Environmental
Science &
Engineering, Inc.
A CILCORP Company

TO: Alameda County Health Care Services Agency
Department of Environmental Health
80 Swan Way, Suite 200
Oakland, CA 94621

DATE: August 16, 1994

94 AUG 19 PM 3:45
HAZMAT

ATTN: Ms. Susan L. Hugo

JOB NUMBER: 6-94-5219

SUBJECT: Second Quarter Ground Water Monitoring Report

WE ARE TRANSMITTING THE FOLLOWING:

Second Quarter Ground Water Monitoring Report for Autopro site, 5200 Telegraph Avenue, Oakland, Alameda County, California. Please contact Chris Valcheff or Mike Quillin at (510) 685-4053 if there are any questions regarding this report.

CC: Mr. Ondrej M. Kojnok, Attorney at Law
Mr. George Tuma, Autopro
RWQCB - SFB Region, Toxics Cleanup Division

DIST:
LB
FILE
ORIGINATOR

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

BY Ch H. Valcheff

Christopher H. Valcheff
Staff Geologist

4090 Nelson Avenue, Suite J Concord, CA 94520 Phone (510) 685-4053 Fax (510) 685-5323

Environmental
Science &
Engineering, Inc.

A CILCORP Company

TO: Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Fifth Floor
Oakland, CA 94612

DATE: August 16, 1994

ATTN: Toxics Cleanup Division

JOB NUMBER: 6-94-5219

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Environmental
Science &
Engineering, Inc.

A CILCORP Company

TO: Ondrej M. Kojnok
Attorney at Law
762 El Paseo de Saratoga
San Jose, CA 95130

DATE: August 16, 1994

ATTN: Mr. Ondrej M. Kojnok

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4090 Nelson Avenue, Suite J Concord, CA 94520 Phone (510) 685-4053 Fax (510) 685-5323

Environmental
Science &
Engineering, Inc.

A CILCORP Company

TO: Autopro
5200 Telegraph Avenue
Oakland, California 94609

DATE: August 16, 1994

ATTN: Mr. George Tuma

JOB NUMBER: 6-94-5219

SUBJECT: Second Quarter Ground Water Monitoring Report

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Second Quarter Ground Water Monitoring Report for the Autopro site, 5200 Telegraph Avenue, Alameda County, California. Please contact Chris Valcheff or Mike Quillin at (510) 685-4053 if there are any questions regarding this report.

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Ms. Susan L. Hugo, ACHCSA
RWQCB - SFB Region, Toxics Cleanup Division

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ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

BY Ch H. Valchl

Christopher H. Valcheff
Staff Geologist

4090 Nelson Avenue, Suite J Concord, CA 94520 Phone (510) 685-4053 Fax (510) 685-5323

REPORT OF FINDINGS
SECOND QUARTER 1994
GROUND WATER MONITORING
AUTOPRO
5200 TELEGRAPH AVENUE,
OAKLAND, CALIFORNIA

ESE PROJECT #6-94-5219

PREPARED FOR:

MR. GEORGE TUMA, AUTOPRO
C/O MR. ONDREJ M. KOJNOK, ATTORNEY AT LAW
762 EL PASEO DE SARATOGA
SAN JOSE, CALIFORNIA

PREPARED BY:

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
4090 NELSON AVENUE, SUITE J
CONCORD, CALIFORNIA 94520

August 16, 1994

ESE
A CILCORP Company

This report has been prepared by Environmental Science & Engineering, Inc. for the exclusive use of Mr. George Tuma of Autopro and Mr. Ondrej M. Kojnok, Attorney at Law, as it pertains to their site located at 5200 Telegraph Avenue in Oakland, California. Our professional services have been performed using that degree of care and skill ordinarily exercised under similar circumstances by other geologists and engineers practicing in this field. No other warranty, express or implied, is made regarding professional advice provided in this report.

REPORT PREPARED BY:

Ch H Vahll FOR

Michael T. Meyer
Project Geologist

8/16/94
Date

UNDER THE PROFESSIONAL REVIEW AND SUPERVISION OF:

Michael E. Quillin

Michael E. Quillin, California R.G. No. 5315
Senior Hydrogeologist
Manager, Geosciences

8/16/94
Date

ESE PROJECT NO. 6-94-5219

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1.0 INTRODUCTION

This report presents the results of Second Quarter 1994 ground water monitoring conducted by Environmental Science & Engineering, Inc. (ESE) at the Autopro Facility (site) located at 5200 Telegraph Avenue in Oakland, California (Figure 1). The site is located at the northeastern corner of the intersection of Telegraph and Claremont Avenues in Oakland, California (Figure 2), in a mixed commercial and residential area within the northern portion of the City of Oakland. The site is at an approximate elevation of 120-feet above mean sea level (U.S.G.S., 1959). Regional topography slopes southwest toward the San Francisco Bay. The site consists of an active automotive sales and service facility.

Ground water monitoring activities included the collection of depth to ground water measurements, collecting and analyzing ground water samples from four existing on-site wells (MW-1 through MW-4; Figure 2), analysis and interpretation of the field and laboratory data, comparison of the data to previous data collected at the site, and preparation of this quarterly ground water monitoring report. Field activities were conducted on July 20, 1994.

ESE's report titled *Report of Findings: Preliminary Site Assessment* for the site, dated May 24, 1994 summarized the site investigation background, presented the results of a preliminary site assessment, and presented the results of the first quarterly ground water monitoring event at the site (First Quarter 1994). In summary, five underground storage tanks (USTs) were removed from three separate excavations at the site (Figure 2) in December 1990, prior to ESE's involvement. The USTs had previously contained gasoline, diesel, and waste oil. Soil and groundwater samples collected from the UST excavations during the UST removal program contained concentrations of total petroleum hydrocarbons (TPH) as gasoline (TPH-G) and as diesel (TPH-D). These samples also contained concentrations of benzene, toluene, ethylbenzene, and total xylenes (BTEX), and total lead. Soil samples collected and analyzed from the waste oil UST excavation additionally contained concentrations of oil and grease (O&G).

Some overexcavation of soils containing petroleum hydrocarbons was apparently conducted in July 1991, prior to ESE's involvement.

In April 1993, ESE performed a limited soil and ground water investigation at the site. The investigation included drilling two soil borings through the backfill material of two of the former UST excavations on site, into the native material beneath, and collecting ground water samples using a temporary sampling probe. The conclusions of the limited investigation were that the soil and ground water samples collected and analyzed contained concentrations of total semi-volatile petroleum hydrocarbons (TSVPH), and that these hydrocarbons did not appear to consist of diesel fuel or gasoline.

In April 1994, ESE conducted a preliminary site assessment (PSA) at the site. The investigation consisted of drilling four soil borings and installing four ground water monitoring wells (MW-1 through MW-4; Figure 2) in the borings and collecting soil ground water samples from the four borings/wells. Soil boring and monitoring well locations are shown on Figure 2. The PSA concluded that native soils beneath the site consist of silty clay from beneath the asphalt surface subgrade to approximately 10 to 13 feet below ground surface (bgs). The silty clay is generally underlain by saturated sandy gravel. The static ground water level in the wells installed at the site was found to be approximately 10.97 to 12.69 feet bgs, with an apparent flow direction to the southwest. Soil and ground water samples collected and analyzed during the PSA were found to contain petroleum hydrocarbons. The lateral extent of petroleum hydrocarbons in groundwater off site to the southwest was not delimited during the PSA.

