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December 7, 1998
Project No. 10-1682-09/804

Mr. Derek Lee
California Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, California 94612

SUBJECT: Semi-Annual Groundwater Monitoring Report and Request for Site Closure, Industrial Asphalt Facility, 52 El Charro Road, Pleasanton, California

Dear Mr. Lee:

Kleinfelder, Inc. (Kleinfelder) is pleased to present this semi-annual groundwater monitoring report and request for site closure on behalf of Industrial Asphalt for the above-referenced site (Plate 1). This report covers the period from May through October 1998 and presents the results of the sampling event conducted on October 7, 1998. In light of the past eight years of remedial activities and groundwater monitoring results at the site, Industrial Asphalt and Kleinfelder also are requesting that the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB), consider this request for site closure.

SITE BACKGROUND

The site is located on a portion (approximately 5 acres) of the 177-acre parcel owned by the Jamieson Company. Industrial Asphalt has occupied the site since 1963. Industrial Asphalt operated six underground storage tanks (USTs) for storing asphalt, and two USTs for storing diesel fuel at the site. In 1985, a leaking fuel pipe serving the diesel USTs was identified and repaired. Upon removal of two diesel USTs in February 1987, free product was observed in the bottom of the excavation. This product was sampled and analyzed for total petroleum hydrocarbons as diesel (TPH-d) and polychlorinated biphenyls (PCBs). The product was found to contain 340,000 milligrams per kilogram (mg/kg) of TPH-d and 12 mg/kg of PCBs (Arochlor 1260). At that time, free product recovery operations began, and several phases of soil and groundwater investigations were performed. In addition, two asphalt tanks were excavated and removed. In September 1987, the remaining four asphalt USTs were removed, and contaminated soil and backfill material were excavated.

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There are 13 monitoring wells and 11 groundwater extraction wells onsite (Plate 2). Following several phases of site investigation, a groundwater remediation system was constructed and started in 1994. Plate 3 shows a layout of the groundwater treatment system. The system was operated for approximately two years. During that period, about 7 million gallons of groundwater were extracted, and approximately 22 pounds of dissolved petroleum hydrocarbons were removed from groundwater (Plate 4). Kleinfelder submitted a letter in May 1996 to the RWQCB requesting shutdown of the active groundwater remediation system and requesting approval to install Oxygen Release Compound® (ORC®) "socks" in extraction wells (after system shutdown) to enhance bioremediation processes. Following installation of the ORC® socks in September 1996, dissolved oxygen (DO) measurement was added to the groundwater monitoring program.

A detailed discussion of the site history including site investigation, groundwater monitoring, and remediation activities, is attached in Appendix A.

SEMI-ANNUAL GROUNDWATER MONITORING RESULTS

In June 1996, a semi-annual (twice yearly) groundwater monitoring program for the site was approved by the RWQCB. As part of the revised monitoring program, all groundwater samples are analyzed for TPH-d and motor oil (TPH-mo). Samples from four wells (MW-1, MW-2, MW-3, and MW-8) are analyzed for PCBs. Monitoring wells MW-1, MW-2, MW-3, MW-8, MW-10, and MW-15 are sampled semi-annually, and 11 other monitoring wells are sampled annually in the spring (Table 1).

The most recent semi-annual groundwater monitoring event was performed on October 7, 1998, in accordance with the revised groundwater monitoring program. It represents the fifth sampling event under the revised monitoring program. Groundwater monitoring wells MW-2 and MW-15 were purged with a submersible pump and sampled with disposable bailers. Monitoring wells MW-1 and MW-3 were purged and sampled with disposable bailers. Please refer to Appendix B for purge logs. Monitoring wells MW-8 and MW-10 were buried under pavement and not accessible at the time of sampling.

Dissolved Oxygen and Water Level Monitoring Data

Prior to sampling, DO measurements were recorded at 5, 15, and 25 feet below static water level in all accessible monitoring wells on October 7, 1998. Depth to water was also measured at this time. Due to equipment malfunction, DO concentrations were remeasured on October 30, 1998, and are summarized in Table 2. Water-level data for the monitoring wells are presented in Table 3. Water levels in the 11 groundwater extraction wells were not measured. Groundwater elevations in monitoring wells rose approximately 8 feet compared to November 1997, declined 8 feet compared with April 1998 data, and were similar to groundwater elevations in December 1995.

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SUMMARY OF GROUNDWATER MONITORING DATA

A review of the data from the October 1998 sampling event and comparison with previous monitoring results at the Industrial Asphalt site indicates the following:

- The groundwater levels beneath the site rose an average of about 8 feet compared to November 1997 and were consistent with December 1995 elevations. The groundwater flow direction on the site was to the northeast with a gradient of about 0.002 ft/ft.

- Low concentrations of diesel and oil range petroleum hydrocarbons less than 3.0 mg/L persist in samples from monitoring wells MW-2 and MW-3. A sheen was reported on the water in each of these wells and also in well MW-1. Detectable concentrations of TPH-d and TPH-mo below 1.0 mg/L remain in well MW-1.

- PCBs were not detected at concentrations at or above the detection limit in samples collected from monitoring wells during the October 1998 monitoring event.

- TPH-d and TPH-mo were not detected in samples from well MW-15 in the October 1998 sampling event. This marks the fourth consecutive sampling event with non-detectable results for well MW-15.

- Dissolved oxygen concentrations below 1.0 mg/L were recorded for wells MW-1, MW-2, MW-3, and MW-15 located nearer the former source areas indicating continued biodegradation of the dissolved hydrocarbons.

JUSTIFICATION FOR SITE CLOSURE

At this time, Industrial Asphalt and Kleinfelder believe that site closure is warranted due to the removal of the sources of petroleum hydrocarbons, reductions in chemical concentrations in soil and groundwater, and stability of chemical concentrations over the last three years. The historical information presented in Appendix A and the following summary items support closure of the site.

- During February 1987 and September 1987, two diesel tanks and six asphalt tanks were removed and contaminated soil and backfill material were excavated.

- In July 1990, an additional 1,000 cubic yards of petroleum hydrocarbon-impacted soil were excavated in the vicinity of soil boring SB-1 where free product was encountered. In January 1991, another 1,000 cubic yards of impacted soil were excavated from an area west of the July 1990 excavation.

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- The groundwater remediation system operated from July 1994 to July 1996. During the two years of operation, the system extracted a total of 7,107,800 gallons of groundwater, removing approximately 22 pounds of petroleum hydrocarbons. Approximately 86 percent (19 pounds) of the total mass was removed within the first six months of operation. The extraction and treatment of approximately 5.5 million gallons of groundwater was required to remove the remaining 14 percent (3 pounds) of petroleum hydrocarbons. Cessation of pumping was approved by the RWQCB in June 1996.

- In September 1996, 15-foot lengths of 4-inch-diameter socks containing ORC® were installed in seven inactive extraction wells. Currently, dissolved oxygen readings are less than 1.0 mg/L in wells near the removed hydrocarbon sources indicating that the oxygen has been consumed by biodegradation of the remaining hydrocarbons.

- Since April 1991 concentrations of TPH-d and TPH-mo in groundwater have decreased by 16 and 37 times, respectively, to less than 3.0 mg/L. For the past three years, concentrations TPH-d and TPH-mo in groundwater have remained relatively stable or have continued to decrease after the cessation of pumping and the addition of ORC®.

- No benzene, toluene, ethylbenzene, or xylenes (BTEX) or polynuclear aromatic hydrocarbons (PAHs) have been detected in soil or groundwater; the health risk presented by the residual petroleum hydrocarbons on site is considered minimal.

- The shallow groundwater at the site is not used as a source of drinking water nor is it likely to be. The nearest downgradient, non-drinking water well is about 950 feet away and has not contained detectable concentrations of petroleum hydrocarbons since monitoring began in 1987. The nearest municipal water well is over 2 miles away.

- Depth to water over the last three years has ranged from about 65 feet to 90 feet bgs; contact with groundwater is unlikely due to its depth.

- The surface water impoundment immediately north of the site acts as a recharge area to groundwater, not a potential receptor.

- The petroleum hydrocarbon-impacted zone (less than 1.0 mg/L), as defined by the most recent groundwater monitoring results, comprises a limited area (0.6 acre) approximately 200 feet long east to west and 140 feet wide north to south (Plate 6) . Approximately one-quarter of this area contains clean soil used to backfill the tank excavations.

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On the basis of the current low chemical concentrations and overall reductions in petroleum hydrocarbons through active remedial activities conducted since 1987, this site should be considered a candidate for no further action and closure. Past remedial activities for soil and groundwater have removed the petroleum hydrocarbon sources and reduced the amount of chemicals remaining in groundwater to stable concentrations of less than 3.0 mg/L in a small area. Further remediation is impractical and the remaining hydrocarbons do not pose a risk to health and the environment. Therefore, Industrial Asphalt and Kleinfelder respectfully request that the RWQCB consider granting closure for this site and cessation of further groundwater monitoring activities.

LIMITATIONS

Our firm has prepared this report for the Client's exclusive use for this particular project and in accordance with generally accepted engineering practices within the area at the time of our investigation. No other representations, expressed or implied, and no warranty or guarantee is included or intended.

This report may be used only by the Client and only for the purposes stated, within a reasonable time from its issuance. Land use, site conditions (both onsite and offsite) or other factors may change over time, and additional work may be required with the passage of time. Any party other than the Client who wishes to use this report shall notify Kleinfelder of such intended use. Based on the intended use of the report, Kleinfelder may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the Client or anyone else will release Kleinfelder from any liability resulting from the use of this report by any unauthorized party.

If you have any questions or comments concerning this report, please do not hesitate to call us at 925-484-1700.

Sincerely,

KLEINFELDER, INC.

Steven W.H. Walker, R.G., C.E.G.
Project Manager

Paul A. Baginski, P.E.
Regional Environmental Manager

SWHW:PAB:sh

cc: Mr. Michael Munn - Industrial Asphalt
Mr. Don Atkinson-Adams - Alameda County Health Care Services Agency
Ms. Loretta Barsamian - RWQCB, San Francisco Bay Region
Mr. Craig Mayfield - Alameda County Flood Control and Water Conservation District, Zone 7

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TABLES

TABLE 1
REVISED GROUNDWATER MONITORING PROGRAM
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON CALIFORNIA

Monitoring Well Number	Sampling Frequency	Analyses			
		TPH-diesel (EPA Method 8015)	TPH-motor oil (EPA Method 8015)	Dissolved Oxygen	PCBs (EPA Method 8080)
MW-1	Semi-Annual	X	X	X	X
MW-2	Semi-Annual	X	X	X	X
MW-3	Semi-Annual	X	X	X	X
MW-4	Annual	X	X	X	
MW-5	Annual	X	X	X	
MW-6	Annual	X	X	X	
MW-7	Annual	X	X	X	
MW-8	Semi-Annual	X	X	X	X
MW-9	Annual	X	X	X	
MW-10	Semi-Annual	X	X	X	
MW-11	Annual	X	X	X	
MW-12	Annual	X	X	X	
MW-13	Annual	X	X	X	
MW-14	Annual	X	X	X	
MW-15	Semi-Annual	X	X	X	
MW-16	Annual	X	X	X	
14A2	Annual	X	X	X	

NOTES:

1. Revised monitoring program approved by RWQCB by letter dated June 26, 1996.
2. TPH - Total Petroleum Hydrocarbons quantified against indicated standard.
3. PCBs - Polychlorinated Biphenyls
4. PAHs were analyzed one time, in the October 1996 monitoring event. PAH analyses are not recommended for inclusion in the groundwater monitoring program.

TABLE 2
DISSOLVED OXYGEN MEASUREMENTS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON, CALIFORNIA

Monitoring Well	Measurement Date	Dissolved Oxygen Reading (mg/L) at Indicated Depth Below SWL		
		5'	15'	25'
MW-1	10/3/96	1.60	NM	NM
	10/21/96	1.95	NM	NM
	4/29/97	0.20	0.10	NM
	11/10/97	1.0	NM	NM
	4/28/98	0.8	0.45	0.45
	10/30/98	0.15	0.1	NM
MW-2	10/7/96	1.20	0.70	NM
	10/21/96	1.63	NM	NM
	4/29/97	0.2	0.1	NM
	11/10/97	1.2	NM	NM
	4/28/98	0.3	0.3	0.15
	10/30/98	0.12	0.11	NM
MW-3	10/3/96	NM	NM	NM
	10/21/96	NM	NM	NM
	4/29/97	NM	NM	NM
	11/10/97	NM	NM	NM
	4/28/98	0.25	0.20	NM
	10/30/98	0.9	NM	NM
MW-4	10/3/96	7.45	7.50	6.20
	10/4/96	7.80	7.72	NM
	4/29/97	NM	NM	NM
	11/10/97	5.0	4.4	NM
	4/28/98	7.8	8.0	7.8
	10/30/98	NM	NM	NM
MW-5	10/3/96	5.60	4.80	3.20
	10/21/96	6.03	5.93	NM
	4/29/97	2.15	1.80	1.40
	11/10/97	2.1	2.2	NM
	4/28/98	4.0	4.1	4.4
	10/30/98	NM	NM	NM
MW-6	10/3/96	3.95	3.85	3.70
	10/21/96	4.05	4.02	3.90
	4/29/97	1.80	2.00	0.20
	11/10/97	3.0	2.6	0.8
	4/28/98	2.2	2.3	2.3
	10/30/98	NM	NM	NM
MW-7	10/3/96	2.00	1.90	1.70
	10/21/96	2.10	2.00	1.90
	4/29/97	0.40	0.20	0.19
	11/10/97	2.0	1.5	1.3
	4/28/98	3.1	3.5	3.6
	10/30/98	NM	NM	NM

TABLE 2
DISSOLVED OXYGEN MEASUREMENTS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON, CALIFORNIA

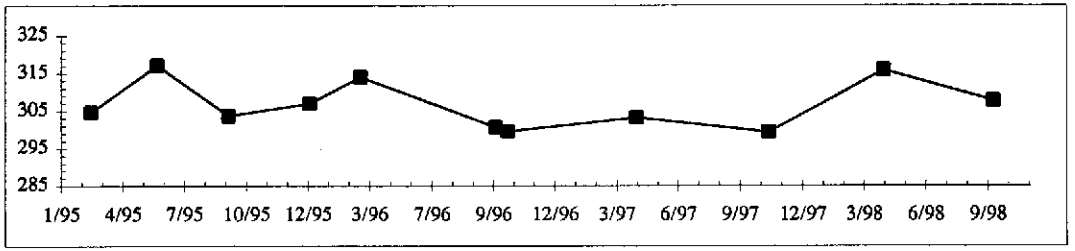
MW-8	10/3/96		Not Accessible	
	10/21/96		Not Accessible	
	4/29/97	0.30	0.30	0.20
	11/10/97	2.2	1.4	0.7
	4/28/98	0.3	0.3	0.2
	10/30/98		Not Accessible	
MW-9	10/3/96		Not Accessible	
	10/21/96		Not Accessible	
	4/29/97		Not Accessible	
	11/10/97		Not Accessible	
	4/28/98		Not Accessible	
	10/30/98		Not Accessible	
MW-10	10/3/96	3.40	3.20	2.50
	10/21/96	3.50	3.60	3.00
	4/29/97		Not Accessible	
	11/10/97		Not Accessible	
	4/28/98		Not Accessible	
	10/30/98		Not Accessible	
MW-14	10/3/96	4.50	4.55	4.45
	10/21/96	4.62	4.68	4.00
	4/29/97	2.30	2.10	0.80
	11/10/97	4.0	3.3	2.8
	4/28/98	3.6	1.9	1.9
	10/30/98	NM	NM	NM
MW-15	10/3/96	4.50	1.00	0.75
	10/21/96	3.47	1.10	0.82
	4/29/97	2.10	1.80	0.20
	11/10/97	4.0	3.2	0.5
	4/28/98	1.0	0.4	0.3
	10/30/98	0.85	0.4	0.1
MW-16	10/3/96		Not Accessible	
	10/21/96		Not Accessible	
	4/29/97	3.20	3.40	1.80
	11/10/97	6.4	5.0	4.9
	4/28/98	2.5	0.5	2.3
	10/30/98	NM	NM	NM
MW-14A2	10/3/96	7.30	NM	NM
	10/21/96	NM	NM	NM
	4/29/97	5.30	NM	NM
	11/10/97	NM	NM	NM
	4/28/98	NM	NM	NM
	10/30/98	NM	NM	NM

