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April 25, 1991

Mr. Dennis Byrne Hazardous Materials Department County of Alameda 470 27th Street Oakland, California 94607

Subject:

Quarterly Monitoring Report

FAX:916/638-8385

Shell Service Station

3420 San Pablo Avenue, Oakland, California

Shell WIC No. 204-5508-5306 Delta Project No. 40-88-666

Dear Mr. Byrne:

Enclosed is a copy of Delta Environmental Consultants, Inc., Quarterly Monitoring Report for the subject site for your review. This report contains results of quarterly monitoring of ground water elevation and quality conducted on January 28, 1991, at the referenced site.

If you have any questions regarding this matter, please contact me at (916) 638-2085.

Sincerely,

DELTA ENVIRONMENTAL CONSULTANTS, INC.

Hal E. Hansen

Hydrogeologist/Project Manager

Hal Hansen

HEH:ria Enclosure



3420 SAN PABLO AVENUE
OAKLAND, CALIFORNIA
SHELL WIC NO. 204-5508-5306
DELTA PROJECT NO. 40-88-666

3420 SAN PABLO AVENUE OAKLAND, CALIFORNIA SHELL WIC NO. 204-5508-5306 DELTA PROJECT NO. 40-88-666

Prepared by:

DELTA ENVIRONMENTAL CONSULTANTS, INC.
3330 Data Drive, Suite 100
Rancho Cordova, California 95670
(916) 638-2085

April 25, 1991

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3420 SAN PABLO AVENUE OAKLAND, CALIFORNIA SHELL WIC NO. 204-5508-5306 DELTA PROJECT NO. 40-88-666

1.0 INTRODUCTION

This report presents results of ground water quality and ground water elevation measurements made by Delta Environmental Consultants, Inc. (Delta), in January 1991 for nine existing monitoring wells at the Shell service station located at 3420 San Pablo Avenue, Oakland, Alameda County, California (site) (Figure 1).

Previous reports on the site include the following:

Report	<u>Date</u>	<u>Author</u>
Soil and Ground Water Investigation	September 1988	Ensco Environmental Services, Inc.
Phase I Hydrogeologic Assessment Investigation	August 14, 1989	Delta
Phase II Hydrogeologic Assessment Investigation	May 30, 1990	Delta
Quarterly Monitoring Report	July 30, 1990	Delta
Quarterly Monitoring Report	October 11, 1990	Delta
Quarterly Monitoring Report	January 4, 1991	Delta

On January 28, 1991, a site visit was made to perform the following:

- Measure and record water levels.
- Collect water samples from monitoring wells MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, and MW-9 for analysis of volatile organics and total petroleum hydrocarbons as gasoline (TPH) by U.S. Environmental Protection Agency (EPA) Methods 8015 and 8020.

3420 San Pablo Avenue, Oakland, California Shell Wie No. 204-5508-5306 Delta Project No. 40-88-666 Page 2

2.0 SITE DATA

2.1 Depth to Ground Water Elevations

Depth to ground water was measured and recorded at monitoring wells MW-1, MW-2, MW-4, MW-5, MW-6, MW-7, MW-8, and MW-9 on January 28, 1991. The results are presented in Table 1. During the subjective analysis of water removed from the wells, it was noted that monitoring wells MW-1 and MW-2 contained 0.03 and 0.31 foot of free product, respectively. Monitoring well MW-3 was inaccessible due to a stockpile of gravel overlying the well. Figure 2 is a ground water contour map showing the location of the nine monitoring wells and the measured ground water elevations. The January 28, 1991, ground water elevations indicate a complex pattern of ground water flow. The general trend of ground water flow appears to be toward the south, except for irregularities in the water table surface near monitoring wells MW-5 and MW-9.

2.2 Ground Water Quality

Ground water samples collected from monitoring wells MW-4, MW-5, MW-6, MW-7, MW-8, and MW-9 on January 28, 1991, were analyzed for benzene, toluene, ethylbenzene, xylenes and TPH. Monitoring wells MW-1 and MW-2 were not sampled due to the presence of free product. The results from these laboratory analyses are presented in Table 2. Analytical results from samples collected during previous sampling events are provided for comparison. Copies of certified laboratory reports for the January 28, 1991, sampling event are included in Appendix A.

Dissolved hydrocarbons were detected in samples collected from each monitoring well in January 28, 1991. Benzene concentrations ranged from less than 140 parts per billion (ppb) in monitoring well MW-9 to 3,600 ppb benzene in monitoring well MW-8.

