Chevron U.S.A. Inc.
2 Annabel Lane, Suite 200, San Ramon, CA 94583 • Phone (415) 838-5000

Marketing Operations
D. Moller
Division Manager, Operations
S. L. Patterson
Area Manager, Operations
C. G. Trimbach
Manager, Engineering

Mr. Jay Maille
City of Hayward Fire Department
22300 Foothill Blvd.
Hayward, CA 94541

30 June 1988

Re: Chevron Facility 90260
21995 Foothill Boulevard
Hayward, CA
WA Job #4-310

Dear Mr. Maille:

Enclosed is the report of the subsurface investigation for the above-referenced site. As indicated in this report, detectable levels of hydrocarbons are present in soil and ground water. The monitoring wells were resampled 15 June 1988, and the report will be submitted to you when available.

Also enclosed is a workplan for a Phase II investigation at this site. Additional monitoring wells will be installed to delineate the extent of hydrocarbon contamination. The additional work will begin upon your approval of the work plan or within 30 days.

If you have any questions or comments, please contact Kay Huffman or Gordon Davitt at (415) 838-5225.

Sincerely,
D. Moller

By _____
K.G. Huffman

KH/wa

Encls.

WEISS ASSOCIATES
Consulting in Geology & Geohydrology
2938 McClure Street, Oakland, CA 94609
415-465-1100

# TRANSMITTAL LETTER

FROM: Sharon Halper

DATE: 24 August 1988

TO: Hugh Murphy
City of Hayward Fire Department
22300 Foothill Blvd.
Hayward, CA. 94541

VIA:
- _____ First Class Mail
- _____ Fax _____ pages
- _____ UPS (Surface)
- X Federal Express
- _____ Courier

SUBJECT: Chevron Service Station No. 90260
21995 Foothill Blvd.
Hayward, CA.

JOB: 4-310-02

AS:
- ✓ We discussed on the telephone ~~on~~ today
- _____ You requested _____
- _____ We believe you may be interested
- _____ Is required

WE ARE SENDING:
- ✓ Enclosed
- _____ Under Separate Cover Via _____

Phase I report, Phase II workplan and letter of recommendation.

FOR:
- _____ Your information
- _____ Your use
- ✓ Your review & comments
- _____ Return to you

PLEASE:
- ✓ Keep this material
- _____ Return by _____
- _____ Acknowledge receipt

MESSAGE: Mr. Chen's telephone no. is 881-0400. Please call me if you have any questions.

WEISS ASSOCIATES Consulting in Geology & Geohydrology
2938 McClure Street, Oakland, CA 94609 415-465-1100

March 31, 1988

Kay Huffman
Chevron USA
2 Annabel Lane, Suite 200
San Ramon CA 94583

PROJECT COPY

Re: Chevron SS #90260
21995 Foothill Boulevard
Hayward, California
WA Job #4-310

Dear Ms. Huffman:

This letter presents the results of a subsurface investigation performed at Chevron Service Station #90260, located at 21995 Foothill Boulevard, Hayward, California (Figure 1). This investigation was performed as a follow-up to a soil vapor study done by EA Engineering Science and Technology (EA). **The scope of work for this phase of the project was to:**

1) Drill six soil borings, two to a depth of about 10 ft, and four to a depth of about 25 ft, and collect soil samples from each boring at five ft intervals for subsurface lithologic and hydrogeologic description and possible chemical analysis;
2) Analyze the soil samples in the field with a portable organic vapor analyzer (OVA) and submit the samples with the highest OVA measurements for chemical analysis;
3) Analyze the selected soil samples for total fuel hydrocarbons (TFHC) by modified EPA Method 8015, gas chromatography/flame ionization detection (GC/FID);
4) Complete the four deeper borings as 4-inch diameter ground water monitoring wells;
5) Develop each well and collect ground water samples for TFHC analysis by modified EPA Method 8015 GC/FID, and for aromatics by EPA Method 602.
6) Survey the top-of-casing elevations of the four wells using an established benchmark, and measure ground water levels; and
7) Report results, including tabulations of data and isoconcentrations of dissolved hydrocarbons.

This report briefly describes each task and the results of the investigation.

## BACKGROUND

EA of Lafayette, California, performed a **Soil Vapor Contaminant Assessment (SVCA)** at the site in December 1987. They collected and analyzed a total of 21 vapor samples from 13 different sampling points. The SVCA indicated the presence of hydrocarbons in the

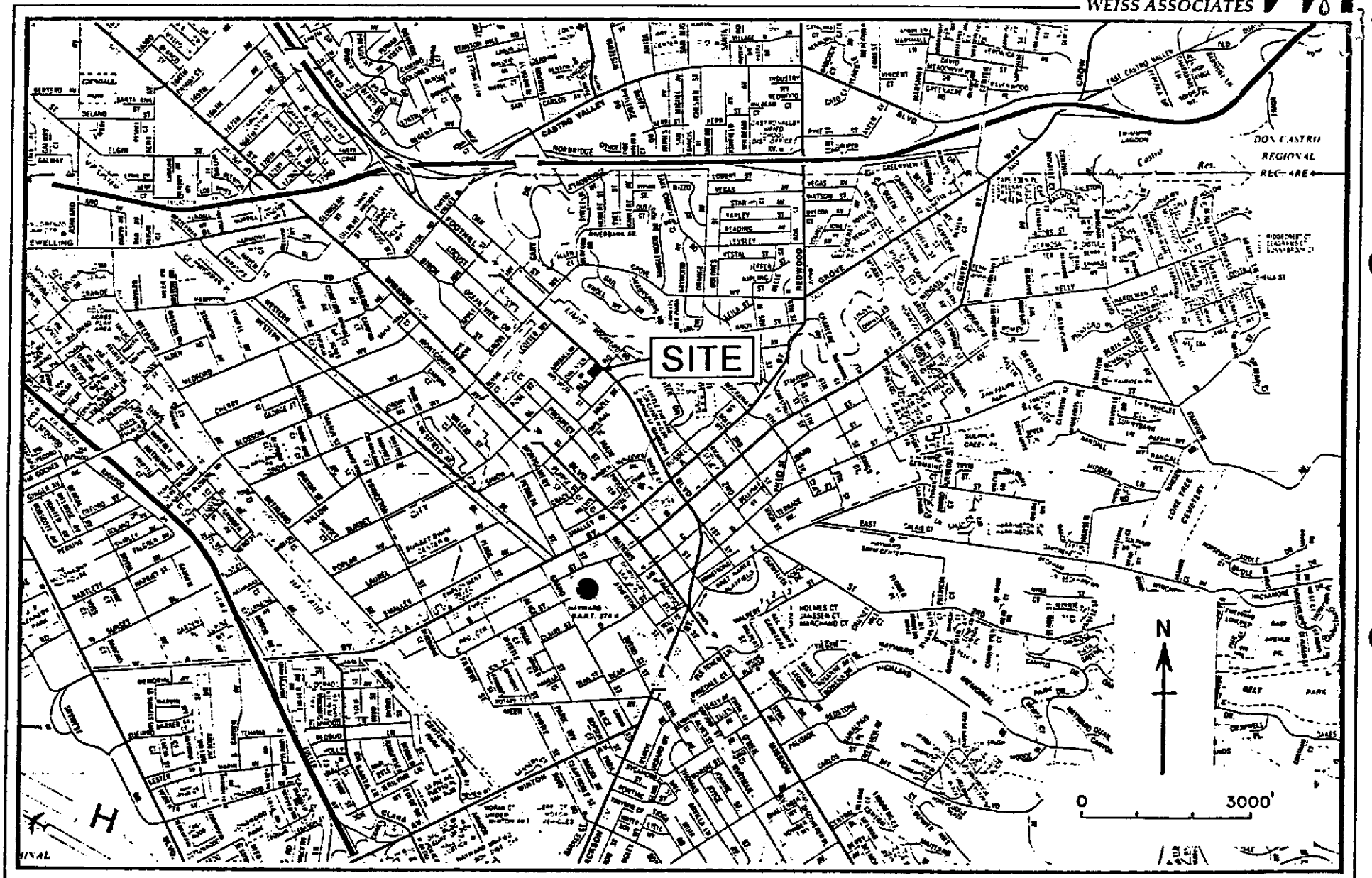



Figure 1. Site Location Map - Chevron Service Station #90260, Hayward, California

subsurface. The highest concentrations of hydrocarbons were found in the vicinity of the underground storage tanks (Figure 2).

Three monitoring wells were previously installed in the vicinity of the buried tanks (Figure 2). Chevron retained Weiss Associates (WA) to further investigate subsurface conditions and determine if hydrocarbons have impacted ground water.

## SOIL BORING AND WELL INSTALLATION ACTIVITIES

Under the supervision of Todd Daniels, WA geologist, Exploration Geoservices of San Jose, California drilled six successful and two aborted soil borings (B-4 through B-11) on 20 through 22 January 1988, using a Mobile B-56 hollow-stem auger drill rig.

Subsurface lithology, hydrogeologic characteristics, and OVA measurements for all borings are shown on the boring logs included as Attachment A, as well as construction details for all borings completed as monitoring wells. The locations of the borings and monitoring wells are shown on Figure 2. Borings B-6 and B-8 were discontinued at 6.5 and 6 ft respectively because of buried obstacles. The purpose of the shallow borings was to check for surface spills near the suspected source, while the deeper borings served the same function in addition to providing ground water monitoring after well installation. In the four deepest borings, a very stiff silty clay was encountered at about 20 ft below grade. Continuous coring using consecutively decreasing diameter drive samplers was performed to determine, as required by local and state guidelines, that the clay was a confining layer at least 5 ft thick. This method of sampling was employed instead of drilling because it is less intrusive, minimizes clay smearing on the borehole walls, and leaves a smaller diameter hole to grout.

Ground water was encountered between 11 and 12 ft below grade in the four deeper borings and they were completed as ground water monitoring wells as follows:

| Boring | | Monitoring Well |
|---|---|---|
| B-4 | → | MW-4 |
| B-5 | → | MW-5 |
| B-7 | → | MW-6 |
| B-11 | → | MW-7. |

The wells were screened in low to high permeability sediments ranging from silty clays to sand; the screens begin 16 to 17 ft below grade and end 17 to 22 ft below grade.

