GERAGHTY
& MILLER, INC.
Environment and Infrastructure

SLIC 3633

a **heidemij** company

August 2, 1996
Project No. RC0174.003

Mr. Barney Chan
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway
Alameda, California 94502-6577

(510) 567-6700

SUBJECT: Response to Alameda County Request for Additional Information, Chevron/ Lonestar Facility, 333 – 23rd Avenue, Oakland, California.

Dear Mr. Chan:

This letter provides the additional information regarding the above-referenced site (Figure 1) that you requested in your letter to Chevron dated July 5, 1996. Responses to specific inquiries regarding the site are addressed in this letter in the same order as they appeared in your July 5th letter.

1) **Comment:** "Please provide a copy of the report describing the accidental discharge of diesel fuel. Specifically, I am interested in the location and an estimation of the quantity of the release."

Response: A report specifically describing the accidental discharge of diesel fuel could not be located. However, the background information included in past reports by previous consultants does include the location and an estimate of the release (Western Geologic Resources, Inc. [WGR], 1989). These reports indicate that approximately 6,000 gallons of Diesel Standard #2 were mistakenly discharged into a monitoring well on August 21, 1985. An underground tank had recently been removed and two monitoring wells, A and B, were installed to monitor groundwater in the vicinity of the tank backfill. The discharge was reportedly into Monitoring Well B. *These monitoring wells are included in an updated site map* shown in Figure 2.

2) **Comment:** "As a result of this release, a groundwater extraction system was installed. Please provide an estimate of the pounds and volume of diesel fuel recovered during

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the system's operation. The referenced reports mention extraction well A, however, this well does not appear on the figures provided. Is R-1 the same as extraction well A? Please clarify."

Response: As a result of this release, steps were immediately taken to remove as much diesel as possible from the groundwater before it dispersed. IT Corporation was contracted to supply a vacuum truck and this technology was able to recover approximately 3,300 gallons of product. IT Corporation was able to recover an additional 200 gallons using a selective oil skimming system (WGR, 1989). A groundwater extraction system was installed and began operation in October 1986. This system initially utilized one 12-inch recovery well, R-1. The groundwater extraction system recovered approximately 250 gallons of diesel as free product using a product-separation system before the system was shut down in March 1987. The location of R-1 has been updated on the Geraghty & Miller site map to correspond with maps produced by the consultants responsible for the installation of the well. A second recovery well, R-2, was installed in May 1988; however, the effectiveness of this well was never documented.

In August 1993, 365 gallons were removed from the product storage tank and transported to the Chevron refinery. It is unknown if the 250 gallons previously mentioned as having been recovered from the extraction system had ever been removed from the product storage tank. Therefore, a conservative estimate of the amount of diesel removed as free product would be 3,865 gallons: 3,300 gallons by vacuum truck, 200 gallons by selective oil skimmers, and 365 gallons removed from the product storage tank.

The groundwater extraction system was shut down in September 1994 due to its limited effectiveness. Passive skimmers were installed in MW-1 and R-2 in 1995 to remove free product, with very limited success. Documented free product removal by these skimmers is less than 5 gallons.

Mass removal of dissolved-phase diesel by the groundwater extraction system has also had only limited effectiveness. Influent concentrations into the treatment system ranged from 0.6 milligrams per liter (mg/L) to 29 mg/L during the period from February 1993 until the system was shut down in September 1994. The average influent concentration during this period was 4 mg/L; however, the mean was only 1 mg/L (5 samples above and 5 samples below this concentration). The amount of water discharged during this period was approximately 185,000 gallons. This yields less than 1 gallon of dissolved-phase diesel removed from the subsurface during this period by the groundwater extraction system.

3) **Comment:** "After the extraction system was turned off, oxygen releasing compound (ORC) were added to wells MW-1, MW-7, MW-9 and MW-10 on March 24, 1996. This action should enhance in-situ bioremediation. Please provide or have analysis performed to provide the current levels of dissolved oxygen, nitrates, phosphates and ammonia in these wells."

Response: Levels of dissolved oxygen, nitrates, phosphates, and ammonia in Wells MW-1, MW-7, MW-8, MW-9, MW-10, and MW-13 were recorded before quarterly sampling on June 16, 1996. Dissolved oxygen was also tested in Wells MW-5 and MW-11 during this sampling event. The information obtained in that sampling is included in Table 1.

4) **Comment:** "What is the current monitoring program being implemented at this site? It was noticed that not all wells are being monitored on a quarterly basis. What is the rationale for your monitoring schedule? It was also noted that well MW-12 was not sampled due to the presence of hardened concrete above the vault box. Is this situation corrected and is MW-12 part of the monitoring program?"

Response: Under the current quarterly monitoring program, all available wells are sampled during the second and fourth quarters; only the downgradient wells (MW-1, MW-4, MW-7, MW-11, and MW-13) are sampled during the first and third quarters. Monitoring Well MW-12 has been completely filled in with silt and gravel from the cement operation. Rehabilitation of this well would be very difficult, and any well in the vicinity would be subject to extremely harsh conditions.

5) **Comment:** "It appears that this site should continue to be monitored, perhaps at a less frequent schedule than quarterly. You may also choose, if it hasn't already been done, to monitor only selective wells. However, due to the close proximity of the Alameda estuary, the TPHd concentration in the perimeter wells must be protective of the estuarine lifeforms. At this time, no generic cleanup level exists for sites located next to a surface water receptor."

Response: Concentrations of total petroleum hydrocarbons (TPH) as diesel reported in Wells MW-4 and MW-11 have generally been below or near the laboratory method detection limit since groundwater monitoring began in 1987, with a single concentration of 110 micrograms per liter [µg/L] reported in each well in September 1995. The San Francisco Bay Regional Water Quality Control Board is currently involved in a study evaluating the aquatic

toxicity of mid-range hydrocarbons. Geraghty & Miller will acquire the most recent aquatic toxicity data and present it to the Alameda County Health Care Services Agency with a recommendation for site closure, based upon a specific monitoring schedule to ensure that the nearby estuary will not be impacted, by September 2, 1996. The most recent Quarterly Groundwater Monitoring Report (July 29, 1996) is included with this document as Attachment 1.

If you have any questions regarding this report, please do not hesitate to call me at (510) 233-3200.

Sincerely,
GERAGHTY & MILLER, INC.