Notes:

1. Dissolved oxygen (DO) readings measured in-situ using a YS1 55 DO meter with 150 foot lead
2. Temperatures also recorded at time of DO measurements, ranging from 16.8 to 18.3 degrees C.
3. SWL = static water level
4. NM = Not measured

TABLE 3
SUMMARY OF GROUND WATER ELEVATIONS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON, CALIFORNIA

Well Number	Date		Product Thickness (ft)	Depth to Water (ft)	Elevation (ft, MSL)	Trend
MW-1	2/14/95	2/95	SHEEN	74.77	304.64	
MP Elev.	5/23/95	5/95	SHEEN	62.24	317.17	
379.41	9/5/95	9/95	SHEEN	75.73	303.68	
Well Dept	1/3/96	1/96	SHEEN	72.43	306.98	
88	3/18/96	3/96	SHEEN	65.44	313.97	
	10/3/96	10/96	SHEEN	78.79	300.62	
	10/21/96	10/96	NE	79.92	299.49	
	4/29/97	4/97	SHEEN	76.23	303.18	
	11/10/97	11/97	SHEEN	80.01	299.40	
	4/28/98	4/98	SHEEN	63.56	315.85	
	10/7/98	10/98	SHEEN	71.70	307.71	
MW-2	2/14/95	2/95	SHEEN	75.16	304.64	
MP Elev.	5/23/95	5/95	SHEEN	62.15	317.65	
379.80	9/5/95	9/95	SHEEN	75.99	303.81	
Well Dept	1/3/96	1/96	SHEEN	72.76	307.04	
90	3/18/96	3/96	SHEEN	66.40	313.40	
	10/3/96	10/96	SHEEN	78.91	300.89	
	10/21/96	10/96	NE	80.04	299.76	
	4/29/97	4/97	SHEEN	76.36	303.44	
	11/10/97	11/97	SHEEN	80.05	299.75	
	4/28/98	4/98	SHEEN	64.31	315.49	
	10/7/98	10/98	SHEEN	72.18	307.62	



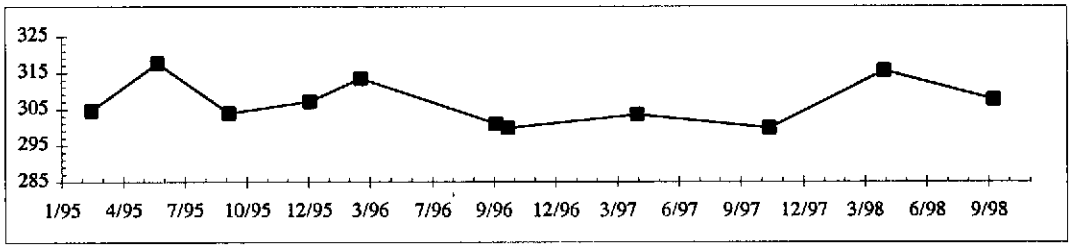
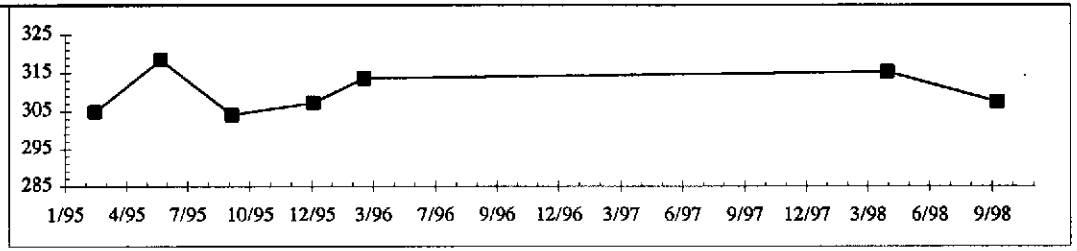


TABLE 3
SUMMARY OF GROUND WATER ELEVATIONS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON, CALIFORNIA

Well Number	Date		Product Thickness (ft)	Depth to Water (ft)	Elevation (ft, MSL)	Trend
MW-3	2/14/95	2/95	SHEEN	73.73	304.81	
MP Elev.	5/23/95	5/95	SHEEN	60.14	318.40	
378.54	9/5/95	9/95	NA	74.55	303.99	
Well Dept	1/3/96	1/96	SHEEN	71.37	307.17	
90	3/18/96	3/96	SHEEN	64.96	313.58	
	10/3/96	10/96	DRY	NA		
	10/21/96	10/96	NM	NA		
	4/29/97	4/97	DRY	NA		
	11/10/97	11/97	DRY	NA		
	4/28/98	4/98	SHEEN	63.30	315.24	
	10/7/98	10/98	SHEEN	71.16	307.38	
MW-4	2/14/95	2/95	NE	71.71	304.55	
MP Elev.	5/23/95	5/95	NE	57.90	318.36	
376.26	9/5/95	9/95	NE	72.25	304.01	
Well Dept	1/3/96	1/96	NE	69.15	307.11	
95	3/18/96	3/96	NE	63.34	312.92	
	10/3/96	10/96	NE	75.13	301.13	
	10/21/96	10/96	NE	77.06	299.20	
	4/29/97	4/97	NM	Not Measured		
	11/10/97	11/97	NE	76.12	300.14	
	4/28/98	4/98	NE	61.07	315.19	
	10/7/98	10/98	NE	68.54	307.72	



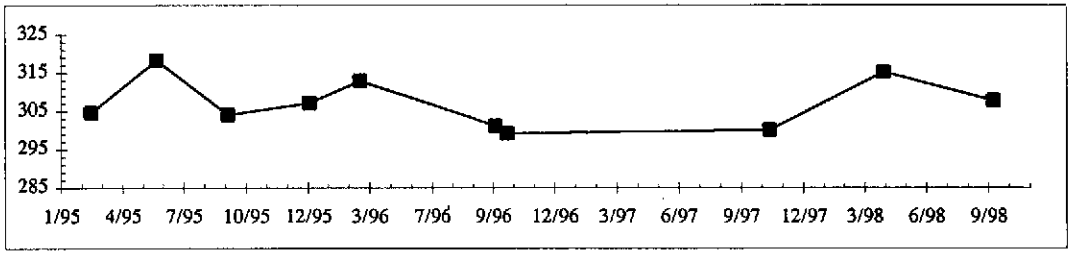
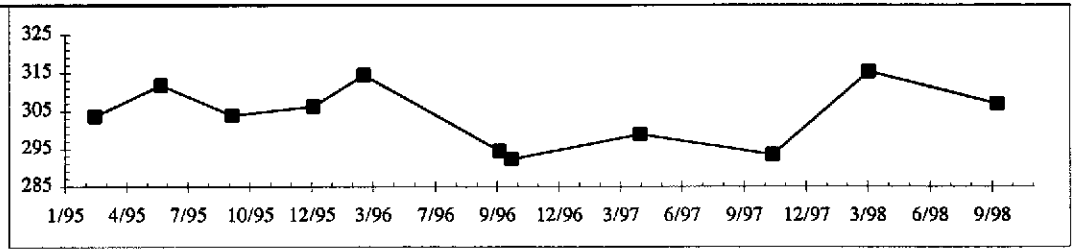


TABLE 3
SUMMARY OF GROUND WATER ELEVATIONS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON, CALIFORNIA

Well Number	Date		Product Thickness (ft)	Depth to Water (ft)	Elevation (ft, MSL)	Trend
MW-5	2/14/95	2/95	NE	78.91	303.64	
MP Elev.	5/23/95	5/95	NE	70.72	311.83	
382.55	9/5/95	9/95	NE	78.67	303.88	
Well Dept	1/3/96	1/96	NE	76.30	306.25	
110	3/18/96	3/96	NE	68.14	314.41	
	10/3/96	10/96	NE	88.09	294.46	
	10/21/96	10/96	NE	90.27	292.28	
	4/29/97	4/97	NE	83.71	298.84	
	11/10/97	11/97	NE	89.10	293.45	
	4/28/98	4/98	NE	67.15	315.40	
	10/7/98	10/98	NE	75.68	306.87	
MW-6	2/14/95	2/95	NE	74.19	304.96	
MP Elev.	5/23/95	5/95	NE	60.80	318.35	
379.15	9/5/95	9/95	NE	75.21	303.94	
Well Dept	1/3/96	1/96	NE	71.88	307.27	
109	3/18/96	3/96	NE	65.29	313.86	
	10/3/96	10/96	NE	77.85	301.30	
	10/21/96	10/96	NE	79.05	300.10	
	4/29/97	4/97	NE	75.42	303.73	
	11/10/97	11/97	NE	79.13	300.02	
	4/28/97	4/98	NE	63.35	315.80	
	10/7/98	10/98	NE	71.31	307.84	



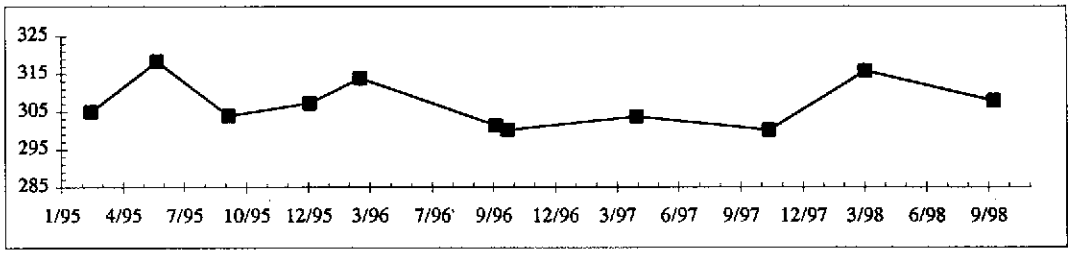
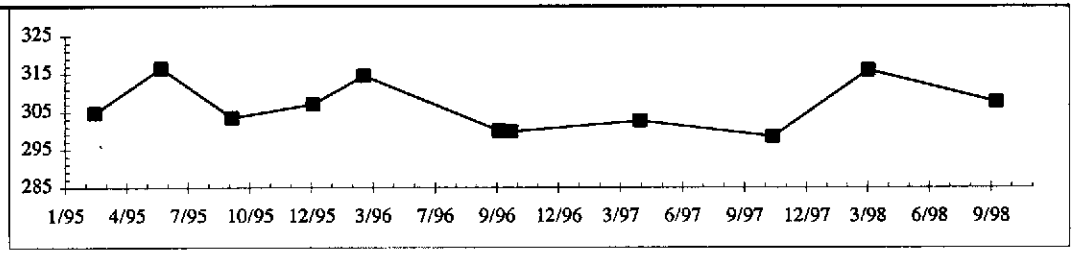


TABLE 3
SUMMARY OF GROUND WATER ELEVATIONS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON, CALIFORNIA

Well Number	Date		Product Thickness (ft)	Depth to Water (ft)	Elevation (ft, MSL)	Trend
MW-7	2/14/95	2/95	NE	74.20	304.74	
MP Elev.	5/23/95	5/95	NE	62.41	316.53	
378.94	9/5/95	9/95	NE	75.48	303.46	
Well Dept	1/3/96	1/96	NE	71.99	306.95	
109	3/18/96	3/96	NE	64.43	314.51	
	10/3/96	10/96	NE	78.91	300.03	
	10/21/96	10/96	NE	79.13	299.81	
	4/29/97	4/97	NE	76.38	302.56	
	11/10/97	11/97	NE	80.41	298.53	
	4/28/98	4/98	NE	62.92	316.02	
	10/7/98	10/98	NE	71.35	307.59	
MW-8	2/14/95	2/95	ODOR	73.87	304.69	
MP Elev.	5/23/95	5/95	ODOR	60.48	318.08	
378.56	9/5/95	9/95	ODOR	74.59	303.97	
Well Dept	1/3/96	1/96	NE	71.39	307.17	
109	3/18/96	3/96	NE	65.25	313.31	
	10/3/96	10/96	NA	Buried		
	10/21/96	10/96	NA	Buried		
	4/29/97	4/97	NE	74.89	303.67	
	11/10/97	11/97	NE	78.51	300.05	
	4/28/98	4/98	SHEEN	63.09	315.47	
	10/7/98	10/98	NA	Buried		



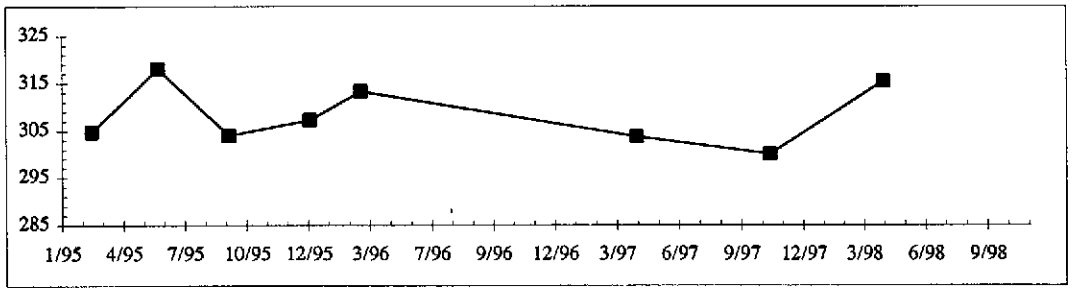
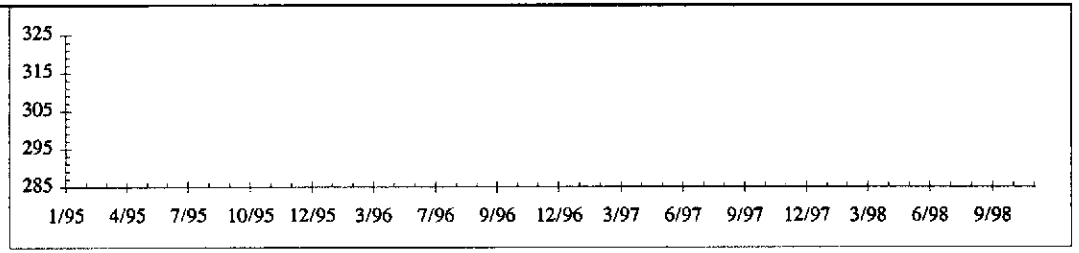