The top-of-casing elevations were surveyed to a USCGS benchmark during this investigation and are tabulated in Table 1. Ground water levels were measured on 8 March 1988 and are shown in Table 1 and on Figure 2. The ground water elevations, from wells screened in similar intervals, do not clearly indicate a ground water gradient or flow direction. The three pre-existing monitoring wells are located within the pit containing the buried tanks and are of

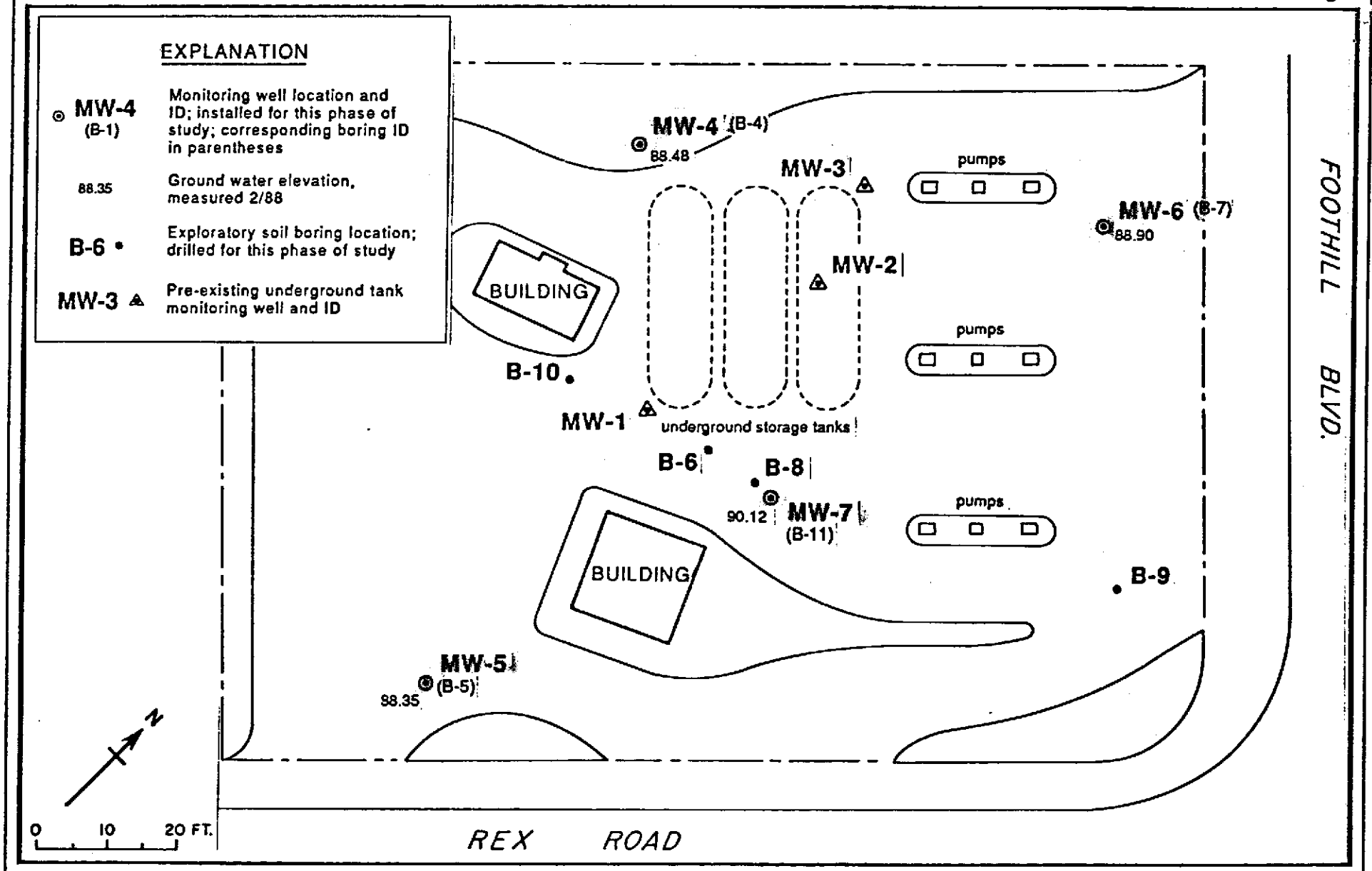



Figure 2. Monitoring Well and Soil Boring Locations - Chevron Service Station #90260, Hayward, California

unknown construction. Two of these, MW-1 and MW-3 were locked and therefore inaccessible to WA for measurement. The fluid level in the third well, MW-2, was markedly higher than levels from the newly installed monitoring wells. It is possible that the fluid in the tank pit monitored by MW-2 may be isolated from the ground water outside the tank pit and this ground water elevation is therefore not a representative ground water level.

TABLE 1 - Monitoring Well Elevations as of 8 March 1988

| Well # | Ground Elev. (USCGS datum, ft) | Top of Casing Elev. (ft) | Depth to Ground Water (ft) | Ground Water Elev. (USCGS datum, ft) |
|---|---|---|---|---|
| MW-2 | ? | ? | 3.13 | ? |
| MW-4 | 101.50 | 100.75 | 12.27 | 88.48 |
| MW-5 | 100.39 | 99.97 | 11.62 | 88.35 |
| MW-6 | 101.94 | 101.43 | 12.53 | 88.90 |
| MW-7 | 101.45 | 101.92 | 11.80 | 90.12 |

Monitoring wells MW-4 and MW-5 were developed on 5 February, and wells MW-6 and MW-7 on 11 February, 1988 by Mike Edmonson and Todd Daniels, WA geologists, using a surge block and air-lift evacuation. Ninety gallons were evacuated from well MW-4, 23 gallons from well MW-5, 50 gallons from MW-6, and 40 gallons from MW-7. The estimated flow rates for the monitoring wells are 1.5 gpm for MW-4, 1.2 gpm for MW-5, 1.0 gpm for MW-6, and 0.5 gpm for MW-7. The evacuated ground water was stored in covered plastic barrels.

## ANALYTIC RESULTS

The results of both soil and ground water analyses are shown in Table 2. The chain-of-custody forms and the laboratory analytic reports are included as Attachments B and C, respectively. Sampling, analytic techniques, and results are discussed below.

Soil samples were collected every 5 ft for possible chemical analysis. Soil samples were surveyed in the field using an OVA to determine the presence or absence of volatile hydrocarbons in the soil. The OVA measurements, in parts per million by volume (ppmv), are shown on the boring logs. The OVA is used only for qualitative, not quantitative, assessment because the correlation of the volume measurement of this instrument and the weight

TABLE 2 - Analytic Results, Chevron SS #90260, Hayward, California

| Sample ID | Sample Depth (ft) | Sample Type | TFHC | Benzene | Ethylbenzene | Toluene | Xylenes |
|---|---|---|---|---|---|---|---|
| | | | <---------- ppm ----------> | | | | |
| B-4 (MW-4) | 10 | soil | <10 | na | na | na | na |
| | 16 | soil | 5,600 | na | na | na | na |
| | 21 | soil | 50 | na | na | na | na |
| | 25 | soil | <10 | na | na | na | na |
| B-5 (MW-5) | 6 | soil | <10 | na | na | na | na |
| | 10 | soil | 820 | na | na | na | na |
| | 19.5 | soil | 850 | na | na | na | na |
| | 24 | soil | <10 | na | na | na | na |
| B-6 | 4.5 | soil | 740 | na | na | na | na |
| B-7 (MW-6) | 5.3 | soil | <10 | na | na | na | na |
| | 9.5 | soil | 28 | na | na | na | na |
| | 14.7 | soil | 670 | na | na | na | na |
| | 19 | soil | 150 | na | na | na | na |
| B-8 | 5 | soil | 12 | na | na | na | na |
| B-9 | 7.7 | soil | <10 | na | na | na | na |
| | 9.5 | soil | 140 | na | na | na | na |
| B-10 | 4 | soil | <10 | na | na | na | na |
| | 10 | soil | 320 | na | na | na | na |
| B-11 (MW-7) | 5 | soil | 930 | na | na | na | na |
| | 9.7 | soil | <10 | na | na | na | na |
| | 15.5 | soil | 9,900 | na | na | na | na |
| | 22.5 | soil | <10 | na | na | na | na |
| MW-4 | | water | 88 | 24 | 1.7 | 19 | 10 |
| MW-5 | | water | 80 | 16 | 2.6 | 15 | 16 |
| MW-6 | | water | 53 | 1.5 | 2.1 | 4.4 | 14 |
| MW-7 | | water | 81 | 34 | 2.4 | 36 | 16 |

measurement of an analytical laboratory is not well defined and the field measurement conditions are not as well controlled.

All samples were taken under chain of custody to Brown and Caldwell Analytical Laboratories of Emeryville, California (B&C), where samples selected on the basis of OVA measurements were analyzed. Figure 3 shows the relationship between soil TFHC and distance from the tank pit. Although no definitive pattern emerges, the figure does show that within 30 ft of the center of the tank pit, major occurrences of detectable TFHC in soil are primarily from depths of 5 to 15 ft, and detectable TFHC is encountered primarily between 10 and 20 ft depths thirty to seventy-five ft from the tanks. The shallow occurrence of TFHC in the *unsaturated* zone near the tanks suggests that there may be a shallow source in the tank vicinity. The TFHC occurrences in the *saturated* zone 30 to 75 ft from the tanks suggest that hydrocarbons there occur within both high an low permeability materials .

