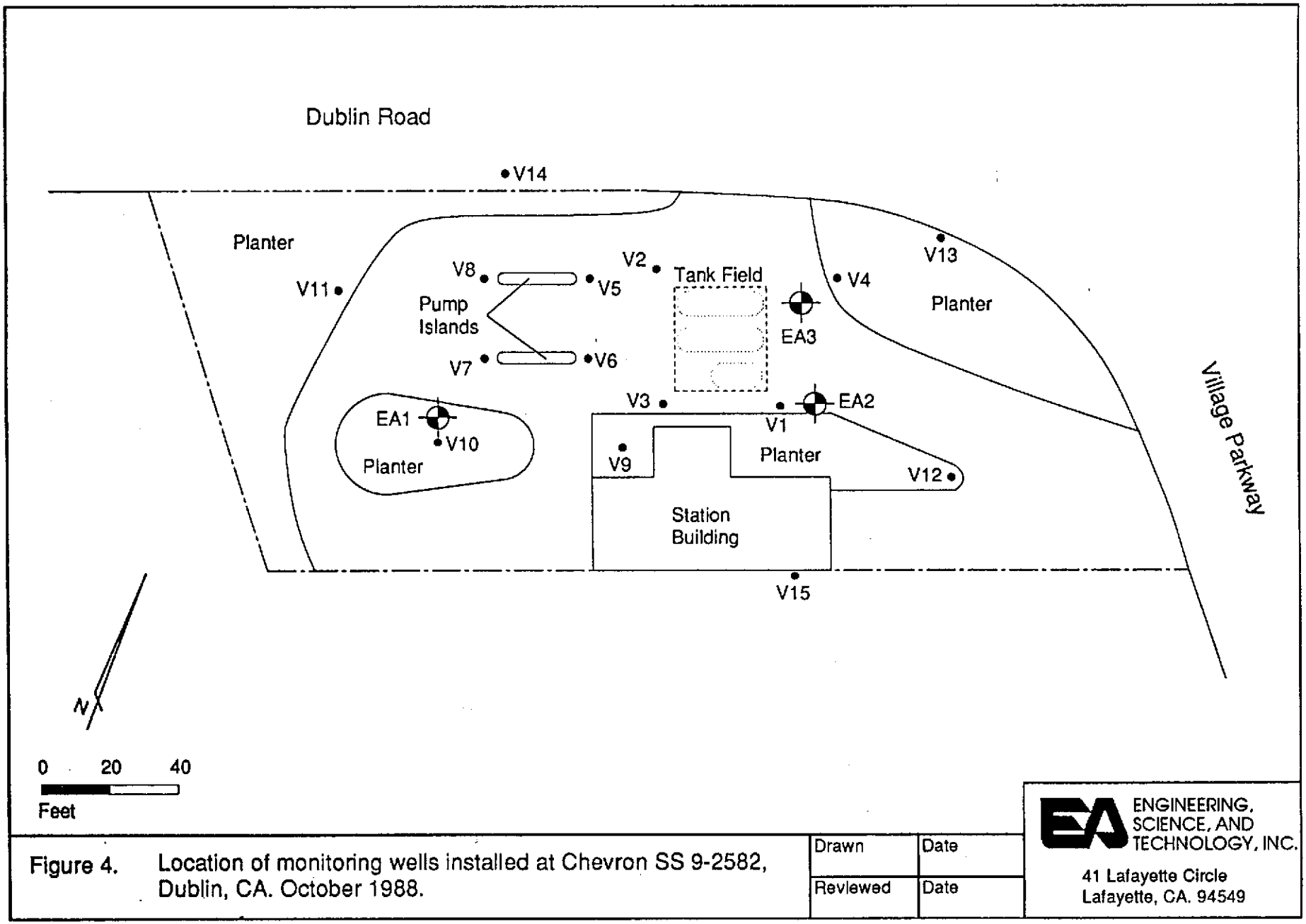

Figure 4. Location of monitoring wells installed at Chevron SS 9-2582, Dublin, CA. October 1988.

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Groundwater was encountered at a depth of 23 feet in EA1; the soil boring was therefore drilled to a depth of 40 feet below the ground surface. Groundwater was encountered at a depth of 19 feet below ground surface in EA2; EA2 was drilled to a depth of 40 feet as well. Groundwater was encountered at 15 feet in EA3, and because the groundwater had risen to less than 11 feet below the ground surface in both EA1 and EA2, EA3 was drilled to a final depth of 35 feet.

The soil borings were completed as monitoring wells by installing nominal 4-inch diameter Schedule 40 PVC casing. Screened casing with a slot size of 0.020 inch was installed from the bottom of EA1 and EA2 at 40 feet to 10 feet of depth below ground surface. Screen was placed from 35 feet to 5 feet in EA3. In each well, the casing was completed to the surface with blank Schedule 40 PVC casing. Individual joints of casing were connected to one another with flush threads. The bottom of the casing in each well was plugged with a PVC slip cap. A filter pack was created in the annular space by placing Lone Star #3 sand through the hollow stem auger. In EA1 and EA2, the filter pack was brought up to a depth of 8 feet below ground surface (2 feet above the top of screen). In EA3, the sand was placed to 4.5 feet below ground surface (0.5 feet above the top of screen). The filter pack was sealed with a 5 gallon bucket of bentonite pellets in EA1 and EA2; only a half of a bucket was used in EA3. A surface seal was then formed by grouting each well from the top of the clay seal to within a foot of the ground surface. The top of the well was secured by setting a water-tight traffic box in concrete. The traffic box can be opened only with a special wrench. The top is further secured to prevent unauthorized entry with a locking waterproof cap.

Well construction details are included as part of the drill logs in Appendix A.

3.2 SOIL SAMPLING AND ANALYSIS

The soils were sampled as the soil boring was drilled. Samples were collected at 5-foot intervals beginning at a depth of 5 feet. The samples were obtained by driving a California modified split-spoon sampler into the soils with a 140-pound hammer. Blow counts were recorded on the drill log with other appropriate information. The split spoon was lined with three clean brass sleeves, each 6 inches in length and 2 inches in diameter. After a sampler was retrieved, the ends of one soil-filled brass liner were immediately wrapped with aluminum foil, capped with plastic end caps, sealed with duct tape, and labeled. These samples were placed immediately on ice in a cooler. Selected samples were shipped under chain of custody to Pace Laboratories, Inc., in Novato, California; Pace is certified by California Department of Health Services (DHS) for hazardous waste testing under Certificate No. 148. The samples were chemically analyzed for total petroleum hydrocarbons and for benzene, toluene, ethylbenzene, and xylenes by modified EPA Method 8015.

At the time of sampling, soil from the other tubes was scanned with an organic vapor analyzer (a Foxboro Century 128) and described on drill log forms. The soils were described on drill logs according to the Unified Soil Classification System. The logs are included in this report as Appendix A.

The drill cuttings were placed in 55-gallon drums for temporary storage. The drums were labeled and moved to the southwest corner of the lot, away from daily operations. The soils will be disposed of at a sanitary landfill, because they contain acceptable levels of total petroleum hydrocarbons for disposal at such sites.

Trace levels of petroleum hydrocarbons were detected in the soils of each well (Table 2).

TABLE 2 CONCENTRATIONS OF HYDROCARBON CONSTITUENTS IN SOILS AND GROUND WATER AT CHEVRON SS 9-2582, 7240 DUBLIN BOULEVARD, DUBLIN, CALIFORNIA, OCTOBER 1988

Well No.	Date	Depth (feet)	Benzene	Toluene	Ethyl-Benzene	Xylenes	TPH
			Soil samples (ppm)				
EA1	10/17/88	6.5&11.5	0.0019	0.0097	<0.0005	0.0018	<0.05
EA1	10/17/88	16.0	0.0007	0.0015	<0.0005	0.0008	<0.05
EA1	10/17/88	21.0	<0.0005	<0.0005	<0.0005	<0.0005	<0.05
EA2	10/20/88	6.0	0.0200	0.0013	0.0037	0.0018	0.140
EA2	10/20/88	11.0	0.0093	0.0034	0.0013	<0.0005	0.110
EA2	10/20/88	16.0	<0.0005	<0.0005	<0.0005	<0.0005	<0.05
EA2	10/20/88	21.0	0.0200	0.0059	0.0045	0.0043	0.140
EA3	10/21/88	6.0	0.0054	0.0013	0.0049	0.0024	0.086
EA3	10/21/88	11.0	0.0320	0.0043	0.0067	<0.0005	0.270
EA3	10/21/88	16.0	0.0016	0.0037	<0.0005	<0.0005	<0.05
EA3	10/21/88	21-36**	<0.0005	<0.0005	<0.0005	<0.0005	<0.05
			Ground-Water Samples (ppm)				
EA1	10/24/88		<0.0005	<0.0005	<0.0005	<0.0005	<0.05
EA2	10/24/88		<0.0005	<0.0005	<0.0005	0.0012	<0.05
EA3	10/24/88		0.0018	<0.0005	<0.0005	0.0030	<0.05

*Composite of two samples, from 6.5 and 11.5 feet.
**Composite of four samples, from 21.0, 26.0, 31.0, and 36.0 feet.