TABLE 3
SUMMARY OF GROUND WATER ELEVATIONS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON, CALIFORNIA

Well Number	Date		Product Thickness (ft)	Depth to Water (ft)	Elevation (ft, MSL)	Trend
MW-9	2/14/95	2/95	NA	Flooded		
MP Elev.	5/23/95	5/95	NA	Buried		
377.40	9/5/95	9/95	NA	Buried		
Well Dept	1/3/96	1/96	NA	Buried		
108	3/18/96	3/96	NA	Buried		
	10/3/96	10/96	NA	Buried		
	10/21/96	10/96	NA	Buried		
	4/29/97	4/97	NA	Buried		
	11/10/97	11/97	NA	Buried		
	4/28/98	4/98	NA	Buried		
	10/7/98	10/98	NA	Buried		
MW-10	2/14/95	2/95	NE	73.32	304.72	
MP Elev.	5/23/95	5/95	NE	59.45	318.59	
378.04	9/5/95	9/95	NE	74.01	304.03	
Well Dept	1/3/96	1/96	NE	71.03	307.01	
111	3/18/96	3/96	NE	64.82	313.22	
	10/3/96	10/96	NE	76.76	301.28	
	10/21/96	10/96	NE	78.52	299.52	
	4/29/97	4/97	NA	Buried		
	11/10/97	11/97	NA	Buried		
	4/28/98	4/98	NA	Buried		
	10/7/98	10/98	NA	Buried		



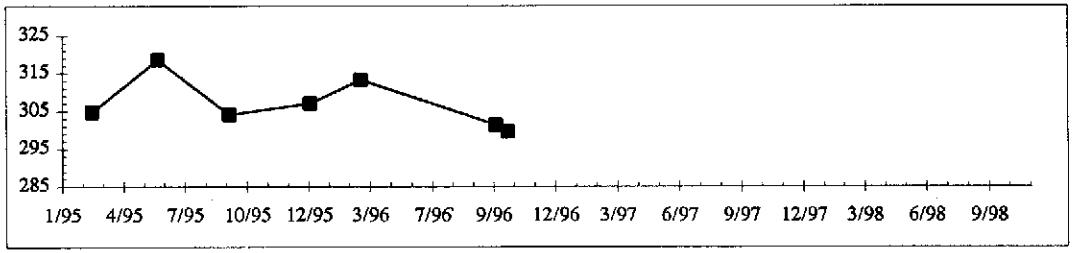
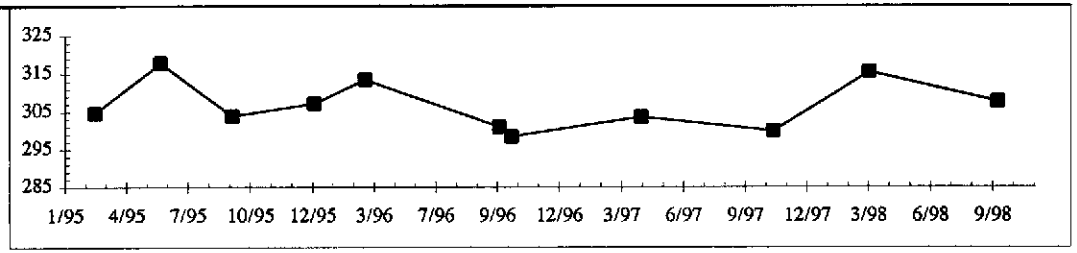


TABLE 3
SUMMARY OF GROUND WATER ELEVATIONS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON, CALIFORNIA

Well Number	Date		Product Thickness (ft)	Depth to Water (ft)	Elevation (ft, MSL)	Trend
MW-14	2/14/95	2/95	NE	75.48	304.61	
MP Elev.	5/23/95	5/95	NE	62.36	317.73	
380.09	9/5/95	9/95	NE	76.22	303.87	
Well Dept	1/3/96	1/96	NE	72.97	307.12	
114.5	3/18/96	3/96	NE	66.71	313.38	
	10/3/96	10/96	NE	79.10	300.99	
	10/21/96	10/96	NE	81.63	298.46	
	4/29/97	4/97	NE	76.51	303.58	
	11/10/97	11/97	NE	80.21	299.88	
	4/28/98	4/98	NE	64.63	315.46	
	10/7/98	10/98	NE	72.39	307.70	
MW-15	2/14/95	2/95	NE	73.83	304.29	
MP Elev.	5/23/95	5/95	NE	61.77	316.35	
378.12	9/5/95	9/95	NE	74.55	303.57	
Well Dept	1/3/96	1/96	NE	71.35	306.77	
117	3/18/96	3/96	NE	64.61	313.51	
	10/3/96	10/96	NE	78.18	299.94	
	10/21/96	10/96	NE	80.37	297.75	
	4/29/97	4/97	NE	75.48	302.64	
	11/10/97	11/97	NE	79.31	298.81	
	4/28/98	4/98	NE	62.72	315.40	
	10/7/98	10/98	NE	70.72	307.40	



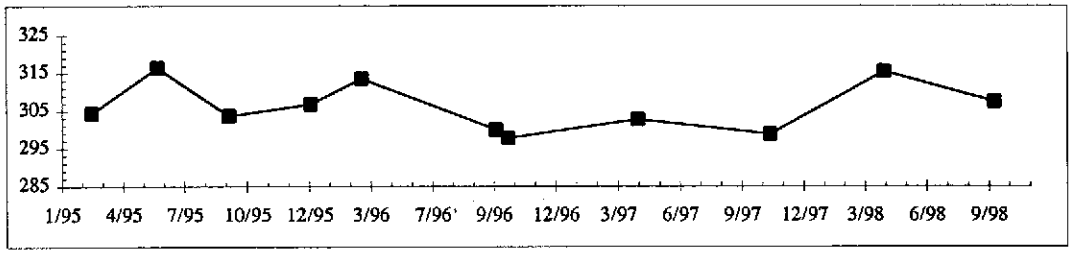
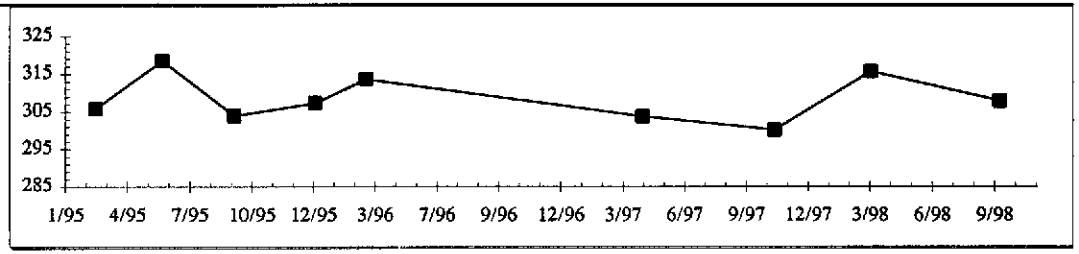


TABLE 3
SUMMARY OF GROUND WATER ELEVATIONS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON, CALIFORNIA

Well Number	Date		Product Thickness (ft)	Depth to Water (ft)	Elevation (ft, MSL)
MW-16	2/14/95	2/95	NE	73.83	305.82
MP Elev.	5/23/95	5/95	NE	61.16	318.49
379.65	9/5/95	9/95	NE	75.71	303.94
Well Dept	1/3/96	1/96	NE	72.42	307.23
110	3/18/96	3/96	NE	66.06	313.59
	10/3/96	10/96	NA	Buried	
	10/21/96	10/96	NA	Buried	
	4/29/97	4/97	NE	75.88	303.77
	11/10/97	11/97	NE	79.49	300.16
	4/28/98	4/98	NE	63.95	315.70
	10/7/98	10/98	NE	71.81	307.84

Trend



STAFF	2/14/95	2/95	NE	Above Staff Gage	
GAGE	5/23/95	5/95	NE	Above Staff Gage	
MP Elev.	9/5/95	9/95	NM	Not Measured	
300.00	1/3/96	1/96	NM	Not Measured	
	3/18/96	3/96	NE	Above Staff Gage	
	10/3/96	10/96	NM	Not Measured	
	10/21/96	10/96	NM	Not Measured	
	4/29/97	4/97	NM	Not Measured	
	11/10/97	11/97	NM	Not Measured	
	4/28/98	4/98	NM	Not Measured	
	10/7/98	10/98	NM	Not Measured	

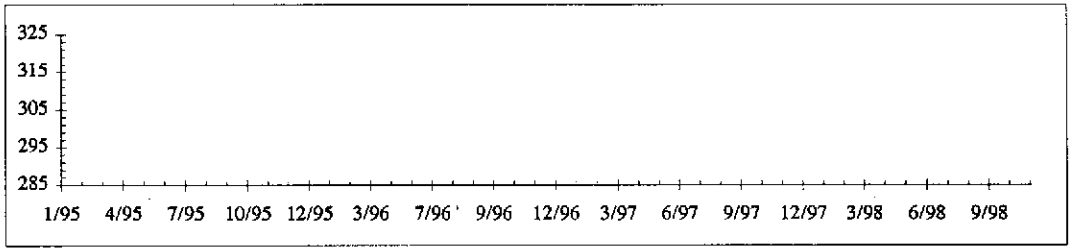
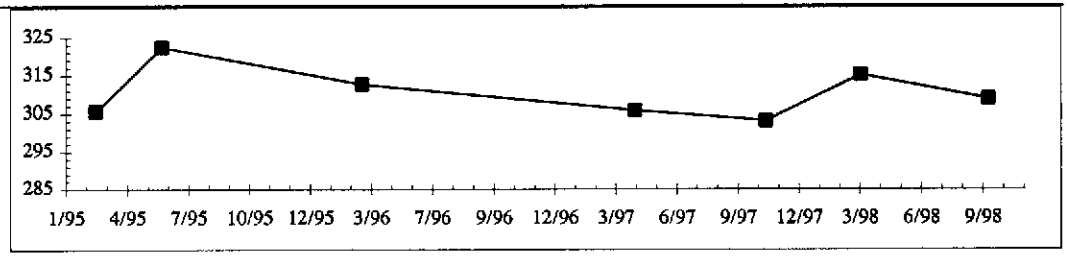


TABLE 3
SUMMARY OF GROUND WATER ELEVATIONS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON, CALIFORNIA

Well Number	Date		Product Thickness (ft)	Depth to Water (ft)	Elevation (ft, MSL)
CJMW-1	2/14/95	2/95	NE	77.23	305.52
MP Elev.	5/23/95	5/95	NE	60.31	322.44
382.75	9/5/95	9/95	NM	Not Measured	
Well Dept	1/3/96	1/96	NM	Not Measured	
NA	3/18/96	3/96	NE	70.10	312.65
	10/3/96	10/96	NM	Not Measured	
	10/21/96	10/96	NM	Not Measured	
	4/29/97	4/97	NE	76.95	305.80
	11/10/97	11/97	NE	79.69	303.06
	4/28/98	4/98	NE	67.55	315.20
	10/7/98	10/98	NE	73.88	308.87

Trend



NOTES:
MP Elev. Measuring Point Elevation refers to Top of Casing, Mean Sea Level (USGS Datum)
Depth to Water in feet below Top of Casing
NA Not Applicable
NE Not Encountered
NM Not measured, reading not recorded

TABLE 4
SUMMARY OF ANALYTICAL RESULTS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON CALIFORNIA

Well Number	Sample Date	Sample Number	TPH as Diesel[1] (mg/L)	TPH as Motor Oil[1] (mg/L)	Total Oil & Grease[2] (mg/L)	Total Hydrocarbons[3] (mg/L)	PAHs (µg/L)	PCBs[4] (µg/L)
MW-1								
	May-95	2975	0.73	0.2	1	0.6	NA	0.1
	Sep-95	83445	4.4	3.8	19	13	NA	<0.5
	Jan-96	3168	9.2	7	2	2	NA	0.6
	Mar-96	3128	0.17	<0.2	3.1	2.2	NA	<0.1
	Oct-96	KMW-1	19	12	NA	NA	<100	0.6
	Apr-97	MW-1	2.7	3.1	NA	NA	NA	0.2
	Nov-97	MW-1	20	11	NA	NA	NA	0.2
	Apr-98	MW-1	0.73	0.43	NA	NA	NA	<0.001
	Oct-98	MW-1	0.72[ab]	0.23[ab]	NA	NA	NA	<1.0
	(duplicate)	MW-21	0.80	0.56	NA	NA	NA	<1.0
MW-2								
	May-95	2973	0.75	<0.2	<0.5	<0.5	NA	0.4
	(duplicate)	2980	0.68	<0.2	<0.5	<0.5	NA	<0.1
	Sep-95	83446	2.4	1	16	14	NA	<0.5
	Jan-96	Not sampled, free product encountered in well. See field notes.						
	Mar-96	3125	4.5	3.4	6.7	5.4	NA	0.1
	(duplicate)	3126	2.1	1.3	5.6	4.3	NA	0.1
	Oct-96	KMW-2	49	30	NA	NA	<100	1.2
	Apr-97	MW-2	5.8	3.3	NA	NA	NA	0.2
	Nov-97	MW-2	3.4	2.3	NA	NA	NA	<0.1
	(duplicate)	MW-12	2.9	1.7	NA	NA	NA	<0.1
	Apr-98	MW-12	6.4	3.5	NA	NA	NA	<0.001
	(duplicate)	MW-22	2.5	1.3	NA	NA	NA	<0.001
	Oct-98	MW-2	2.8[ab]	0.95	NA	NA	NA	<1.0
MW-3								
	May-95	2974	2.5	0.8	3	2	NA	0.1
	Sep-95	NT	NT	NT	NT	NT	NT	NT
	Jan-96	Not sampled, free product encountered in well. See field notes.						
	Mar-96	3127	0.71	0.7	1.5	1.3	NA	0.2
	Oct-96	Not sampled, well dry. See field notes.						
	Apr-97	Not sampled, well dry. See field notes.						
	Nov-97	Not sampled, well dry. See field notes.						
	Apr-98	MW-3	2.3	1.6	NA	NA	NA	<0.001
	Oct-98	MW-3	2.9[ab]	1.5	NA	NA	NA	<5.0

TABLE 4
SUMMARY OF ANALYTICAL RESULTS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON CALIFORNIA

Well Number	Sample Date	Sample Number	TPH as Diesel[1] (mg/L)	TPH as Motor Oil[1] (mg/L)	Total Oil & Grease[2] (mg/L)	Total Hydrocarbons[3] (mg/L)	PAHs (µg/L)	PCBs[4] (µg/L)
MW-4								
	May-95	2964	<0.05	<0.5	<0.5	<0.5	NA	<0.1
	Sep-95	83456	<0.05	<0.2	<0.5	<0.5	NA	<0.5
	Jan-96	3175	<0.05	<0.2	0.5	<0.5	NA	<0.1
	Mar-96	3133	<0.05	0.7	0.9	<0.5	NA	<0.1
	Oct-96	Not sampled. On annual sampling frequency.						
	Apr-97	Not sampled. Well not accessible at time of sampling.						
	Nov-97	Not sampled. On annual sampling frequency.						
	Apr-98	MW-4	<0.05	<0.1	NA	NA	NA	NA
	Oct-98	Not sampled. On annual sampling frequency.						
MW-5								
	May-95	2963	<0.05	<0.5	<0.5	<0.5	NA	<0.1
	Sep-95	83457	<0.05	<0.2	<0.5	<0.5	NA	<0.5
	Jan-96	3174	<0.05	<0.2	<0.5	<0.5	NA	<0.1
	Mar-96	3133	<0.05	<0.2	<0.5	<0.5	NA	<0.1
	Oct-96	Not sampled. On annual sampling frequency.						
	Apr-97	MW-5	<0.05	<0.2	NA	NA	NA	NA
	Nov-97	Not sampled. On annual sampling frequency.						
	Apr-98	MW-5	0.055	<0.1	NA	NA	NA	NA
	Oct-98	Not sampled. On annual sampling frequency.						
MW-6								
	May-95	2965	<0.05	<0.5	<0.5	<0.5	NA	<0.1
	Sep-95	83455	<0.05	<0.2	<0.5	<0.5	NA	<0.5
	Jan-96	3173	<0.05	<0.2	<0.5	<0.5	NA	<0.1
	Mar-96	3138	<0.05	<0.2	<0.5	<0.5	NA	<0.1
	Oct-96	Not sampled. On annual sampling frequency.						
	Apr-97	MW-6	0.1	<0.2	NA	NA	NA	NA
	Nov-97	Not sampled. On annual sampling frequency.						
	Apr-98	MW-6	<0.05	<0.1	NA	NA	NA	NA
	Oct-98	Not sampled. On annual sampling frequency.						