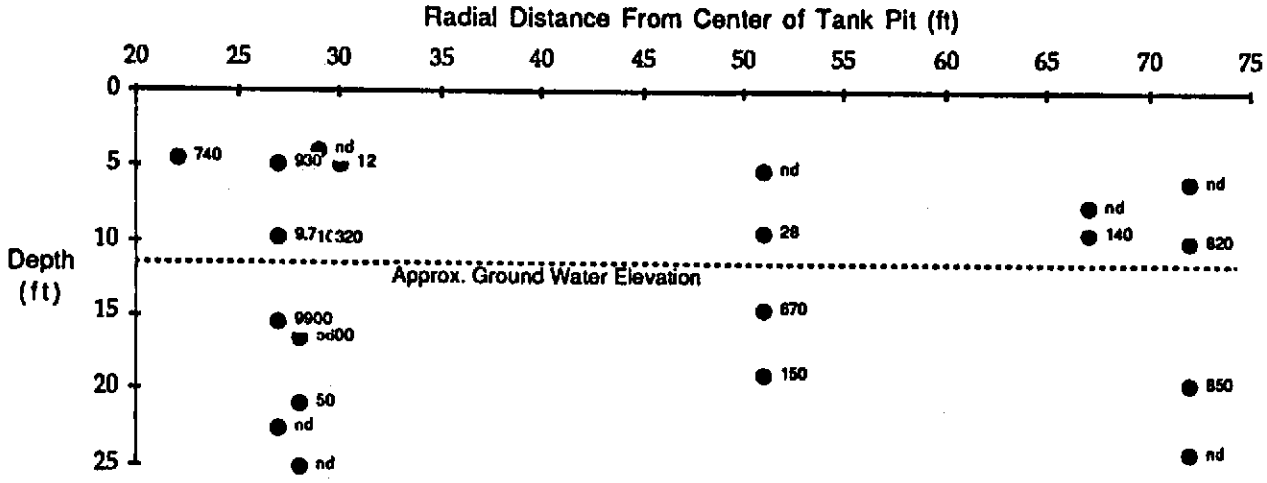
On 5 February 1988 over three wellbore volumes of ground water were evacuated from MW-4 and MW-5 monitoring wells and ground water samples were collected for TFHC and BTX analysis. Samples were similarly collected from wells MW-6 and MW-7 on 12 February 1988. TFHC were analyzed by GC/FID, and BTX were analyzed by EPA Method 602. Ground water from all four newly installed wells contains benzene, ethylbenzene, toluene, and xylene isomers at concentrations ranging from 1.7 ppm to 36 ppm. Ground water from MW-4, MW-5 and MW-7 contains about 40% more TFHC than ground water from MW-6. In addition, ground water from these three wells generally contains over ten times more benzene and over 4 times more toluene than ground water from MW-6, while having comparable concentrations of xylenes and ethylbenzene.

## CONCLUSIONS

The ground water elevations shown in Figure 2 do not clearly indicate a ground water gradient. A high fluid level in MW-2 within the tank pit suggests possible isolation of ground fluids at MW-2 from ground water outside the tank pit. The highest ground water elevation outside the tank pit was measured in well MW-7 near the center of the site. The other three lower water levels occur north, west, and south, suggesting a slight mounding of ground water near MW-7. Similarly, no clear direction of migration is indicated by the distribution of TFHCs in the soil and ground water samples.

Figure 3 indicates that within 30 ft of the center of the tank pit, detectable TFHC in soil primarily occurs from depths of 5 to 15 ft with several high values occurring between 5 to 10 feet in the unsaturated zone. Thirty to 75 ft from the underground storage tanks, detectable TFHC is encountered primarily in the saturated zone, between 10 and 20 ft depths. The shallow

## Figure 3 - TFHC Soil Sample Analytic Results
## Depth vs Distance From Center of Tank Pit



occurrence of TFHC in the unsaturated zone near the tanks suggests that there may be a shallow source in the tank vicinity. However, the relatively even distribution of TFHC and aromatics at greater distances from the tanks fail to indicate a preferred direction of migration, and therefore provides no further clues to a source location or locations. The extent of the hydrocarbons in soil and ground water is not presently known.

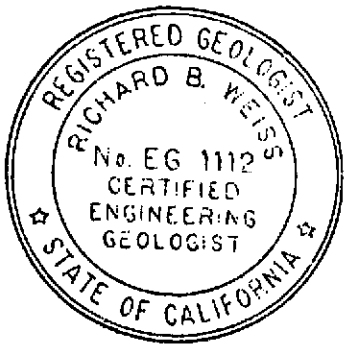
We appreciate the opportunity to provide hydrogeologic consulting to Chevron and trust this report meets your needs. If you have any questions, please call.

Sincerely
Weiss Associates

Dan Bodner
Project Hydrogeologist

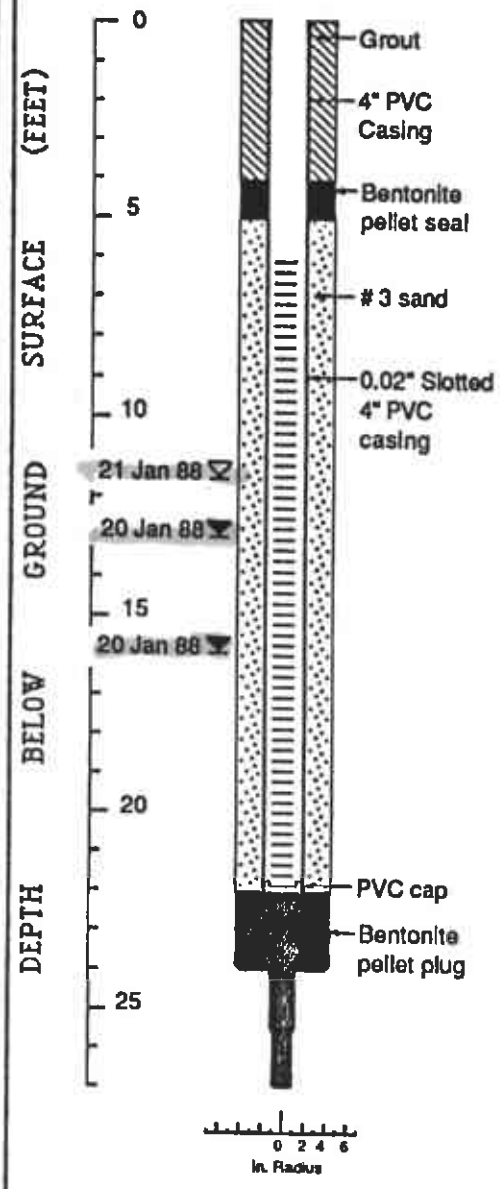
Sherwood Lovejoy, Jr.
Project Hydrogeologist

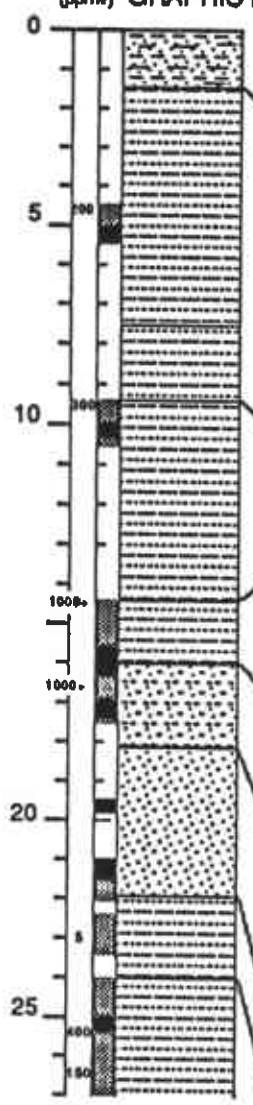
Richard B. Weiss
Principal Hydrogeologist




Attachments:
A - Boring Logs
B - Chain of Custody
C - Analytic Reports

# WELL MW-4




DESCRIPTION

Sandy CLAY (CL); orange-brown; medium stiff; damp; 30% fine to coarse sand; 20% silt; low est K; minor roots [fill]

Silty CLAY (CL); black, mottled green, gray; medium stiff; damp; 30% silt; low est K; minor wood fragments; slight hydrocarbon odor

Decreased stiffness to soft; increased moisture to moist at 4.5 ft
(Note: moisture could be from landscape)

Becomes yellow-brown, mottled gray, black; increased stiffness at 7.5 ft (driller)

Silty CLAY (CL); olive-brown, mottled orange-brown; stiff to very stiff; dry to damp; 30-40% silt; low est K; moderate to strong hydrocarbon odor

Contact (driller)

Clayey SILT (ML); olive-brown, mottled blue-gray-orange; medium stiff; damp to moist; 20% clay; low to mod est K; very strong hydrocarbon odor; free product filling voids; interbedded fine sand layer

Silty SAND (SM); olive-brown, mottled blue-gray; medium dense; moist to wet; 20% silt; 80% very fine sand; mod to high est K; very strong hydrocarbon odor

Contact (driller)

SAND (SP); olive-brown, blue-gray; medium dense; 90% fine to medium sand; 5% coarse sand; <5% fines; very high est K; moderate hydrocarbon odor

Interbedded silty CLAY layer; blue-green; very strong hydrocarbon odor from 21 to 21.4 ft

Silty CLAY (CL); orange-brown, mottled blue-gray; very stiff; 20% silt; low est K

Silty CLAY/Clayey SILT (CL/ML); blue-green; very stiff; 30-50% silt; low est K; moderate to strong hydrocarbon odor

EXPLANATION

- Water level during drilling (date)
- Water Level (date)
- Contact (dotted where approx.)
- Uncertain Contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Grab sample

K = Estimated Permeability (hydraulic conductivity)

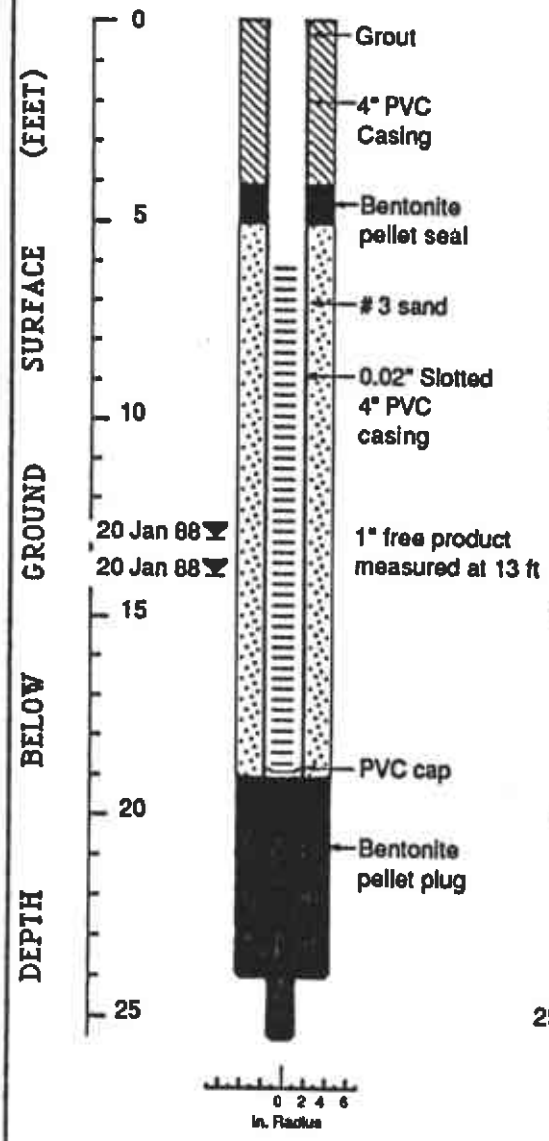
Logged by: Todd Daniels
Supervisor: Richard Weiss; EG 1112
Drilling Company: Exploration Geoservices, Inc.
Driller: Dave Yeager/Brian Swaitz
Drilling Method: Hollow stem auger
Dates Drilled: 1-20-88
Well Head Completion: Locking stovepipe & Christy box
Type of sampler: Split barrel