Aaron O'Brien
Staff Engineer/Project Manager

Gary W. Keyes, P.E.
Principal Engineer/Associate
Richmond, California Office Manager

Attachments: Table 1 Summary of Field Parameters

Figure 1 Site Location Map
Figure 2 Site Plan

Attachment 1 Quarterly Groundwater Monitoring Report (July 29, 1996)

cc: Bob Cochran, Chevron Products Company

Table 1: Summary of Field Parameters
RMC Lonestar Facility
333 – 23rd Avenue, Oakland, California.

Well	Date	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	Phosphate (mg/L)	Ammonia (mg/L)
MW-1	9-Nov-95	0.90	---	---	---
	17-Jun-96	1.34	>5.0	2.0	>10
MW-4	9-Nov-95	0.37	0.2	0	0.1
	16-Jun-96	(Well not found.)			
MW-5	9-Nov-95	0.85	0.1	1.5	0.1
	16-Jun-96	0.78	---	---	---
MW-7	9-Nov-95	0.42	---	---	---
	16-Jun-96 (a)	OR	>5.0	4.0	>10
MW-8	9-Nov-95	0.95	---	---	---
	16-Jun-96	0.29	0	0.6	0.6
MW-9	9-Nov-95	0.58	---	---	---
	16-Jun-96 (a)	14.66	>5.0	>10	1.0
MW-10	9-Nov-95	1.49	---	---	---
	16-Jun-96	3.30	1.0	6.0	>10
MW-11	9-Nov-95	0.52	0.2	5.0	0.1
	16-Jun-96	0.25	---	---	---
MW-13	9-Nov-95	(Well not found.)			
	16-Jun-96 (b)	0.52	0.1	0.4	0.2
R-2	9-Nov-95	0.44	0.6	0	0
	16-Jun-96	(Well not sampled for biological indicators.)			
A	9-Nov-95	0.42	1	0	4
	16-Jun-96	(Well not sampled for biological indicators.)			

(a) ORC removed before field measurements recorded.
(b) Well measured after purging.

mg/L Milligrams per liter
OR Overrange of instrument

Table 2: Summary of Groundwater Sampling Results
RMC Lonestar Facility
333 – 23rd Avenue, Oakland, California.

Well	Date	Top of Casing Elevation (a) (feet) (msl)	Depth to Water (feet)	Liquid-Phase Hydrocarbon Thickness (feet)	Groundwater Elevation (b) (feet) (msl)	TPH-G (c) (µg/L)	Benzene (d) (µg/L)	Toluene (d) (µg/L)	Ethyl-benzene (d) (µg/L)	Xylenes (d) (µg/L)	TPH-D (e) (µg/L)
MW-1	21-Dec-90	4.70	9.77	2.07	-3.41	NP	NP	NP	NP	NP	NP
	18-Dec-93		8.45	0.03	-3.73	NS	NS	NS	NS	NS	NS
	29-Mar-94		9.00	0.45	-3.94	NS	NS	NS	NS	NS	NS
	9-Jun-94		NS (i)	NS	NS	NS	NS	NS	NS	NS	NS
	4-Oct-94		8.71	0.04	-3.98	LPH	LPH	LPH	LPH	LPH	LPH
	20-Dec-94		8.38	0.67	-3.14	LPH	LPH	LPH	LPH	LPH	LPH
	28-Mar-95		7.79	0.50	-2.69	LPH	LPH	LPH	LPH	LPH	LPH
	30-Jun-95		NM	NM	NM	LPH	LPH	LPH	LPH	LPH	LPH
	24-Sep-95		7.79	0.50	-2.69	LPH	LPH	LPH	LPH	LPH	LPH
	29-Dec-95		(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)
	24-Mar-96		7.68	0.01	-2.97	1,400 (n)	ND(<0.50)	ND(<0.50)	ND(<0.50)	ND(<0.50)	59,000
	16-Jun-96		7.86	---	-3.16	ND(<500)	ND(<5.0)	ND(<5.0)	ND(<5.0)	ND(<5.0)	99,000
MW-2 (f)	15-Jun-89	NS	NP	NP	---	ND(<200)	ND(<0.5)	ND(<5.0)	ND(<5.0)	ND(<5.0)	NA
MW-4	28-May-87	NS	NP	NP	---	NA	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<2)	ND(<5)
	15-Jun-89		NP	NP	---	ND(<100)	ND(<0.2)	ND(<2.0)	ND(<2.0)	ND(<2.0)	ND(<0.2)
	21-Dec-90		7.31	NP	---	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	19-Mar-93		6.64	---	---	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)	ND(<50)
	16-Jun-93		8.01	---	---	210	32	27	2.8	19	ND(<50)
	18-Dec-93		7.35	---	---	79	0.5	1.2	0.5	1.1	100
	29-Mar-94		8.05	---	---	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	9-Jun-94		8.14	---	---	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	4-Oct-94		7.31	---	---	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	20-Dec-94		7.03	---	---	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	28-Mar-95		6.83	---	---	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	30-Jun-95		7.84	---	---	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	24-Sep-95		7.67	---	---	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	110
	29-Dec-95	(l)	(l)	(l)	(l)	(l)	(l)	(l)	(l)	(l)	(l)
	24-Mar-96		7.41	---	---	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	95
	16-Jun-96	(l)	(l)	(l)	(l)	(l)	(l)	(l)	(l)	(l)	(l)

Table 2: Summary of Groundwater Sampling Results
RMC Lonestar Facility
333 – 23rd Avenue, Oakland, California.