TABLE 4
SUMMARY OF ANALYTICAL RESULTS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON CALIFORNIA

Well Number	Sample Date	Sample Number	TPH as Diesel[1] (mg/L)	TPH as Motor Oil[1] (mg/L)	Total Oil & Grease[2] (mg/L)	Total Hydrocarbons[3] (mg/L)	PAHs (µg/L)	PCBs[4] (µg/L)
MW-7								
	May-95	2967	<0.05	<0.05	<0.5	<0.5	NA	<0.1
	Sep-95	83454	0.2	0.4	<0.5	<0.5	NA	<0.5
	Jan-96	3172	<0.05	<0.2	<0.5	<0.5	NA	<0.1
	Mar-96	3137	<0.05	<0.2	<0.5	<0.5	NA	<0.1
	Oct-96	Not sampled. On annual sampling frequency.						
	Apr-97	MW-7	<0.05	<0.2	NA	NA	NA	NA
	Nov-97	Not sampled. On annual sampling frequency.						
	Apr-98	MW-7	<0.05	<0.1	NA	NA	NA	NA
	Oct-98	Not sampled. On annual sampling frequency.						
MW-8								
	May 1995	2970	0.3	<0.5	<0.5	<0.5	NA	<0.1
	(duplicate)	652381	0.4	<0.5	<0.5	<0.5	NA	<0.1
	Sept.1995	83448	0.3	<0.2	<0.5	<0.5	NA	<0.5
	(duplicate)	83447	0.3	<0.2	<0.5	<0.5	NA	<0.5
	Jan. 1996	3167	0.9	1	<0.5	<0.5	NA	<0.1
	(duplicate)	3166	0.65	0.4	1	<0.5	NA	<0.1
	Mar. 1996	3132	1.3	0.9	1.5	0.5	NA	<0.1
	(duplicate)	3131	1.2	0.7	0.8	<0.5	NA	<0.1
	Oct-96	Not sampled. Well not accessible at time of sampling.						
	Apr-97	MW-8	0.41	<0.2	NA	NA	NA	<0.1
	(duplicate)	MW-18	0.35	<0.2	NA	NA	NA	<0.1
	Nov-97	MW-8	0.98	1.5	NA	NA	NA	<0.1
	Apr-98	MW-8	0.14	0.33	NA	NA	NA	<0.001
	Oct-98	Not sampled. Well not accessible at time of sampling.						
MW-9								
	May-95	NT	NT	NT	NT	NT	NT	NT
	Sep-95	NT	NT	NT	NT	NT	NT	NT
	Jan-96	NT	NT	NT	NT	NT	NT	NT
	Mar-96	NT	NT	NT	NT	NT	NT	NT
	Oct-96	Not sampled. Inaccessible indefinitely.						
	Apr-98	Not sampled. Inaccessible indefinitely.						
	Oct-98	Not sampled. Inaccessible indefinitely.						

TABLE 4
SUMMARY OF ANALYTICAL RESULTS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON CALIFORNIA

Well Number	Sample Date	Sample Number	TPH as Diesel[1] (mg/L)	TPH as Motor Oil[1] (mg/L)	Total Oil & Grease[2] (mg/L)	Total Hydrocarbons[3] (mg/L)	PAHs (µg/L)	PCBs[4] (µg/L)
MW-10								
	May-95	2972	2.4	0.5	2	0.9	NA	<0.1
	Sep-95	83452	<0.05	1	1	<0.5	NA	<0.5
	Jan-96	3164	0.1	0.2	2	0.9	NA	<0.1
	Mar-96	3129	1.9	0.8	1.4	0.7	NA	<0.1
	Oct-96	KMW-10	0.08	<0.2	NA	NA	<10	<0.1
	Apr-97	Not sampled. Well not accessible at time of sampling.						
	Nov-97	Not sampled. Well not accessible at time of sampling.						
	Apr-98	Not sampled. Well not accessible at time of sampling.						
	Oct-98	Not sampled. Well not accessible at time of sampling.						
MW-14								
	May-95	2968	<0.05	<0.5	<0.5	<0.5	NA	<0.1
	Sep-95	83449	<0.05	<0.2	1	<0.5	NA	<0.5
	Jan-96	3171	<0.05	<0.2	<0.5	<0.5	NA	<0.1
	Mar-96	3136	<0.05	<0.2	<0.5	<0.5	NA	<0.1
	Oct-96	Not sampled. On annual sampling frequency.						
	Apr-97	MW-14	<0.05	<0.2	NA	NA	NA	NA
	Nov-97	Not sampled. On annual sampling frequency.						
	Apr-98	MW-14	0.062	<0.1	NA	NA	NA	NA
	Oct-98	Not sampled. On annual sampling frequency.						
MW-15								
	May-95	2971	0.1	<0.5	<0.5	<0.5	NA	<0.1
	Sep-95	83451	0.3	0.4	2	<0.5	NA	<0.5
	Jan-96	3165	0.1	0.3	<0.5	<0.5	NA	<0.1
	Mar-96	3134	0.14	ND	<0.5	<0.5	NA	<0.1
	Oct-96	KMW-15	0.11	<0.2	NA	NA	<10	NA
	(duplicate)	KMW-51	0.1	<0.2	NA	NA	<10	NA
	Apr-97	MW-15	<0.05	<0.2	NA	NA	NA	NA
	Nov-97	MW-15	<0.05	<0.2	NA	NA	NA	NA
	Apr-98	MW-15	<0.05	<0.1	NA	NA	NA	NA
	Oct-98	MW-15	<0.05	<0.05	NA	NA	NA	NA

TABLE 4
SUMMARY OF ANALYTICAL RESULTS
INDUSTRIAL ASPHALT, 52 EL CHARRO ROAD, PLEASANTON CALIFORNIA

Well Number	Sample Date	Sample Number	TPH as Diesel[1] (mg/L)	TPH as Motor Oil[1] (mg/L)	Total Oil & Grease[2] (mg/L)	Total Hydrocarbons[3] (mg/L)	PAHs (µg/L)	PCBs[4] (µg/L)
MW-16								
	May-95	2969	<0.05	<0.5	<0.5	<0.5	NA	<0.1
	Sep-95	83450	0.06	<0.2	<0.5	<0.5	NA	<0.5
	Jan-96	3170	<0.05	0.3	<0.5	<0.5	NA	<0.1
	Mar-96	3135	<0.05	0.9	0.7	<0.5	NA	<0.1
	Oct-96	Not sampled. On annual sampling frequency.						
	Apr-97	MW-16	<0.05	0.4	NA	NA	NA	NA
	Nov-97	Not sampled. On annual sampling frequency.						
	Apr-98	MW-16	0.13	<0.1	NA	NA	NA	NA
	Oct-98	Not sampled. On annual sampling frequency.						
14A2[5]								
	May-95	2966	<0.05	<0.5	<0.5	<0.5	NA	<0.1
	Sep-95	83453	<0.05	<0.2	<0.5	<0.5	NA	<0.5
	Jan-96	3169	<0.05	<0.2	<0.5	<0.5	NA	<0.1
	Mar-96	3130	<0.05	<0.2	<0.5	<0.5	NA	<0.1
	Oct-96	Not sampled. On annual sampling frequency.						
	Apr-97	14A2	<0.05	<0.2	NA	NA	NA	NA
	Nov-97	Not sampled. On annual sampling frequency.						
	Apr-98	14A2	<0.05	<0.1	NA	NA	NA	NA
	Oct-98	Not sampled. On annual sampling frequency.						
Drinking Water Standard[6]			—	—	—	—		0.5

NOTES FOR TABLE 4

[1] Sample analysis via SM 3510/8015M GCFID.

[2] Sample analysis via SM 5520C.

[3] Sample analysis via SM 5520F.

[4] Polychlorinated Biphenyl compounds. Sample analysis via EPA Test Method 8080.

[5] Jamieson Well sampled via a sampling port.

[6] California Department of Health Services Drinking Water Standards, Primary Maximum Contaminant Levels (MCL); secondary MCLs listed in parentheses. Source: Water Quality Goals, California Regional Water Quality Control Board, Central Valley Region, July 1995

[a] Silica Gel cleanup performed prior to analysis.

[b] Results within quantitation range; chromatographic pattern not typical of fuel.

TPH Total Petroleum Hydrocarbons.

<0.1 Not Detected at or above the indicated laboratory reporting limit.

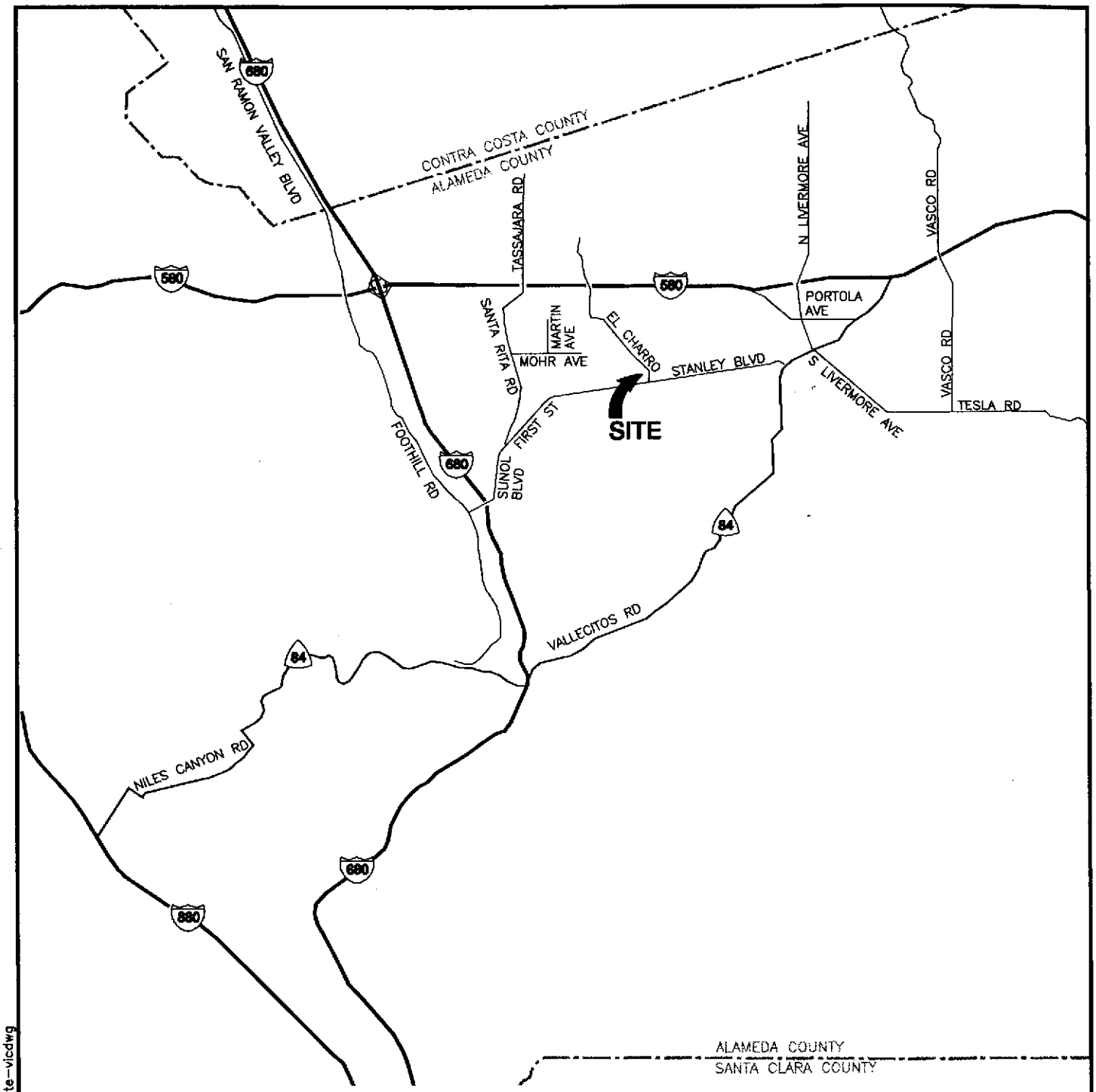
NT Not Tested (ie., well not sampled)

NA Sample not analyzed for that constituent

PCBs Polychlorinated Biphenyls. Only Arochlor 1260 was detected.