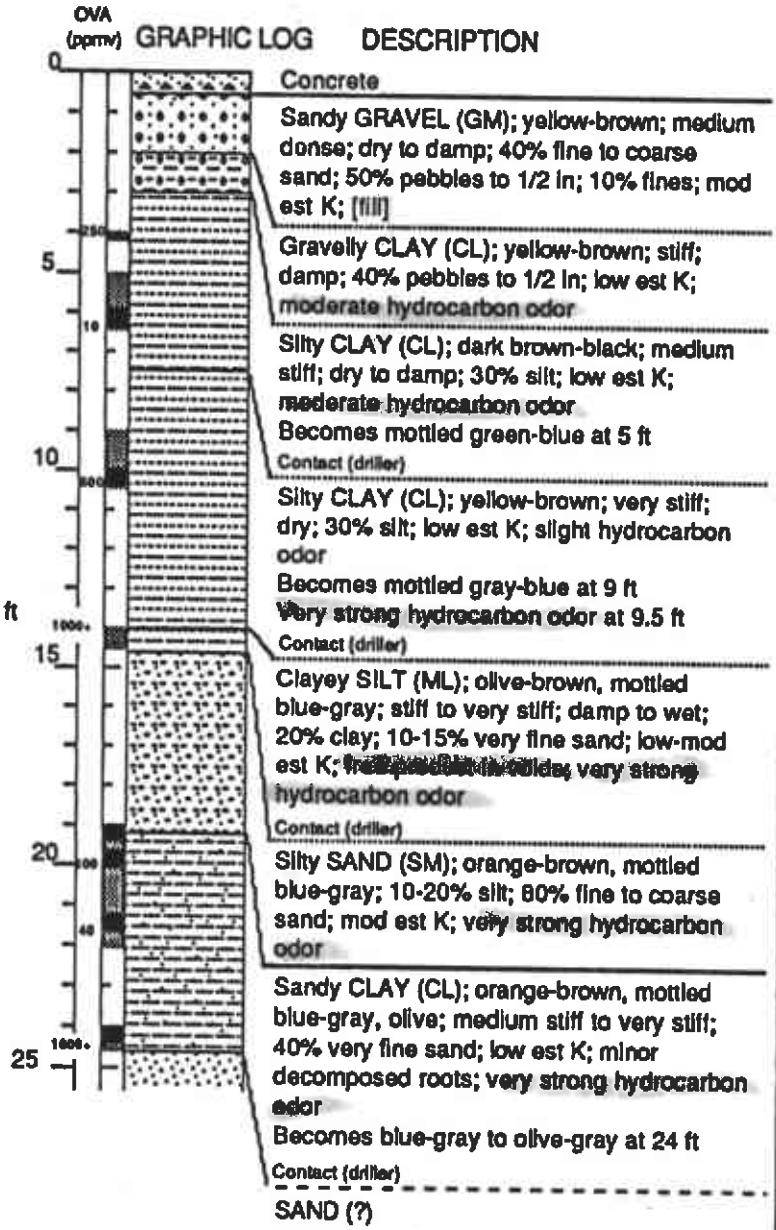
Boring Log and Well Construction Details - Well MW-4

Chevron Facility # 0260
Hayward, CA

WEISS ASSOCIATES

# WELL MW-5




## EXPLANATION

- Water level during drilling (date)
- Water Level (date)
- Contact (dotted where approx.)
- Uncertain Contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Grab sample

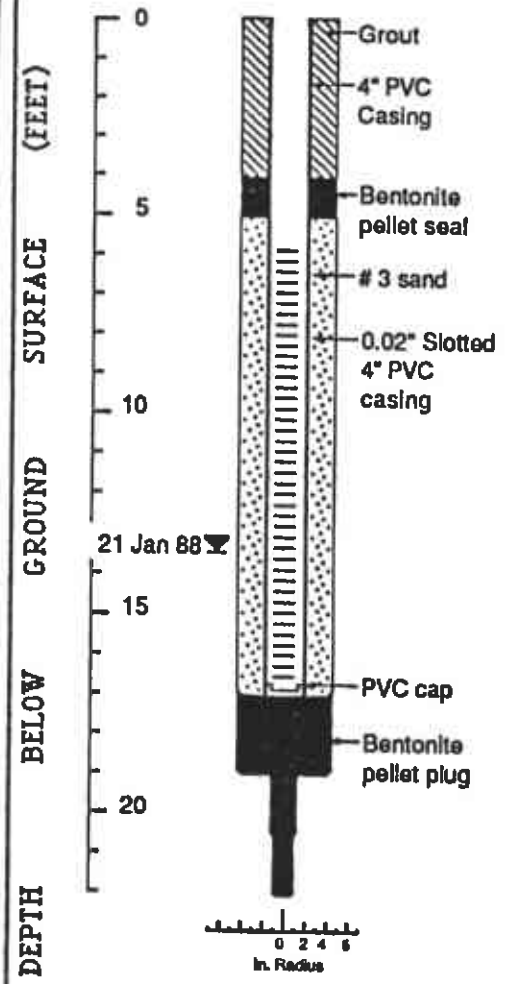
K = Estimated Permeability (hydraulic conductivity)

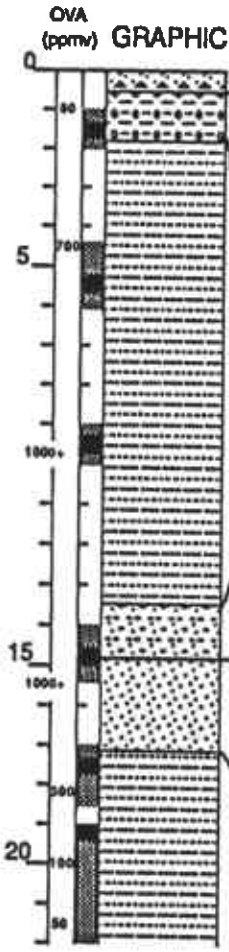
Logged by: Todd Daniels
Supervisor: Richard Weiss; EG 1112
Drilling Company: Exploration Geoservices, Inc.
Driller: Dave Yeager/Brian Swatz
Drilling Method: Hollow stem auger
Dates Drilled: 1-20-88
Well Head Completion: Locking stovepipe & Christy box
Type of sampler: Split barrel

Boring Log and Well Construction Details - Well MW-5

Chevron Facility # 0260
Hayward, CA

# WELL MW-6




## EXPLANATION

- Water level during drilling (date)
- Water Level (date)
- Contact (dotted where approx.)
- Uncertain Contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Grab sample

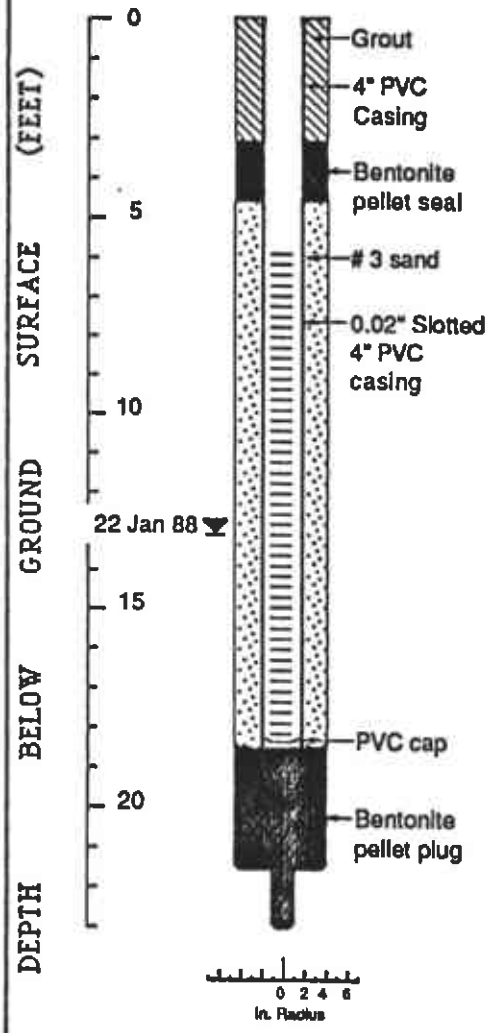
K = Estimated Permeability (hydraulic conductivity)

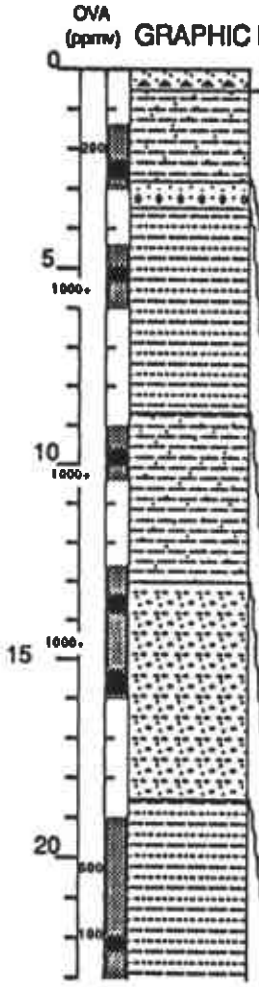
Logged by: Todd Daniels
Supervisor: Richard Weiss; EG 1112
Drilling Company: Exploration Geoservices, Inc.
Driller: Dave Yeager/Brian Swatz
Drilling Method: Hollow stem auger
Dates Drilled: 1-21-88
Well Head Completion: Locking stovepipe & Christy box
Type of sampler: Split barrel