Well	Date	Top of Casing Elevation (a) (feet) (msl)	Depth to Water (feet)	Liquid-Phase Hydrocarbon Thickness (feet)	Groundwater Elevation (b) (feet) (msl)	TPH-G (c) (µg/L)	Benzene (d) (µg/L)	Toluene (d) (µg/L)	Ethyl-benzene (d) (µg/L)	Xylenes (d) (µg/L)	TPH-D (e) (µg/L)
MW-5	28-May-87	5.43	NP	NP	---	NA	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<2)	ND(<5)
	15-Jun-89		NP	NP	---	ND(<100)	ND(<0.2)	ND(<2.0)	ND(<2.0)	ND(<2.0)	NA
	21-Dec-90		9.11	NP	-3.68	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	16-Jun-93		9.12	---	-3.69	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	18-Dec-93		8.72	---	-3.29	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	690
	29-Mar-94		9.00	---	-3.57	NS	NS	NS	NS	NS	NS
	9-Jun-94		9.36	---	-3.93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	4-Oct-94		NM	---	NM	NS	NS	NS	NS	NS	NS
	20-Dec-94		8.10	---	-2.67	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	28-Mar-95		8.21	---	-2.78	NS	NS	NS	NS	NS	NS
	30-Jun-95		8.78	---	-3.35	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	900
	24-Sep-95		8.40	---	-2.97	NS	NS	NS	NS	NS	NS
	29-Dec-95		8.39	---	-2.96	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	24-Mar-96		NM	---	NM	NS	NS	NS	NS	NS	NS
	16-Jun-96		8.58	---	-3.15	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
MW-7	15-Jun-89	4.51	NP	NP	---	ND(<100)	ND(<0.2)	ND(<2.0)	ND(<2.0)	ND(<2.0)	NA
	21-Dec-90		7.90	0.01	-3.38	NA	NA	NA	NA	NA	NA
	16-Jun-93		8.45	---	-3.94	ND(<50)	ND(<0.5)	0.9	ND(<0.5)	ND(<0.5)	ND(<50)
	18-Dec-93		8.01	---	-3.50	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	240
	29-Mar-94		8.60	---	-4.09	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	9-Jun-94		8.61	---	-4.10	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	130 (h)
	4-Oct-94		7.82	---	-3.31	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	20-Dec-94		7.70	---	-3.19	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	140
	28-Mar-95		7.67	---	-3.16	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	30-Jun-95		8.33	---	-3.82	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	24-Sep-95		8.16	---	-3.65	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	29-Dec-95		7.51	---	-3.00	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	230 (j)
	24-Mar-96		7.69	0.01	-3.17	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	81
	16-Jun-96		10.37	---	-5.86	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	190

Table 2: Summary of Groundwater Sampling Results
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MW-8	21-Dec-90	4.93	8.53	0.02	-3.59	NA	NA	NA	NA	NA	NA
	18-Dec-93		NM	NM	NM	NS	NS	NS	NS	NS	NS
	29-Mar-94		8.38	---	-3.46	NS	NS	NS	NS	NS	NS
	9-Jun-94		NS (i)	NS	NS	NS	NS	NS	NS	NS	NS
	20-Dec-94		7.58	---	-2.66	ND(<2500)	120	100	ND(<25)	100	50,000
	28-Mar-95		7.08	---	-2.16	NS	NS	NS	NS	NS	NS
	30-Jun-95		8.09	---	-3.17	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	14,000
	24-Sep-95		8.45	---	-3.53	NS	NS	NS	NS	NS	NS
	29-Dec-95		7.47	---	-2.55	520	ND(<2.0)	ND(<2.0)	ND(<2.0)	ND(<2.0)	25,000
	24-Mar-96		NM	---	NM	NS	NS	NS	NS	NS	NS
	16-Jun-96		7.99	---	-3.07	59 (q)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	9,400
MW-9	28-May-87	4.42	NP	NP	---	NA	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<2)	ND(<5)
	15-Jun-89		NP	NP	---	ND(<100)	ND(<0.2)	ND(<2.0)	ND(<2.0)	ND(<2.0)	NA
	21-Dec-90		7.86	sheen	---	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	1	230
	16-Jun-93		8.34	---	-3.92	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)	ND(<50)
	18-Dec-93		7.91	---	-3.49	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	29-Mar-94		7.85	---	-3.43	NS	NS	NS	NS	NS	NS
	9-Jun-94		8.69	---	-4.27	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	4-Oct-94		NM	---	NM	NS	NS	NS	NS	NS	NS
	20-Dec-94		7.60	---	-3.18	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	28-Mar-95		7.58	---	-3.16	NS	NS	NS	NS	NS	NS
	30-Jun-95		8.34	---	-3.92	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	24-Sep-95		8.21	---	-3.79	NS	NS	NS	NS	NS	NS
	29-Dec-95		7.48	---	-3.06	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	600
	24-Mar-96		NM	---	NM	NS	NS	NS	NS	NS	NS
	16-Jun-96		8.25	---	-3.83	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	810

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MW-10	15-Jun-89	5.24	NP	NP	---	ND(<100	ND(<0.2)	ND(<2.0)	ND(<2.0)	ND(<2.0)	NA
	21-Dec-90		8.92	NP	-3.68	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	80
	16-Jun-93		8.97	---	-3.73	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	18-Dec-93		7.87	---	-2.63	51 (g)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	12,000
	29-Mar-94		9.20	---	-3.96	NS	NS	NS	NS	NS	NS
	9-Jun-94		9.31	---	-4.07	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	4-Oct-94		NM	---	NM	NS	NS	NS	NS	NS	NS
	20-Dec-94		8.30	---	-3.06	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	28-Mar-95		8.26	---	-3.02	NS	NS	NS	NS	NS	NS
	30-Jun-95		8.95	---	-3.71	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	24-Sep-95		8.87	---	-3.63	NS	NS	NS	NS	NS	NS
	29-Dec-95		8.03	---	-2.79	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	1,800 (k)
	24-Mar-96		NM	---	NM	NS	NS	NS	NS	NS	NS
	16-Jun-96		8.77	---	-3.53	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	300
MW-11	21-Aug-87	4.37	NP	NP	---	NA	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<2)	ND(<0.1)
	21-Jun-89		NP	NP	---	ND(<100)	ND(<0.2)	ND(<2.0)	ND(<2.0)	ND(<2.0)	NA
	21-Dec-90		8.59	sheen	---	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	19-Mar-93		7.57	---	-3.20	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)	ND(<50)
	16-Jun-93		8.84	---	-4.47	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)	ND(<50)
	18-Dec-93		8.26	---	-3.89	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	29-Mar-94		9.07	---	-4.70	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	9-Jun-94		9.14	---	-4.77	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	150 (h)
	4-Oct-94		7.94	---	-3.57	ND(<50)	ND(<0.5)	1.0	ND(<0.5)	ND(<0.5)	ND(<50)
	20-Dec-94		7.68	---	-3.31	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	28-Mar-95		6.90	---	-2.53	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	30-Jun-95		8.81	---	-4.44	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	24-Sep-95		8.80	---	-4.43	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	110
	29-Dec-95		8.22	---	-3.85	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	24-Mar-96		8.46	---	-4.09	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	80
	16-Jun-96		8.74	---	-4.37	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	86 (p)

Table 2: Summary of Groundwater Sampling Results
RMC Lonestar Facility
333 – 23rd Avenue, Oakland, California.