2.0 GROUND WATER MONITORING

2.1 GROUND WATER ELEVATIONS

On July 20, 1994, ESE personnel measured static water levels in the four wells using an electric water level tape. Measurements were made relative to the surveyed datum for each well. ESE calculated ground water elevations for each well by subtracting the depth to ground water measurement from the datum elevation. The ground water elevation data were used to construct a ground water elevation contour map, from which ESE estimated the direction of ground water flow and the ground water gradient beneath the site (Figure 3). Field documentation of water level measurements are included with well purging results in Appendix A - Well Purging and Sampling Data.

2.2 GROUND WATER SAMPLING AND ANALYSIS

Ground water samples were collected from each of the wells on July 20, 1994, after they were purged of approximately three casing volumes of water and allowed to recover, in accordance with ESE Standard Operating Procedure (SOP) No. 3 for Ground Water Monitoring and Sampling from Monitoring Wells (Appendix B). Samples were analyzed by Sequoia Analytical (Sequoia), a State-certified laboratory, for TPH-G with BTEX distinction according to United States Environmental Protection Agency (EPA) Method 5030/8015/8020, for total extractable petroleum hydrocarbons (TPH-D) according to EPA Method 3510/3520/8015, and for chromium, nickel, lead, and zinc according to EPA Method 200.7.

3.0 RESULTS

3.1 GROUND WATER PHYSICAL RESULTS

Table 1 presents a historical summary of ground water elevation data, inclusive of the current monitoring event. Ground water elevations presented in the PSA were found during a QA/QC review to have been incorrectly calculated from the April 1994 monitoring data. The corrected ground water elevations are included in Table 1, and revised ground water contours based on the April 1994 data are shown on Figure 2. The revised ground water flow regime beneath the site estimated based on April 1994 data appears to exhibit two components of ground water flow. One of these components is to the southwest (as shown in the PSA) with an approximate gradient of 0.007 (34.4 feet per mile). The second component of ground water flow direction implied by the April 1994 data is to the northeast, also with an approximate gradient of 0.006 (33.0 feet per mile). This bi-modal flow direction is inconsistent with the expected regional flow direction (to the west), and may represent a local variation resulting from the relatively high-permeability backfill material which now replaces the native clay in the area of the three former UST basins. The effect of the backfill material may be exacerbated by contact of the fill material with the water-bearing sandy gravel underlying the clay beneath the site. Such contact could provide areas of direct recharge of the potentially confined or semi-confined saturated sandy gravel. This interpretation provides one possible explanation of the relatively high ground water elevations in the central portion of the site (where the largest area of backfill is located).

Ground water elevation contours based on the July 1994 monitoring data are shown on Figure 3. The ground water elevation in all wells at the site except MW-1 decreased between 0.19 and 0.29 feet between the April and July 1994 monitoring events (Table 1). The ground water elevation in well MW-1 increased 0.30 feet over the same period. The bi-modal ground water flow direction is again implied with the ground water elevation data, and the gradient of the southwesterly component of ground water flow remains approximately 0.04 (72.8 feet per mile). The northeasterly component of ground water flow direction appears to have varied to an easterly direction, with a significantly reduced gradient of 0.002 (10.6 feet per mile). No free phase

petroleum hydrocarbons (free product) were observed in any of the wells.

3.2 GROUND WATER CHEMICAL RESULTS

Current analytical results are summarized along with historical data in Table 2, and TPH-G data are graphically presented on Figure 4. The laboratory report and chain of custody documentation are presented in Appendix C - Laboratory Reports and Chain of Custody Documentation for Ground Water Samples. Based on these laboratory results, the estimated extent of TPH-G in ground water beneath the site is shown on Figure 4.

Concentrations of TPH-G, ethylbenzene, and total xylenes in the ground water sample collected from well MW-1 have decreased less than an order of magnitude since April 1994. TPH-D, benzene and toluene concentrations have risen from not detected (ND) to 100, 19, and 2.5 parts per billion (ppb), respectively, in this sample. Concentrations of all five metals except cadmium rose since April 1994. Cadmium was ND in July 1994, but was detected in April 1994 at a concentration below the July 1994 detection limit.

No detectable concentrations of TPH-G, TPH-D, or BTEX were reported in the ground water sample collected from well MW-2 during either the April or July 1994 monitoring event. Concentrations of chromium and zinc increased from ND to 0.022 and 0.068 ppm, respectively between April and July 1994. The nickel concentration decreased less than an order of magnitude, and cadmium and lead remained ND.

TPH-G, toluene, ethylbenzene, and total zylenes concentrations decreased less than an order of magnitude from the April 1994 results in the ground water sample collected from well MW-3. The benzene concentration increased less than an order of magnitude, and the TPH-D concentration increased from ND to 1,400 ppb. The lead, nickel, and zinc concentrations in MW-3 increased less than an order o magnitude between April and July 1994. The chromium concentration increased from ND to 0.099 ppm over this period, while the cadmium concentration remained ND.

Ethylbenzene and total xylene concentrations in the ground water sample collected from well MW-4 increased less than an order of magnitude since April 1994. The TPH-D, benzene, and toluene concentrations increased from ND to 1,500, 35, and 11 ppb, respectively. The TPH-G concentration decreased less than an order of magnitude. Cadmium was again ND, and lead decreased to ND since April 1994. Chromium and zinc concentrations increased from ND to 0.023 and 0.060 ppm, respectively, while the nickel concentration decreased less than an order of magnitude.

4.0 SUMMARY AND CONCLUSIONS

- Ground water beneath the site exhibits a bi-modal flow direction, possibly because of the influence of ubiquitous high-permeability backfill material placed following the UST removal. The predominant flow direction appears to be to the southwest, with a gradient of 0.014. The second component of ground water flow is to the east, with a gradient of 0.002 during the July 1994 monitoring event. This flow regime implies that petroleum hydrocarbons would be expected to migrate to the southwest and east.

- TPH-G concentrations decreased less than an order of magnitude in ground water samples collected from all four wells between April and July 1994.

- TPH-D concentrations increased from ND in three of the four wells (MW-1, MW-3, and MW-4), and remain ND in the fourth well (MW-2).

- Benzene concentrations increased from ND in wells MW-1 and MW-4, increased less than an order of magnitude in well MW-3, and remained ND in well MW-2.

- Toluene concentrations mirrored benzene concentration fluctuations, except that a slight decrease was reported in well MW-3. Ethylbenzene and total xylene concentrations in July 1994 ground water samples were similar to those in April 1994.

- The continued ND results for TPH-D, TPH-G, and BTEX in well MW-2 support the ground water elevation data which indicate that well MW-2 is an up-gradient well.

- The overall extent of the plume of petroleum hydrocarbons in ground water does not appear to have increased in areal extent between April and July 1994. However, the increase in TPH-D and benzene in wells MW-1, MW-3, and MW-4 may indicate that these constituents are migrating in the direction of these wells. This interpretation is consistent with the ground water elevation data.

- The existing monitoring well network is sufficient to confirm with current data that petroleum hydrocarbons do appear to be migrating offsite to the southwest, and the existing monitoring well network is not sufficient to confirm the extent to which this is occurring.