Boring Log and Well Construction Details - Well MW-6

Chevron Facility # 0260
Hayward, CA

# WELL MW-7




GRAPHIC LOG

DESCRIPTION

Concrete

Sandy CLAY (CL); orange-brown; medium stiff; damp; 30% fine sand; 10% pebbles to 1/4 in; low est K; moderate hydrocarbon odor; [fill]
Becomes black, mottled olive; gray-blue at 1.5 ft
Becomes blue-green; 20% pebbles at 2.3 ft

Gravelly SAND (SM); blue-green; medium dense; damp; 30% pebbles to1/4 in; 60% very fine to coarse sand; 10-20% fines; mod est K; moderate to strong hydrocarbon odor; [fill]

Silty CLAY (CL); olive-brown; medium stiff; damp; 30% silt; low est K; strong hydrocarbon odor
Silty SAND layer from 4.8 to 5.3 ft
Becomes black, mottled blue-gray at 5.5 ft
Gravelly SAND layer from 5.7 to 6 ft [fill]

Sandy CLAY (CL); olive-brown, mottled blue-gray; medium stiff; damp; 30% fine sand; low est K; very strong hydrocarbon odor [fill?]
Minor free product in voids at 9.4 ft
40% fine sand at 10.5 ft

Silty SAND (SP); olive-gray; medium dense; wet; <5% fines; 95% very fine to medium sand; high est K; free product in voids, very strong hydrocarbon odor
Contact (driller)

Silty CLAY (CL); blue-gray; very stiff; 30% silt; low est K; moderate to strong hydrocarbon odor

## EXPLANATION

- Water level during drilling (date)
- Water Level (date)
- Contact (dotted where approx.)
- Uncertain Contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Grab sample

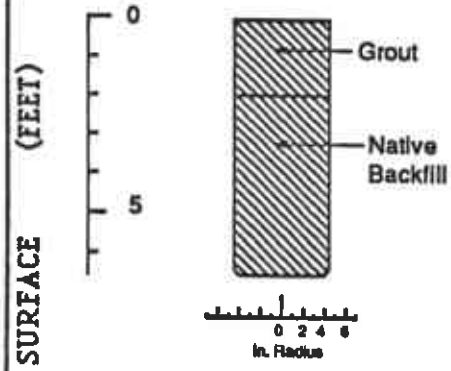
K = Estimated Permeability (hydraulic conductivity)

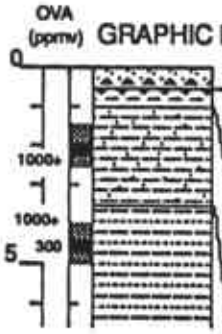
Logged by: Todd Daniels
Supervisor: Richard Weiss; EG 1112
Drilling Company: Exploration Geoservices, Inc.
Driller: Dave Yeager/Brian Swaitz
Drilling Method: Hollow stem auger
Dates Drilled: 1-22-88
Well Head Completion: Locking stovepipe & Christy box
Type of sampler: Split barrel

Boring Log and Well Construction Details - Well MW-7

Chevron Facility # 0260
Hayward, CA

# BORING B-6




DESCRIPTION

Concrete

Gravelly CLAY (CL); orange-brown, mottled gray; medium stiff; damp; 30% pebbles to 1/2 in; 10-20% sand; low est K; moderate hydrocarbon odor [fill]

Sandy CLAY (CL); gray, olive-brown; medium stiff; damp; 30% fine sand; low est K; very strong hydrocarbon odor [fill?]

Silty CLAY (CL); dark brown-black, mottled blue-gray; medium stiff; damp; 20-30% silt; low est K; moderate to strong hydrocarbon odor; [fill?]
(Hole abandoned, hit object)

## EXPLANATION

- Water level during drilling (date)
- Water Level (date)
- Contact (dotted where approx.)
- Uncertain Contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Grab sample

K = Estimated Permeability (hydraulic conductivity)

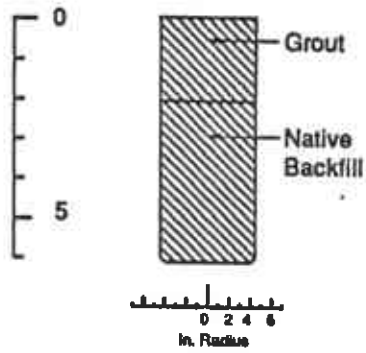
| | |
|---|---|
| Logged by: | Todd Daniels |
| Supervisor: | Richard Weiss; EG 1112 |
| Drilling Company: | Exploration Geoservices, Inc. |
| Driller: | Dave Yeager |
| Drilling Method: | Hollow stem auger |
| Dates Drilled: | 1-21-88 |
| Well Head Completion: | None |
| Type of sampler: | Split barrel |

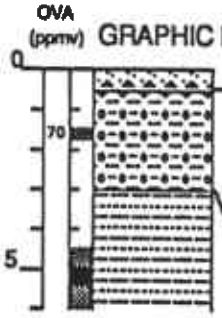
Boring Log B-6

Chevron Facility #0260
Hayward, CA

# BORING B-8

DEPTH BELOW GROUND SURFACE (FEET)




DESCRIPTION

Concrete

Gravelly CLAY (CL); orange-brown, mottled gray; stiff; damp; 30% pebbles to 1/4 in; 10-20% very fine sand; low est K; moderate hydrocarbon odor [fill?]
<5% pebbles at 2 ft

Silty CLAY (CL); black, mottled gray-olive; medium stiff; damp; 20% silt; low est K; moderate hydrocarbon odor [fill?]
(Hole abandoned, hit object)

**EXPLANATION**

- Water level during drilling (date)
- Water Level (date)
- Contact (dotted where approx.)
- Uncertain Contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Grab sample

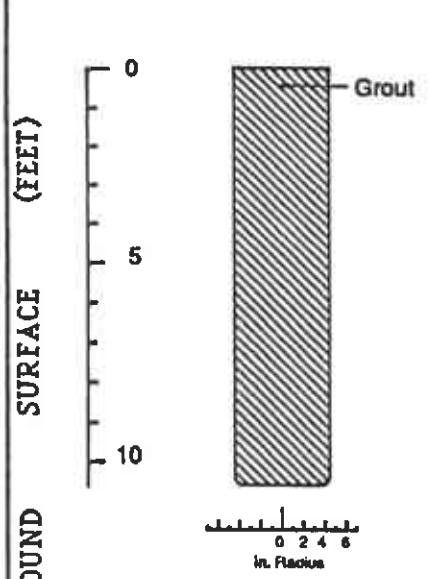
K = Estimated Permeability (hydraulic conductivity)

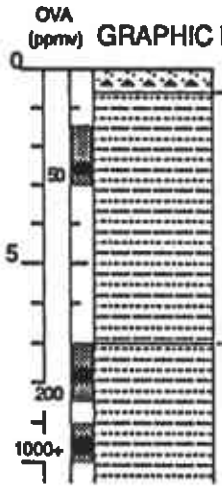
Logged by: Todd Daniels
Supervisor: Richard Weiss; EG 1112
Drilling Company: Exploration Geoservices, Inc.
Driller: Dave Yeager
Drilling Method: Hollow stem auger
Dates Drilled: 1-21-88
Well Head Completion: None
Type of sampler: Split barrel

Boring Log B-8

Chevron Facility #0260
Hayward, CA

# BORING B-9




DESCRIPTION

Concrete

Silty CLAY (CL); olive-brown; medium stiff; damp; 30% silt; 10% pebbles to 1/4 in; low est K; slight hydrocarbon odor
Becomes black; <5% pebbles at 2 ft

Contact (driller, cuttings)

Silty CLAY (CL); olive-brown, mottled blue-gray; very stiff; damp; 20% silt; low est K; <5% roots; moderate hydrocarbon odor
Becomes olive-brown to yellow-brown; blocky texture at 8 ft
Minor caliche; very strong hydrocarbon odor at 9 ft

## EXPLANATION

- Water level during drilling (date)
- Water Level (date)
- Contact (dotted where approx.)
- Uncertain Contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Grab sample

K = Estimated Permeability (hydraulic conductivity)

Logged by: Todd Daniels
Supervisor: Richard Weiss; EG 1112
Drilling Company: Exploration Geoservices, Inc
Driller: Dave Yeager
Drilling Method: Hollow stem auger
Dates Drilled: 1-22-88
Well Head Completion: None
Type of sampler: Split barrel

Boring Log B-9

Chevron Facility #0260
Hayward, CA

**ATTACHMENT B**

CHAIN OF CUSTODY

REPORT TO: WOODY LOVEJOY

**WEISS ASSOCIATES**

2938 McClure St. Oakland CA 94609 415-465-1100

CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Shuttle Inventory Number: _____

Shipping Seal No. _____

WA Personnel: Be sure to include copy of this form in the field sampling files.

Project ID: 4-310-80 CHEVRON - Hayward

Sampled by: Michael Edmonson Laboratory Name: Brown & Caldwell

NOTES TO LAB:
1) Specify analytic method and detection limit in report.
2) Notify us if there are any anomalous peaks on GC or other scans.
3) Duplicates listed in parentheses.
4) ANY QUESTIONS/CLARIFICATIONS: CALL US.

| Sample ID | Sampling Date | Sample/ Container Type[1] | Analyze/ Hold[2] | Turn-around[3] | Analyze For: | Analytic Method/ Detection Limit | Comments |
|---|---|---|---|---|---|---|---|
| MW4-WS#1 | 2/5/88 | W/V | A | N | BTX & TPH | EPA 602/8015 | |
| MW4-WS#1A | | | Hold | | | | |
| MW5-WS#1 | | | A | | | | |
| MW5-WS#1A | | | Hold | | | | |
| TB-CH-1 | | | A | | | | |

X _____ Received by (Signature), Date

X M.K. Edmonson 2/5/88 Released by (Signature), Date

X _____ Released by (Signature), Date

X _____ Released by (Signature), Date

X _____ Shipping Carrier, Method, Date

X _____ Received by Lab Personnel, Date/Telephone

X _____ Seal Intact?, Number

1 - Sample Type Codes: W = Water, S = Soil, O = Other (specify).
Container Type Codes: V = VOA Bottle, P = Plastic Bottle, G = Glass Bottle, T = Brass Tube, O = Other (specify).

2 - Analyze/Hold: A = Analyze; HOLD (spell out) = DO NOT ANALYZE UNLESS NECESSARY OR REQUESTED.