Well	Date	Top of Casing Elevation (a) (feet) (msl)	Depth to Water (feet)	Liquid-Phase Hydrocarbon Thickness (feet)	Groundwater Elevation (b) (feet) (msl)	TPH-G (c) (µg/L)	Benzene (d) (µg/L)	Toluene (d) (µg/L)	Ethyl-benzene (d) (µg/L)	Xylenes (d) (µg/L)	TPH-D (e) (µg/L)
MW-12	21-Aug-87	NS	NP	NP	---	NA	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<2)	ND(<0.1)
	18-Dec-93	NM	NM	NM	NM	NS	NS	NS	NS	NS	NS
	29-Mar-94	NM	NM	NM	NM	NS	NS	NS	NS	NS	NS
	9-Jun-94	(i)	(i)	(i)	(i)	(i)	(i)	(i)	(i)	(i)	(i)
MW-13	21-Aug-87	4.73	NP	NP	---	NA	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<2)	ND(<0.1)
	15-Jun-89		NP	NP	---	ND(<100)	ND(<0.2)	ND(<2.0)	ND(<2.0)	ND(<2.0)	NA
	19-Mar-93		7.62	---	-2.89	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)	ND(<50)
	16-Jun-93		8.56	---	-3.83	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)	ND(<50)
	18-Dec-93		8.11	---	-3.38	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	29-Mar-94		8.65	---	-3.92	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	9-Jun-94		8.60	---	-3.87	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	4-Oct-94		8.31	---	-3.58	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	20-Dec-94		7.92	---	-3.19	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	28-Mar-95		7.78	---	-3.05	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	30-Jun-95		NM	NM	NM	NS	NS	NS	NS	NS	NS
	24-Sep-95		8.34	---	-3.61	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	180
	29-Dec-95	(l)	(l)	(l)	(l)	(l)	(l)	(l)	(l)	(l)	(l)
(o)	24-Mar-96		7.74	---	-3.01	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<50)
	16-Jun-96		8.07	---	-3.34	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	57
TB	19-Mar-93	---	---	---	---	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)	NA
	16-Jun-93		---	---	---	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)	NA
	18-Dec-93		---	---	---	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	NA
	29-Mar-94		---	---	---	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	NA
FB	9-Jun-94		---	---	---	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	NA
TB	20-Dec-94		---	---	---	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	NA
	28-Mar-95		---	---	---	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	NA
	30-Jun-95		---	---	---	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	NA
	24-Sep-95		---	---	---	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	NA
	29-Dec-95		---	---	---	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	NA
	24-Mar-96		---	---	---	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	NA
	16-Jun-96		---	---	---	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	NA

(Remarks on next page.)

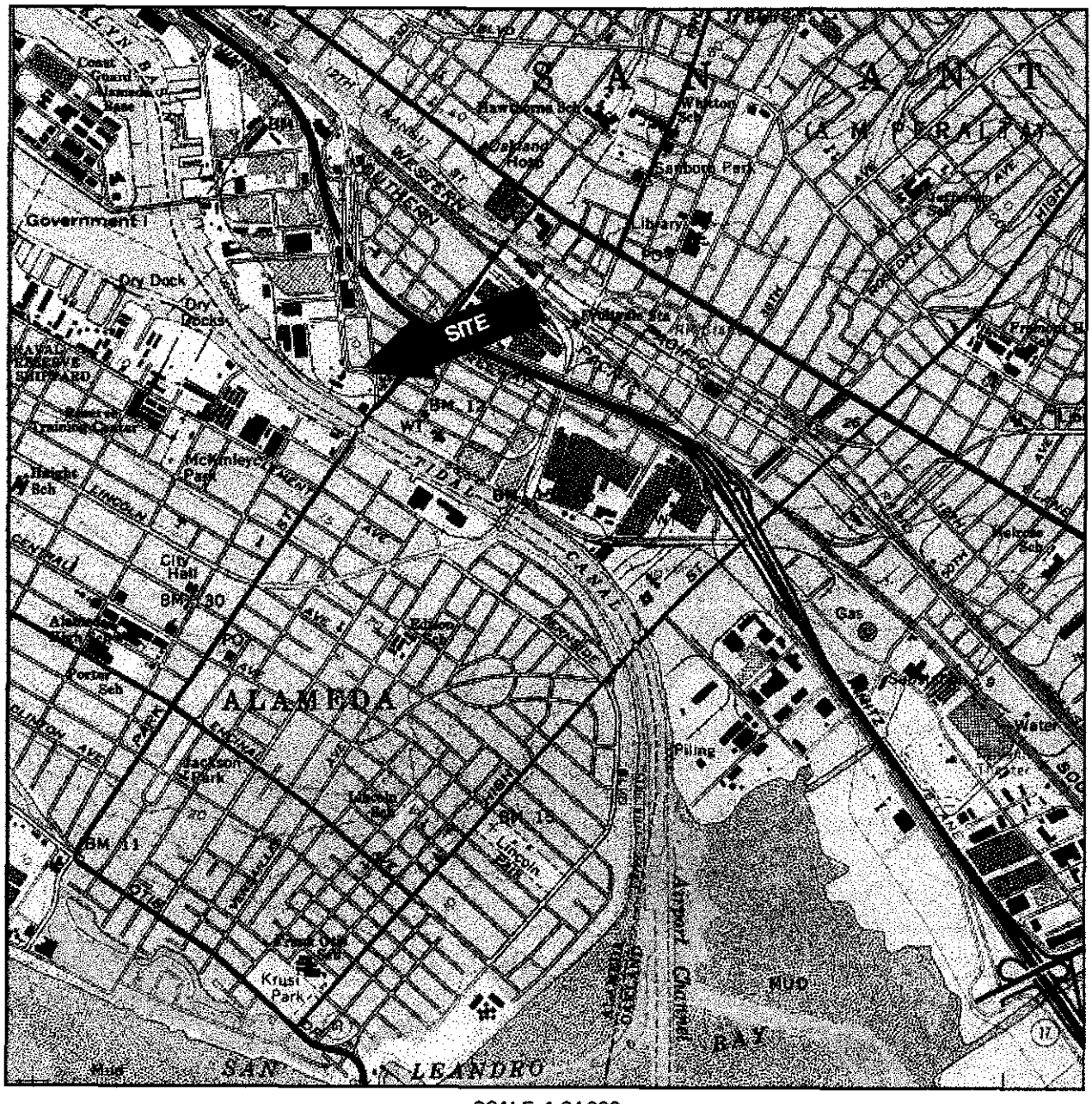
Table 2: Summary of Groundwater Sampling Results
RMC Lonestar Facility
333 – 23rd Avenue, Oakland, California.