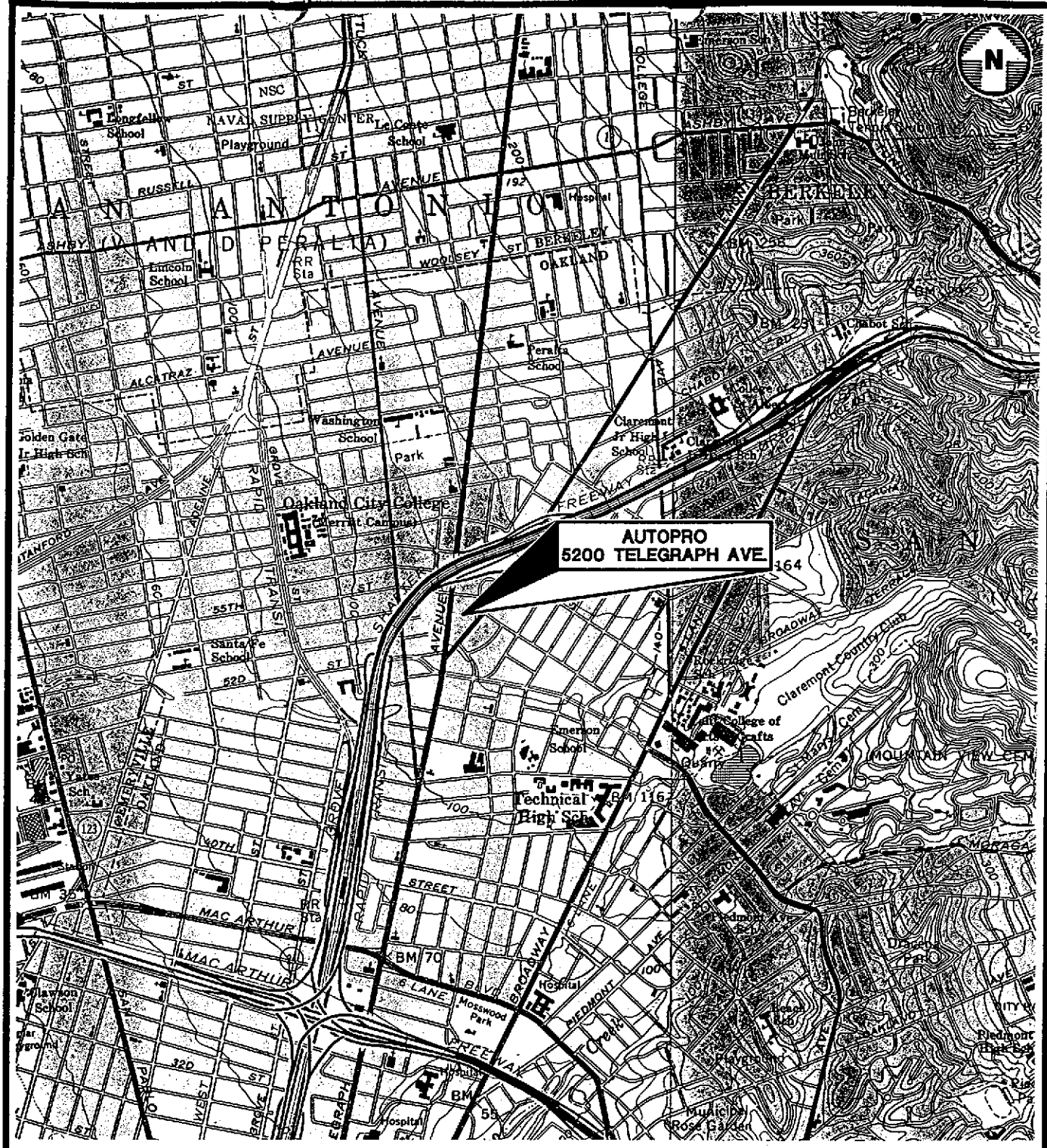
- Metals concentrations have generally increased since April 1994.

5.0 REFERENCES

Environmental Science & Engineering, Inc. (ESE), 1993, Autopro, 5200 Telegraph Avenue, Oakland, California, Letter to Mr. Jeff Widman, dated April 19, 1993.

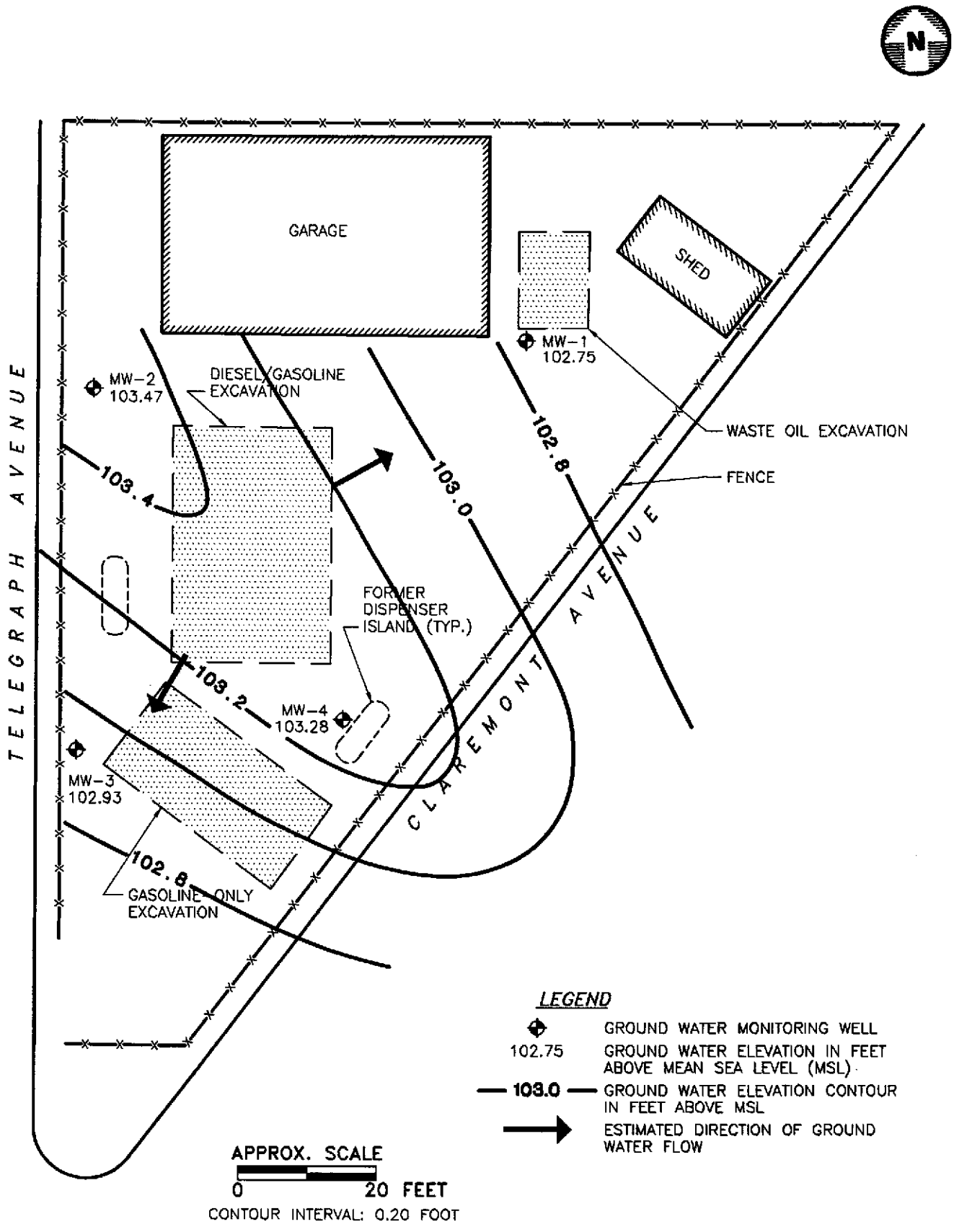
_____, 1994, Report of Findings: Preliminary Site Assessment, Autopro, 5200 Telegraph Avenue, Oakland, California, dated May 24, 1994.