3 - N = Normal Turnaround, F = 1-Week Turnaround, R = 24-Hour Turnaround

1C:/FORMS/CHAINCUS

Report to Woody Lovejoy 2-378

WEISS ASSOCIATES
2938 McClure St. Oakland CA 94609 415-465-1100

CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Shuttle Inventory Number: _____

Shipping Seal No. _____

WA Personnel: Be sure to include copy of this form in the field sampling files

Project ID: 4-310

NOTES TO LAB:
1) Specify analytic method and detection limit in report.
2) Notify us if there are any anomalous peaks on GC or other scans.
3) Duplicates listed in parentheses.
4) ANY QUESTIONS/CLARIFICATIONS: CALL US.

Sampled by: Bob Agnew Laboratory Name: Brown & Caldwell

| Sample ID | Sampling Date | Sample/ Container Type[1] | Analyze/ Hold[2] | Turn-around[3] | Analyze For: | Analytic Method/ Detection Limit | Comments |
|---|---|---|---|---|---|---|---|
| MW 6-WS 1 | 2-12-88 | W/V | Anal | N | BTX & TPHC | [EPA 602, 8015 BTX - ppm, TFHC .05 PPB] | |
| MW 6-WS1A | " " | W/V | Hold | N | BTX & TFHC | | |
| MW7-WS1 | " " | W/V | Anal | N | BTX & TPHC | " " | |
| MW7-WS1A | " " | W/V | Hold | N | BTX & TFHC | " " | |

X _____ Received by (Signature), Date

X _____ Released by (Signature), Date

X _____ Released by (Signature), Date

X Robert L. Agnew Released by (Signature), Date

X _____ Shipping Carrier, Method, Date

X B Kendy Received by (Lab Personnel), Date, Telephone 2-12-88

X _____ Seal Intact?, Number

1 - Sample Type Codes: W = Water, S = Soil, O = Other (specify).
Container Type Codes: V = VOA Bottle, P = Plastic Bottle, G = Glass Bottle, T = Brass Tube, O = Other (specify).

2 - Analyze/Hold: A = Analyze; HOLD (spell out) = DO NOT ANALYZE UNLESS NECESSARY OR REQUESTED.

3 - N = Normal Turnaround, F = 1-Week Turnaround, R = 24-Hour Turnaround

TFH 1 ppm
BTX .05 PPB

1C:/FORMS/CHAINCUS

Report to Woody Lovejoy. Log # 1-599 Page 1 of 3

WEISS ASSOCIATES
2054 University Ave., Suite 301/Berkeley, CA 94704/415-644-3281

WA Personnel: Be sure to include copy of this form in job billing and field sampling files

Project ID 4-310

CHAIN OF CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Field Record

Sampled by T. Davies

Laboratory Record

Laboratory Name Brown & Caldwell

NOTES TO LAB:
1) Specify analytic method and detection limit in report
2) Notify us if there are any anomalous peaks on GC or other scans.
3) Duplicates listed in parentheses.
4) Questions/clarifications—CALL US.

| Sample ID | Sample/ Container Type[1] | Sampling Date | Analyze/ Hold[2] | Analyze for: | Analytic Method/Detection Limit | Received by | Date | Condition |
|---|---|---|---|---|---|---|---|---|
| B-4-5' | SIT | 1/20/88 | | TPH | EPA-8015 | | | |
| B-4-10' | | | A | | | | | |
| B-4-15.7' | | | | | | | | |
| B-4-16' | | | A | | | | | |
| B-4-17' | | | | | | | | |
| B-4-19.5' | | | | | | | | |
| B-4-21' | | | A | | | | | |
| B-4-25' | | | A | | | | | |
| B-5-6' | | | A | | | | | |
| B-5-10' | | | A | | | | | |
| B-5-19' | | | | | | | | |
| B-5-19.5' | | | A | | | | | |
| B-5-21.3' | | | | | | | | |
| B-5-24' | | | A | | | | | |
| B-6-2' | | 1/21/88 | | | | | | |
| B-6-4.5' | | / | A | | | | | |

→ Normal Turnaround

Report: to Woody L.
Wait for sample analysis
Verification for Woody L.
(On samples on HOLD)

x Todd Davies 1/25/88
Released by Field Personnel, Date

x Todd Davies 1/25/88
Released by Courier, Date

x Monte Scott 1/25/88
Received by Lab Personnel, Date

Telephone

1. Sample Type Codes: W=water, S=soil, O=other(specify)
Container Codes: V=VOA bottle, P=Plastic bottle, G=Glass bottle, T=brass tube, O=other(specify)

Analyze/Hold: A = Analyze, H = Hold--DO NOT ANALYZE UNLESS NECESSARY OR REQUESTED

WEISS ASSOCIATES
2054 University Ave., Suite 301/Berkeley, CA 94704/415-644-3281



WA Personnel: Be sure to include copy of this form in job billing and field sampling files

Project ID 4-310

CHAIN OF CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

**Field Record**

Sampled by T. DAVIS

**Laboratory Record**

Laboratory Name Boone & Caldwell

NOTES TO LAB:
1) Specify analytic method and detection limit in report
2) Notify us if there are any anomalous peaks on GC or other scans.
3) Duplicates listed in parentheses.
4) Questions/clarifications—CALL US.

| Sample ID | Sample/ Container Type[1] | Sampling Date | Analyze/ Hold[2] | Analyze for: | Analytic Method/Detection Limit | Received by | Date | Condition |
|---|---|---|---|---|---|---|---|---|
| B-7-1.5 | S/T | 11/21/88 | | TFH | EPA 8015 | | | |
| B-7-5.3 | | | A | | | | | |
| B-7-9.5 | | | A | | | | | |
| B-7-14.7 | | | A | | | | | |
| B-7-17.5 | | | | | | | | |
| B-7-19 | | | A | | | | | |
| B-9-5' | | | A | | | | | |
| B-9-2.5' | | 11/22/88 | | | | | | |
| B-9-7.7' | | | A | | | | | |
| B-9-9.5' | | | A | | | | | |
| B-10-4 | | | A | | | | | |
| B-10-6 | | | | | | | | |
| B-10-10 | | | A | | | | | |
| B-11-2.5 | | | | | | | | |
| B-11-5' | | | A | | | | | |
| B-11-9.7' | | | A | | | | | |

x [signature] 11/25/88
Released by Field Personnel, Date

x [signature] 11/25/88
Released by Courier, Date

x Monika Scott 11/25/88
Received by Lab Personnel, Date

Telephone

1. Sample Type Codes: W=water, S=soil, O=other(specify)
Container Codes: V=VOA bottle, P=Plastic bottle, G=Glass bottle, T=brass tube, O=other(specify)

2. Analyze/Hold: A = Analyze, H = Hold--DO NOT ANALYZE UNLESS NECESSARY OR REQUESTED

WEISS ASSOCIATES
2054 University Ave., Suite 301/Berkeley, CA 94704/415-644-3281

WA Personnel: Be sure to include copy of this form in job billing and field sampling files

Project ID 4-310

## CHAIN OF CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

**Field Record**

Sampled by T. DANIELS

**Laboratory Record**

Laboratory Name Brown & Caldwell

**NOTES TO LAB:**
1) Specify analytic method and detection limit in report
2) Notify us if there are any anomalous peaks on GC or other scans.
3) Duplicates listed in parentheses.
4) Questions/clarifications—CALL US.

| Sample ID | Sample/ Container Type[1] | Sampling Date | Analyze/ Hold[2] | Analyze for: | Analytic Method/Detection Limit | Received by | Date | Condition |
|---|---|---|---|---|---|---|---|---|
| B-11-13.5' | S/T | 1/24/88 | | TFH | EPA 8015 | | | |
| B-11-15.5' | S/T | " | A | " | " | | | |
| B-11-22.5' | S/T | " | A | " | " | | | |

x Todd W. Spencer 1/25/88
Released by Field Personnel, Date

x Todd W. Spencer 1/25/88
Released by Courier, Date

x Monica Acosta 1/25/88
Received by Lab Personnel, Date

Telephone _____

1. Sample Type Codes: W=water, S=soil, O=other(specify)
   Container Codes: V=VOA bottle, P=Plastic bottle, G=Glass bottle, T=brass tube, O=other(specify)

2. Analyze/Hold: A = Analyze, H = Hold--DO NOT ANALYZE UNLESS NECESSARY OR REQUESTED

# ATTACHMENT C

## ANALYTIC REPORTS

BROWN AND CALDWELL LABORATORIES
1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

# ANALYTICAL REPORT

LOG NO: E88-02-378

Received: 12 FEB 88
Reported: 26 FEB 88

Mr. Woody Lovejoy
Weiss Associates
2938 McClure Avenue
Oakland, CA 94609

Project: 4-310

## REPORT OF ANALYTICAL RESULTS



| LOG NO | SAMPLE DESCRIPTION, GROUND WATER SAMPLES | DATE SAMPLED |
|---|---|---|
| 02-378-1 | MW6-WS1 | 12 FEB 88 |
| 02-378-2 | MW7-WS1 | 12 FEB 88 |

| PARAMETER | 02-378-1 | 02-378-2 |
|---|---|---|
| Total Fuel Hydrocarbons, mg/L | 53 | 81 |
| EPA Method 602 | | |
| Date Extracted | 02.23.88 | 02.23.88 |
| 1,2-Dichlorobenzene, ug/L | <250 | <250 |
| 1,3-Dichlorobenzene, ug/L | <250 | <250 |
| 1,4-Dichlorobenzene, ug/L | <250 | <250 |
| Benzene, ug/L | 5100 | 34000 |
| Chlorobenzene, ug/L | <250 | <250 |
| Ethylbenzene, ug/L | 2100 | 2400 |
| Toluene, ug/L | 4400 | 36000 |
| Total Xylene Isomers, ug/L | 14000 | 16000 |

Steve Fisher, Laboratory Director

BROWN AND CALDWELL LABORATORIES
1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