3.3 GROUNDWATER SAMPLING AND ANALYSIS

The wells were developed with a bottom-filling bailer. Water was purged from the well until it was visually free of suspended silts and fine sediments. The purged water was placed in 55 gallon drums. The water will be disposed of appropriately according to laboratory analysis.

The wells were gauged before purging with an oil/water interface probe to determine depth to water and the necessary volume of purge water. Three casing volumes of water were purged from each well. The temperature and conductivity stabilized as the water was purged.

The groundwater was sampled with a clean Teflon bailer. The bailer was lowered slowly into the water and allowed to fill slowly, and the contained water was poured slowly into labeled 40-ml glass vials. The vials were capped with Teflon-lined caps and placed on ice in a cooler. The samples were then shipped under chain of custody to Pace Laboratories, where they were analyzed by modified EPA Method 8015 for total petroleum hydrocarbons (TPH) and for benzene, toluene, ethylbenzene, and xylenes (BTEX).

The results of these analyses are summarized in Table 2. The groundwaters from EA1 did not contain detectable levels of either TPH or BTEX. The groundwater in EA2 contained 0.0012 mg/L total xylenes, but all other aromatic hydrocarbons were below detection, including TPH. EA3 contained 0.0018 mg/L benzene and 0.0030 mg/L xylenes.

3.4 GAUGING DEPTHS TO GROUND WATER

The top of casing elevations were surveyed with a level and stadia rod. An elevation of 333 feet was assumed for the base of a light post at the corner of Dublin Boulevard and Village

Parkway; the elevation of 333 feet was obtained from a blue line for the station facilities and referenced to the USGS Dublin 15 minute topographic map.

Depths to ground water were gauged and the wells were monitored for free product twice with an Oil Recovery Systems oil/water interface probe that is graduated in hundredths of a foot (Table 3). No free product was detected on either occasion. The elevations of the top of groundwater (the potentiometric surface) was calculated for each well and plotted on a site map in order to determine the direction of groundwater flow. The indicated direction of flow for 24 October 1988 (Figure 5) is north-northeast; the difference in elevation of the top of groundwater between EA2 and EA3 is 0.28 feet, representing a hydraulic gradient of 0.006. The elevations of the top of groundwater for 2 November 1988 (Figure 6) indicate that the groundwater gradient is nearly flat. The indicated direction of flow is to the south-southeast, as originally expected; the hydraulic gradient is now only 0.001 between EA2 and EA3 and between EA1 and EA2.

TABLE 3 DEPTHS AND ELEVATIONS OF GROUND-WATER AT CHEVRON SS 9-2582, 7240 DUBLIN BOULEVARD, DUBLIN, CALIFORNIA, OCTOBER, NOVEMBER 1988

Date	Monitoring Well #	Elevation Top of Casing (feet msl)	Depth to Ground water (feet)	Elevation Top of GW (feet msl)
24 October	EA1	333.41	10.64	322.77
	EA2	332.59	9.70	322.89
	EA3	333.64	11.03	322.61
02 November	EA1	333.41	10.69	322.72
	EA2	332.59	10.03	322.56
	EA3	333.64	11.03	322.61

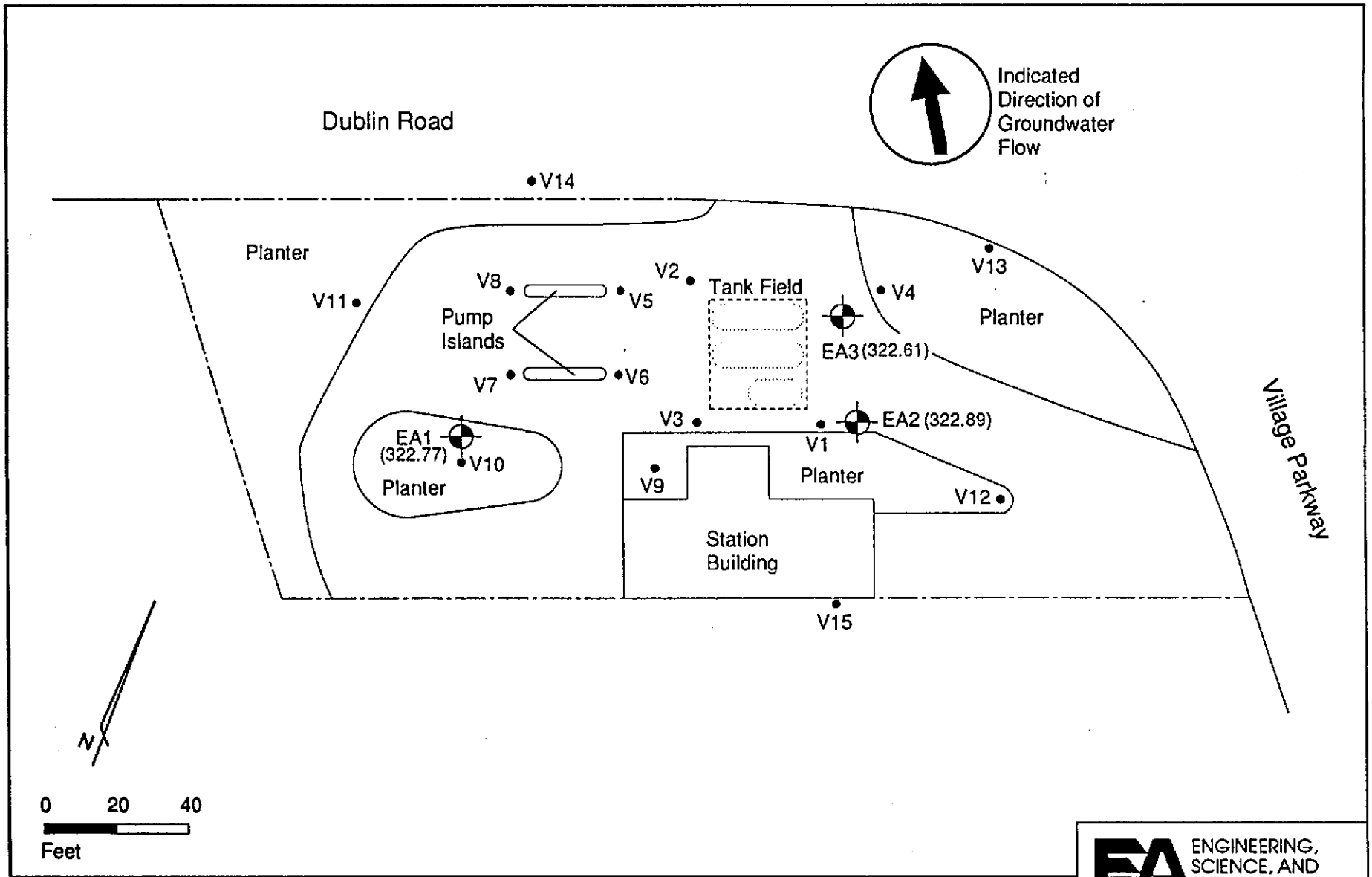

Figure 5. Elevations of top of ground water and indicated direction of flow at Chevron SS 9-2582, Dublin, CA. 24 October 1988.

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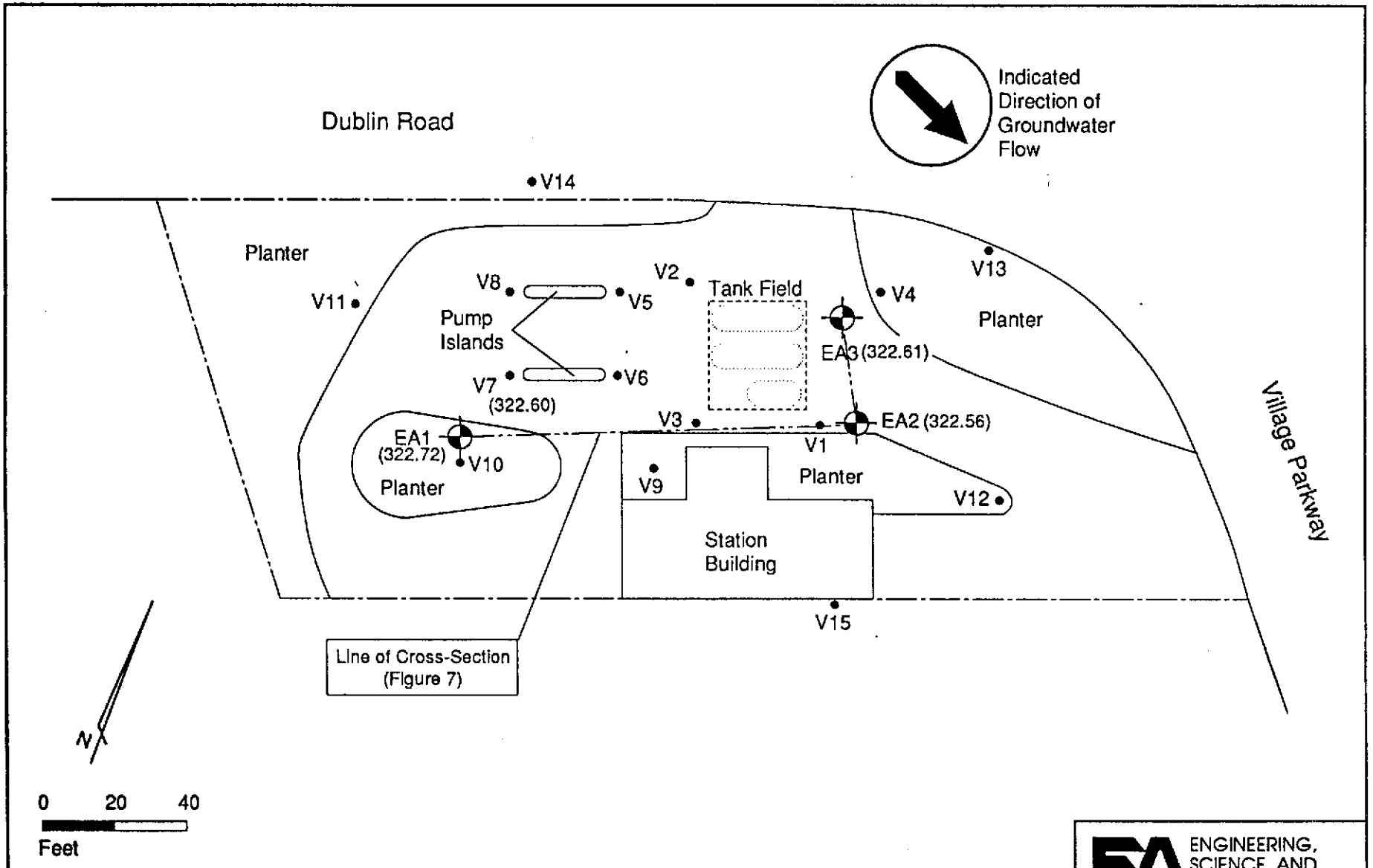