PAHs Polynuclear Aromatic Hydrocarbons by EPA 8270

PLATES



CAD FILE: C:_KA-PROJ\PLEAS\10168209\804\site-vicdwg

KLEINFELDER

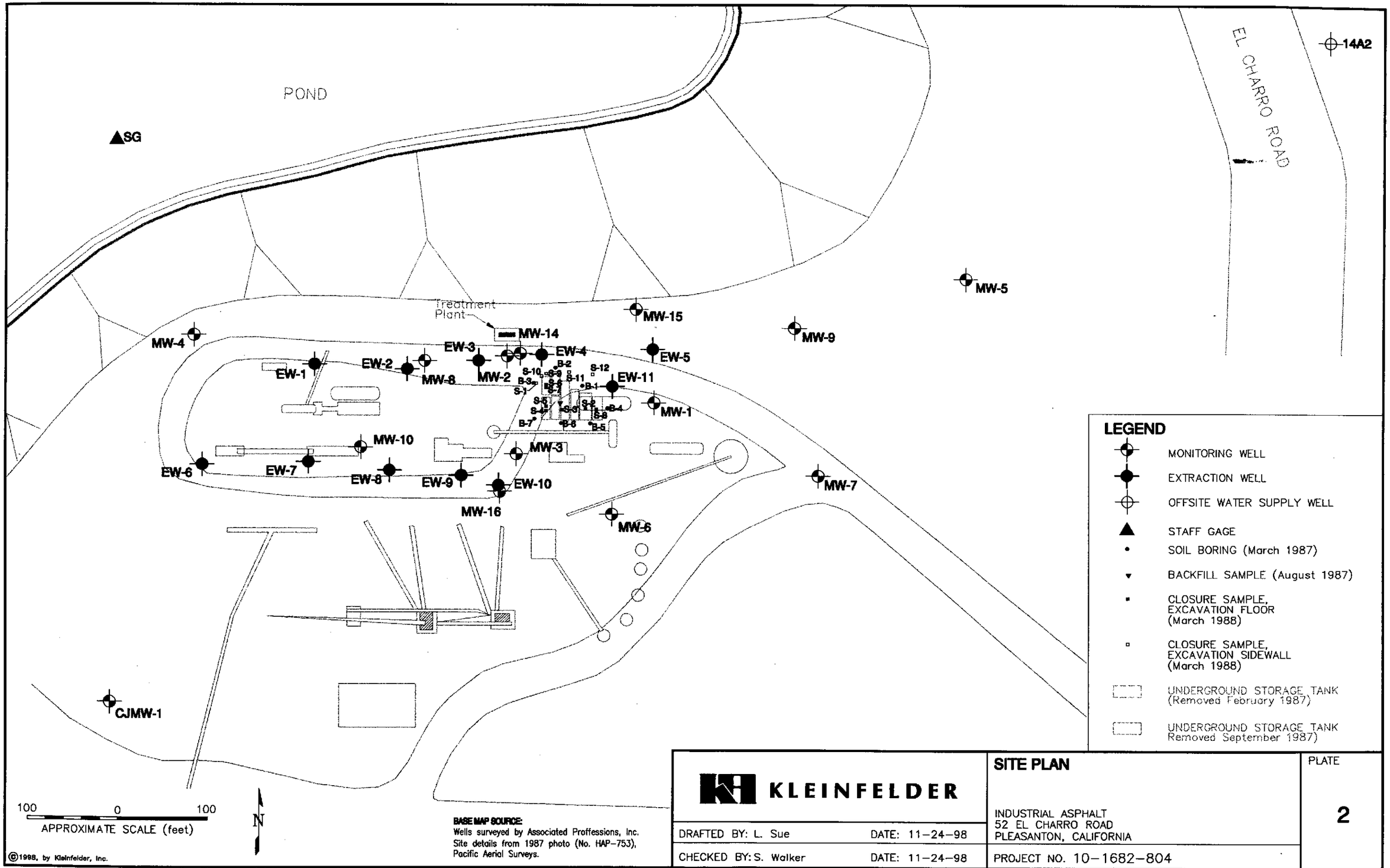
DRAFTED BY: L. Sue	DATE: 11-24-98
CHECKED BY: S. Walker	DATE: 11-24-98

SITE VICINITY MAP

INDUSTRIAL ASPHALT
52 EL CHARRO ROAD
PLEASANTON, CALIFORNIA

PROJECT NO. 10-1682-804

PLATE 1



KLEINFELDER

DRAFTED BY: L. Sue	DATE: 11-24-98
CHECKED BY: S. Walker	DATE: 11-24-98

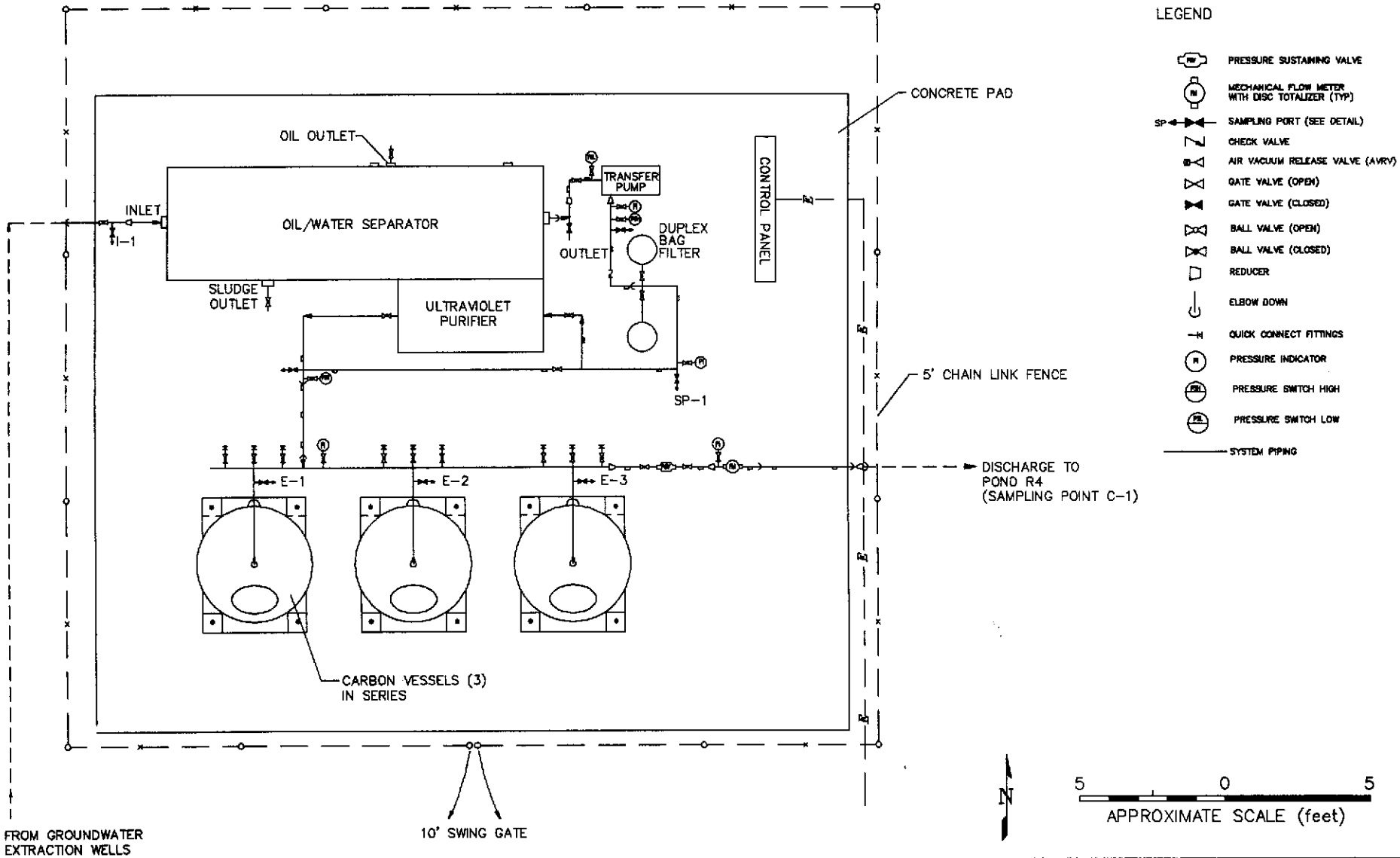
SITE PLAN

INDUSTRIAL ASPHALT
52 EL CHARRO ROAD
PLEASANTON, CALIFORNIA

PROJECT NO. 10-1682-804

PLATE 2

CAD FILE: C:_KA-PROJ\PLEAS\10168209\804\SITEPLAN.dwg



KLEINFELDER

FORMER GROUNDWATER TREATMENT SYSTEM LAYOUT

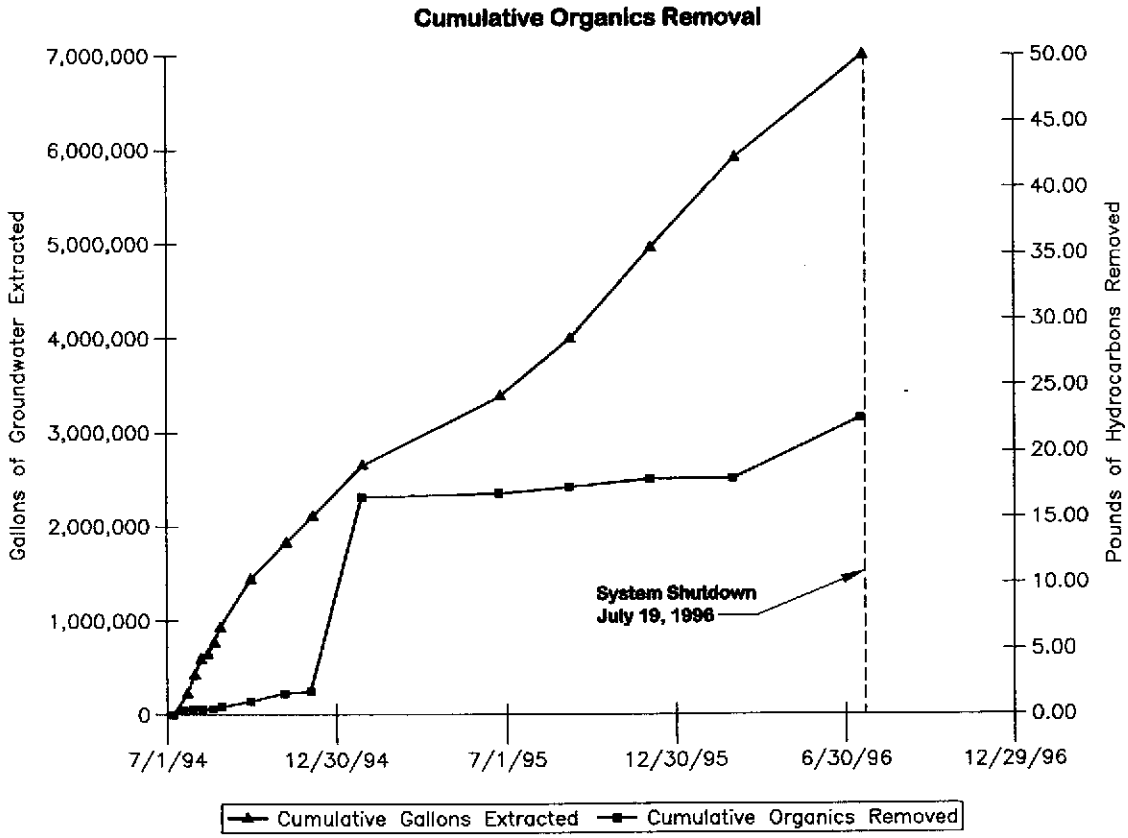
INDUSTRIAL ASPHALT
52 EL CHARRO ROAD
PLEASANTON, CALIFORNIA

PLATE 3

DRAFTED BY: L. Sue	DATE: 11-30-98
CHECKED BY: S. Walker	DATE: 11-30-98

PROJECT NO. 10-168209-804

CAD FILE: C:_PROJECTS\10168209\804\TSLAYOUT.dwg



CAD FILE: C:_PROJECTS\10168209\804\ORG-REM.dwg

KLEINFELDER

DRAFTED BY: L. Sue	DATE: 11-30-98	
CHECKED BY: S. Walker	DATE: 11-30-98	

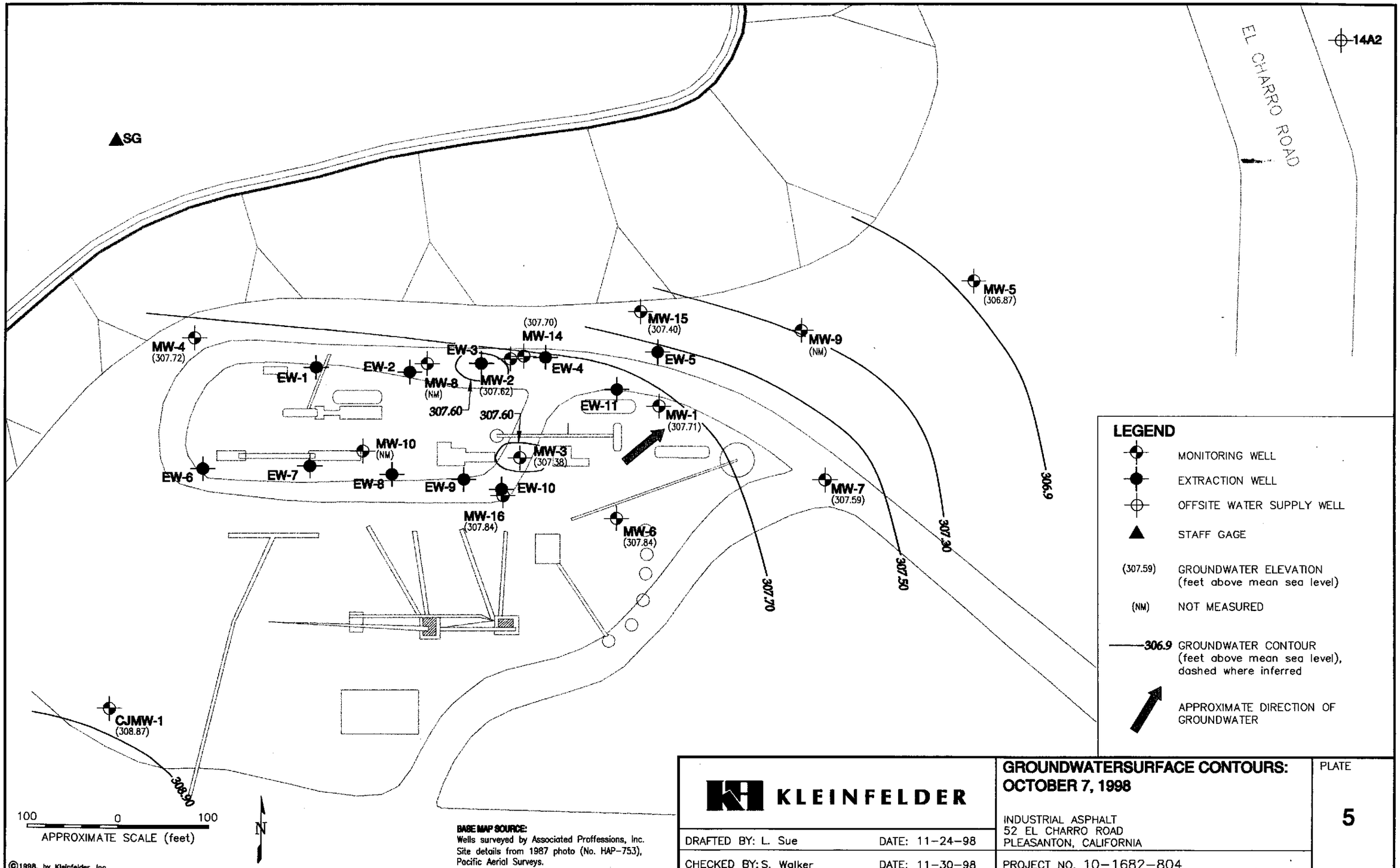
CUMULATIVE ORGANICS REMOVED

INDUSTRIAL ASPHALT
52 EL CHARRO ROAD
PLEASANTON, CALIFORNIA

PROJECT NO. 10-168209-804

PLATE

4



BASE MAP SOURCE:
Wells surveyed by Associated Proffessions, Inc.
Site details from 1987 photo (No. HAP-753), Pacific Aerial Surveys.