**ANALYTICAL REPORT**

LOG NO: E88-02-231

Received: 05 FEB 88
Reported: 23 FEB 88

Mr. Woody Lovejoy
Weiss Associates
2938 McClure Avenue
Oakland, CA 94609

Project: 4-310-00

REPORT OF ANALYTICAL RESULTS



| LOG NO | SAMPLE DESCRIPTION, BLANK WATER SAMPLES | DATE SAMPLED |
|---|---|---|
| 02-231-3 | TB-CH-1 | 05 FEB 88 |

| PARAMETER | 02-231-3 |
|---|---|
| Total Fuel Hydrocarbons, mg/L | <1.0 |
| EPA Method 602 | |
| Date Extracted | 02.18.88 |
| 1,2-Dichlorobenzene, ug/L | <0.5 |
| 1,3-Dichlorobenzene, ug/L | <0.5 |
| 1,4-Dichlorobenzene, ug/L | <0.5 |
| Benzene, ug/L | 0.5 |
| Chlorobenzene, ug/L | <0.5 |
| Ethylbenzene, ug/L | <0.5 |
| Toluene, ug/L | 1.4 |
| Total Xylene Isomers, ug/L | 1.6 |

Steve Fisher, Laboratory Director

BROWN AND CALDWELL LABORATORIES

1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

**ANALYTICAL REPORT**

LOG NO: E88-02-231

Received: 05 FEB 88
Reported: 23 FEB 88

Mr. Woody Lovejoy
Weiss Associates
2930 McClure Avenue
Oakland, CA 94609

Project: 4-310-00

REPORT OF ANALYTICAL RESULTS



| LOG NO | SAMPLE DESCRIPTION, GROUND WATER SAMPLES | DATE SAMPLED |
|---|---|---|
| 02-231-1 | MW4-WS | 05 FEB 88 |
| 02-231-2 | MW5-WS | 05 FEB 88 |

| PARAMETER | 02-231-1 | 02-231-2 |
|---|---|---|
| Total Fuel Hydrocarbons, mg/L | 88 | 80 |
| EPA Method 602 | | |
| Date Extracted | 02.19.88 | 02.19.88 |
| 1,2-Dichlorobenzene, ug/L | <100 | <50 |
| 1,3-Dichlorobenzene, ug/L | <100 | <50 |
| 1,4-Dichlorobenzene, ug/L | <100 | <50 |
| Benzene, ug/L | 24000 | 16000 |
| Chlorobenzene, ug/L | <100 | <50 |
| Ethylbenzene, ug/L | 1700 | 2600 |
| Toluene, ug/L | 19000 | 15000 |
| Total Xylene Isomers, ug/L | 10000 | 16000 |

BROWN AND CALDWELL LABORATORIES
1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

# ANALYTICAL REPORT

LOG NO: E88-01-511

Received: 25 JAN 88
Reported: 10 FEB 88

Mr. Woody Lovejoy
Weiss Associates
2938 McClure Avenue
Oakland, CA 94609

Project: 4-310

REPORT OF ANALYTICAL RESULTS



| LOG NO | SAMPLE DESCRIPTION, SOIL SAMPLES | DATE SAMPLED |
|---|---|---|
| 01-511-1 | B-4 10' | 20 JAN 88 |
| 01-511-2 | B-4 16' | 20 JAN 88 |
| 01-511-3 | B-4 21' | 20 JAN 88 |
| 01-511-4 | B-4 25' | 20 JAN 88 |
| 01-511-5 | B-5 6' | 20 JAN 88 |

| PARAMETER | 01-511-1 | 01-511-2 | 01-511-3 | 01-511-4 | 01-511-5 |
|---|---|---|---|---|---|
| Total Fuel Hydrocarbons, mg/kg | <10 | 5600 | 50 | <10 | <10 |

BROWN AND CALDWELL LABORATORIES
1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

ANALYTICAL REPORT

LOG NO: E88-01-511

Received: 25 JAN 88
Reported: 10 FEB 88

Mr. Woody Lovejoy
Weiss Associates
2938 McClure Avenue
Oakland, CA 94609

Project: 4-310

REPORT OF ANALYTICAL RESULTS



| LOG NO | SAMPLE DESCRIPTION, SOIL SAMPLES | DATE SAMPLED |
|---|---|---|
| 01-511-6 | B-5 10' | 20 JAN 88 |
| 01-511-7 | B-5 19.5' | 20 JAN 88 |
| 01-511-8 | B-5 24' | 20 JAN 88 |
| 01-511-9 | B-6 4.5' | 21 JAN 88 |
| 01-511-10 | B-7 5.3' | 21 JAN 88 |

| PARAMETER | 01-511-6 | 01-511-7 | 01-511-8 | 01-511-9 | 01-511-10 |
|---|---|---|---|---|---|
| Total Fuel Hydrocarbons, mg/kg | 820 | 850 | <10 | 740 | <10 |

BROWN AND CALDWELL LABORATORIES
1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

**ANALYTICAL REPORT**

LOG NO: E88-01-511

Received: 25 JAN 88
Reported: 10 FEB 88

Mr. Woody Lovejoy
Weiss Associates
2938 McClure Avenue
Oakland, CA 94609

Project: 4-310

REPORT OF ANALYTICAL RESULTS



| LOG NO | SAMPLE DESCRIPTION, SOIL SAMPLES | DATE SAMPLED |
|---|---|---|
| 01-511-11 | B-7 9.5' | 21 JAN 88 |
| 01-511-12 | B-7 14.7' | 21 JAN 88 |
| 01-511-13 | B-7 19' | 21 JAN 88 |
| 01-511-14 | B-8 5' | 21 JAN 88 |
| 01-511-15 | B-9 7.7' | 22 JAN 88 |

| PARAMETER | 01-511-11 | 01-511-12 | 01-511-13 | 01-511-14 | 01-511-15 |
|---|---|---|---|---|---|
| Total Fuel Hydrocarbons, mg/kg | 28 | 670 | 150 | 12 | <10 |

BROWN AND CALDWELL LABORATORIES
1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

**ANALYTICAL REPORT**

LOG NO: E88-01-511

Received: 25 JAN 88
Reported: 10 FEB 88

Mr. Woody Lovejoy
Weiss Associates
2938 McClure Avenue
Oakland, CA 94609

Project: 4-310

REPORT OF ANALYTICAL RESULTS



| LOG NO | SAMPLE DESCRIPTION, SOIL SAMPLES | DATE SAMPLED |
|---|---|---|
| 01-511-16 | B-9 9.5' | 22 JAN 88 |
| 01-511-17 | B-10 4' | 22 JAN 88 |
| 01-511-18 | B-10 10' | 22 JAN 88 |
| 01-511-19 | B-11 5' | 22 JAN 88 |
| 01-511-20 | B-11 9.7' | 22 JAN 88 |

| PARAMETER | 01-511-16 | 01-511-17 | 01-511-18 | 01-511-19 | 01-511-20 |
|---|---|---|---|---|---|
| Total Fuel Hydrocarbons, mg/kg | 140 | <10 | 320 | 930 | <10 |

BROWN AND CALDWELL LABORATORIES
1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

**ANALYTICAL REPORT**

LOG NO: E88-01-511

Received: 25 JAN 88
Reported: 10 FEB 88

Mr. Woody Lovejoy
Weiss Associates
2938 McClure Avenue
Oakland, CA 94609

Project: 4-310

REPORT OF ANALYTICAL RESULTS



| LOG NO | SAMPLE DESCRIPTION, SOIL SAMPLES | DATE SAMPLED |
|---|---|---|
| 01-511-21 | B-11 15.5' | 22 JAN 88 |
| 01-511-22 | B-11 22.5' | 22 JAN 88 |
| 01-511-23 | B-4 5' | 20 JAN 88 |
| 01-511-24 | B-5 15.7' | 20 JAN 88 |
| 01-511-25 | B-4 17' | 20 JAN 88 |

| PARAMETER | 01-511-21 | 01-511-22 | 01-511-23 | 01-511-24 | 01-511-25 |
|---|---|---|---|---|---|
| Sample Held, Not Analyzed | --- | --- | HELD | HELD | HELD |
| Total Fuel Hydrocarbons, mg/kg | 9900 | <10 | --- | --- | --- |

BROWN AND CALDWELL LABORATORIES
1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

**ANALYTICAL REPORT**

LOG NO: E88-01-511

Received: 25 JAN 88
Reported: 10 FEB 88

Mr. Woody Lovejoy
Weiss Associates
2938 McClure Avenue
Oakland, CA 94609

Project: 4-310

REPORT OF ANALYTICAL RESULTS



| LOG NO | SAMPLE DESCRIPTION, SOIL SAMPLES | DATE SAMPLED |
|---|---|---|
| 01-511-26 | B-4 19.5' | 20 JAN 88 |
| 01-511-27 | B-5 19' | 20 JAN 88 |
| 01-511-28 | B-5 21.3' | 20 JAN 88 |
| 01-511-29 | B-6 2' | 21 JAN 88 |
| 01-511-30 | B-7 1.5' | 21 JAN 88 |

| PARAMETER | 01-511-26 | 01-511-27 | 01-511-28 | 01-511-29 | 01-511-30 |
|---|---|---|---|---|---|
| Sample Held, Not Analyzed | HELD | HELD | HELD | HELD | HELD |

BROWN AND CALDWELL LABORATORIES
1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

**ANALYTICAL REPORT**

LOG NO: E88-01-511

Received: 25 JAN 88
Reported: 10 FEB 88

Mr. Woody Lovejoy
Weiss Associates
2938 McClure Avenue
Oakland, CA 94609

Project: 4-310

REPORT OF ANALYTICAL RESULTS



| LOG NO | SAMPLE DESCRIPTION, SOIL SAMPLES | DATE SAMPLED |
|---|---|---|
| 01-511-31 | B-7 17.5' | 21 JAN 88 |
| 01-511-32 | B-9 2.5' | 22 JAN 88 |
| 01-511-33 | B-10 6' | 22 JAN 88 |
| 01-511-34 | B-11 2.5' | 22 JAN 88 |
| 01-511-35 | B-11 13.5' | 22 JAN 88 |

| PARAMETER | 01-511-31 | 01-511-32 | 01-511-33 | 01-511-34 | 01-511-35 |
|---|---|---|---|---|---|
| Sample Held, Not Analyzed | HELD | HELD | HELD | HELD | HELD |

Linda Black Fox
Steve Fisher, Laboratory Director

DATE: 6/23/88
SERVICE STATION #: 4 9-0260
LOCATION: HAYWARD
CONTRACT #:
RELEASE #: 174
CONTRACTOR:

# HYDROGEOLOGIC WORK RELEASE

## SOIL BORINGS/MONITORING WELLS

| Specification Reference | Work Requested [ ] | |
|---|---|---|
| | | **Field** |
| 2.1 | [X] | Install 6 soil boring(s) and collect soil samples every 5 feet for lithologic description and possible chemical analysis. The total depth of the boring(s) should be determined in the field |
| 2.1/2.2 | [X] | If ground water is encountered during drilling convert the boring(s) to 4 inch monitoring wells using schedule 40 PVC after confering with Chevron engineer. |
| 2.2 | [X] | Install 4 ground water monitoring well(s). The well(s) should be 4 inch diameter schedule 40 PVC pipe. |
| 2.1 | [X] | Location above of [2] soil boring(s) / [4] monitoring well(s) are specified on the attached base map dated _____. |
| 2.1 | [ ] | Contractor is to locate [ ] soil boring(s) / [ ] monitoring well(s) and confirm with Chevron prior to installation. |
| | | **Office** |
| 2.6 | [X] | Construct a geologic cross-section of the site using boring and monitoring well information. |

DATE: 6/28/89
SERVICE STATION #: 0260
LOCATION: Hayward
CONTRACT #:
RELEASE #: 174
CONTRACTOR:

## SOIL BORING SAMPLE ANALYSIS

| Specification Reference | Work Requested [ ] | |
|---|---|---|
| | Field | |
| 2.1.2 | [ ] | Submit all soil samples collected to the analytic laboratory and analyze specific samples at the direction of Chevron. |
| 2.1.2 | [X] | Submit all soil samples to the analytic laboratory and analyze specific samples based on field observations and guidelines in specifications. |

## CHEMICAL ANALYSIS OF SOIL BORINGS

| Specification Reference | Work Requested [ ] | |
|---|---|---|
| 2.3 | [X] | Analyze soil samples by: |

| | |
|---|---|
| [ ] EPA 8015(TFHC) | [X] EPA 8015(TFHC,BTX) |
| [ ] EPA 413.1(O&G) | [ ] EPA 418.1(HFHC) |
| [ ] EPA 8010(HALOCARBONS) | [ ] EPA 8020(AROMATICS) |
| [ ] EPA 8240(GC/MS) | [ ] EPA 8270(GC/MS) |
| [ ] EPA 8080(PCB) | [ ] EPA 7421(LEAD) |

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## MONITORING WELL DEVELOPMENT

| Specification Reference | Work Requested [ ] | |
|---|---|---|
| | Field | |
| 2.4 | [X] | Develop and collect samples from 11 monitoring wells. |
| | Office | |
| 2.6 | [ ] | Tabulate all well development data (pH, conductivity, temperature). |

## CHEMICAL ANALYSIS OF WATER SAMPLES

2.5 [X] Analyze the water samples by:

| | |
|---|---|
| [X] EPA 8015(TFHC) | [ ] EPA 8015(TFHC,BTX) |
| [ ] EPA 413.1(O&G) | [ ] EPA 418.1(HFHC) |
| [ ] EPA 601(HALOCARBONS) | [X] EPA 602(AROMATICS) |
| [ ] EPA 624(GC/MS) | [ ] EPA 625(GC/MS) |
| [ ] EPA 608(PCB) | [ ] EPA 7240(LEAD) |

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# TOP OF CASING SURVEY AND LIQUID LEVEL MEASUREMENTS

| Specification Reference | Work Requested [ ] | |
|---|---|---|
| | | **Field** |
| 2.8.2 | [X] | Perform a top of casing survey of all wells on the site using an ~~arbitrary ground elevation of 100.00.~~ established benchmark. |
| 2.8.1/2.8.3 | [X] | Measure depth to product and depth to water in the ground water monitoring wells. Calculate the product and water elevations and the product thickness. |
| | | **Office** |
| 2.6 | [X] | Tabulate all data from the top of casing survey, product and water measurements and product thickness calculations. |
| 2.6 | [X] | Plot all top of casing elevations and product and water elevations onto the site base map. |
| 2.6 | [X] | Contour the product and water elevations on base maps. |
| 2.6 | [ ] | Contour the product thickness on a base map. |
| 2.6 | [X] | Contour the isoconcentrations of dissolved hydrocarbons on a base map |
| 2.6 | [ ] | Draw a hydrograph of product and water elevations for _____ months. |
| 2.6 | [ ] | Graph product thickness over _____ months. |

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## AREA SURVEYS

| Specification Reference | Work Requested [ ] | |
|---|---|---|
| | | **Field** |
| 2.9 | [ ] | Perform a location survey of all domestic, municipal and agricultural supply wells within a _____ mile radius of the site. (Completed in Phase I). |
| 2.9 | [ ] | Perform a vapor survey of all underground utilities within a _____ block radius of the site using a:<br>[ ] OVA<br>[ ] PID<br>[ ] Explosimeter |
| 2.9 | [ ] | Collect air samples in adsorbent tubes for chemical analysis for aromatic compounds. |
| | | **Office** |
| 2.9.1 | [X] | Perform a records search to determine past land uses ~~and possible releases in a~~ _____ ~~mile radius of the site~~. |
| 2.6 | [ ] | Tabulate all data from the well survey. (Completed in Phase I) |
| 2.6 | [ ] | Prepare a location map for all wells found in the well survey. (Completed in Phase I) |
| 2.6 | [ ] | Tabulate data from the vapor survey or the air sampling. |
| 2.6 | [ ] | Plot all data from the vapor survey or air sampling on a site base map. |

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# REPORTS
## SERVICE STATION ASSESSMENTS CONT'D.
## PHASE II INVESTIGATION

| Specification Reference | Work Requested [ ] |
|---|---|

**FIGURES:**

Standard

- [X] Site location map.
- [X] Site base map with boring / well locations.

Optional

- [X] Geologic cross-section.
- [X] Isoconcentration contour of dissolved hydrocarbons.
- [X] Product and water elevation contour maps.
- [X] Isoconcentration contour of free-floating hydrocarbons.
- [X] Supply well survey location map.
- [ ] Vapor survey location map.

**GRAPHS:**

Optional

- [ ] Graph of chemical concentrations vs time.
- [ ] Hydrograph of product and water elevations.
- [ ] Graph of product thickness vs time.
- [ ] Graph of baildown test results.
- [ ] Graph of aquifer test results.

**APPENDICES:**

Standard

- [X] Drill logs.
- [X] Chain of custody forms.
- [X] Analytic laboratory reports.

Optional

- [X] Supply well survey data.

WEISS ASSOCIATES

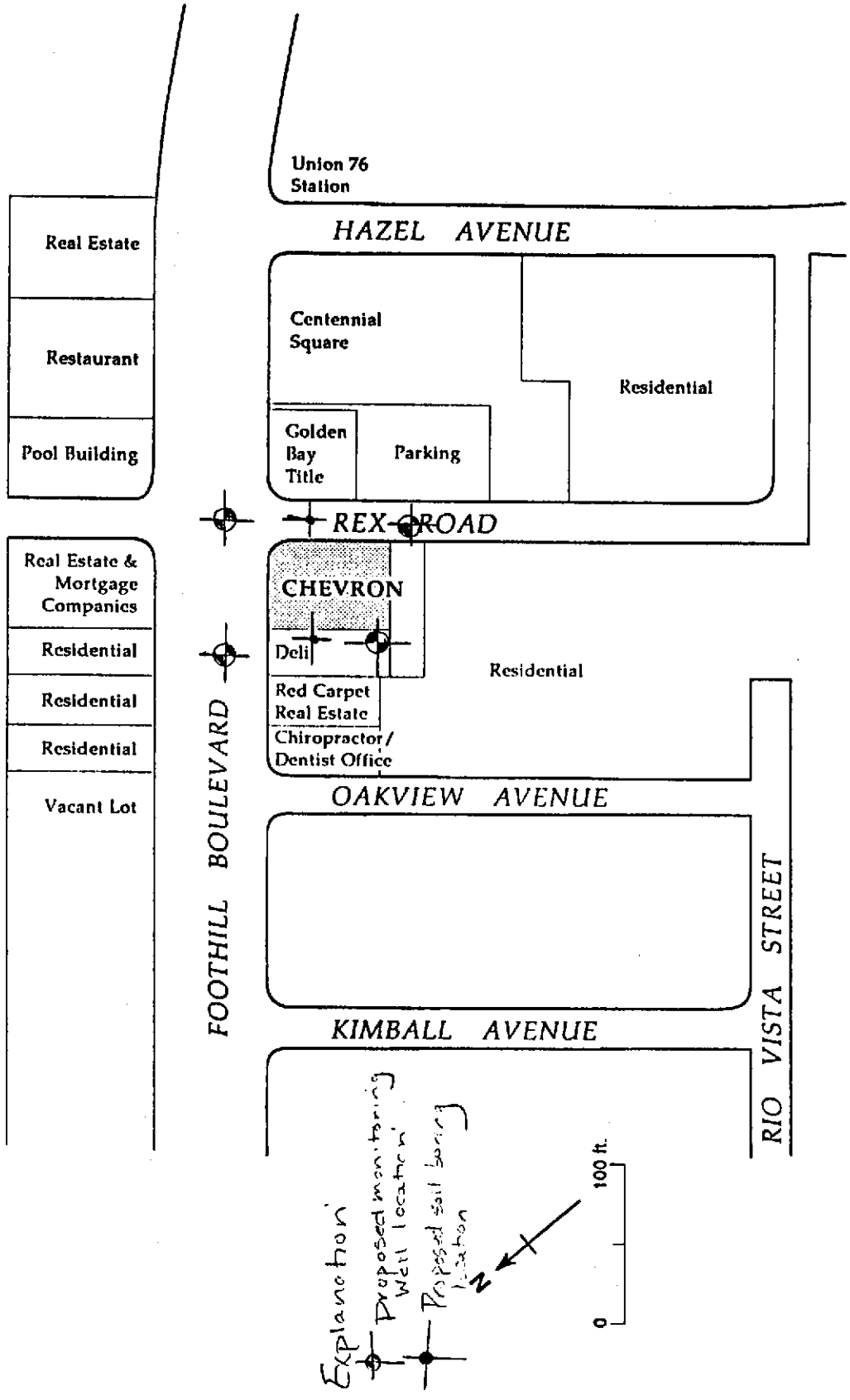


Figure 1 Adjacent Properties and Businesses; Chevron Service Station #0269, Hayward, California