Figure 6. Elevations of top of ground water and indicated direction of flow at Chevron SS 9-2582, Dublin, CA. 2 November 1988.

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4. SUMMARY AND DISCUSSION

4.1 SITE HYDROGEOLOGY

The stratigraphy revealed by the soil borings is very consistent across the site (Figure 7). A layer of plastic, locally silty/sandy clay lies immediately beneath the concrete that covers the entire station except in the landscaped areas. This clay is apparently 15 feet thick at EA3, 19 feet thick at EA2, and 23 feet thick at EA1. At each of these depths a thin layer of water-bearing sands was penetrated; because the depth to this sand layer could not be predicted from boring to boring, the sand was not sampled in the sampling run with the split spoon sampler. An identical plastic clay bounds the sand from below. The clay becomes progressively more silty, grading into a clayey silt/very fine grained sand at 35 to 40 feet, below grade.

Water was first encountered in EA1 at 23 feet below ground surface, in EA2 at 19 feet, and in EA3 at 15 feet. The groundwater subsequently rose up to 10 feet below the surface in all three wells. The elevations of the top of groundwater reveal a surface with very little gradient. The aquifer behaves as a confined aquifer, the water responding to a fairly significant hydraulic head.

Because the aquifer is not well represented in the described soil samples, the hydraulic conductivity and, therefore, transmissivity are difficult to represent without conducting either a pump test or a slug test (both tests are beyond the context of this investigation). However, groundwater velocity, of which transmissivity is a component, is expected to be slow. The hydraulic gradient is very low and cannot provide the necessary push to accelerate the flow of water; the velocity of flow of the groundwater will be generated largely by the hydraulic head, which is difficult to evaluate and more regional in extent. If the aquifer is represented by the clay, which is definitely the

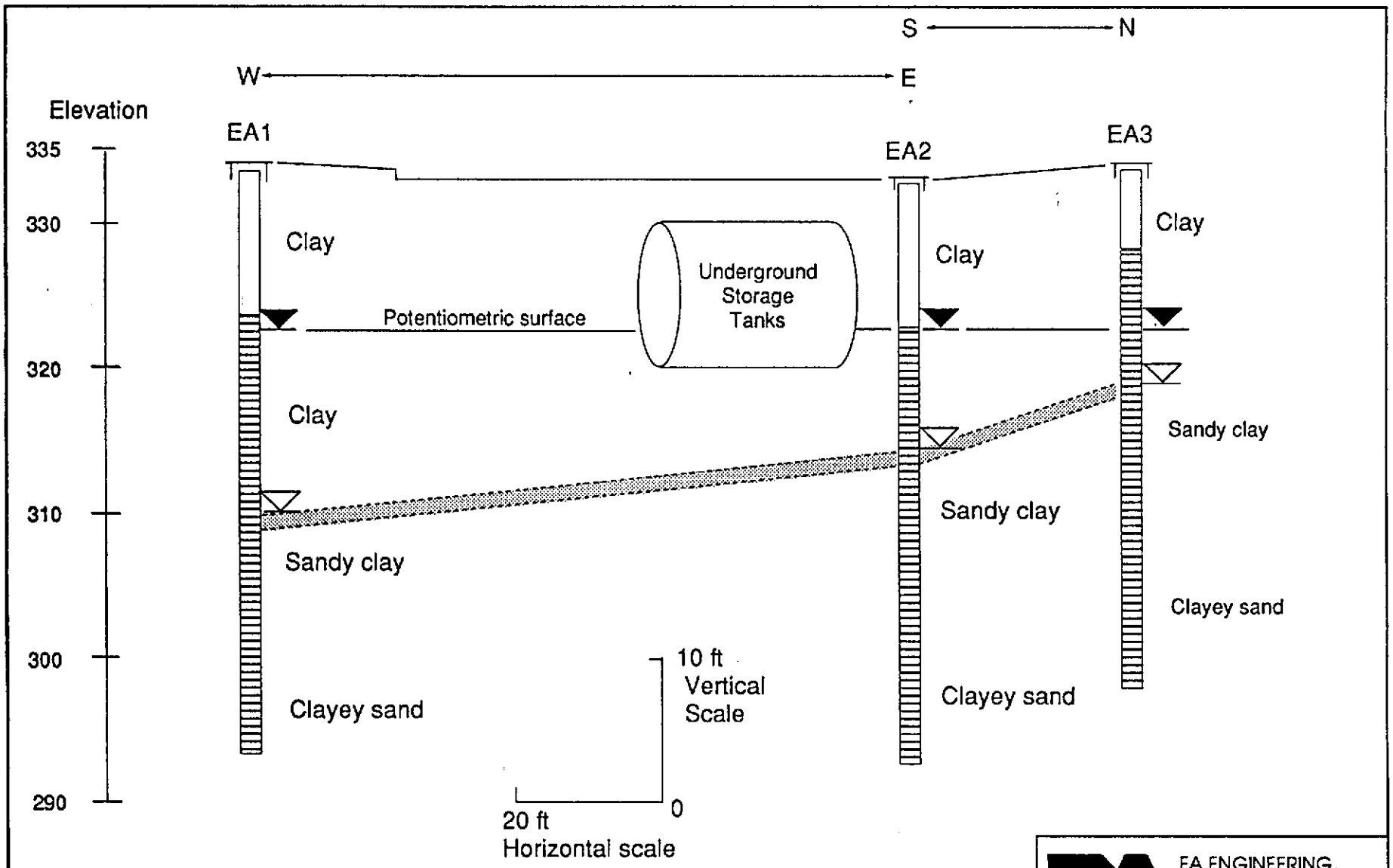

Figure 7. Schematic geologic cross-section of subsurface at Chevron SS 9-2582, Dublin, California

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dominant matrix, hydraulic conductivity and the velocity of flow of the groundwater, will be very low.

4.2 EXTENT AND NATURE OF SUBSURFACE CONTAMINATION

Trace amounts of petroleum hydrocarbons were detected in both the soils and groundwater. No evidence of a major product loss at Chevron SS 9-2582 was detected in either the SVCA or the installation of monitoring wells.

Concentrations of petroleum hydrocarbons in the soils decrease with depth in EA1 and EA2: in EA1 concentrations of benzene diminish from 0.0019 ppm above 11.5 feet to 0.0007 ppm at 16.0 feet and less than the detection limit of 0.0005 ppm at 21.0 feet; concentrations of toluene in EA1 diminish from 0.0097 ppm above 11.5 feet to 0.0015 ppm at 21.0 feet; concentrations of benzene in EA 3 decrease from 0.0054 ppm at 6.0 feet and 0.0320 ppm at 11.0 feet to 0.0016 ppm at 16.0 feet, just at first intersected groundwater; concentrations of xylenes in EA3 decrease from 0.0024 ppm at 6.0 feet to less than the detection limit at 0.0005 ppm at both 11.0 and 16.0 feet. Soils below 16 feet do not contain measurable hydrocarbons in EA1 and EA3. Because the concentrations of hydrocarbons in the soils above first intersected groundwater decline to low levels and because the concentrations of dissolved hydrocarbons in groundwater are also low, leaching of hydrocarbons from soils characterized by low permeability has apparently been minimal. Leaching may also be minimized by adsorption, biodegradation, volatilization, and abiotic degradation. Slow leaching will itself minimize eventual exposure to soil bound hydrocarbons.

The concentrations of dissolved aromatic hydrocarbons in groundwater are within regulatory limits. The concentrations of xylenes (1.2 ug/L in EA2, and 3 ug/L in EA3) are two orders of magnitude lower than the California Action Levels for drinking water of 620 ug/L. While the concentration of benzene in EA3 of

1.8 ug/L is slightly above the California Action Level of 0.7 ug/L, it is below the U.S. Maximum Contaminant Level (MCL) for drinking water of 5 ug/L.