KLEINFELDER

DRAFTED BY: L. Sue	DATE: 11-24-98
CHECKED BY: S. Walker	DATE: 11-30-98

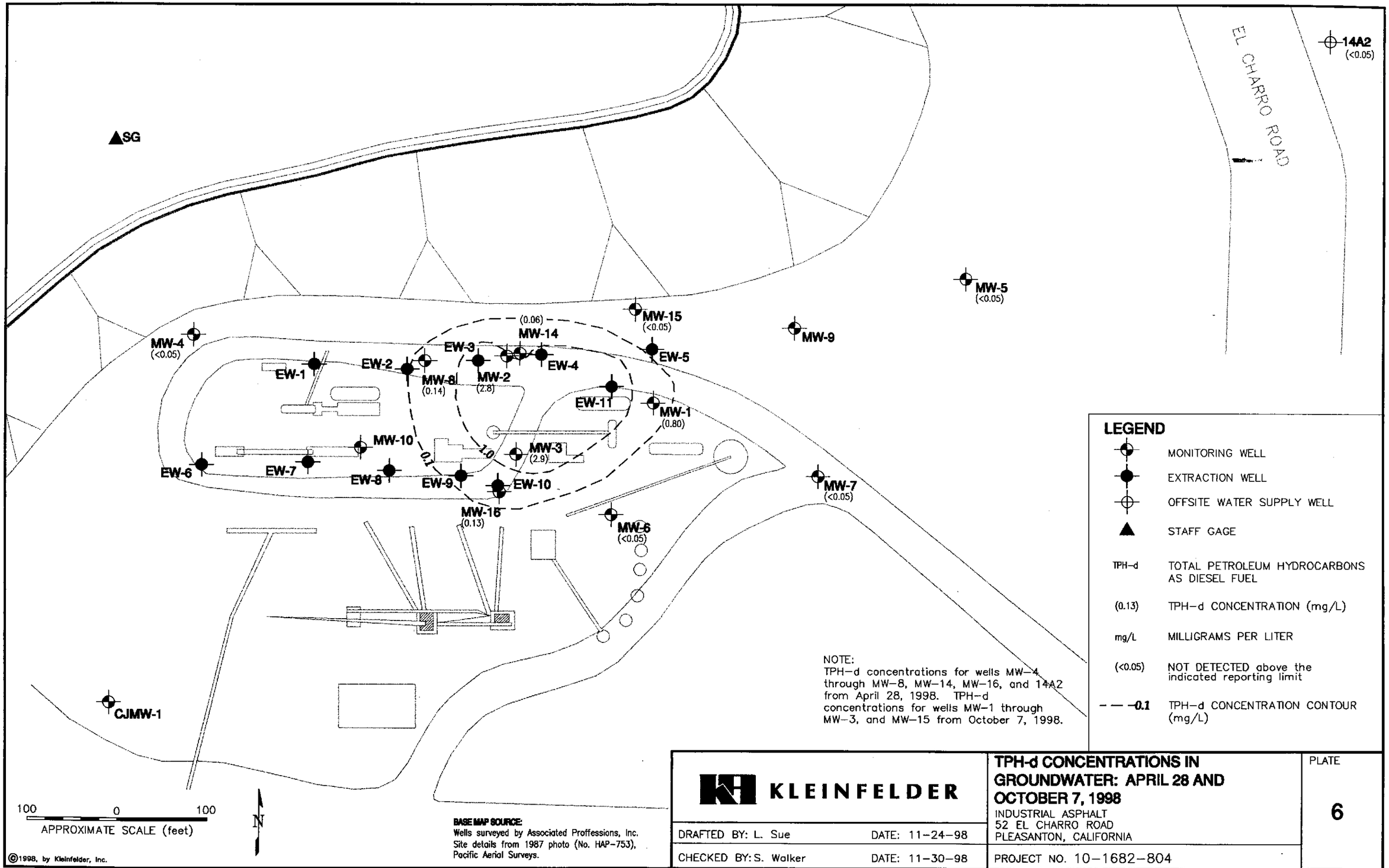
GROUNDWATERSURFACE CONTOURS: OCTOBER 7, 1998

INDUSTRIAL ASPHALT
52 EL CHARRO ROAD
PLEASANTON, CALIFORNIA

PROJECT NO. 10-1682-804

PLATE 5

CAD FILE: C:_KA-PROJ\PLEAS\10168209\804\GW-1198.dwg



BASE MAP SOURCE:
Wells surveyed by Associated Proffessions, Inc.
Site details from 1987 photo (No. HAP-753), Pacific Aerial Surveys.

NOTE:
TPH-d concentrations for wells MW-4 through MW-8, MW-14, MW-16, and 14A2 from April 28, 1998. TPH-d concentrations for wells MW-1 through MW-3, and MW-15 from October 7, 1998.

LEGEND

⊕	MONITORING WELL
●	EXTRACTION WELL
⊕	OFFSITE WATER SUPPLY WELL
▲	STAFF GAGE
TPH-d	TOTAL PETROLEUM HYDROCARBONS AS DIESEL FUEL
(0.13)	TPH-d CONCENTRATION (mg/L)
mg/L	MILLIGRAMS PER LITER
(<0.05)	NOT DETECTED above the indicated reporting limit
- - -0.1	TPH-d CONCENTRATION CONTOUR (mg/L)

KLEINFELDER

DRAFTED BY: L. Sue DATE: 11-24-98

CHECKED BY: S. Walker DATE: 11-30-98

TPH-d CONCENTRATIONS IN GROUNDWATER: APRIL 28 AND OCTOBER 7, 1998

INDUSTRIAL ASPHALT
52 EL CHARRO ROAD
PLEASANTON, CALIFORNIA

PROJECT NO. 10-1682-804

PLATE 6

CAD FILE: C:_KA-PROJ\PLEAS\10168209\804\GW-1198.dwg

APPENDIX A

APPENDIX A
SITE INVESTIGATION AND REMEDIATION HISTORY

Industrial Asphalt is an asphalt manufacturing facility that has occupied the subject site since 1963. Industrial Asphalt maintained six underground storage tanks (USTs) for storage of asphalt, and two USTs storing diesel fuel at the site. Diesel product purchased in 1983 and 1984 was used as a burner fuel in the asphalt batch plant. In 1985, a leaking fuel pipe serving the diesel USTs was identified and repaired. Upon removal of two diesel tanks in February 1987, diesel product was observed in the bottom of the excavation. This product was sampled and analyzed for total petroleum hydrocarbons quantified as diesel (TPH-d) and polychlorinated biphenyls (PCBs). The product was found to contain 340,000 milligrams per kilogram (mg/kg) of TPH-d, and 12 mg/kg of PCBs (Arochlor 1260). At that time, approximately 5,000 gallons of a mixture of diesel and water was pumped from the excavation and transported off-site for Class I disposal. In addition, two asphalt tanks were excavated and removed.

Remedial Investigation Activities

In March 1987, Kleinfelder drilled seven soil borings around the UST area. Based on soil sample analytical results from the seven borings, three monitoring wells (MW-1, MW-2, and MW-3) were installed in June 1987. Free product was observed in monitoring wells MW-1 and MW-2 shortly after installation. Free product was not observed in monitoring well MW-3. A sample of free product was collected from monitoring well MW-2 in August 1987, analyzed and found to contain 18 mg/kg of PCBs.

In September 1987, the remaining four asphalt USTs were removed, and contaminated soil and backfill material were excavated. Excavated soils were sampled and found to contain from 1,500 to 150,000 mg/kg of TPH-d. Closure samples representative of remaining soils in the excavation were collected (five sidewall samples and seven samples from the excavation floor) were analyzed for TPH-d, with reported concentrations ranging from non-detect to 26 mg/kg.

Soil gas surveys were conducted at the site in October 1987 and June 1988 to aid in plume definition. Information from the first survey was used to identify the locations of five additional groundwater monitoring wells at the site (MW-4 through MW-8). These wells were installed in March 1988. Soil gas samples in the second survey were analyzed for carbon dioxide; methane; benzene (B); toluene (T); xylenes (X); and total hydrocarbons (C4 to C9 carbon range). Carbon dioxide concentrations in soil gas samples ranged from 56,000 micrograms per liter (ug/L) to 210,000 ug/L. These concentrations, significantly higher than ambient air, suggest that unassisted biological activity was occurring.

In July 1989, two groundwater monitoring wells (MW-9 and MW-10) and one observation well (MW-11) were installed, and a staff gauge was installed in the gravel pit north of the site.

In November 1989, the Alameda County Department of Environmental Health (ACDEH) issued a letter to Industrial Asphalt requiring additional work at the site. In response to the ACDEH letter, Kleinfelder developed and submitted a Remedial Investigation/Remedial Action (RI/RA) Workplan to the ACDEH in January 1990. As part of this work, fourteen soil borings (SB-1 through SB-10 and MW-13 through 16) were installed in three separate field events at the site. One of the fourteen borings (MW-13) was completed as an extraction well and

later designated as extraction well EW-11. Three borings (MW-14 through MW-16) were completed as monitoring wells. Monitoring well MW-11 also was abandoned as part of these field activities.

At boring SB-1 adjacent to the previous UST excavation, free product was encountered during drilling at a depth of 15 feet. In July 1990, approximately 1,000 cubic yards of soil were excavated in the vicinity of SB-1. Impacted soils were recycled onsite in the asphalt plants.

During the 1990 RI work, a soil sample collected from boring SB-4 at 61 feet below grade (which had contained 340 mg/kg of TPH-d and 0.11 mg/kg of PCBs) was analyzed for polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270. No PAHs were detected in the sample.

The remedial investigation report summarizing the above work was submitted to ACDEH in December 1990. The RI Report also contained results of aquifer testing performed at the site; a well canvas identifying the location, use, screen interval, and distance of wells from the Industrial Asphalt site; and a baseline health risk assessment.

In January 1991 another 1,000 cubic yards of impacted soil were excavated from an area west of the July 1990 excavation. (This excavation was a follow-up activity from the July 1990 excavation, at which time some impacted soil was not accessible.) Soil was recycled in the asphalt batch process on-site; the excavation was backfilled with clean fill and finished at the surface with asphalt concrete.

In February 1991, ACDEH stipulated that groundwater cleanup should achieve "MCLs (maximum contaminant levels for drinking water) and below levels that could result in a one-in-a-million cancer risk." A feasibility study (FS) for soil and groundwater remediation was submitted to the ACDEH in August 1991. The selected remedy involved (1) extraction wells to pump groundwater; (2) Granular activated carbon to treat extracted groundwater; (3) Discharging treated groundwater to the surface water impoundment north of the facility; and (4) Recycling spent carbon through the onsite asphalt batch manufacturing process.

In May 1992, ten new groundwater extraction wells were installed (EW-1 through EW-10) at the site in support of groundwater remediation. Well and boring locations are shown on Plate 2.

Groundwater Monitoring Program History

Following installation of the first three monitoring wells in June 1987, a monthly groundwater monitoring program was instituted at the site. Depth-to-water, free product thicknesses (as appropriate), groundwater sampling and analysis (for TPH-d and PCBs) were conducted.

Analyses for BTEX (aromatic volatile organic compounds or VOCs) were requested by ACDEH in 1989. Kleinfelder included BTEX analyses in the July/August 1989 groundwater analyses. No BTEX constituents were detected in any groundwater samples, thus BTEX analyses were discontinued. Beginning in July 1990, the groundwater monitoring frequency was reduced to every two months.

Beginning in 1991, the groundwater monitoring frequency was reduced to occur quarterly. At that time, quarterly groundwater samples were analyzed for TPH-d, TPH-mo (motor oil), Oil and Grease (O&G), Total Recoverable Petroleum Hydrocarbons (TH), and PCBs.

Beginning with the October 1996 sampling event, the revised groundwater monitoring program depicted in Table 1 was instituted. Selected monitoring wells at the site are on a semi-annual monitoring frequency, and the majority of monitoring wells are on an annual frequency. The groundwater monitoring program now involves analysis for TPH-d and TPH-mo in all groundwater samples, and PCBs in selected monitoring well samples.

The RWQCB, in their June 26, 1996 letter authorizing the revised monitoring program, stated that, "Polynuclear Aromatic Hydrocarbons (PAHs) have not been included in the proposed groundwater monitoring program. Either provide a rationale for not doing so or include PAH analysis in the monitoring program." Kleinfelder included PAH analyses in the October 1996 monitoring event, to address this RWQCB request.

Groundwater Remediation System History

A groundwater remediation system was constructed by Pacific Mechanical Corporation (the low bidder in a competitive bidding process) in 1994. The system consisted of a total of eleven groundwater extraction wells pumping to an oil-water separator, a bag filter, ultraviolet sterilizer, and activated carbon. Please refer to Plate 3 for a layout of the former groundwater remediation system at the site. Treated water was discharged to Industrial Asphalt's recharge pond north of the facility (pond R4) under Industrial Asphalt's Waste Discharge Requirements (WDR) Order Number 93-037, issued by the RWQCB on April 26, 1993.

Kleinfelder started the groundwater remediation system on July 13, 1994. Within three months, extensive biofouling was observed in the oil-water separator, bag filters, and carbon vessels that cause excessive pressure drop and limited treatment system efficiency. Kleinfelder requested in a letter dated November 16, 1994 to introduce chlorine in tablet form into the oil-water separator to prevent the biofouling. The RWQCB authorized chlorine addition in January 1995. The system operated for approximately two years, with limited effectiveness. In the first six months of operation, approximately 16 pounds of hydrocarbons were extracted. In the proceeding eighteen months, only about 5 pounds of hydrocarbons were extracted. Please refer to Plate 4 for a graphical depiction of pounds removed and gallons extracted since start-up.

Kleinfelder submitted a letter report to the RWQCB dated May 21, 1996, requesting authorization to shut down the groundwater remediation system at the site. In that report, we also requested authorization to install oxygen releasing socks (after system shutdown) to enhance passive bioremediation processes in groundwater at the site. The RWQCB approved of the system shutdown and passive bioremediation enhancement in a letter dated June 26, 1996. Following receipt of authorization, Industrial Asphalt turned off the groundwater remediation system on July 19, 1996.

In the 24 months of operation, the groundwater remediation system extracted a total of 7,107,800 gallons of groundwater. This water was treated and discharged in 100% compliance with the WDR issued for the site.