United States Geologic Survey, 1959 Oakland East and Oakland West 7.5 Minute Topographic Quadrangles, Photo Revised 1980.

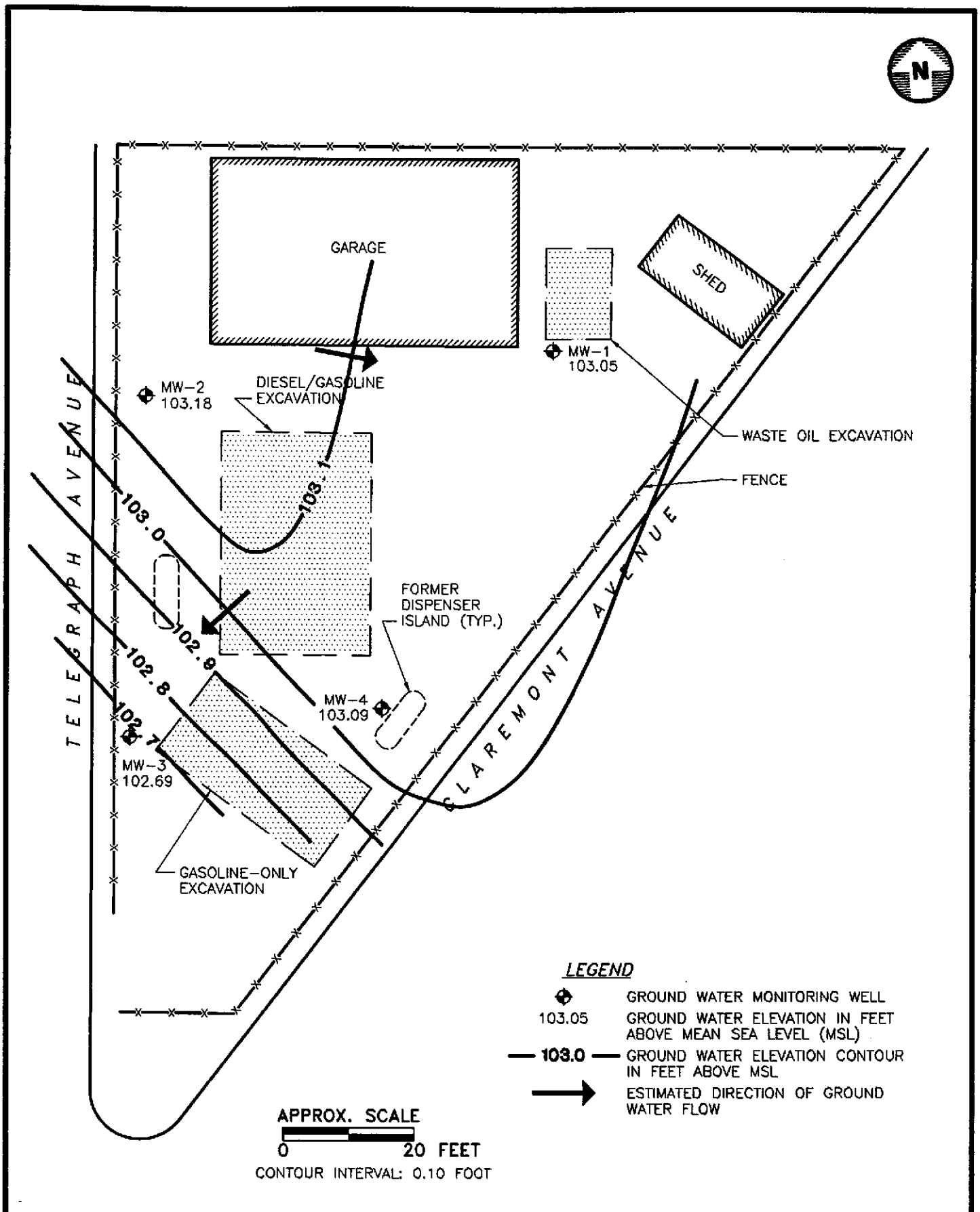


ADAPTED FROM U.S.G.S. OAKLAND EAST AND OAKLAND WEST 7.5 MINUTE TOPOGRAPHIC QUADRANGLE MAPS, 1959, PHOTOREVISED 1980.

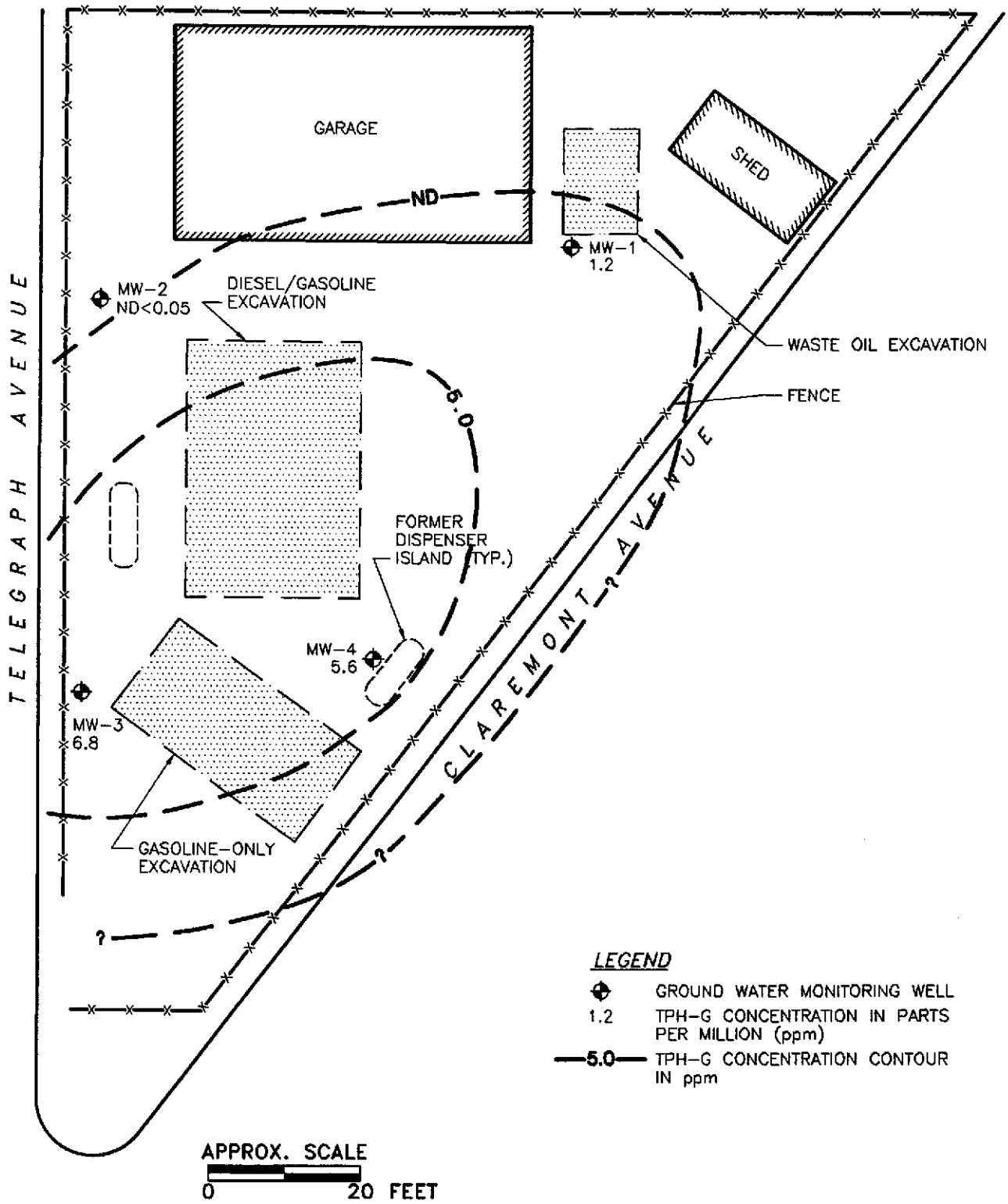
ESE A CILCORP Company — Environmental Science & Engineering, Inc.	DATE 3/94	LOCATION MAP	FIGURE NO. 1
4090 NELSON AVENUE, SUITE J CONCORD, CA 94520	REVISED	AUTOPRO 5200 TELEGRAPH AVENUE OAKLAND, CALIFORNIA	PROJ. NO. 6-94-5219
	CAD FILE 52191001		