Because the immediate area surrounding this site is commercial and there are no documented water wells, the number of sensitive receptors of affected groundwater is small. Because the soils apparently have low porosity and low permeability and the hydraulic gradient is nearly flat, off-site movement of contaminants in the groundwater is likely to be slow. The probability of exposure to hydrocarbons dissolved in the groundwater is therefore low.

5. REFERENCES

EA Engineering, Science, and Technology, Inc. (EA). 1988. Report of Investigation, Chevron SS 9-2582, 7240 Dublin Boulevard, Dublin, California. Prepared for Chevron U.S.A. Inc.

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

LOG OF SOIL BORING: EA 1

Coordinates: 121 55' 20" West
37 41' 10" North
Elevation top of casing:333.41
Casing below surface:0.28 ft

CLIENT	STATION #	LOCATION
Chevron USA	SS 9-2582	7240 Dublin Blvd Dublin, California

DRILLING AND SAMPLING METHODS Rotary with 10 inch hollow stem auger and CA modified split tube sampler lined with 2 inch brass sleeves; HEW Drilling Co. C57:384167

				DRILLING START	DRILLING FINISH
WATER LEVEL	10.71	10.39			
TIME	1200	1205		TIME 0930	TIME 1230
DATE	10-20	10-21		DATE 10-17	DATE 10-17
REFERENCE	T of C	T of C			

SURFACE CONDITIONS Landscaped grass

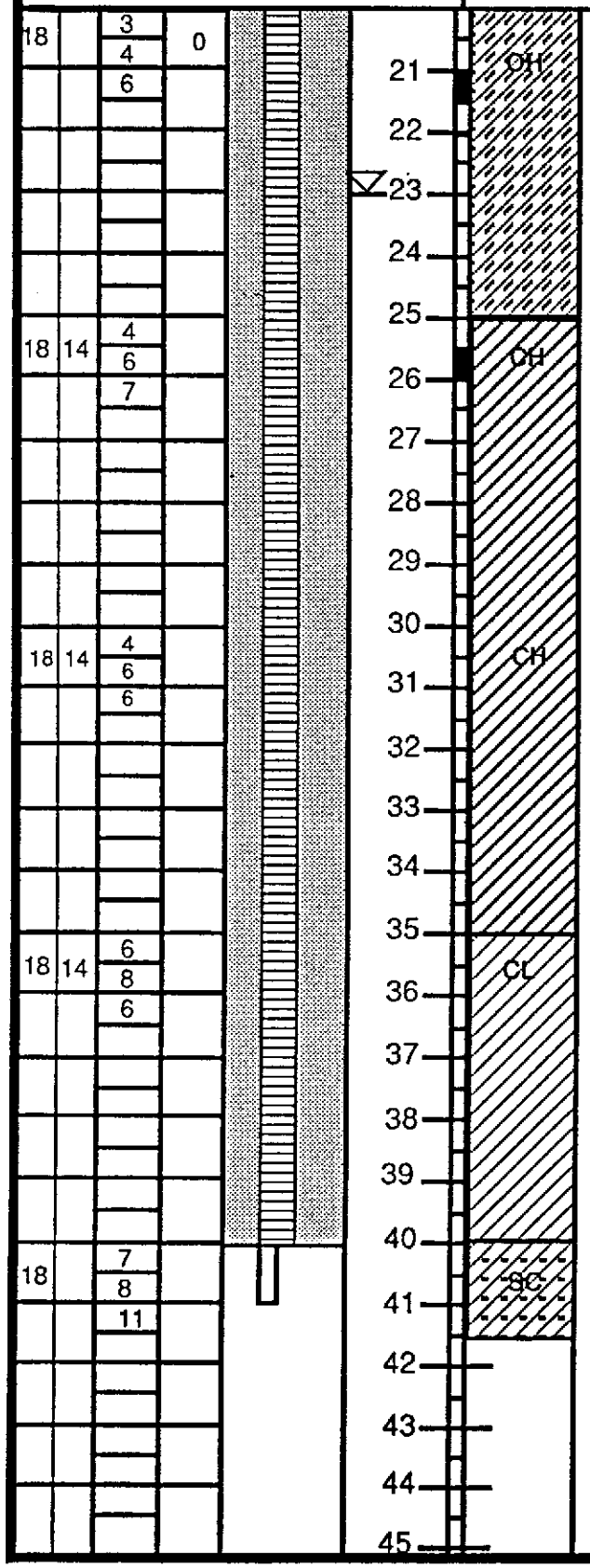
DESCRIPTION by: T. R. Winsor

Inches Driven	Inches Recover	Blows/6" Sampler	OVA Reading	WELL DETAIL	DEPTH (Feet)	GRAPHIC LOG	DESCRIPTION
					0		Dark greenish-black silt and clay-rich soil, with rare coarse sand grains, abundant tree roots and organics.
18	12	3 3 4	0		5	CL	Dark greenish-black silty clay, angular silt sized fragments of quartz in plastic clay; locally goes to gray-green and has the appearance of a fill; aggregated chunks and pieces of clay-rich material; very plastic, damp, no odor.
18	14	3 4 6	0.6		10	CH	Dark olive-gray to greenish-gray clay; soft and lustrous, plastic and pliable, damp but no odor; rare sand/silt grains,still has the aggregated look of a fill.
18	16	3 5 6	0		15	CH	Olive-gray clay, loses the aggregated appearance of a fill , very rare silt grain, damp, no odor, plastic; a consistent clay
					20		

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

CLIENT	STATION #	LOCATION
Chevron USA	SS 9-2582	7240 Dublin Blvd Dublin, California

LOG OF SOIL BORING EA1



Olive-gray clay, very plastic, damp with no odor, rare silt grains and abundant organics.

Gray-green clay, very tough plastic clay with local Fe oxides and organics, rare silt grains and angular lithics.

Tough, sticky pliable clay-dark, angular silt is visible in small %, not sufficient to give clay a gritty feel; still smooth, wet/moist but not yielding a lot of water

Gray-green silty clay to clayey silt/sand, much more silt than above but still very plastic and pliable, silt is evenly distributed rounded silt sized grains of quartz cemented by clay; wet ;silt to 80%, (3 brass tubes).

Very fine-grained sand or silt cemented with clay, sample is still coherent and pliable to a point; ultimately is rather friable; grains are rounded and very well sorted; no angular lithics or sand.

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

LOG OF SOIL BORING: EA 2

Coordinates:121 55'20" West
37 41'10" North

Elevation top of casing:332.59

Casing below surface: 0.26 ft

CLIENT	STATION #	LOCATION
Chevron USA	SS 9-2582	7240 Dublin Blvd Dublin, California

DRILLING AND SAMPLING METHODS: Rotary with 10 inch hollow stem auger and CA split spoon sampler lined with 2 inch brass sleeves; HEW Drilling Co. C57:384167

				DRILLING START	DRILLING FINISH
WATER LEVEL	10.09				
TIME	12:00			TIME 09:30	TIME 12:30
DATE	10-21			DATE 10-20-88	DATE 10-20-88
REFERENCE	T of C				