IMPLEMENTATION OF ENHANCED BIOREMEDIATION

Hydrocarbon degrading bacteria are commonly present in soils and groundwater at virtually all hydrocarbon-impacted sites. Kleinfelder believes that natural biological processes are active in groundwater and capillary fringe soils (near the soil/water interface) at the Industrial Asphalt site. This opinion is based on the following observations:

APPENDIX B

KA KLEINFELDER

WELL DEVELOPMENT & SAMPLING LOG

WELL NO. MW-1

Date: 10-7-98 Weather: Clear ≈ 80°F Sheet 1 of 1

Project: Industrial Asphalt Submitted By: S. Quayle / K. Powers Date: 10-8-98

Project No.: 10-1682-09 / 803 Reviewed By: Date:

Purpose of Log ☐ Development ☑ Sampling

Equipment & Decontamination

	Baller	Disposable Baller	Suction Pump	Submersable Pump	Dedicated Pump	Other:
Purging Equipment		(Disposable Baller)				
Sampling Equipment		(Disposable Baller)				

Test Equipment	Water Level	pH	Conductivity	Turbidity
Meter No.	11928 Solinst	KA 90575	KA 90293	Not
Calibration Date/Time	NA	10-7-98 1150	10-7-98 1150	Used

Decontamination Methods	Wash	Rinse I	Rinse II	Rinse III
TSP / Alconox / Other:	DI / Tap / Other; Steam / Hot / Cool	DI / Tap / Other; Steam / Hot / Cool	DI / Tap / Other; Steam / Hot / Cool	DI / Tap / Other; Steam / Hot / Cool
	NA →	→	→	→
Vol. (gal):				
Source:				
Decon. Notes:				

Development / Purge Record

Well Security: good (fair) poor Well Integrity: good (fair) poor Locked: yes (no)

Purge Volume (CV) = (T.D. − DTW) × Factor × 1 C.V = ; Well Diam.: ☑ 2" ☐ 4"

Purge Volume (CV)	T.D.	−	DTW	×	Factor (2"=0.175, 4"=0.653)	× 1 C.V	=	2.7 gal
Well Diam.: ☑ 2" ☐ 4"	87.4 ft.	−	71.70 ft.	×		× 3	=	8.1 gal

Free Product?: Odor: no (yes slight to moderate) Floating Product: none (sheen) film ____ feet thick

Time (24-hr)	1537	1542	1547 SBY	1558	1559			Replicate Goals
Gallons Purged	0	2.7	5.4	8.1				(dev. only)
Surged (minutes)	↑	NA →						±0.10
pH	S	6.80	6.79	6.79				±1°C
Temperature (°C)	T	17.2	17.3	17.3				±10%
Cond. (µmhos/cm)	A	720	700	700				±10%
Salinity (‰)	R	0.5	0.5	0.5				<50 NTUs
Turbidity (NTU's)	T	NM →						Colorless
Color	↓	sly. cloudy brown	→	→				±0.01'
Depth to Water	71.70				71.69			

Reference Point: (TOC) Other:

Sample Log

Sample #	Time	Quantity	Volume	Type	Preserv.	Filtration	Analysis	Lab
MW-1	1600	2	1L	Amber	—	—	TPH-d/mo	Entech
		1	1L	Amber	—	—	PCBs	↓
MW-21	1615	2	1L	Amber	—	—	TPH-d/mo	↓
(Duplicate)		1	1L	Amber	—	—	PCBs	

Misc

Other Observations:

Final Check: VOAs free of bubbles? yes / no / (NA) Well Locked? yes / (no) / NA

KA KLEINFELDER

WELL DEVELOPMENT & SAMPLING LOG

WELL NO. MW-2

Date: 10-7-98 Weather: Clear ≈ 80°F Sheet 1 of 1

Project: Industrial Asphalt Submitted By: S. Quayle / K. Powers Date: 10-8-98

Project No.: 10-1682-09 / 803 Reviewed By: Date:

Purpose of Log ☐ Development ☑ Sampling

Equipment & Decontamination

Purging Equipment	Bailer	Disposable Bailer	Suction Pump	(Submers-able Pump)	Dedicated Pump	Other:
Sampling Equipment	Bailer	(Disposable Bailer)	Suction Pump	Submers-able Pump	Dedicated Pump	Other:

Test Equipment	Water Level	pH	Conductivity	Turbidity
Meter No.	11928 Solinst	KA 90575	KA 90293	Not
Calibration Date/Time	NA	10/7/98 1150	10/7/98 1150	Used.

Decontamination Methods	Wash	Rinse I	Rinse II	Rinse III
	DI (Tap) Other; Steam Hot (Cool)	DI (Tap) Other; Steam Hot (Cool)	DI (Tap) Other; Steam Hot (Cool)	(DI) Tap Other; Steam Hot (Cool)
TSP / Alconox / Other:				
Vol. (gal):	3-4	3-4	3-4	1-2
Source:	Alcambra			

Decon. Notes: Pump hose is cleaned as it is removed

Development / Purge Record

Well Security: (good) fair poor Well Integrity: (good) fair poor Locked: (yes) no

Purge Volume (CV) = T.D. − DTW × Factor × 1 C.V = 11.8 gal

Well Diam.: ☐ 2" ☑ 4" = 90' ft. − 72.18 ft. × (Factor) × 3 = 35.4 gal

Free Product?: Odor: (no) yes SBQ Floating Product: (none) sheen slight sheen film feet thick

								Replicate Goals
Time (24-hr)	~~1410~~ 1402	14:05	14:08	14:10	Purge	buckets		
Gallons Purged	0	11.8	23.6	35.4				(dev. only)
Surged (minutes)	↑	NA →	→	→				±0.10
pH	S	6.81	6.80	6.81				±1°C
Temperature (°C)	T	19.0	18.9	18.9	Stable.			±10%
Cond. (µmhos/cm)	A	720	720	720				±10%
Salinity (‰)	R	0.5	0.5	0.5				<50 NTUs
Turbidity (NTU's)	T	NM →	→	→				Colorless
Color	↓	Clear →	→	→				±0.01'
Depth to Water		72.18						

Reference Point: (TOC) Other:

Sample Log

Sample #	Time	Quantity	Volume	Type	Preserv.	Filtration	Analysis	Lab
MW-2	14:55	2	1L	Amber	—	—	TPH-d/mo	Entech
		1	1L	Amber	—	—	PCBs	↓

Misc

Other Observations:

Final Check: VOAs free of bubbles? yes / no / (NA) Well Locked? (yes) / no / NA

KA KLEINFELDER

WELL DEVELOPMENT & SAMPLING LOG

WELL NO. MW-3

Sheet 1 of 1

Date: 10-7-98 Weather: Clear ≈ 80°F

Project: Industrial Asphalt Submitted By: S. Quayle / K. Powers Date: 10-8-98

Project No.: 10-1682-09 / 803 Reviewed By: Date:

Purpose of Log ☐ Development ☑ Sampling

Equipment & Decontamination

Purging Equipment	Bailer	Disposable Bailer	Suction Pump	Submersable Pump	Dedicated Pump	Other:
Sampling Equipment	Bailer	Disposable Bailer	Suction Pump	Submersable Pump	Dedicated Pump	Other:

Test Equipment	Water Level	pH	Conductivity	Turbidity
Meter No.	11928 Solinst	KA 90575	KA 90293	Not
Calibration Date/Time	NA	10/7/98 1150	10/7/98 1150	Used

Decontamination Methods	Wash	Rinse I	Rinse II	Rinse III
	DI Tap Other / Steam Hot Cool	DI Tap Other / Steam Hot Cool	DI Tap Other / Steam Hot Cool	DI Tap Other / Steam Hot Cool
TSP Alconox Other:	NA			
Vol. (gal):				
Source:				
Decon. Notes:				

Development / Purge Record

Well Security: good (fair) poor Well Integrity: good (fair) poor Locked: yes (no)

Purge Volume (CV) T.D. − DTW × Factor × 1 C.V = 2.8 gal

Well Diam.: ☐ 2" ☑ 4" 75.4 ft. − 71.16 ft. × (2"=0.125, 4"=0.663) × 3 = 8.4 gal

Free Product?: Odor: no (yes) Floating Product: none (sheen) film feet thick

								Replicate Goals
Time (24-hr)	1430	1436	1445	1455	1507			
Gallons Purged	0	2.8	5.6	8.4				(dev. only)
Surged (minutes)	↑	NA	→	→	→	→	→	
pH	S	6.76	6.80	6.86				±0.10
Temperature (°C)	T	17.9	17.1	17.1				±1°C
Cond. (µmhos/cm)	A	800	780	750				±10%
Salinity (‰)	R	0.8	0.7	0.7				±10%
Turbidity (NTU's)	T	NM	→	→	→	→	→	<50 NTUs
Color	↓	cloudy gray	→	→				Colorless
Depth to Water	71.16				71.14			±0.01'

Reference Point: (TOC) Other: OK to Sample

Sample Log

Sample #	Time	Quantity	Volume	Type	Preserv.	Filtration	Analysis	Lab
MW-3	1515	2	1L	Amber	—	—	TPH-d/mo	Entech
		1	1L	Amber	—	—	PCBs	↓

Misc

Other Observations:

Final Check: VOAs free of bubbles? yes / no / (NA) Well Locked? yes / (no) / NA

KA KLEINFELDER

WELL DEVELOPMENT & SAMPLING LOG

WELL NO. MW-15 (KP)

Date: 10-7-98 Weather: Clear ≈ 80°F

Project: Industrial Asphalt Submitted By: S. Quayle / K. Powers

Project No.: 10-1682-09 / 803 Reviewed By:

Purpose of Log ☐ Development ☑ Sampling

Sheet 1 of 1

Date: 10-8-98

Date:

Equipment & Decontamination

Purging Equipment	Bailer	Disposable Bailer	Suction Pump	(Submersible Pump)	Dedicated Pump	Other:
Sampling Equipment	Bailer	(Disposable Bailer)	Suction Pump	Submersible Pump	Dedicated Pump	Other:

Test Equipment	Water Level	pH	Conductivity	Turbidity
Meter No.	11928 Solinst	KA 90575	KA 90293	Not
Calibration Date/Time	NA	10/7/98 / 11:50 →	→ Redlined / zoned	USED

Decontamination Methods (TSP, Alconox, Other:)	Wash	Rinse I	Rinse II	Rinse III
DI				(DI)
Tap	(Tap)	(Tap)	(Tap)	Tap
Other	Other	Other	Other	Other
Steam Hot				Steam Hot
Cool	(Cool)	(Cool)	(Cool)	(Cool)
Vol. (gal):	3-4	3-4	3-4	1-2 →
Source:	Alambra			
Decon. Notes:	Pump hose is cleaned as it is removed			

Development / Purge Record

Well Security: good (fair) poor Well Integrity: good (fair) poor Locked: (yes) no

Purge Volume (CV) T.D. − DTW × Factor × 1 C.V = 3 gal

Well Diam.: ☐ 2" ☒ 4" 117 ft. − 70.72 ft. × 2"=0.175 4"=0.653 × 3 = 93 gal

Free Product?: Odor: no yes Floating Product: none sheen film feet thick

Time (24-hr)	12:17	12:18	12:21	12:24	1232	1235	1238	Replicate Goals
Gallons Purged	0	1 5.5	2 3 1	4 9 3	62	77.5	93 →	(dev. only)
Surged (minutes)	↑	NA →						
pH	S	6.98	7.04	7.04	7.04	7.05	7.04	±0.10
Temperature (°C)	T	17.9	17.5	17.2	17.2	17.2	17.2	±1°C
Cond. (µmhos/cm)	A	650	650	650	650	640	640	±10%
Salinity (‰)	R	0.6	0.5	0.5	0.5	0.5	0.5	±10%
Turbidity (NTU's)	T	NM →					→	<50 NTUs
Color	↓	clear	→	→	→	→	→	Colorless
Depth to Water	7						70.70	±0.01'

Reference Point: (TOC) Other: @ 1306 Recharge OK

Sample Log

Sample #	Time	Quantity	Volume	Type	Preserv.	Filtration	Analysis	Lab
MW-15	13:10.	2	1L	Amber	—	—	TPH-d/mo	Entech
		+	1L	Amber	—	—	PCBs	
				KP				↓

Misc.

Other Observations: 1241 Pump off

Final Check: VOAs free of bubbles? yes / no / (NA) Well Locked? yes / no / (NA)

jen b:\PURGELOG.XLS — General, 10/01/95 FINAL

KA KLEINFELDER

RECORD OF WATER LEVEL MEASUREMENTS

Date: 10-7-98 Weather: Clear, Warm Sheet 1 of 1

Project: Industrial Asphalt Submitted By: S. Quayle / K. Powers Date: 10-8-98

Project No.: 10-1682-09/803 Reviewed By: Date:

Instrument Number: D.O. Meter #2 (KA# 90233) Probe #2 (KA# 90195)

T.D.	Well Number	Time (opened/measured) (24-hr)	Sensitivity Setting (est. %)	Measuring Point (M.P.)	Measurement 1	Replicate Measurements (if requested) 2	3	Notes			(locked? ✓)
87.4	MW-1	1111	75	TOC	71.70						
90	MW-2	1040			72.18						
75.4	MW-3	1018			71.16						
95	MW-4	1300			68.54						
110.4	MW-5	1142			75.68						
106	MW-6	12:43			71.31						
108	MW-7	1158			71.35						
108	MW-8	Could not locate buried									
114	MW-14	1224			72.39						
117	MW-15	9:20			70.72						
109	MW-16	1230			71.81						
	CJMW-1	1218	↓	↓	73.88						

M.P.: (TOC), GS, Cover ring, Other: All Wells Locked -- YES (NO)

jet b:\WL-FORM.XLS, 6/20/95, DRAFT FINAL

KA KLEINFELDER

RECORD OF WATER LEVEL MEASUREMENTS

Date: 10/30/98 Weather: clear cool Sheet 1 of 1

Project: Industrial Asphalt Submitted By: Keith Powers Date: 10/30/98

Project No.: 10-1682-09/803 Reviewed By: Date:

Instrument Number:

Well Number	Time (opened/measured)	Sensitivity Setting	Measuring Point	Measurement	Replicate Measurements (if requested)		DO (mg/L) / T °C Notes Depth below wtr column			(locked?)	TD	DTW
	(24-hr)	(est. %)	(M.P.)	1	2	3	5'	15'	25'			
MW-1				79.3	86		0.15 / 18.9	0.1 / 18.8			87.4	74.3
MW-2				79.8	89.8		0.12 / 19.1	0.11 / 19.0			90	74.8
MW-3				74			0.9 / 17.1				75.4	73.6
MW-8	Buried										90	
MW-15				78.6	88.6	98.6	0.85 / 17.1C	0.4 / 17.1	0.1 / 17.1		117	73.6

M.P.: TOC, GS, Cover ring, Other: All Wells Locked -- YES / NO

jet b:\WL-FORM.XLS, 6/20/95, DRAFT FINAL

APPENDIX C

Entech Analytical Labs, Inc.

CA ELAP# 2224

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

October 15, 1998

Steve Walker
Kleinfelder
7133 Koll Center Parkway
Pleasanton, CA 94566

Subject:	5 Water Samples
Lab #'s:	E18249-E18253
Project Name:	Industrial Asphalt
Project Number:	10-1682-09/803
P.O. Number:	
Method(s):	EPA 8080 - PCB's
Subcontract Lab:	Acculabs, Inc.

Dear Steve Walker,

Chemical analysis on the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. USEPA protocols for sample storage and preservation were followed.

Entech Analytical Labs, Inc. is certified by the State of California (#2224). If you have any questions regarding procedures or results, please call me at 408-735-1550.

Sincerely,

Michelle L. Anderson
Lab Director

Entech Analytical Labs, Inc.