Well	Date	Top of Casing Elevation (a) (feet) (msl)	Depth to Water (feet)	Liquid-Phase Hydrocarbon Thickness (feet)	Groundwater Elevation (b) (feet) (msl)	TPH-G (c) (µg/L)	Benzene (d) (µg/L)	Toluene (d) (µg/L)	Ethyl-benzene (d) (µg/L)	Xylenes (d) (µg/L)	TPH-D (e) (µg/L)

(a) Elevations surveyed on 9/26/93 by Field Designs relative to City of Oakland Benchmark #3457 and corrected to msl. (Benchmark datum is 2.998 feet off of msl.)
(b) The top-of-water elevation in the presence of liquid-phase hydrocarbons is calculated by (TOC-DTW)+((DTW-DTP) X 0.8).
(c) Analyzed by USEPA Method 8015, modified.
(d) Analyzed by USEPA Method 8020.
(e) Analyzed by USEPA Method 8015, modified.
(f) Monitor Well MW-2 was abandoned prior to December 1992.
(g) Laboratory reports that the chromatogram does not match typical gasoline pattern.
(h) Laboratory reports that the chromatogram does not match typical diesel pattern; lighter hydrocarbons present.
(i) Monitor Well MW-12 inaccessible due to the accumulation of silt, sand, and gravel in the well casing.
(j) Laboratory reports that the chromatogram indicates the presence of unidentified hydrocarbons >C16.
(k) Laboratory reports that the chromatogram indicates the presence of diesel and unidentified hydrocarbons >C16.
(l) Well could not be found.
(m) Well inaccessible.
(n) Laboratory reports that the chromatogram indicates the presence of unidentified hydrocarbons >C8.
(o) Well MW-13 also analyzed on March 24, 1996, for Total Dissolved Solids (USEPA Method 160.1). Laboratory reported a concentration of 1,600 mg/L.
(p) Laboratory reports that the chromatogram indicates the presence of unidentified hydrocarbons >C18.
(q) Laboratory reports that the chromatogram indicates the presence of unidentified hydrocarbons >C9.

TPH-G Total petroleum hydrocarbons as gasoline
TPH-D Total petroleum hydrocarbons as diesel
µg/L Micrograms per liter
ND Not detected within the method detection limit.
NM Not measured
NP Data not provided
NS Not surveyed or not sampled
LPH Liquid-phase hydrocarbons present; well not sampled

Data through January 1991 provided by Gettler-Ryan, Inc. (Site Update, January 15, 1991).
June 16, 1996 laboratory analytical results provided by Sequoia Analytical, Walnut Creek, California.



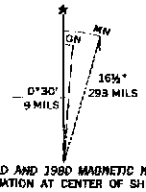
SCALE 1:24 000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET



UTM GRID AND 1980 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

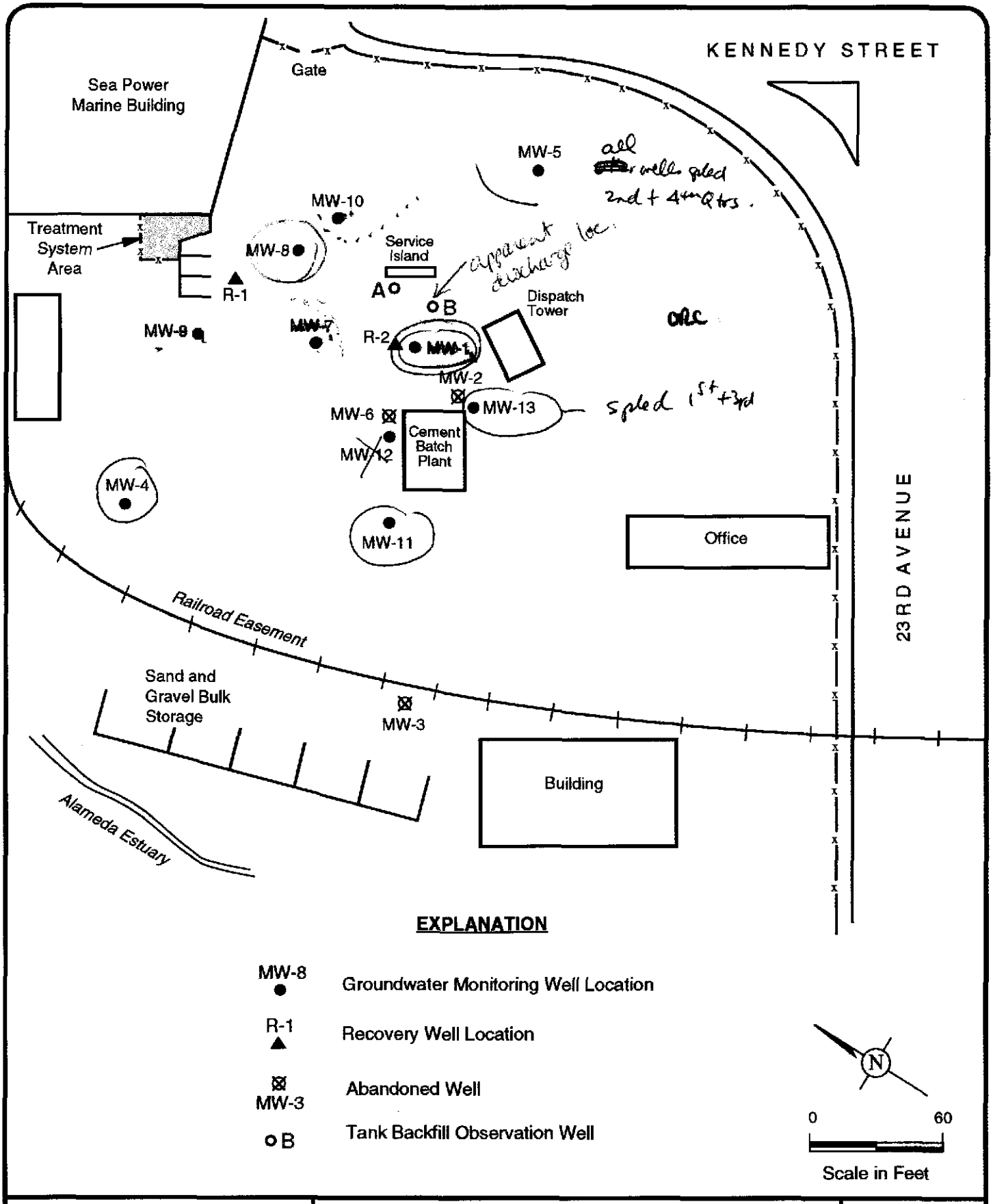
Reference: U.S.G.S. 7.5-minute Quadrangle Oakland East California, 1959 photorevised 1980.