SURFACE CONDITIONS: Level asphalt SE corner of tank field

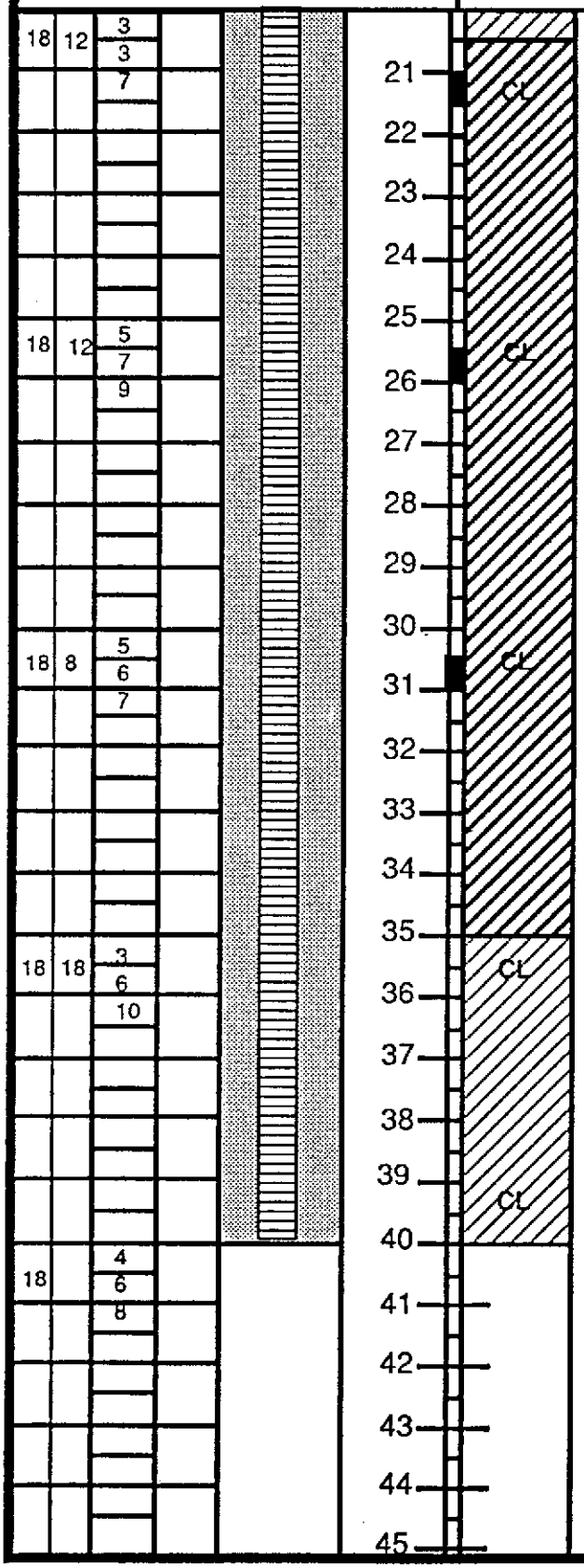
DESCRIPTION by: T.R. Winsor

Inches Driven	Inches Recover	Blows/6" Sampler	OVA Reading	WELL DETAIL	DEPTH (Feet)	GRAPHIC LOG	
					0		Concrete.
					1		Right at the edge of the tank field: - part of the sample is fill; rounded sand and gravel - part is olive-gray clay, moist.
					2		
					3		
					4		
18	15	4 2 4	90		5	CL	Olive-gray fine grained sand and olive-gray clay; some odor.
					6		
					7		
					8		
					9		
18		4 4 7	1		10	CH	Olive-gray clay, very plastic with no obvious grit, faint odor.
					11		
					12		
					13		
					14		
18		4 6 8	0		15		Olive-gray, plastic clay, moist, rare subangular sand grains; local Fe oxide mottling distributed thru an apparent but weak, blocky, jointing; black carbon also distributed throughout; clay is very pliable, almost elastic.
					16		
					17		
					18		
					19		Water at 19 ft., can feel grit in clay on bit, no odor.
					20		

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

CLIENT	STATION #	LOCATION
Chevron USA	SS 9-2582	7240 Dublin Blvd Dublin California

LOG OF SOIL BORING **EA 2**



Gray-green, sticky pliable clay; local Fe oxide mottling and rare subangular sand grains; pebbles of siltstone some black carbon, sample is very moist and sticky but not saturated; upper tube contains a fine-grained sand; quartz and dark lithics give the sand a salt and pepper appearance.

Gray-green clay, sticky and pliable with little grit; locally mottled with Fe oxides, oxides are not heavy but are evenly distributed at intersections of small blocky texture; sample is wet but not saturated.

Darker gray-green clay, stiff but pliable and very sticky, still local Fe oxides but significantly less in amount.

Silty clay, fine angular silt-sized grains in clay similar to above, silt is approximately 20% of sample, dark angular lithics also occur with the quartz.

Silty clay to clayey sand; no sharp breaks, grades smoothly from silty clay to clayey sand to silty clay; sand contains subrounded quartz that is very fine grained, almost silt sized with 5-10% lithic fragments, also has 1-2% rounded quartz grains that are sand sized; clay contains 20-30% silt or very fine grained sand.

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

LOG OF SOIL BORING: EA 3

Coordinates:121 55'20" West
37 41'10"North
Elevation top of casing:333.64
Casing below surface: 0.30 ft

CLIENT	STATION #	LOCATION
Chevron USA	SS 9-2582	7240 Dublin Blvd Dublin, California

DRILLING AND SAMPLING METHODS: Rotary drill with 10 inch hollow stem auger with CA split spoon auger lined with 2 inch brass liners; HEW Drilling Co.C57: 384167

				DRILLING START	DRILLING FINISH
WATER LEVEL					
TIME				TIME 08:30	TIME 15:30
DATE				DATE 10-21-88	DATE 10-21-88
REFERENCE					

SURFACE CONDITIONS: Concrete that slopes to the south

DESCRIPTION by: T. R. Winsor TRW

Inches Driven	Inches Recover	Blows/6" Sampler	OVA Reading	WELL DETAIL	DEPTH (Feet)	GRAPHIC LOG
					0	CL
					1	
					2	
					3	
					4	
					5	
18	10		20		6	SC
					7	CL
					8	
					9	
					10	
18	10	2 4 7			11	
					12	
					13	
					14	
					15	CH
18	10	2 5 7			16	
					17	
					18	
					19	
					20	

Olive-gray clay, plastic, locally with high silt but generally high clay, odor.

Very fine grained sand, salt and pepper appears with quartz and dark lithics, clay approximately 10%, subangular quartz.

Olive-gray clay, silt evenly dispersed, less than 2% in otherwise homogeneous clay, some clay is lighter colored gray giving a variegated appearance, sample is moist with very weak odor, rare pebbles of siltstone

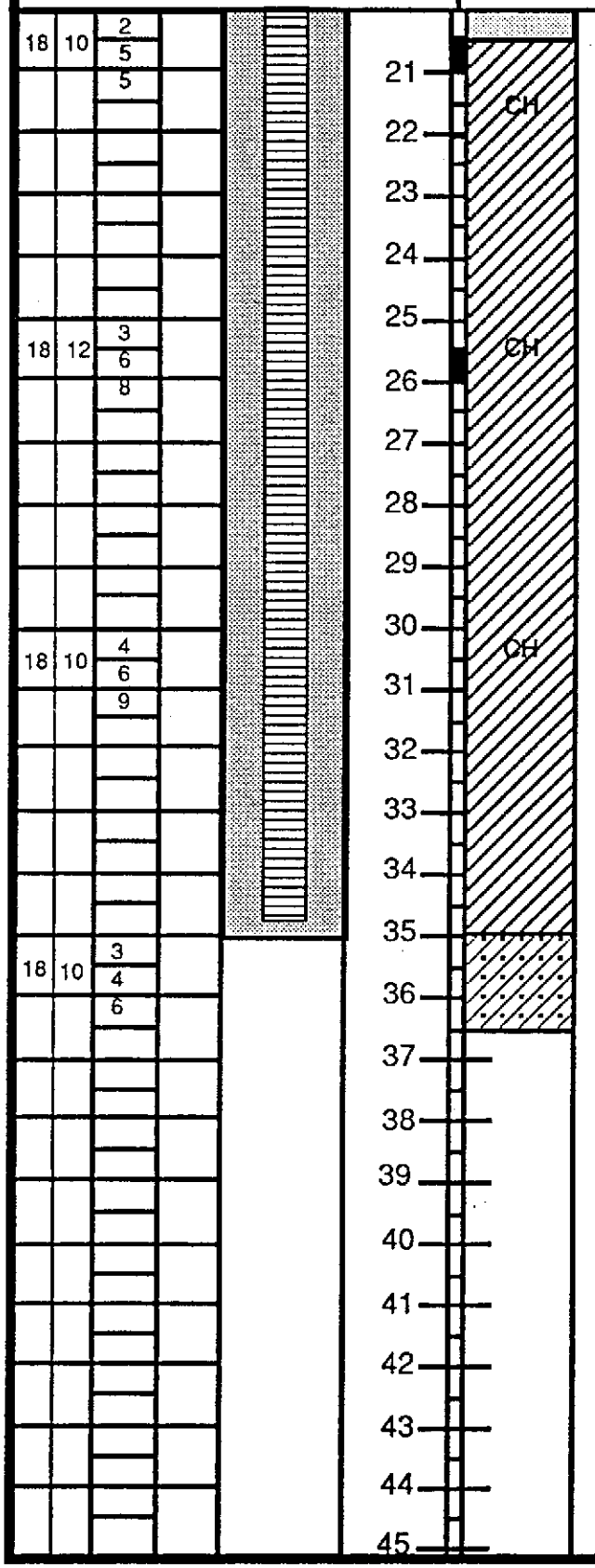
Olive-gray clay, less than 1% silt, rare pebbles or grains of siltstone, similar olive-gray/gray variegation to above, spotty Fe oxides, some organic debris; clay is almost elastic; clay is almost vitreous.

Fine-grained sand and clay is lithic-rich and subangular, still with significant clay content.

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

CLIENT	STATION #	LOCATION
Chevron USA	SS 9-2582	7240 Dublin Blvd Dublin, California

LOG OF SOIL BORING **EA 3**



Sand

Grayish-green clay, clay is very sticky, stiff and almost elastic, not as vitreous as above, does not contain the silt.

Gray-green clay, with local fe oxides, rare pebbles of gray siltstone, clay is very tough, almost elastic, wet.

Gray-green clay, with limited local Fe oxides, less than 2%, rare sand grains, clay is very stiff and tough.

Clayey sand to sandy clay, grades evenly from a sand composed of very fine grained (almost silt sized) grains of quartz and lithics cemented by gray-green clay to a clay with only 30-40% sand; the sand is almost friable, and clay is still very pliable, wet.

pace laboratories, inc
FORMERLY WESCO LABORATORIES

REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California

Report date: October 28, 1988
Client: EA Engineering
41 A Lafayette Circle
Lafayette, CA 94549
Attn.: TR Winsor

Pace job #: EAE 08100

Date sampled: October 17, 1988
Sampled by: TR Winsor

Site: Chevron, Dublin

Date received: October 18, 1988
Submitted by: E. Haran

P.O.: 0254

Lab #	Client ID	Matrix	Analysis
8- 1011	EA1-11.5	soil	
8- 1012	EA1-16.0	soil	TPH-light w BTXE
8- 1013	EA1-21.0	soil	TPH-light w BTXE
8- 1010	EA1-6.5	soil	TPH-light w BTXE

Dear Client,

No problems were encountered with the analysis of your samples. We will store samples for 30 days after the report date. The samples will be returned to the client after the 30-day period, unless other arrangements are made.
If you have any questions, please feel free to call Lisa Petersen, our Client Services Coordinator at 415-883-6100.