ESE Environmental Science & Engineering, Inc. 4090 NELSON AVENUE, SUITE J CONCORD, CA 94520	DATE 3/94 REVISED 7/28/94 CAD FILE 52191003	REVISED GROUND WATER ELEVATIONS APRIL 26, 1994 AUTOPRO 5200 TELEGRAPH AVENUE OAKLAND, CALIFORNIA	FIGURE NO. 2 PROJ. NO. 6-94-5219



ESE Environmental Science & Engineering, Inc.	DATE 3/94	GROUND WATER ELEVATIONS JULY 20, 1994	FIGURE NO. 3
4090 NELSON AVENUE, SUITE J CONCORD, CA 94520	REVISED 7/28/94	AUTOPRO 5200 TELEGRAPH AVENUE OAKLAND, CALIFORNIA	PROJ. NO. 6-94-5219
	CAD FILE 52191003		



ESE Environmental Science & Engineering, Inc.	DATE 3/94	TPH-G CONCENTRATION CONTOUR MAP JULY 20, 1994	FIGURE NO. 4
4090 NELSON AVENUE, SUITE J CONCORD, CA 94520	REVISED 8/8/94	AUTOPRO 5200 TELEGRAPH AVENUE OAKLAND, CALIFORNIA	PROJ. NO. 6-94-5219
	CAD FILE 52191004		

TABLE 1

HISTORICAL GROUND WATER ELEVATION DATA

Autopro
5200 Telegraph Avenue
Oakland, California

Well	Date	Datum (ft. AMSL)	Depth to Water	Piezometric Surface Elevation	Change in Elevation
MW-1	07/20/94	115.44	12.39	103.05	0.30
	04/26/94	115.44	12.69	102.75	--
MW-2	07/20/94	114.62	11.44	103.18	-0.29
	04/26/94	114.62	11.15	103.47	--
MW-3	07/20/94	113.90	11.21	102.69	-0.24
	04/26/94	113.90	10.97	102.93	--
MW-4	07/20/94	114.25	11.16	103.09	-0.19
	04/26/94	114.25	10.97	103.28	--

NOTES:

ft. AMSL = Feet Above Mean Sea Level
Negative change in elevation denotes a decrease in piezometric surface elevation

TABLE 2

HISTORICAL GROUND WATER ANALYTICAL DATA

Autopro
5200 Telegraph Avenue
Oakland, California

Sample I.D.	Date Sampled	TPH-G (µg/L)	TPH-D (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	1,2-Dichlorethane (µg/L)	Ethylene dibromide (µg/L)	Metals (mg/L)				
										Cd	Cr	Pb	Ni	Zn
MW-1	04/26/94	1,400	<50	<0.50	<0.50	4.5	2.1	<0.50	<0.50	0.001	<0.05	<0.005	0.12	<0.10
	07/20/94	1,200	100	19	2.5	2.4	1.6	--	--	<0.010	0.22	0.044	0.36	0.35
MW-2	04/26/94	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.001	<0.05	<0.005	0.06	<0.10
	07/20/94	<50	<50	<0.5	<0.5	<0.5	<0.5	--	--	<0.010	0.022	<0.020	0.045	0.068
MW-3	04/26/94	10,000	<3,000	70	40	40	50	<30	<30	<0.001	<0.05	0.043	0.10	0.10
	07/20/94	7,500	1,400	120	38	36	39	--	--	<0.010	0.099	0.14	0.12	0.25
MW-4	04/26/94	6,800	<300	<3.0	<3.0	3.0	4.0	<3.0	<3.0	<0.001	<0.05	0.007	0.06	<0.10
	07/20/94	5,600	1,500	35	11	12	17	--	--	<0.010	0.023	<0.020	0.048	0.060
TRIP	04/26/94	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--

Notes:

TPH-G = Total Petroleum Hydrocarbons as Gasoline
TPH-D = Total Petroleum Hydrocarbons as Diesel
µg/L = Micrograms per liter or parts per billion (ppb)
mg/L = Milligrams per liter or parts per million (ppm)
Cd = Cadmium
Cr = Chromium
Pb = Lead
Ni = Nickel
Zn = Zinc
< = Less than listed detection limits
-- = Not analyzed

APPENDIX A

WELL PURGING AND SAMPLING DATA

Environmental Science & Engineering, Inc.
A CILCORP Company

SAMPLE COLLECTION LOG

PROJECT NAME: Autopro
PROJECT NO.: 6-94-5219
DATE: July 20, 1994

SAMPLE LOCATION I.D.: MW-1
SAMPLER: Paul Meaden
PROJECT MANAGER: Mike Quilla

CASING DIAMETER

2" X
4"
Other

SAMPLE TYPE

Ground Water X
Surface Water
Treat. Influent
Treat. Effluent
Other

WELL VOLUMES PER UNIT

Well Casing I.D. (inches)	Gal/Ft.
2.0	0.1632
4.0	0.6528
6.0	1.4690

DEPTH TO PRODUCT: 0 (ft.)
DEPTH TO WATER: 12.39 (ft.)
DEPTH OF WELL: 24.25 (ft.)

PRODUCT THICKNESS: 0 (ft.)
WATER COLUMN: 11.86 (ft.)
WELL CASING VOLUME: (gal)

MINIMUM PURGE VOLUME (3 or 4 WCV): 1.9 (gal)
ACTUAL VOLUME PURGED: 6 (gal)

TIME	Volume (GAL)	pH (Units)	E.C. (Micromhos) X1000	Temperature (F°)	Turbid. (NTU)	Other
11:02	0	5.13	0.166	65°		Muddy
11:08	3	5.31	0.167	65.9°		
11:13	6	5.40	0.165	65.1°		

INSTRUMENT CALIBRATION

pH/COND./TEMP.: TYPE Hydac 9 UNIT# DATE: 7/20 TIME: BY: PM
TURBIDITY: TYPE UNIT# DATE: TIME: BY:

PURGE METHOD

___Displacement Pump ___Other
X Bailer (Teflon/PVC/SS) ___Submersible Pump

SAMPLE METHOD

___Bailer (Teflon/PVC/SS) ___Dedicated
X Bailer (Disposable) ___Other

SAMPLES COLLECTED

	ID	TIME	DATE	LAB	ANALYSES
SAMPLE	MW-1	11:15	7/20		
DUPLICATE					
SPLIT					
FIELD BLANK					

COMMENTS:

SAMPLER: PROJECT MANAGER

4090 Nelson Avenue, Suite J Concord, CA 94520 Phone (510) 685-4093 Fax (510) 685-5323

Environmental Science & Engineering, Inc.