CA ELAP# 2224

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

Kleinfelder
7133 Koll Center Parkway, Suite 100
Pleasanton, CA 94566
Attn: Steve Walker

Date: 10/15/98
Date Received: 10/8/98
Project: 10-1682-09/803
PO #:
Sampled By: Client

Certified Analytical Report

Water Sample Analysis:

Sample ID	MW-1			MW-21							
Sample Date	10/7/98			10/7/98							
Sample Time	16:00			16:15							
Lab #	E18252			E18253							
	Result	DF	DLR	Result	DF	DLR				PQL	Method
Results in µg/Liter:											
Analysis Date	10/12/98			10/12/98							
TPH-Diesel	**720** x	1.0	50	**800** x	1.0	50				50	8015M
TPH-Motor Oil	**230**	1.0	50	**560**	1.0	50				50	8015M

DF=Dilution Factor ND= None Detected above DLR PQL=Practical Quantitation Limit DLR=Detection Reporting Limit

· Silica Gel cleanup performed prior to analysis

· Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2224)

Michelle L. Anderson, Lab Director

Environmental Analysis Since 1983

Entech Analytical Labs, Inc.

CA ELAP# 2224

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

Kleinfelder
7133 Koll Center Parkway, Suite 100
Pleasanton, CA 94566
Attn: Steve Walker

Date: 10/15/98
Date Received: 10/8/98
Project: 10-1682-09/803
PO #:
Sampled By: Client

Certified Analytical Report

Water Sample Analysis:

Sample ID	MW-15			MW-2			MW-3				
Sample Date	10/7/98			10/7/98			10/7/98				
Sample Time	13:10			14:55			15:15				
Lab #	E18249			E18250			E18251				
	Result	DF	DLR	Result	DF	DLR	Result	DF	DLR	PQL	Method
Results in µg/Liter:											
Analysis Date	10/12/98			10/12/98			10/12/98				
TPH-Diesel	**ND**	1.0	50	**2,800** x	1.0	50	**2,900** x	1.0	50	50	8015M
TPH-Motor Oil	**ND**	1.0	50	**950**	1.0	50	**1,500**	1.0	50	50	8015M

DF=Dilution Factor ND= None Detected above DLR PQL=Practical Quantitation Limit DLR=Detection Reporting Limit

· Silica Gel cleanup performed prior to analysis

· Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2224)

Michelle L. Anderson, Lab Director

Environmental Analysis Since 1983

Entech Analytical Labs, Inc.

CA ELAP# 2224

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

STANDARD LAB QUALIFIERS
July, 1998

All Entech lab reports now reference standard lab qualifiers. These qualifiers are noted in the adjacent column to the analytical result and are adapted from the U.S. EPA CLP program. The current qualifier list is as follows:

Qualifier	Description
U	Compound was analyzed for but not detected
J	Estimated valued for tentatively identified compounds or if result is below PQL but above MDL
N	Presumptive evidence of a compound (for Tentatively Identified Compounds)
B	Analyte is found in the associated Method Blank
E	Compounds whose concentrations exceed the upper level of the calibration range
D	Multiple dilutions reported for analysis; discrepancies between analytes may be due to dilution
X	Results within quantitation range; chromatographic pattern not typical of fuel

Acculabs Inc.

Formerly West Laboratory

Davis

1046 Olive Drive, Suite 2, Davis CA 95616 ■ 530-757-0920 ■ Fax 753-6091

Sample Log 19139
October 15, 1998

Michelle Anderson
Entech Analytical Labs, Inc.
525 Del Rey Avenue, Suite E
Sunnyvale, CA 94086

Subject : 4 Water samples
Project Name : Kleinfelder
Project Number :

Dear Ms. Anderson,

Chemical analysis on the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. USEPA protocols for sample storage and preservation were followed.

Acculabs - Davis is certified by the State of Arizona (AZ0583) and the State of California (# 1346). If you have any questions regarding procedures or results, please call me at 530-757-0920.

Sincerely,

Tom Kwoka

Tom Kwoka

Acculabs Inc.

Formerly West Laboratory

Davis

1046 Olive Drive, Suite 2, Davis CA 95616 ■ 530-757-0920 ■ Fax 753-6091

Subject : 4 Water samples
Project Name : Kleinfelder
Project Number :

Sample Log 19139
October 15, 1998

Case Narrative

EPA 8082

Sample E18251(MW-3) was diluted due to matrix interference.

Tom Kwoka

Acculabs Inc.

Formerly West Laboratory

Davis

1046 Olive Drive, Suite 2, Davis CA 95616 ■ 530-757-0920 ■ Fax 753-6091

EPA 8082

Sample Log 19139
October 15, 1998

Sample Name : **E18252(MW-1)**

Project Name	: Kleinfelder	Date Analyzed	: 10/15/98
Project Number	:	Date Received	: 10/09/98
Sample Date	: 10/07/98	Dilution	: 1:1
Date Extracted	: 10/12/98	Sample Matrix	: Water
Extr. Method	: EPA 3510	Lab Number	: 19139-03
QC Batch	: PW981001		

Parameter	MRL	Measured Conc.	Units
PCB 1016	1.0	<1.0	ug/L
PCB 1221	1.0	<1.0	ug/L
PCB 1232	1.0	<1.0	ug/L
PCB 1242	1.0	<1.0	ug/L
PCB 1248	1.0	<1.0	ug/L
PCB 1254	1.0	<1.0	ug/L
PCB 1260	1.0	<1.0	ug/L
Tetrachloro-m-xylene (sur)	(28-152)	84	% Recovery
Decachlorobiphenyl (sur)	(2-143)	68	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

Acculabs Inc.

Formerly West Laboratory

Davis

1046 Olive Drive, Suite 2, Davis CA 95616 ■ 530-757-0920 ■ Fax 753-6091

Sample Log 19139
October 15, 1998

EPA 8082

Sample Name : **E18253(MW-21)**

Project Name : Kleinfelder
Project Number :
Sample Date : 10/07/98
Date Extracted : 10/12/98
Extr. Method : EPA 3510
QC Batch : PW981001

Date Analyzed : 10/15/98
Date Received : 10/09/98
Dilution : 1:1
Sample Matrix : Water
Lab Number : 19139-04

Parameter	MRL	Measured Conc.	Units
PCB 1016	1.0	<1.0	ug/L
PCB 1221	1.0	<1.0	ug/L
PCB 1232	1.0	<1.0	ug/L
PCB 1242	1.0	<1.0	ug/L
PCB 1248	1.0	<1.0	ug/L
PCB 1254	1.0	<1.0	ug/L
PCB 1260	1.0	<1.0	ug/L
Tetrachloro-m-xylene (sur)	(28-152)	90	% Recovery
Decachlorobiphenyl (sur)	(2-143)	92	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

Acculabs Inc.

Formerly West Laboratory

Davis

1046 Olive Drive, Suite 2, Davis CA 95616 ■ 530-757-0920 ■ Fax 753-6091

Sample Log 19139
October 15, 1998

EPA 8082

Sample Name : **E18250(MW-2)**

Project Name	: Kleinfelder	Date Analyzed	: 10/15/98
Project Number	:	Date Received	: 10/09/98
Sample Date	: 10/07/98	Dilution	: 1:1
Date Extracted	: 10/12/98	Sample Matrix	: Water
Extr. Method	: EPA 3510	Lab Number	: 19139-01
QC Batch	: PW981001		

Parameter	MRL	Measured Conc.	Units
PCB 1016	1.0	<1.0	ug/L
PCB 1221	1.0	<1.0	ug/L
PCB 1232	1.0	<1.0	ug/L
PCB 1242	1.0	<1.0	ug/L
PCB 1248	1.0	<1.0	ug/L
PCB 1254	1.0	<1.0	ug/L
PCB 1260	1.0	<1.0	ug/L
Tetrachloro-m-xylene (sur)	(28-152)	93	% Recovery
Decachlorobiphenyl (sur)	(2-143)	90	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : T.I.K.
Tom Kwoka

Acculabs Inc.

Formerly West Laboratory

Davis

1046 Olive Drive, Suite 2, Davis CA 95616 ■ 530-757-0920 ■ Fax 753-6091

Sample Log 19139
October 15, 1998

EPA 8082

Sample Name : **E18251(MW-3)**

Project Name : Kleinfelder
Project Number :
Sample Date : 10/07/98
Date Extracted : 10/12/98
Extr. Method : EPA 3510
QC Batch : PW981001

Date Analyzed : 10/15/98
Date Received : 10/09/98
Dilution : 1:5
Sample Matrix : Water
Lab Number : 19139-02

Parameter	MRL	Measured Conc.	Units
PCB 1016	5.0	<5.0	ug/L
PCB 1221	5.0	<5.0	ug/L
PCB 1232	5.0	<5.0	ug/L
PCB 1242	5.0	<5.0	ug/L
PCB 1248	5.0	<5.0	ug/L
PCB 1254	5.0	<5.0	ug/L
PCB 1260	5.0	<5.0	ug/L
Tetrachloro-m-xylene (sur)	(28-152)	94	% Recovery
Decachlorobiphenyl (sur)	(2-143)	77	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

Acculabs Inc. October 09, 1998

QC Report
Pesticides/PCB by EPA 608

QC Batch PW981001 Matrix: Water

Method Blank

Parameter	MRL(ug/L)	Measured Value(ug/l)
Aldrin	(0.050)	<0.050
alpha-BHC	(0.050)	<0.050
beta-BHC	(0.050)	<0.050
delta-BHC	(0.050)	<0.050
gamma-BHC	(0.050)	<0.050
Chlordane Technical	(1.0)	<1.0
gamma-Chlordane	(0.050)	<0.050
alpha-Chlordane	(0.050)	<0.050
4,4'-DDD	(0.10)	<0.10
4,4'-DDE	(0.10)	<0.10
4,4'-DDT	(0.10)	<0.10
Dieldrin	(0.10)	<0.10
Endosulfan 1	(0.050)	<0.050
Endosulfan 2	(0.10)	<0.10
Endosulfan Sulfate	(0.10)	<0.10
Endrin	(0.10)	<0.10
Endrin Aldehyde	(0.10)	<0.10
Heptachlor	(0.050)	<0.050
Heptachlor Epoxide	(0.050)	<0.050
Toxaphene	(2.0)	<2.0
PCB 1016	(1.0)	<1.0
PCB 1221	(2.0)	<2.0
PCB 1232	(1.0)	<1.0
PCB 1242	(1.0)	<1.0
PCB 1248	(1.0)	<1.0
PCB 1254	(1.0)	<1.0
PCB 1260	(1.0)	<1.0

Tom Kwoka
Senior Chemist

Acculabs Inc. October 09, 1998

QC Report
Pesticides/PCB by EPA 608

QC Batch PW981001 Matrix: Water

Spike and Spike Duplicate Results

Parameter	Matrix Spike (%Rec)	Matrix Spike Dup. (%Rec)	RPD %
Not enough sample to spike. See LCS data.			

Laboratory Control Spike

Parameter	Laboratory Control Spike----(%Rec)---Spike Dup		RPD %
alpha-BHC	105	107	2
beta-BHC	92	92	0
gamma-BHC	109	111	2
delta-BHC	106	108	2
Heptachlor	94	93	1
Aldrin	88	85	3
Hept-Epoxide	101	103	2
Endo-I	60	62	3
Dieldrin	103	106	3
DDE	101	103	2
Endrin	101	101	0
Endo-II	73	75	3
DDD	103	105	2
Endo Sulf	100	102	2
4,4'-DDT	111	114	3
PCB 1016	89		
PCB 1260	95		

Tom Kwoka
Senior Chemist

Entech Analytical Labs, Inc.

525 Del Rey Avenue, Suite E
Sunnyvale, CA 94086

QUALITY CONTROL RESULTS SUMMARY

METHOD: Gas Chromatography
Laboratory Control Spikes

QC Batch #: DW981003
Matrix: Water
Units: µg/L

Date analyzed: 10/11/98
Date extracted: 10/11/98
Quality Control Sample: Blank Spike

PARAMETER	Method #	MB µg/L	SA µg/L	SR µg/L	SP µg/L	**SP %R**	SPD µg/L	**SPD %R**	RPD	QC LIMITS RPD	QC LIMITS %R
Diesel	8015M	<50.0	950	ND	918	97	926	97	1	25	62-132

Definition of Terms:

- na: Not Analyzed in QC batch
- MB: Method Blank
- SA: Spike Added
- SR: Sample Result
- RPD(%): Duplicate Analysis - Relative Percent Difference
- SP: Spike Result
- SP (%R) Spike % Recovery
- SPD: Spike Duplicate Result
- SPD (%R) Spike Duplicate % Recovery
- NC: Not Calculated

Entech Analytical Labs, Inc.

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

Subcontract Chain of Custody

19139

Subcontract Lab:		Date Sent:	Project Name:		Due Date:	
Acculabs- Davis		10/8/98	Kleinfelder		10/15/98	
Sample ID and Source	Matrix	Required Analysis	Date Taken	Time Taken	Containers	Pres?
E18250 (mw-2)	W	8080 PCBS	10/7/98		1x 1Ltr Amb		01
E18251 (mw-3)	↓	↓	↓		↓		02
E18252 (mw-1)	↓	↓	↓		↓		03
E18253 (mw-21)	↓	↓	↓		↓		04

Relinquished By:	Received By:	Date:	Time:
Vroom via Cal Overnight		10/8/98	6 pm
Relinquished By:	Received By:	Date:	Time:
Relinquished By:	Received By:	Date:	Time:
	Stu Woodall	10/9/98	830

Notes: _____

KLEINFELDER

PROJECT NO.	PROJECT NAME
10-1682-09/803	Industrial Asphalt

L.P. NO. (P.O. NO.)

SAMPLERS: (Signature/Number) KBR 3014 #3827

RECEIVING LAB: Entech Analytical Labs Inc.

INSTRUCTIONS/REMARKS: Standard T.A.T

	DATE MM/DD/YY	SAMPLE I.D. TIME HH-MM-SS	SAMPLE I.D.	MATRIX	NO. OF CONTAINERS	TYPE OF CONTAINERS	ANALYSIS TPH-d/MO 8015	PCBs 8080									
1	10/7/98	13:10	MW-15 B18249	H2O	2	Amber	X	X	NO	KB							
2		14:55	MW-2 B18250	H2O	3	Amber	X	X									
3		15:15	MW-3 B18251	H2O	3	Amber	X	X									
4		16:00	MW-1 B18252	H2O	3	Amber	X	X									
5		16:15	MW-2 B18253	H2O	3	Amber	X	X									
6			END														
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	
18																	
19																	
20																	

SILICA GEL CLEANUP ON 8015 TPH d/mo

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
KBR	10/8/98 10:10	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)
	10/8/98 3:45	

Instructions/Remarks:

Send Results To:

KLEINFELDER
7133 KOLL CENTER PARKWAY
SUITE 100
PLEASANTON, CA 94566
925 ~~(510)~~ 484-1700

Attn. Steve Walker 925 484-5838

M-60 White – Sampler Canary – Return Copy To Shipper Pink – Lab Copy

CHAIN OF CUSTODY

№ 2218