C. Santos
Sample Controller

pace laboratories, inc.
FORMERLY WESCO LABORATORIES

REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California

Report Date: 27-Oct-88 Completion Date: 25-Oct-88
PACE JOB #: EAE 08100-L Reported by: D.Gill
Analytical Method: EPA 5030/8015/8020 Analyst: POWELL/ATTIA
MATRIX: SOIL

LAB #: 8-1010 - 8-1011 (composite) CLIENT'S ID: EA1-6.5 ft. EA1-11.5 ft.

COMPOUND	RESULT (ug/kg)	Detection Limit(ug/kg)
Benzene	1.9	0.5
Toluene	9.7	0.5
Ethylbenzene	N.D.	0.5
Xylene	1.8	0.5
Total Petroleum Hydrocarbons (light)	N.D.	50.0

QUALITY CONTROL DATA	Surrogate Spike % Recovery
Fluorobenzene	89 %

LAB #: 8-1012 CLIENT'S ID: EA1-16.0 ft.

COMPOUND	RESULT (ug/kg)	Detection Limit(ug/kg)
Benzene	0.7	0.5
Toluene	1.5	0.5
Ethylbenzene	N.D.	0.5
Xylene	0.8	0.5
Total Petroleum Hydrocarbons (light)	N.D.	50.0

QUALITY CONTROL DATA	Surrogate Spike % Recovery
Fluorobenzene	94 %

LAB #: 8-1013 CLIENT'S ID: EA1-21.0 ft.

COMPOUND	RESULT (ug/kg)	Detection Limit(ug/kg)
Benzene	N.D.	0.5
Toluene	N.D.	0.5
Ethylbenzene	N.D.	0.5
Xylene	N.D.	0.5
Total Petroleum Hydrocarbons (light)	N.D.	50.0

QUALITY CONTROL DATA	Surrogate Spike % Recovery
Fluorobenzene	97 %

N.D.: Not Detected

Analytical Supervisor

pace laboratories, inc.
FORMERLY WESCO LABORATORIES

REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California

QUALITY CONTROL DATA
SAMPLE #: 8-1010, 1011, 8-1013

COMPOUND	Blank ug/l	Spike Duplicate % deviation	Spike % recovery
Benzene----------	N.D.	4	106
Toluene----------	N.D.	2	103
p-Xylene----------	N.D.	2	104
Gasoline----------	N.D.	1	110
QUALITY CONTROL DATA			
Surrogate Spike % Recovery			
Fluorobenzene	100 %	103 %	98 %

QUALITY CONTROL DATA
SAMPLE #: 8-1012

COMPOUND	Blank ug/l	Spike Duplicate % deviation	Spike % recovery
Benzene----------	N.D.	1	89
Toluene----------	N.D.	0	94
p-Xylene----------	N.D.	4	88
Gasoline----------	N.D.	9	93
QUALITY CONTROL DATA			
Surrogate Spike % Recovery			
Fluorobenzene	90 %	92 %	95 %

Analytical Supervisor

0254

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

CHAIN OF CUSTODY - REQUEST FOR ANALYSIS

☑ Lafayette, Ca. 41 Lafayette Cir. (415) 283-7077
☐ Newport Beach, Ca. 5001 Birch Street Suite B (714) 852-0513

RESULTS DUE DATE: 5 day RUSH ☑ yes ☐ no
LABORATORY: Para Labs
LAB. I.D. NUMBER:
LAB. CONTACT:

PROJECT NAME/LOCATION: Chevron SS 9-2582 Dublin, CA
PROJECT NUMBER: 10119.17
PROJ. MGR./EA CONTACT: TR Winsor
PHONE NUMBER: (415) 283-7077
P.O. NUMBER:
SAMPLING TEAM: TR Winsor
CARRIER/WAYBILL NUMBER:
DATE SAMPLES SHIPPED: 18 October

SAMPLE NUMBER	SAMPLE LOCATION	SAMPLE TYPE	COLLECTION DATE/TIME	PRESER-VATIVE	REQUESTED ANALYSES (METHODS): TPH (8015 to DOHS modified) ☑ GAS ☐ DIESEL	VOLATILE AROMATICS ☐ ALL ☐ BTXE (8020/602)	GREASE and OIL (413.2/503E)	VHC (Halogen, 8010/601)	VOC GC/MS (8240/624)					Samples Received in Good Condition
EA1	6.5 ft	Soil	10-17-88 10:00		✓									
EA1	11.5 ft	Soil	10-17-88 10:30		✓									
EA1	16.0 ft	Soil	10-17-88 11:00		✓									
EA1	21.0 ft	Soil	10-17-88 11:15		✓									

EXPECTED NORMAL REPORTING LIMITS:

	BENZENE	TOLUENE	XYLENE	Et BENZENE	TPH				
Water	0.5ppb	0.5ppb	0.5ppb	0.5ppb	0.5ppm				
Soil	0.5ppb	0.5ppb	0.15ppm	0.5ppb	10ppm				

SPECIAL INSTRUCTIONS: Composite EA1 6.5ft + 11.5ft

	NAME	COMPANY	DATE	TIME
Relinquished by:	TR Winsor	EA Engineering	10-18-88	9:00
Received by:	[illegible]	Para Lab	10/18/88	2:15
Relinquished by:				
Received by:				
Relinquished by:				
Received by:				

DISTRIBUTION: White - Accompany Shipment
Last - Shipper (to file)

EAE U8100

pace laboratories, inc.
FORMERLY WESCO LABORATORIES

REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California

Report date: October 28, 1988 Pace job #: EAE 08103 -L
Client: EA Engineering
41 A Lafayette Circle
Lafayette, CA 94549
Attn.: T. Winsor

Date sampled: October 20, 1988 Site: Chevron SS9-2582 (Dublin)
Sampled by: T. Winsor

Date received: October 24, 1988 P.O.: 10119.17
Submitted by: T. Winsor

Lab #	Client ID	Matrix	Analysis
8- 1211	EA2 11.0ft.	soil	TPH-light v BTXE
8- 1212	EA2 16.0ft.	soil	TPH-light v BTXE
8- 1213	EA2 21.0ft.	soil	TPH-light v BTXE
8- 1210	EA2 6.0ft.	soil	TPH-light v BTXE

Dear Client,

No problems were encountered with the analysis of your samples. We will store samples for 30 days after the report date. The samples will be returned to the client after the 30-day period, unless other arrangements are made.
If you have any questions, please feel free to call Lisa Petersen, our Client Services Coordinator at 415-883-6100.

C. Sontag
Sample Controller

pace laboratories, inc.
FORMERLY WESCO LABORATORIES

REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California

Report Date: 27-Oct-88
PACE JOB #: EAE 08103-L
Analytical Method: EPA 5030/8015/8020
MATRIX: SOIL

Completion Date: 25-Oct-88
Reported by: D.Gill
Analyst: ATTIA
Instrument I.D.: VARIAN 3300

LAB #:	8-1210		8-1211	
CLIENT'S ID:	EA2 6.0 ft.		EA2 11.0 ft.	
COMPOUND	RESULT (ug/kg)	Detection Limit (ug/kg)	RESULT (ug/kg)	Detection Limit (ug/kg)
Benzene	20.0	0.5	9.3	0.5
Toluene	1.3	0.5	3.4	0.5
Ethylbenzene	3.7	0.5	1.3	0.5
Xylene	1.8	0.5	N.D.	0.5
Total Petroleum Hydrocarbons (light)	140.0	50.0	110.0	50.0
QUALITY CONTROL DATA				
Surrogate Spike % Recovery				
Fluorobenzene	110%		108%	

LAB #:	8-1212		8-1213	
CLIENT'S ID:	EA2 16 ft.		EA3 21.0 ft.	
COMPOUND	RESULT (ug/kg)	Detection Limit (ug/kg)	RESULT (ug/kg)	Detection Limit (ug/kg)
Benzene	N.D.	0.5	20.0	0.5
Toluene	N.D.	0.5	5.9	0.5
Ethylbenzene	N.D.	0.5	4.5	0.5
Xylene	N.D.	0.5	4.3	0.5
Total Petroleum Hydrocarbons (light)	N.D.	50.0	140.0	50.0
QUALITY CONTROL DATA				
Surrogate Spike % Recovery				
Fluorobenzene	96%		114%	

N.D.: Not Detected

Analytical Supervisor

pace laboratories, inc.
FORMERLY WESCO LABORATORIES

REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California

QUALITY CONTROL DATA
METHOD: EPA 5030/8015/8020 PACE JOB #: EAE 08103-L

COMPOUND	Blank ug/l	Spike Duplicate % deviation	Spike % recovery
Benzene----------	N.D.	4	106
Toluene----------	N.D.	2	103
p-Xylene----------	N.D.	2	104
Gasoline----------	N.D.	1	110

