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H2OGEOL
A GROUNDWATER CONSULTANCY

Ms. Susan Hugo
Senior Hazardous Materials Specialist
Department of Environmental Health
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, California 94621

November 15, 1993

RE: Piedmont Plaza, 175 41st Street, Oakland, California.
Fourth Quarter 1993 Groundwater Monitoring.

Dear Ms. Hugo:

This letter report presents the results of the Fourth Quarter, 1993 sampling and analysis of the monitoring wells located at the STERN PROPERTY COMPANY site known as Piedmont Plaza, 175 41st Street in Oakland, California.

The Fourth Quarter, 1993 sampling occurred on November 02, 1993. The depth to static groundwater at each of the three monitoring wells, the purge volumes, and the field parameters (pH, specific conductance, and temperature) are recorded in attached Table 1.

In compliance with the provision of the County's letter dated May 05; 1993 the following table presents "historical records of groundwater level in each well ... tabulated to indicate the fluctuation in water levels". The table provides the well casing top elevation, depth to water, and groundwater surface elevation at each of the monitoring wells. (Depths are in feet below the top of casing and elevations are in feet above mean sea level, City of Oakland datum.)

Well	Date	Time	Casing Top Elevation	Depth to Water	Groundwater Surface Elevation
MW-1	01/28/93	07:19	104.63	15.15	89.48
	05/04/93	06:53	104.63	17.44	87.19
	08/03/93	07:25	103.11	19.62	83.49
	11/02/93	07:10	103.11	20.92	82.19
MW-2	01/28/93	07:21	104.63	13.10	91.53
	05/04/93	06:54	104.63	14.15	90.48
	08/03/93	07:20	104.63	16.23	88.40
	11/02/93	07:04	103.56	16.84	86.72
MW-3	01/28/93	07:22	105.56	11.02	94.54
	05/04/93	06:56	105.56	11.53	94.03
	08/03/93	07:33	105.56	12.62	92.94
	11/02/93	06:54	105.56	13.56	92.00

The casing height of well MW-2 was reduced by 1.07 feet on August 17, 1993 to accommodate parking area paving. This height reduction lowered the casing top elevation of well MW-2 from 104.63 feet to 103.56 feet above mean sea level.

For the Fourth Quarter 1993 the groundwater flow direction and gradient for the triangle with a well at each apex was North 84.6° West at a gradient of 0.1306. Figure 1 shows monitoring well locations, the groundwater flow direction, and water surface elevations. The following table presents historical records of groundwater flow direction and gradient fluctuation based on the preceding historical water levels.

Date	Well Triangle	Gradient	Flow Direction
01/28/93	MW-1, MW-2, MW-3	0.0632	N 88.7° W
05/04/93	MW-1, MW-2, MW-3	0.0931	N 83.3° W
08/03/93	MW-1, MW-2, MW-3	0.1343	N 80.9° W
11/02/93	MW-1, MW-2, MW-3	0.1306	N 84.6° W

The County's letter of May 05, 1993 requested that "any changes in the groundwater flow direction and gradient based on the measured data since the last sampling event must be explained". Though, the depth to groundwater continued increasing following the Winter 1992-1993 rainy season, there has not been a notable change in groundwater flow direction. The gradient of the groundwater surface increased by a factor of two between the Winter (first) water level measurements on 01/28/93 and the Summer (third, 08/03/93) and Fall (fourth, 11/02/93) measurements. The Spring (05/04/93) groundwater surface gradient was transitional, differing by a factor of 1.4 from the Winter value. This represents a systematic rate of seasonal change and is explainable by the reduction of overland recharge since the cessation of the rainy season.

The monitoring wells were purged using a submersible electric pump at a flow rate of 0.1-1 gallons per minute and a bailer. The purge volumes, and the field parameters (pH, specific conductance, and temperature) are recorded in Table 1. The water from wells MW-1, -2, and -3 was pumped/bailed into a small container and transferred to 55 gallon drums located at the side of the site.

The Fourth Quarter 1993 sampling event groundwater samples collected from each well were submitted for analysis, under chain-of-custody documentation, to CHROMALAB, INC. of San Ramon, California. Groundwater samples from all three wells were analyzed for the presence of Total Petroleum Hydrocarbons (TPH) as Diesel (TPH-D) by U.S.EPA Method 3510/8015. Samples from MW-1 and MW-2 were analyzed

for Total Oil and Grease (TOG) by Standard Method 5520 B&F, for TPH as Gasoline (THP-G) by U.S.EPA Method 3510/8015, and for the aromatic hydrocarbons (benzene, toluene, ethylbenzene, and total xylene isomers; collectively known as BTEX) by U.S. EPA Method 602.