GERAGHTY & MILLER, INC.
Environmental Services
A **Heidemij** Company

Project No. RC0174.000

SITE LOCATION MAP
Lonestar Facility
333–23rd Avenue
Oakland, California

FIGURE
1



EXPLANATION

MW-8 ●	Groundwater Monitoring Well Location
R-1 ▲	Recovery Well Location
⊠ MW-3	Abandoned Well
o B	Tank Backfill Observation Well

N

0 60

Scale in Feet

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Environmental Services
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Project No. RC0174.000

SITE PLAN
Lonestar Facility
333 – 23rd Avenue
Oakland, California

FIGURE
2

REVISION
7/30/96

ATTACHMENT 1

QUARTERLY GROUNDWATER MONITORING REPORT
(JULY 29, 1996)

GERAGHTY
& MILLER, INC.
Environment and Infrastructure

a **heidemij** company

July 29, 1996
Project No. RC0174.003

Mr. Bob Cochran
Chevron Products Company
6001 Bollinger Canyon Road
San Ramon, CA 94583-0804

(510) 842-9655

SUBJECT: Results of Quarterly Groundwater Monitoring, Second Quarter 1996, Lonestar Facility, 333 – 23rd Avenue, Oakland, California.

Dear Mr. Cochran:

This report presents the results of the quarterly groundwater monitoring performed on June 16, 1996, at the facility referenced above (Figure 1). The scope of work for this project was originally presented to Chevron in Task 12 of the Geraghty & Miller, Inc. Budget Modification No. 2 dated May 21, 1993, and extended for quarterly monitoring from January through December 1996 in Tasks 14 and 15 of Budget Modification No. 5 dated December 19, 1995. The monitoring program includes collecting depth-to-water measurements and groundwater samples from all ten wells during the June and December monitoring events and from the downgradient wells only (MW-1, MW-4, MW-7, MW-11, and MW-13) during the March and September quarterly monitoring events.

A groundwater extraction and treatment system operated through September 1, 1994. A product-removal system consisting of passive product skimmers installed in Monitoring Well MW-1 and Recovery Well R-2 began operation on September 1, 1994, and operated through October 12, 1995. Oxygen Release Compound (ORC), a powder contained in a permeable membrane suspended from the wellcap, was added to Monitoring Wells MW-1, MW-7, MW-9, and MW-10 on March 24, 1996, to enhance biodegradation of petroleum hydrocarbons.

FIELD PROCEDURES

The quarterly groundwater monitoring was performed on June 16, 1996. Depth-to-water and dissolved oxygen (DO) measurements were collected from Monitoring Wells MW-1, MW-5, MW-7, MW-8, MW-9, MW-10, MW-11, and MW-13. Field parameters (nitrate, phosphate, and ammonia) were recorded for Wells MW-1, MW-7, MW-8, MW-9, MW-10, and MW-13. ORC was temporarily removed from the well casing in Wells MW-1, MW-7, MW-9, and MW-10 prior

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to collection of field parameters. Field parameters are shown in Table 1. Groundwater samples were also collected from Wells MW-1, MW-5, MW-7, MW-8, MW-9, MW-10, MW-11, and MW-13. The monitoring-well locations are shown in Figure 2. Well MW-4 was inaccessible due to excessive accumulation of debris associated with the concrete manufacturing plant above the well. The well casing of MW-12 is filled with silt, sand, and gravel to the top of the casing.

Prior to sampling, depth-to-water and total-well-depth measurements were obtained from Monitoring Wells MW-1, MW-5, MW-7, MW-8, MW-9, MW-10, MW-11, and MW-13. Additionally, the wells were checked for the presence of liquid-phase hydrocarbons with an oil/water interface probe. Each well to be sampled was purged of approximately three casing volumes of water, except Monitor Wells MW-1, MW-7, MW-9, and MW-10. These wells were not purged to avoid removing oxygenated water generated by the ORC. The equipment that entered the wells was washed in a solution of non-phosphate cleaner and water and then triple rinsed in deionized water prior to sampling each well. Following purging, groundwater samples were collected using a disposable polyethylene bailer, with a new bailer used for each well. The purged water was then processed through the on-site groundwater treatment system and discharged into the sanitary sewer.

Groundwater samples were put into the appropriate USEPA-approved containers, placed on ice, and transported to Sequoia Analytical, in Walnut Creek, California, along with appropriate chain-of-custody documentation. The water samples were analyzed for total petroleum hydrocarbons (TPH) as gasoline (USEPA Method 8015, modified), TPH as diesel (USEPA Method 8015, modified), and benzene, toluene, ethylbenzene, and total xylenes (BTEX; USEPA Method 8020).

A trip blank, consisting of a sample vial containing laboratory-grade water, accompanied the sample vials from the laboratory to the site and back to the laboratory, and was also submitted for analysis. The purpose of the trip blank is to assess whether any of the compounds analyzed for may have been imparted to the samples by air in the vicinity of the sample bottles during shipping, by the sample container, by the preservative, or by other exogenous sources.

RESULTS

DEPTH-TO-WATER DATA

A summary of the depth-to-water data is presented in Table 2. Depth to water ranged from 7.86 feet (Monitor Well MW-1) to 10.37 feet (Monitor Well MW-7) below the ground surface.

The well-casing elevations were surveyed on September 26, 1993, by Field Designs relative to City of Oakland Benchmark #3457.

GROUNDWATER ANALYTICAL RESULTS

A summary of the groundwater analytical results is presented in Table 2. Copies of the certified laboratory reports and chain-of-custody documentation are included in Attachment 1. TPH as diesel was reported in all the wells sampled except for Monitor Well MW-5, at concentrations ranging from 57 micrograms per liter [µg/L] (Well MW-13) to 99,000 µg/L (Well MW-1). TPH as gasoline and BTEX were not detected in any of the groundwater samples or the trip blank, with the exception of Monitor Well MW-8 (59 µg/L of TPH as gasoline).