QUALITY CONTROL DATA
Surrogate Spike % Recovery

Fluorobenzene	100 %	103 %	98 %

N.D.: Not Detected

Analytical Supervisor

0255

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

CHAIN OF CUSTODY - REQUEST FOR ANALYSIS

☑ Lafayette, Ca. 41 Lafayette Cir. (415) 283-7077
☐ Newport Beach, Ca. 5001 Birch Street Suite B (714) 852-0513

RESULTS DUE DATE: 2 days RUSH ☑ yes ☐ no
LABORATORY: PACE
LAB. I.D. NUMBER:
LAB. CONTACT:

Chevron 559-2582
PROJECT NAME/LOCATION: Dublin, CA
PROJECT NUMBER: 10119.17
PROJ. MGR./EA CONTACT: TR Winsor
PHONE NUMBER: 283-7077
P.O. NUMBER:
SAMPLING TEAM: TR Winsor
CARRIER/WAYBILL NUMBER: DaCa
DATE SAMPLES SHIPPED: 10-21-88

SAMPLE NUMBER	SAMPLE LOCATION	SAMPLE TYPE	COLLECTION DATE/TIME	PRESER-VATIVE	REQUESTED ANALYSES (METHODS) TPH (8015 to DOHS modified) ☑ GAS ☐ DIESEL	VOLATILE AROMATICS ☐ ALL ☐ BTXE (8020/602)	GREASE and OIL (413.2/503E)	VHC (Halogen, 8010/601)	VOC GC/MS (8240/624)					Samples Received in Good Condition
EA2	6.0 ft	Soil	10-20 9:30		✓									
EA2	11.0 ft	Soil	10-20 9:45		✓									
EA2	16.0 ft	Soil	10-20 10:15		✓									
EA2	21.0 ft	Soil	10-20 10:35		✓									

EXPECTED NORMAL REPORTING LIMITS:

	BENZENE	TOLUENE	XYLENE	Et BENZENE	TPH				
Water	0.5ppb	0.5ppb	0.5ppb	0.5ppb	0.5ppm				
Soil	0.5ppb	0.5ppb	0.15ppm	0.5ppb	10ppm				

SPECIAL INSTRUCTIONS: 8015 w/ BTEX

	NAME	COMPANY	DATE	TIME
Relinquished by:	TR Winsor	EA Engineering	10-21-88	8:20
Received by:	Donald Tokarski	Pace Laboratories	10-24-88	1151
Relinquished by:				
Received by:				
Relinquished by:				
Received by:				

EAE 0015

DISTRIBUTION: White - Accompany Shipment
Last - Shipper (to file)

pace laboratories, inc.
FORMERLY WESCO LABORATORIES

REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California

Report date: October 28, 1988 Pace job #: EAE 08102 -L
Client: EA Engineering
41 A Lafayette Circle
Lafayette, CA 94549
Attn.: T. Winsor

Date sampled: October 21, 1988 Site: Chevron S69-2582 (Dublin)
Sampled by: T. Winsor

Date received: October 24, 1988 P.O.: 10119.17
Submitted by: T. Winsor

Lab #	Client ID	Matrix	Analysis
8- 1203	EA3 11.0ft.	soil	TPH-light v BTXE
8- 1204	EA3 16.0ft.	soil	TPH-light v BTXE
8- 1205	EA3 21.0ft.	soil	TPH-light v BTXE
8- 1206	EA3 26.0ft.	soil	COMPOSITE
8- 1207	EA3 31.0ft.	soil	COMPOSITE
8- 1208	EA3 36.0ft.	soil	COMPOSITE
8- 1202	EA3 6.0ft.	soil	TPH-light v BTXE

Dear Client,

No problems were encountered with the analysis of your samples. We will store samples for 30 days after the report date. The samples will be returned to the client after the 30-day period, unless other arrangements are made.
If you have any questions, please feel free to call Lisa Petersen, our Client Services Coordinator at 415-883-6100.

C. Sontag
Sample Controller

pace laboratories, inc.
FORMERLY WESCO LABORATORIES

REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California

Report Date: 27-Oct-88
PACE JOB #: EAE 08102-L
Analytical Method: EPA 5030/8015/8020
MATRIX: SOIL

Completion Date: 26-Oct-88
Reported by: D.Gill
Analyst: LEWIS/POWELL
Instrument I.D.: VARIAN 3300

LAB #:	8-1202		8-1203	
CLIENT'S ID:	EA3 6.0 ft.		EA3 11.0 ft.	
COMPOUND	RESULT (ug/kg)	Detection Limit (ug/kg)	RESULT (ug/kg)	Detection Limit (ug/kg)
Benzene	5.4	0.5	32.0	0.5
Toluene	1.3	0.5	4.3	0.5
Ethylbenzene	4.9	0.5	6.7	0.5
Xylene	2.4	0.5	N.D.	0.5
Total Petroleum Hydrocarbons (light)	86.0	50.0	270.0	50.0
QUALITY CONTROL DATA		Surrogate Spike % Recovery		
Fluorobenzene	89%		99%	

LAB #:	8-1204		8-1205 - 8-1208	
CLIENT'S ID:	EA3 21.0 ft.		EA3 21, 26, 31, 36 ft (composite)	
COMPOUND	RESULT (ug/kg)	Detection Limit (ug/kg)	RESULT (ug/kg)	Detection Limit (ug/kg)
Benzene	1.6	0.5	N.D.	0.5
Toluene	3.7	0.5	N.D.	0.5
Ethylbenzene	N.D.	0.5	N.D.	0.5
Xylene	N.D.	0.5	N.D.	0.5
Total Petroleum Hydrocarbons (light)	N.D.	50.0	N.D.	50.0
QUALITY CONTROL DATA		Surrogate Spike % Recovery		
Fluorobenzene	99%		102%	

N.D.: Not Detected

Analytical Supervisor

pace laboratories, inc.
FORMERLY WESCO LABORATORIES

REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California

QUALITY CONTROL DATA
METHOD: EPA 5030/8015/8020 PACE JOB #: EAE 08102-L

COMPOUND	Blank ug/l	Spike Duplicate % deviation	Spike % recovery
Benzene----------	N.D.	0	92
Toluene----------	N.D.	0	106
p-Xylene----------	N.D.	0	106
Gasoline----------	N.D.	4	108

QUALITY CONTROL DATA
Surrogate Spike % Recovery

Fluorobenzene	111 %	95 %	95 %

N.D.: Not Detected

Analytical Supervisor

0267

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

CHAIN OF CUSTODY - REQUEST FOR ANALYSIS

☑ Lafayette, Ca. 41 Lafayette Cir. (415) 283-7077
☐ Newport Beach, Ca. 5001 Birch Street Suite B (714) 852-0513

Chevron 559-2582

RESULTS DUE DATE: 27 Oct 88 RUSH ☑ yes ☐ no
LABORATORY: PACE Labs
LAB. I.D. NUMBER:
LAB. CONTACT:

PROJECT NAME/LOCATION: Dublin, CA
PROJECT NUMBER: 10119.17
PROJ. MGR./EA CONTACT: TR Winsor
PHONE NUMBER: (415) 283-7077
P.O. NUMBER:
SAMPLING TEAM: TR Winsor
CARRIER/WAYBILL NUMBER:
DATE SAMPLES SHIPPED: 24 October 1988

SAMPLE NUMBER	SAMPLE LOCATION	SAMPLE TYPE	COLLECTION DATE/TIME	PRESERVATIVE	REQUESTED ANALYSES (METHODS) TPH (8015 to DOHS modified) ☑ GAS ☐ DIESEL	VOLATILE AROMATICS ☐ ALL ☐ BTXE (8020/602)	GREASE and OIL (413.2/503E)	VHC (Halogen, 8010/601)	VOC GC/MS (8240/624)				Samples Received in Good Condition
EA3	6.0 ft	soil	21 Oct 9:05		✓								
EA3	11.0 ft	soil	21 Oct 9:40		✓								
EA3	16.0 ft	soil	21 Oct 10:00		✓								
EA3	21.0 ft	soil	21 Oct 10:20										
EA3	26.0 ft	soil	21 Oct 10:35		✓								
EA3	31.0 ft	soil	21 Oct 11:00										
EA3	36.0 ft	soil	21 Oct 11:30										

EXPECTED NORMAL REPORTING LIMITS:

	BENZENE	TOLUENE	XYLENE	Et BENZENE	TPH				
Water	0.5ppb	0.5ppb	0.5ppb	0.5ppb	0.5ppm				
Soil	0.5ppb	0.5ppb	0.15ppm	0.5ppb	10ppm				

SPECIAL INSTRUCTIONS: all analysis should be an 8015 with BTEX; composite samples from 21.0, 26.0, 31.0, and 36.0

	NAME	COMPANY	DATE	TIME
Relinquished by:	TR Winsor	EA Engineering Science	10-24-88	11:30
Received by:	Donald Edwards	Pace Laboratories	10 24 88	1 15P
Relinquished by:				
Received by:				
Relinquished by:				
Received by:				

EAE ORIG

DISTRIBUTION: White - Accompany Shipment
Last - Shipper (to file)

pace laboratories, inc.
FORMERLY WESCO LABORATORIES

REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California

Report date: October 28, 1988 Pace job #: EAE 08104 -L
Client: EA Engineering
41 A Lafayette Circle
Lafayette, CA 94549
Attn.: T. Winsor

Date sampled: October 24, 1988 Site: Chevron, Dublin, CA
Sampled by: N. Fischer

Date received: October 25, 1988 P.O.: 0269
Submitted by: Don Tokarski

Lab #	Client ID	Matrix	Analysis
8- 1235	EA1	water	TPH light w/ BTXE
8- 1236	EA2	water	TPH light w/ BTXE
8- 1237	EA3	water	TPH light w/ BTXE

Dear Client,

No problems were encountered with the analysis of your samples. We will store samples for 30 days after the report date. The samples will be returned to the client after the 30-day period, unless other arrangements are made.
If you have any questions, please feel free to call Lisa Petersen, our Client Services Coordinator at 415-883-6100.