The Fourth Quarter 1993 sample analytical results are included in the following table. As per the provisions of the County's letter dated May 05, 1993, this table is intended to "tabulate analytical results from all previous sampling events...". The results are expressed in units of micrograms per liter (µg/L, approximate equivalent to parts per billion).

Well/ Date	TPH-D	TPH-G	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Oil & Grease
MW-1							
01/28/93	120	<50	<0.5	<0.5	<0.5	<1.5	<1,000
05/04/93	<50	<50	<0.5	<0.5	<0.5	<0.5	<1,000
08/03/93	<50	<50	<0.5	<0.5	<0.5	<0.5	<1,000
11/02/93	<50	<50	<0.5	<0.5	<0.5	<0.5	<1,000
MW-2							
01/28/93	110	<50	<0.5	<0.5	<0.5	<1.5	<1,000
05/04/93	<50	<50	<0.5	<0.5	<0.5	<0.5	<1,000
08/03/93	<50	<50	<0.5	<0.5	<0.5	<0.5	1,400
11/02/93	<50	<50	<0.5	<0.5	<0.5	<0.5	<1,000
MW-3							
01/28/93	140	<50	<0.5	<0.5	<0.5	<1.5	<1,000
05/04/93	<50	---	----	----	----	----	------
08/03/93	<50	---	----	----	----	----	<1,000
11/02/93	<50	---	----	----	----	----	------

Attached in compliance with the County's letter dated May 05, 1993 we "provide laboratory reports (including quality control/quality assurance) (Sic, usually QA/QC) and chain-of-custody documentation". This submittal is as provided by the individual State Department of Health Services certified laboratory performing the analyses in conformity with their respective accreditation requirements.

In conformance with the telephone conversations between yourself, myself, and Mr. Stern, on April 27 and May 03, 1993, which were followed by the County's letter dated May 05, 1993, the chain-of-custody form for the Fourth Quarter 1993 instructed the laboratory to analyze the appropriate groundwater sample from MW-3 for BTEX and/or total oil and grease if and only if any of the analytical method compounds were detected in either MW-1 or MW-2. This analytical scenario was noted above.

The groundwater monitoring program has reported the following results:

TPH-G +BTEX: Four quarters (in all three wells) of levels below the regulatory threshold embodied in the Tri-Regional Board Staff Recommendations. Four quarters of both non detectable and/or levels below the Practical Quantitation Reporting Limit (PQRL).

TOG: Four quarters (in all three wells) of levels below the regulatory threshold embodied in the Tri-Regional Board Staff Recommendations. Four quarters of non detectable levels in wells MW-1 and MW-3. Four quarters of non detectable to less than the PQRL in well MW-2 (one quarter with 1,400 µg/L (1.4 times the detection level) and below the PQRL of 5,000 µg/L).

TPH-D: Three consecutive quarters of levels below the regulatory threshold embodied in the Tri-Regional Board Staff Recommendations (below detectable levels in all three wells). Only the first quarter showed a slight detection, with concentrations ranging from 110 to 140 µg/L, compared to a 100 µg/L U.S.EPA SNARL (Suggested No Adverse Response Level). In addition, the highest concentration the First quarter was in the upgradient well (MW-3) suggesting a possible upgradient, off site source.

According to Page 2, Paragraph 4 of the County's letter dated May 05, 1993 "the frequency of sampling events will be evaluated and/or a recommendation for signoff/case closure" for these constituents is possible.

Discontinuance of the groundwater monitoring program for Piedmont Plaza is proposed. Suspension of the program is based on four consecutive quarters of TPH-G + BTEX and TOG below regulatory thresholds. Continued monitoring for TPH-D should not be the responsibility of Piedmont Plaza based on three consecutive quarters on non detect and one quarter of near non detect, with the higher concentration in the upgradient well. Continued TPH-D monitoring should be the responsibility of the upgradient source.

Please do not hesitate to call me at (510) 373-9211 should you have any questions.

Sincerely,

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xc: Mr. Frank Stern, STERN PROPERTY COMPANY
Rich Hiett, Regional Water Quality Control Board, San Francisco Bay Region