A CELCORP Company

SAMPLE COLLECTION LOG

PROJECT NAME: Autopro
PROJECT NO.: 6-94-5219
DATE: July 20, 1994

SAMPLE LOCATION I.D.: MW-2
SAMPLER: Paul Marsden
PROJECT MANAGER: Mike Quillin

CASING DIAMETER

2" X
4" ____
Other ____

SAMPLE TYPE

Ground Water X
Surface Water ____
Treat. Influent ____
Treat. Effluent ____
Other ____

WELL VOLUMES PER UNIT

Well Casing I.D. (inches)	Gal/Ft.
2.0	0.1632
4.0	0.6528
6.0	1.4690

DEPTH TO PRODUCT: 0 (ft.)
DEPTH TO WATER: 11.44 (ft.)
DEPTH OF WELL: 24.50 (ft.)

PRODUCT THICKNESS: 0 (ft.)
WATER COLUMN: 13.06 (ft.)
WELL CASING VOLUME: 2.1 (gal)

MINIMUM PURGE VOLUME (3 or 4 WCV): 6.3 (gal)
ACTUAL VOLUME PURGED: 7 (gal)

TIME	Volume (GAL)	pH (Units)	E.C. (Micromhos) X1000	Temperature (F°)	Turbid. (NTU)	Other
1130	0	4.91	0.41	65.1°		
1135	3	5.01	0.44	64.9°		
1140	7	4.98	0.43	65.3°		

INSTRUMENT CALIBRATION

pH/COND./TEMP.: TYPE Hydac 9 UNIT# ____ DATE: 7/20 TIME: ____ BY: PM
TURBIDITY: TYPE ____ UNIT# ____ DATE: ____ TIME: ____ BY: ____

PURGE METHOD

___Displacement Pump ___Other
X Bailer (Teflon/PVC/SS) ___Submersible Pump

SAMPLE METHOD

___Bailer (Teflon/PVC/SS) ___Dedicated
X Bailer (Disposable) ___Other

SAMPLES COLLECTED

	ID	TIME	DATE	LAB	ANALYSES
SAMPLE	MW-2	11:45	7/20		
DUPLICATE					
SPLIT					
FIELD BLANK					

COMMENTS: ____

SAMPLER: Paul Marsden PROJECT MANAGER M. Quillin

4090 Nelson Avenue, Suite J Concord, CA 94520 Phone (510) 685-4053 Fax (510) 685-5323

Environmental Science & Engineering, Inc.
A CILCORP Company

SAMPLE COLLECTION LOG

PROJECT NAME: Autopro
PROJECT NO.: G-94-5219
DATE: July 20, 1994

SAMPLE LOCATION I.D.: MW-3
SAMPLER: Paul Marsden
PROJECT MANAGER: Mike Quillin

CASING DIAMETER

2" X
4" ____
Other ____

SAMPLE TYPE

Ground Water X
Surface Water ____
Treat. Influent ____
Treat. Effluent ____
Other ____

WELL VOLUMES PER UNIT

Well Casing I.D. (inches)	Gal/Ft.
2.0	0.1632
4.0	0.6528
6.0	1.4690

DEPTH TO PRODUCT: Ø (ft.)
DEPTH TO WATER: 11.21 (ft.)
DEPTH OF WELL: 24.50 (ft.)

PRODUCT THICKNESS: Ø (ft.)
WATER COLUMN: 13.29 (ft.)
WELL CASING VOLUME: 2.1 (gal)

MINIMUM PURGE VOLUME (3 or 4 WCV): 6.3 (gal)
ACTUAL VOLUME PURGED: 7 (gal)

TIME	Volume (GAL)	pH (Units)	E.C. (Micromhos) X1000	Temperature (F°)	Turbid. (NTU)	Other
1201	0	5.48	0.91	65.9°		Black
1208	3	5.51	0.99	66.2°		"
1214	7	5.47	0.98	66°		"

INSTRUMENT CALIBRATION

pH/COND./TEMP.: TYPE Hydac 9 UNIT# ____ DATE: 7/20 TIME: ____ BY: PM
TURBIDITY: TYPE ____ UNIT# ____ DATE: ____ TIME: ____ BY: ____

PURGE METHOD

___Displacement Pump ___Other
X Bailer (Teflon/PVC/SS) ___Submersible Pump

SAMPLE METHOD

___Bailer (Teflon/PVC/SS) ___Dedicated
X Bailer (Disposable) ___Other

SAMPLES COLLECTED

	ID	TIME	DATE	LAB	ANALYSES
SAMPLE	MW-3	1220	7/20		
DUPLICATE					
SPLIT					
FIELD BLANK					

COMMENTS: ____

SAMPLER: [signature] PROJECT MANAGER [signature]

4090 Nelson Avenue, Suite J Concord, CA 94520 Phone (510) 685-4053 Fax (510) 685-5323

Environmental Science & Engineering, Inc.
A CH2MHILL Company

SAMPLE COLLECTION LOG

PROJECT NAME: Autopro
PROJECT NO.: 6-94-5219
DATE: July 20, 1994

SAMPLE LOCATION I.D.: MW-4
SAMPLER: Paul Marsden
PROJECT MANAGER: Mike Quillin

CASING DIAMETER

2" Y
4"
Other

SAMPLE TYPE

Ground Water X
Surface Water
Treat. Influent
Treat. Effluent
Other

WELL VOLUMES PER UNIT

Well Casing I.D. (inches)	Gal/Ft.
2.0	0.1632
4.0	0.6528
6.0	1.4690

DEPTH TO PRODUCT: 0 (ft.)
DEPTH TO WATER: 11.16 (ft.)
DEPTH OF WELL: 24.40 (ft.)

PRODUCT THICKNESS: 0 (ft.)
WATER COLUMN: 13.24 (ft.)
WELL CASING VOLUME: 2.1 (gal)

MINIMUM PURGE VOLUME (3 or 4 WCV): 6.3 (gal)
ACTUAL VOLUME PURGED: 7 (gal)

TIME	Volume (GAL)	pH (Units)	E.C. (Micromhos)	Temperature (F°)	Turbid. (NTU)	Other
			X1000			
1230	0	5.59	.714	65.9°		
1235	3	5.62	.48	66.4°		
1240	7	5.65	.47	66.2°		

INSTRUMENT CALIBRATION

pH/COND./TEMP.: TYPE Hydac 9 UNIT#_____ DATE: 7/20 TIME:_____ BY:_____
TURBIDITY: TYPE_____ UNIT#_____ DATE:_____ TIME:_____ BY:_____

PURGE METHOD

___Displacement Pump ___Other
X Bailer (Teflon/PVC/SS) ___Submersible Pump

SAMPLE METHOD

___Bailer (Teflon/PVC/SS) ___Dedicated
X Bailer (Disposable) ___Other

SAMPLES COLLECTED

	ID	TIME	DATE	LAB	ANALYSES
SAMPLE	MW-4	1245	7/20		
DUPLICATE					
SPLIT					
FIELD BLANK					

COMMENTS:

SAMPLER: [signature] PROJECT MANAGER [signature]

4090 Nelson Avenue, Suite J Concord, CA 94520 Phone (510) 685-4053 Fax (510) 685-5323

APPENDIX B

ESE STANDARD OPERATING PROCEDURE NO. 3 FOR GROUND WATER MONITORING AND SAMPLING FROM MONITORING WELLS

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
CONCORD, CALIFORNIA OFFICE
STANDARD OPERATING PROCEDURE NO. 3
FOR GROUND-WATER MONITORING AND SAMPLING FROM MONITORING WELLS

Environmental Science & Engineering, Inc. (ESE) typically performs ground-water monitoring at project sites on a quarterly basis. As part of the monitoring program an ESE staff member will first gauge the depth to water and free product (if present) in each well, then collect ground-water samples from each well. Depth to water measurements are taken by lowering an electric fiberglass tape measure into the well and recording the occurrence of water in feet below a fixed datum set on the top of the well-casing. If free-phase liquid hydrocarbons (free product) are known or suspected to be present in the well, then an electric oil/water interface probe is used to determine the depth to the occurrence of ground-water and the free product in feet below the fixed datum on the top of the well-casing. Depth to water and depth to product measurements are measured and recorded within an accuracy of 0.005-foot. The electric tape and the electric oil/water interface probe are washed with an Alconox® detergent and tap water solution then rinsed with tap water between uses in different wells.

Ground-water samples are collected from a well subsequent to purging a minimum of three to four well-casing volumes of ground water from the well, if the well bails dry prior to the removal of the required minimum volume, then the samples are collected upon the recovery of the ground water in that well to 80% of its initial static level. Ground water is typically purged from monitoring wells using either a hand-operated positive displacement pump, constructed of polyvinylchloride (PVC); a new (precleaned), disposable polyethylene bailer; or, a variable-flow submersible pump, constructed of stainless steel and Teflon®. The hand pumps and the submersible pumps are cleaned between each use with an Alconox® detergent and tap water solution followed by a tap water rinse. During the well purging process the conductivity, pH and temperature of the ground water are monitored by the ESE staff member. Ground-water samples are collected from the well subsequent to the stabilization of the of the conductivity, pH and temperature of the purge water, and the removal of four well-casing volumes of ground-water (unless the well bails dry). The parameters are deemed to have stabilized when two consecutive measurements are within 10% of each other, for each respective parameter. The temperature, pH, conductivity and purge volume measurements, and observations of water clarity and sediment content will be documented by the ESE staff member on ESE Ground-Water Sampling Data Forms.

Ground-water samples are collected by lowering a new (precleaned), disposable polyethylene bailer into the well using new, disposable nylon cord. The filled bailer is retrieved, emptied, then filled again. The ground water from this bailer is decanted into appropriate laboratory supplied glassware and/or plastic containers (if sample preservatives are required, they are added to the empty containers at the laboratory prior to the sampling event). The containers are filled carefully so that no headspace is present to avoid volatilization of the sample. The filled sample containers are then labeled and placed in a cooler with ice for transport under chain of custody documentation to the designated analytical laboratory. The ESE staff member will document the time and method of sample collection, and the type of sample containers and preservatives (if any) used. These facts will appear on the ESE Ground-Water Sampling Data Forms. ESE will collect a duplicate ground-water sample from one well for every ten wells sampled at each site. The duplicate will be a blind sample (its well designation will be unknown to the laboratory). The duplicate sample is for Quality Assurance and Quality Control (QA/QC) purposes, and provides a check on ESE sampling procedures and laboratory sample handling procedures. When VOCs are included in the laboratory analyses, ESE will include a trip blank, if required, in the cooler with the ground-water samples for analysis for the identical VOCs. The trip blank is supplied by the laboratory and consists of deionized water. The trip blank is for QA/QC purposes and provides a check on both ESE and laboratory sample handling and storage procedures. Since disposable bailers are used for sample collection, and are not reused, no equipment blank (rinsate) samples are collected.

APPENDIX C

LABORATORY REPORTS AND CHAIN OF CUSTODY DOCUMENTATION FOR GROUND WATER SAMPLES

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Environmental Science & Engineering, Inc.	Client Project ID:	#6-94-5219/Tri-Star	Sampled: Jul 20, 1994
4090 Nelson Ave., Ste J	Sample Matrix:	Water	Received: Jul 21, 1994
Concord, CA 94520	Analysis Method:	EPA 5030/8015/8020	Reported: Aug 4, 1994
Attention: Mike Quillin	First Sample #:	407-0977	

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 407-0977 MW-1	Sample I.D. 407-0978 MW-2	Sample I.D. 407-0979 MW-3	Sample I.D. 407-0980 MW-4
Purgeable Hydrocarbons	50	1,200	N.D.	7,500	5,600
Benzene	0.5	19	N.D.	120	35
Toluene	0.5	2.5	N.D.	38	11
Ethyl Benzene	0.5	2.4	N.D.	36	12
Total Xylenes	0.5	1.6	N.D.	39	17
Chromatogram Pattern:		Gasoline	--	Gasoline	Gasoline

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	40	20
Date Analyzed:	8/1/94	8/1/94	8/1/94	8/1/94
Instrument Identification:	HP-4	HP-4	HP-4	HP-4
Surrogate Recovery, %: (QC Limits = 70-130%)	83	90	93	84

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

Karen L. Enstrom
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Environmental Science & Engineering, Inc.	Client Project ID:	#6-94-5219/Tri-Star	Sampled: Jul 20, 1994
4090 Nelson Ave., Ste J	Sample Matrix:	Water	Received: Jul 21, 1994
Concord, CA 94520	Analysis Method:	EPA 3510/3520/8015	Reported: Aug 4, 1994
Attention: Mike Quillin	First Sample #:	407-0977	

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 407-0977 MW-1	Sample I.D. 407-0978 MW-2	Sample I.D. 407-0979 MW-3	Sample I.D. 407-0980 MW-4
Extractable Hydrocarbons	50	100	N.D.	1,400	1,500
Chromatogram Pattern:		Unidentified Hydrocarbons <C16	--	Unidentified Hydrocarbons <C16	Unidentified Hydrocarbons <C16

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0
Date Extracted:	7/27/94	7/27/94	7/27/94	7/27/94
Date Analyzed:	7/29/94	7/29/94	7/29/94	7/29/94
Instrument Identification:	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

Karen L. Enstrom
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Environmental Science & Engineering, Inc.	Client Project ID:	#6-94-5219/Tri-Star	Sampled:	Jul 20, 1994
4090 Nelson Ave., Ste J	Sample Descript:	Water, MW-1	Received:	Jul 21, 1994
Concord, CA 94520			Analyzed:	Jul 26, 1994
Attention: Mike Quillin	Lab Number:	407-0977	Reported:	Aug 4, 1994

LABORATORY ANALYSIS

Analyte	Detection Limit mg/L	Sample Results mg/L
Cadmium	0.010	N.D.
Chromium	0.010	0.22
Lead	0.020	0.044
Nickel	0.020	0.36
Zinc	0.020	0.35

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL, #1271

Karen L. Enstrom
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Environmental Science & Engineering, Inc.	Client Project ID:	#6-94-5219/Tri-Star	Sampled:	Jul 20, 1994
4090 Nelson Ave., Ste J	Sample Descript:	Water, MW-2	Received:	Jul 21, 1994
Concord, CA 94520			Analyzed:	Jul 26, 1994
Attention: Mike Quillin	Lab Number:	407-0978	Reported:	Aug 4, 1994