Geraghty & Miller appreciates the opportunity to be of service to Chevron. If you have any questions regarding this report, please do not hesitate to call us.

Sincerely,
GERAGHTY & MILLER, INC.

Aaron O'Brien
Staff Engineer/Project Manager

Jeffrey W. Hawkins, R.G.
Senior Scientist

Gary W. Keyes
Principal Engineer/Associate
Richmond, California Office Manager

Attachments:

Table 1	Summary of Field Parameters
Table 2	Summary of Groundwater Sampling Results
Figure 1	Site Location Map
Figure 2	Site Plan
Attachment 1	Copies of Certified Laboratory Reports and Chain-of-Custody Documentation

ATTACHMENT 1

COPIES OF CERTIFIED LABORATORY REPORTS
AND
CHAIN-OF-CUSTODY DOCUMENTATION

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Geraghty & Miller, Inc.	Client Project ID:	Chevron / Lonestar	Sampled: Jun 16, 1996
1050 Marina Way South	Sample Matrix:	Water	Received: Jun 18, 1996
Richmond, CA 94804	Analysis Method:	EPA 5030/8015 Mod./8020	Reported: Jun 25, 1996
Attention: Cynthia Hilton	First Sample #:	606-1347	

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 606-1347 MW-13	Sample I.D. 606-1348 MW-8	Sample I.D. 606-1349 MW-5	Sample I.D. 606-1350 MW-7	Sample I.D. 606-1351 MW-11	Sample I.D. 606-1352 MW-1
QC Batch Number:		GC062096 802011A	GC062096 802011A	GC062096 802011A	GC062096 802011A	GC062096 802011A	GC062496 802011A
Purgeable Hydrocarbons	50	N.D.	59	N.D.	N.D.	N.D.	N.D.
Benzene	0.50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Toluene	0.50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Ethyl Benzene	0.50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Total Xylenes	0.50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chromatogram Pattern:		--	Unidentified Hydrocarbons >C9	--	--	--	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0	10
Date Analyzed:	6/20/96	6/20/96	6/20/96	6/20/96	6/20/96	6/24/96
Instrument Identification:	HP-11	HP-11	HP-11	HP-11	HP-11	HP-11
Surrogate Recovery, %: (QC Limits = 70-130%)	96	92	94	98	94	95

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL, #1271

Kenneth L. Wimer
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Geraghty & Miller, Inc.	Client Project ID:	Chevron / Lonestar	Sampled: Jun 16, 1996
1050 Marina Way South	Sample Matrix:	Water	Received: Jun 18, 1996
Richmond, CA 94804	Analysis Method:	EPA 5030/8015 Mod./8020	Reported: Jun 25, 1996
Attention: Cynthia Hilton	First Sample #:	606-1353	

QC Batch Number: GC062096 802011A | GC062096 802011A | GC062096 802011A

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 606-1353 MW-9	Sample I.D. 606-1354 MW-10	Sample I.D. 606-1355 TB
Purgeable Hydrocarbons	50	N.D.	N.D.	N.D.
Benzene	0.50	N.D.	N.D.	N.D.
Toluene	0.50	N.D.	N.D.	N.D.
Ethyl Benzene	0.50	N.D.	N.D.	N.D.
Total Xylenes	0.50	N.D.	N.D.	N.D.
Chromatogram Pattern:		--	--	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0
Date Analyzed:	6/20/96	6/20/96	6/20/96
Instrument Identification:	HP-11	HP-11	HP-11
Surrogate Recovery, %: (QC Limits = 70-130%)	92	93	95

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL, #1271

Kenneth L. Wimer
Project Manager

Sequoia Analytical

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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Geraghty & Miller, Inc.	Client Project ID:	Chevron / Lonestar	Sampled: Jun 16, 1996
1050 Marina Way South	Sample Matrix:	Water	Received: Jun 18, 1996
Richmond, CA 94804	Analysis Method:	EPA 3510/8015 Mod.	Reported: Jun 25, 1996
Attention: Cynthia Hilton	First Sample #:	606-1347	

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 606-1347 MW-13	Sample I.D. 606-1348 MW-8	Sample I.D. 606-1349 MW-5	Sample I.D. 606-1350 MW-7	Sample I.D. 606-1351 MW-11	Sample I.D. 606-1352 MW-1
QC Batch Number:		SP061996 8015EXA	SP061996 8015EXA	SP061996 8015EXA	SP061996 8015EXA	SP061996 8015EXA	SP061996 8015EXA
Extractable Hydrocarbons	50	57	9,400	N.D.	190	86	99,000
Chromatogram Pattern:		Diesel	Diesel	--	Diesel	Unidentified Hydrocarbons >C18	Diesel

Quality Control Data

Report Limit Multiplication Factor:	1.0	10	1.0	1.0	1.0	20
Date Extracted:	6/19/96	6/19/96	6/19/96	6/19/96	6/19/96	6/19/96
Date Analyzed:	6/20/96	6/20/96	6/20/96	6/20/96	6/20/96	6/21/96
Instrument Identification:	HP-3B	HP-3B	HP-3B	HP-3B	HP-3B	HP-3B

Extractable Hydrocarbons are quantitated against a fresh diesel standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL, #1271

Kenneth L. Wimer
Project Manager

Sequoia Analytical

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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Geraghty & Miller, Inc.	Client Project ID:	Chevron / Lonestar	Sampled: Jun 16, 1996
1050 Marina Way South	Sample Matrix:	Water	Received: Jun 18, 1996
Richmond, CA 94804	Analysis Method:	EPA 3510/8015 Mod.	Reported: Jun 25, 1996
Attention: Cynthia Hilton	First Sample #:	606-1353	

QC Batch Number: SP061996 SP061996

8015EXA 8015EXA

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 606-1353 MW-9	Sample I.D. 606-1354 MW-10
Extractable Hydrocarbons	50	810	300
Chromatogram Pattern:		Diesel	Diesel

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0
Date Extracted:	6/19/96	6/19/96
Date Analyzed:	6/20/96	6/20/96
Instrument Identification:	HP-3B	HP-3B

Extractable Hydrocarbons are quantitated against a fresh diesel standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL, #1271