C. Santos
Sample Controller

pace laboratories, inc.
FORMERLY WESCO LABORATORIES

REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California

Report Date: 27-Oct-88 Completion Date: 31-Aug-88
PACE JOB #: EAE 08104-L Reported by: D.Gill
Analytical Method: EPA 5030/8015/8020 Analyst: ATTIA
MATRIX: WATER

LAB #:	8-1235		8-1236	
CLIENT'S ID:	EA1		EA2	
COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)	RESULT (ug/l)	Detection Limit (ug/l)
Benzene	N.D.	0.5	N.D.	0.5
Toluene	N.D.	0.5	N.D.	0.5
Ethylbenzene	N.D.	0.5	N.D.	0.5
Xylene	N.D.	0.5	1.2	0.5
Total Petroleum Hydrocarbons (light)	N.D.	50.0	N.D.	50.0
QUALITY CONTROL DATA			Surrogate Spike % Recovery	
Fluorobenzene	96%		98%	

LAB #:	8-1237	
CLIENT'S ID:	EA3	
COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Benzene	1.8	0.5
Toluene	N.D.	0.5
Ethylbenzene	N.D.	0.5
Xylene	3.0	0.5
Total Petroleum Hydrocarbons (light)	N.D.	50.0
QUALITY CONTROL DATA		Surrogate Spike % Recovery
Fluorobenzene	95%	

N.D.: Not Detected

Analytical Supervisor

pace laboratories, inc.
FORMERLY WESCO LABORATORIES

REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California

QUALITY CONTROL DATA
METHOD: EPA 5030/8015/8020 PACE JOB #: EAE 08104-L

COMPOUND	Blank ug/l	Spike Duplicate % deviation	Spike % recovery
Benzene----------	N.D.	0	92
Toluene----------	N.D.	0	106
p-Xylene----------	N.D.	0	106
Gasoline----------	N.D.	4	108
QUALITY CONTROL DATA			
Surrogate Spike % Recovery			
Fluorobenzene	111 %	95 %	95 %

N.D.: Not Detected

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CHAIN OF CUSTODY - REQUEST FOR ANALYSIS

☑ Lafayette, Ca. 41 Lafayette Cir. (415) 283-7077
☐ Newport Beach, Ca. 5001 Birch Street Suite B (714) 852-0513

RESULTS DUE DATE: 27 Oct 88 RUSH ☑ yes ☐ no
LABORATORY: PACE Labs
LAB. I.D. NUMBER:
LAB. CONTACT:

PROJECT NAME/LOCATION: Chevron SS9-2582 Dublin, California
PROJECT NUMBER: 10119.17
PROJ. MGR/EA CONTACT: TR Winsor
PHONE NUMBER: (415) 283-7077
P.O. NUMBER:
SAMPLING TEAM: N. Fischer
CARRIER/WAYBILL NUMBER:
DATE SAMPLES SHIPPED: 25 October 1988

SAMPLE NUMBER	SAMPLE LOCATION	SAMPLE TYPE	COLLECTION DATE/TIME	PRESERVATIVE	REQUESTED ANALYSES (METHODS) TPH (8015 to DOHS modified) ☑ GAS ☐ DIESEL	VOLATILE AROMATICS ☐ ALL ☐ BTXE (8020/602)	GREASE and OIL (413.2/503E)	VHC (Halogen, 8010/601)	VOC GC/MS (8240/624)					Samples Received in Good Condition
EA1		water	10-24 16:10	H_2SO_4	✓									
EA2		water	10-24 14:25	H_2SO_4	✓									
EA3		water	10-24 13:00	H_2SO_4	✓									

EXPECTED NORMAL REPORTING LIMITS:

	BENZENE	TOLUENE	XYLENE	Et BENZENE	TPH
Water	0.5ppb	0.5ppb	0.5ppb	0.5ppb	0.5ppm
Soil	0.5ppb	0.5ppb	0.15ppm	0.5ppb	10ppm

SPECIAL INSTRUCTIONS: all samples 8015 w/ BTEX

	NAME	COMPANY	DATE	TIME
Relinquished by:	TR Winsor	EA Engineering Science	10-25-88	10:30
Received by:	Arnold Yokouchi	Pace Laboratories	10-25-88	2:50
Relinquished by:				
Received by:				
Relinquished by:				
Received by:	Ethel Thrower	Pace Laboratories	10/25/88	5:05

DISTRIBUTION: White - Accompany Shipment
Last - Shipper (to file)

4" = 0.65 gallons
2" = 0.16 gallons

FIELD RECORD OF WELL GAUGING, PURGING AND SAMPLING 9-2582

JOB # 10119.17

Site: 7420 DUBLIN RD. DUBLIN, CA

Well No: EA3 Gauge Date: 10/24/ Time: 11:30 A.M.

Weather: FOGGY, COLD 55°F

Well Condition: NEW

Well Diameter (inches): 4"

Odor (describe): NONE

Sounding Method: _____ Measurement Reference: _____

Stick up/down (ft): _____

(1) Well Depth (ft): 33.94 Purge Date: 10/24 Time: 12[17] PM

(2) Depth to Liquid (ft): 11.03 TO H_2O Purge Method: PVC BAILER

(3) Depth to Water (ft): 11.03 Purge Rate (gpm): ~1 GPM

(4) Liquid Depth [(1)-(2)]: 22.91 Purge Time (min): 43 MIN

(5) Liquid Volume [(4)xF] (gal): 14.66 Purge Volume (gal): 44

Did Well Pump Dry? Describe: NO, IT DID NOT PUMP DRY.

WELL H_2O WAS MURKY WITH SILK - GREY TAN COLOR.

Samplers: Fischer

Sampling Date: 10/24/88 Time: 1[00] PM

Sample Type: H_2O Split? _____ With Whom: _____

Comments and Observations: _____

PH —

Conductivity —350 350 400

TEMP — 22°C 22°C 22°

4" = 0.65 gallons
2" = 0.16 gallons

FIELD RECORD OF WELL GAUGING, PURGING AND SAMPLING

Site: CHEVRON AT DUBLIN RD. & VILLAGE PKWY. DUBLIN

Well No: EA 1 Gauge Date: 10/24 Time: 12^00 P.M.

Weather: FAIR - FOGGY EARLY BREAKING TO SUN. 65°F

Well Condition: NEW

Well Diameter (inches): 4"

Odor (describe):

Sounding Method: _____ Measurement Reference: _____

Stick up/down (ft):

(1) Well Depth (ft): 38.09 Purge Date: 10/24/88 Time: ~~AM~~ P.M.

(2) Depth to Liquid (ft): TO H2O 10.64 Purge Method: ~~PVC~~ PVC BAILER

(3) Depth to Water (ft): 10.64 Purge Rate (gpm): 1. gpm

(4) Liquid Depth [(1)-(2)]: 27.45 Purge Time (min): _____

(5) Liquid Volume [(4)xF] (gal): 17.8 Purge Volume (gal): 53.5

Did Well Pump Dry? Describe: NO. RECHARGED QUICKLY. H2O SILTY.

Samplers: Fischer

Sampling Date: 10/24/88 Time: 4^10 p.m.

Sample Type: H2O Split? NO With Whom: _____

Comments and Observations:

PH —

Conductivity — 400 300 300

TEMP — 18.5C° 18.0 18.0

4" = 0.65 gallon
2" = 0.16 gallon

FIELD RECORD OF WELL GAUGING, PURGING AND SAMPLING

JOB # 10119.17

Site: 7420 DUBLIN ROAD. DUBLIN, CA

Well No: EA 7 Gauge Date: 10/24/88 Time: 11:30 AM

Weather: FOGGY. 55° F

Well Condition: NEW

Well Diameter (inches): 4"

Odor (describe): H_2S

Sounding Method: _____ Measurement Reference: _____

Stick up/down (ft): _____

(1) Well Depth (ft): 37.98 Purge Date: 10/24/88 Time: 1:25 PM

(2) Depth to Liquid (ft): H_2O 9.70 Purge Method: PVC BAILER

(3) Depth to Water (ft): 9.70 Purge Rate (gpm): 1 gpm

(4) Liquid Depth [(1)-(2)]: 30.28 Purge Time (min): 60

(5) Liquid Volume [(4)xF] (gal): 19.68 Purge Volume (gal): 59

Did Well Pump Dry? Describe: NO. H_2O is murky & silty. H_2O recharged quickly

Samplers: FISCHER

Sampling Date: 10/24/88 Time: 2:25 P.M.

Sample Type: H_2O Split? NO With Whom: _____

Comments and Observations: _____

	1	2	3
pH			
Conductivity	400	400	400
*TEMP	21°C	21°	20