LABORATORY ANALYSIS

Analyte	Detection Limit mg/L	Sample Results mg/L
Cadmium	0.010	N.D.
Chromium	0.010	0.022
Lead	0.020	N.D.
Nickel	0.020	0.045
Zinc	0.020	0.068

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL, #1271

Karen L. Enstrom
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Environmental Science & Engineering, Inc.	Client Project ID:	#6-94-5219/Tri-Star	Sampled:	Jul 20, 1994
4090 Nelson Ave., Ste J	Sample Descript:	Water, MW-3	Received:	Jul 21, 1994
Concord, CA 94520			Analyzed:	Jul 26, 1994
Attention: Mike Quillin	Lab Number:	407-0979	Reported:	Aug 4, 1994

LABORATORY ANALYSIS

Analyte	Detection Limit mg/L	Sample Results mg/L
Cadmium	0.010	N.D.
Chromium	0.010	0.099
Lead	0.020	0.14
Nickel	0.020	0.12
Zinc	0.020	0.25

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL, #1271

Karen L. Enstrom
Project Manager

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Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Environmental Science & Engineering, Inc.	Client Project ID:	#6-94-5219/Tri-Star	Sampled:	Jul 20, 1994
4090 Nelson Ave., Ste J	Sample Descript:	Water, MW-4	Received:	Jul 21, 1994
Concord, CA 94520			Analyzed:	Jul 26, 1994
Attention: Mike Quillin	Lab Number:	407-0980	Reported:	Aug 4, 1994

LABORATORY ANALYSIS

Analyte	Detection Limit mg/L	Sample Results mg/L
Cadmium	0.010	N.D.
Chromium	0.010	0.023
Lead	0.020	N.D.
Nickel	0.020	0.048
Zinc	0.020	0.060

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL, #1271

Karen L. Enstrom
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Environmental Science & Engineering, Inc.
4090 Nelson Ave., Ste J
Concord, CA 94520
Attention: Mike Quillin

Client Project ID: #6-94-5219/Tri-Star
Matrix: Liquid
QC Sample Group: 4070977-80

Reported: Aug 4, 1994

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes	Diesel
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015 Mod.
Analyst:	J. Fontecha	J. Fontecha	J. Fontecha	J. Fontecha	K. Wimer
MS/MSD Batch#:	4071326	4071326	4071326	4071326	BLK072794
Date Prepared:	8/1/94	8/1/94	8/1/94	8/1/94	7/27/94
Date Analyzed:	8/1/94	8/1/94	8/1/94	8/1/94	7/29/94
Instrument I.D.#:	HP-4	HP-4	HP-4	HP-4	HP-3B
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L	300 µg/L
Matrix Spike % Recovery:	85	95	90	92	83
Matrix Spike Duplicate % Recovery:	80	90	90	95	82
Relative % Difference:	6.1	5.4	0.0	3.2	1.2
LCS Batch#:	2LCS080194	2LCS080194	2LCS080194	2LCS080194	BLK072794
Date Prepared:	8/1/94	8/1/94	8/1/94	8/1/94	7/27/94
Date Analyzed:	8/1/94	8/1/94	8/1/94	8/1/94	7/29/94
Instrument I.D.#:	HP-4	HP-4	HP-4	HP-4	HP-3B
LCS % Recovery:	97	97	98	100	83
% Recovery Control Limits:	71-133	72-128	72-130	71-120	28-122

SEQUOIA ANALYTICAL, #1271

Karen L. Enstrom
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.

Sequoia Analytical

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

Environmental Science & Engineering, Inc.
4090 Nelson Ave., Ste J
Concord, CA 94520
Attention: Mike Quillin

Client Project ID: #6-94-5219/Tri-Star
Matrix: Liquid
QC Sample Group: 4070977-80

Reported: Aug 4, 1994

QUALITY CONTROL DATA REPORT

ANALYTE	Cadmium	Chromium	Lead	Nickel	Zinc
Method:	EPA 200.7	EPA 200.7	EPA 200.7	EPA 200.7	EPA 200.7
Analyst:	K. Anderson	K. Anderson	K. Anderson	K. Anderson	K. Anderson
MS/MSD Batch#:	4071052	4071052	4071052	4071052	4071052
Date Prepared:	7/22/94	7/22/94	7/22/94	7/22/94	7/22/94
Date Analyzed:	7/26/94	7/26/94	7/26/94	7/26/94	7/26/94
Instrument I.D.#:	Liberty-100	Liberty-100	Liberty-100	Liberty-100	Liberty-100
Conc. Spiked:	1.0 mg/L	1.0 mg/L	1.0 mg/L	1.0 mg/L	1.0 mg/L
Matrix Spike % Recovery:	102	81	92	96	103
Matrix Spike Duplicate % Recovery:	98	80	86	95	100
Relative % Difference:	4.0	1.2	6.7	1.1	3.0
LCS Batch#:	BLK072294	BLK072294	BLK072294	BLK072294	BLK072294
Date Prepared:	7/22/94	7/22/94	7/22/94	7/22/94	7/22/94
Date Analyzed:	7/26/94	7/26/94	7/26/94	7/26/94	7/26/94
Instrument I.D.#:	Liberty-100	Liberty-100	Liberty-100	Liberty-100	Liberty-100
LCS % Recovery:	88	83	83	95	92
% Recovery Control Limits:	75-125	75-125	75-125	75-125	75-125

SEQUOIA ANALYTICAL, #1271

Karen L. Enstrom
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.

CHAIN OF CUSTODY RECORD

DATE July 20, 94 PAGE 1 OF 1

PROJECT NAME Tri-Star

ADDRESS 5200 TELEGRAPH Oakland

PROJECT NO. 6-94-5219

SAMPLED BY Paul Marsden

LAB NAME

ESE Environmental Science & Engineering, Inc.
A CILCORP Company
4090 Nelson Avenue
Suite J
Concord, CA 94520
Phone (510) 685-4053
Fax (510) 685-5323

SAMPLE #	DATE	TIME	LOCATION	TPH-G	TPH-D	BTEX	Cadmium, Chromium, Lead, Nickel, Zinc								MATRIX	NUMBER OF CONTAINERS	REMARKS (CONTAINER, SIZE, ETC.)
				ANALYSES TO BE PERFORMED											MATRIX		
MW-1	7/20	11:15	Oakland	X	X	X	X			4070977					H_2O	4	2 Liters 2 Voas
MW-2	"	11:45	"	X	X	X	X			4070978					"	4	"
MW-3	"	12:20	"	X	X	X	X			4070979					"	4	"
MW-4	"	12:45	"	X	X	X	X			4070980					"	4	"
Trip	MQ					X											1 Voa vial

RELINQUISHED BY: (signature)	RECEIVED BY: (signature)	date	time
1. Paul Marsden	M. Quill	7/21/94	1400
2. M. Quill	Melissa Creusere	7/21/94	1000
3.			
4.			
5.			

17 TOTAL NUMBER OF CONTAINERS

REPORT RESULTS TO: Mike Quill

SPECIAL SHIPMENT REQUIREMENTS

INSTRUCTIONS TO LABORATORY (handling, analyses, storage, etc.):

STANDARD T/A TIME

SAMPLE RECEIPT

CHAIN OF CUSTODY SEALS	
REC'D GOOD CONDTN/COLD	
CONFORMS TO RECORD	