Kenneth L. Wimer
Project Manager

Sequoia Analytical

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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Geraghty & Miller, Inc.
1050 Marina Way South
Richmond, CA 94804
Attention: Cynthia Hilton

Client Project ID: Chevron / Lonestar
Matrix: Liquid

QC Sample Group: 6061347-355

Reported: Jun 25, 1996

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Diesel
QC Batch#:	GC062096	GC062096	GC062096	GC062096	SP061996
Analy. Method:	802011A EPA 8020	802011A EPA 8020	802011A EPA 8020	802011A EPA 8020	8015EXA EPA 8015
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	EPA 3510
Analyst:	S. Chullakorn	S. Chullakorn	S. Chullakorn	S. Chullakorn	J. Dinsay
MS/MSD #:	6061347	6061347	6061347	6061347	BLK061996
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Prepared Date:	6/20/96	6/20/96	6/20/96	6/20/96	6/19/96
Analyzed Date:	6/20/96	6/20/96	6/20/96	6/20/96	6/20/96
Instrument I.D.#:	HP-11	HP-11	HP-11	HP-11	HP-3A
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L	300 µg/L
Result:	22	19	21	62	430
MS % Recovery:	110	95	105	103	140
Dup. Result:	20	18	19	56	470
MSD % Recov.:	100	90	95	93	160
RPD:	9.5	5.4	10	10	8.9
RPD Limit:	0-25	0-25	0-25	0-25	0-50

LCS #:	11LCS062096	11LCS062096	11LCS062096	11LCS062096	LCS061996
Prepared Date:	6/20/96	6/20/96	6/20/96	6/20/96	6/19/96
Analyzed Date:	6/20/96	6/20/96	6/20/96	6/20/96	6/20/96
Instrument I.D.#:	HP-11	HP-11	HP-11	HP-11	HP-3A
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L	300 µg/L
LCS Result:	22	19	21	61	350
LCS % Recov.:	110	95	105	102	117

MS/MSD LCS Control Limits	70-130	70-130	70-130	70-130	50-150

SEQUOIA ANALYTICAL, #1271

Kenneth L. Wimer
Project Manager

Please Note:
The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

** MS = Matrix Spike, MSD = MS Duplicate, RPD = Relative % Difference

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Geraghty & Miller, Inc.
1050 Marina Way South
Richmond, CA 94804
Attention: Cynthia Hilton

Client Project ID: Chevron / Lonestar
Matrix: Liquid
QC Sample Group: 6061347-355
Reported: Jul 3, 1996

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes
QC Batch#:	GC062496	GC062496	GC062496	GC062496
	802011A	802011A	802011A	802011A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030
Analyst:	S. Chullakorn	S. Chullakorn	S. Chullakorn	S. Chullakorn
MS/MSD #:	6061604	6061604	6061604	6061604
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Prepared Date:	6/24/96	6/24/96	6/24/96	6/24/96
Analyzed Date:	6/24/96	6/24/96	6/24/96	6/24/96
Instrument I.D.#:	HP-11	HP-11	HP-11	HP-11
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L
Result:	21	19	21	61
MS % Recovery:	105	95	105	102
Dup. Result:	20	17	19	56
MSD % Recov.:	100	85	95	93
RPD:	4.9	11	10	8.6
RPD Limit:	0-25	0-25	0-25	0-25

LCS #:	11LCS062496	11LCS062496	11LCS062496	11LCS062496
Prepared Date:	6/24/96	6/24/96	6/24/96	6/24/96
Analyzed Date:	6/24/96	6/24/96	6/24/96	6/24/96
Instrument I.D.#:	HP-11	HP-11	HP-11	HP-11
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L
LCS Result:	21	19	21	62
LCS % Recov.:	105	95	105	103

MS/MSD LCS Control Limits	70-130	70-130	70-130	70-130

SEQUOIA ANALYTICAL, #1271

Kenneth J. Wimer
Project Manager

Please Note:
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** MS = Matrix Spike, MSD = MS Duplicate, RPD = Relative % Difference

ax Copy of Lab Report and COC to Chevron Contact: ... Chain of Custody Record

Chevron U.S.A. Inc.
P.O. BOX 5004
San Ramon, CA 94583
FAX (415)842-9591

Chevron Facility Number: Chevron Lonestar
Facility Address: 333 23rd Ave. Oakland Ca.
Consultant Project Number: RC0174-003
Consultant Name: Geraghty & Miller INC.
Address: 1050 Marina Way South Richmond
Project Contact (Name): Cynthia Hilton
(Phone): 2333200 (Fax Number): 2333204

Chevron Contact (Name): BoB Cochran
(Phone): 842-9655 9606331
Laboratory Name: Sequoia
Laboratory Release Number: 3479240
Samples Collected by (Name): G. Crowley
Collection Date: 6/16,17/96
Signature: [signature]

Analyses To Be Performed

Sample Number	Lab Sample Number	Number of Containers	Matrix S = Soil A = Air W = Water C = Charcoal	Type G = Grab C = Composite D = Discrete	Time	Sample Preservation	Iced (Yes or No)	BTEX + TPH GAS (8020 + 8015)	TPH Diesel (8015) SILICA GEL CLEAN UP	Oil and Grease (5520)	Purgeable Halocarbons (8010)	Purgeable Aromatics (8020)	Purgeable Organics (8240)	Extractable Organics (8270)	Metals Cd,Cr,Pb,Zn,Ni (ICAP or AA)					Remarks
W-13		4	W	G	6/16 1:00	See Label	Y	X	X		6061347			AD						
W-8		4	W	G	6/16 12:35			X	X		6061348									
W-5		4	W	G	6/16 12:15			X	X		6061349									
W-7		4	W	G	6/16 10:15			X	X		6061350									
W-11		4	W	G	6/16 1:15			X	X		6061351									
W-1		4	W	G	6/17 10:45			X	X		6061352									
W-9		4	W	G	6/16 9:40			X	X		6061353									
W-10		4	W	G	6/16 8:50			X	X		6061354			↓						
TB		1	W	/	/	/	/	X	/		6061355									

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time	Turn Around Time (Circle Choice)
[signature]	G&M	6-18-96 1330	[signature]	SAL	6/18/96 1330	24 Hrs.
[signature]	SAL	6/18 2005				48 Hrs.
						5 Days
						10 Days
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature): [signature]		6/18/96 2005	As Contracted (circled)