3.0 DISCUSSION

In January 1991, water levels ranged from 9.43 feet below grade in monitoring well MW-7 to 12.70 feet below grade in monitoring well MW-3. Free product thickness in monitoring well MW-1 has decreased from 0.04 to 0.03 foot between October 1990 and January 1991. Dissolved benzene concentrations have decreased in monitoring wells MW-4 and MW-9 between October 1990 and January 1991.

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The laboratory test results indicate that an increase in TPH concentrations occurred between October 1990 and January 1991 in monitoring wells MW-4, MW-5, MW-6, MW-7, and MW-9. The increased concentrations of TPH range from approximately 2,700 ppb in monitoring well MW-5 to 29,300 ppb in monitoring well MW-6.

Delta will continue to monitor water levels and water quality on a quarterly basis. The next sampling event will take place in April 1991. Delta is currently seeking an encroachment permit from the City of Oakland to install an upgradient monitoring well and a monitoring well to assess the lateral extent of petroleum hydrocarbon constituents in ground water to complete the hydrogeologic investigation of this site.

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4.0 REMARKS/SIGNATURES

The recommendations contained in this report represent our professional opinions and are based in part on information supplied by the client. These opinions are based on currently available information and are arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. This report has been prepared solely for the use of Shell and any reliance on this report by third parties shall be at such party's sole risk. Other than this, no warranty is implied or intended.

DELTA ENVIRONMENTAL CONSULTANTS, INC.

This report was prepared by:

Hydrogeologist

This report was reviewed by:

Hal E. Hansen

Project Manager

The work performed in this report was done under the supervision of a California Registered Geologist:

Oal O. w I

4/27/91 Date

Dale A. van Dam, R.G. California Registered Geologist #4632

/law

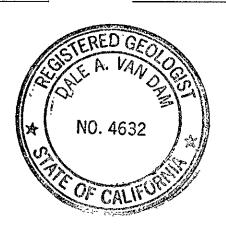


TABLE 1
Ground Water Elevations

Monitoring Well	Data	Top of Riser Elevation (ft)	Water Depth	Ground Water Elevation (ft)	¡Physical <u>Ob</u> servations
	<u>Date</u>	Estevation (It)	<u>\</u>	Lievation (II)	Obscivations
MW-1	06/12/89	21.28	9.57	11.71	
	01/23/90		9.04	12.24	No product
	02/02/90		8.89	12.39	No product
	02/21/90		8.00	13.28	0.01' Free product
	04/10/90		9.47	11.81	0.01' Free product
	07/26/90		9.73	11.55	0.01' Free product
	10/25/90		12.53	8.75	0.04' Free product
	01/28/91		11.62	9.66	0.03' Free product
MW-2	06/12/89	21.56	7.96	13.60	
	01/23/90		8.30	13.26	No product
	02/02/90		8.04	13.52	No product
	02/21/90		7.57	13.99	No product
	40/10/90		7.94	13.62	No product
	07/26/90		8.41	13.15	
	10/25/90		11.13	10.43	
	01/28/91		9.62	11.94	0.31' Free product
MW-3	06/12/89	21.78	10.77	11.01	
14111 5	01/23/90	-1	9.26	12.52	No sheen or product
	02/02/90		9.33	12.45	No sheen or product
	02/21/90		8.24	13.54	No sheen or product
	04/10/90		10.26	11.52	No sheen or product
	07/26/90		10.98	10.80	
	10/25/90		12.70	9.08	
	01/28/91		NM ^a		
MW-4	06/12/89	20.31	11.19	9.12	#4÷
747.44 -4	01/23/90	20.51	9.25	11.06	No sheen or product
	02/02/90		8.04	12.27	No sheen or product
	02/21/90		7.90	12.41	
	04/10/90		9.30	11.01	No sheen or product
	07/26/90		9.56	10.75	
	10/25/90		11.98	8.33	
	01/28/91		10.69	9.62	
	01/23/71		10.07	7.02	
MW-5	01/23/90	20.91	7.89	13.02	No sheen or product
	02/02/90		8.23	12.68	No sheen or product
	02/21/90		7.31	13.60	No sheen or product
	04/10/90		9.89	11.72	No sheen or product
	07/26/90		9.80	11.11	
	10/25/90		11.35	9.56	
	01/28/91		10.37	10.54	
MW-6	01/23/90	22.32	7.57	14.75	No sheen or product
	02/02/90		7.86	14.46	No sheen or product
	02/21/90		6.95	15.37	No sheen or product
	04/10/90		9.25	13.07	No sheen or product
	07/26/90		8.64	13.68	
	10/25/90		11.79	10.53	
	01/28/91		9.99	12.33	Sheen on VOA sample

TABLE 1-Continued

Ground Water Elevations

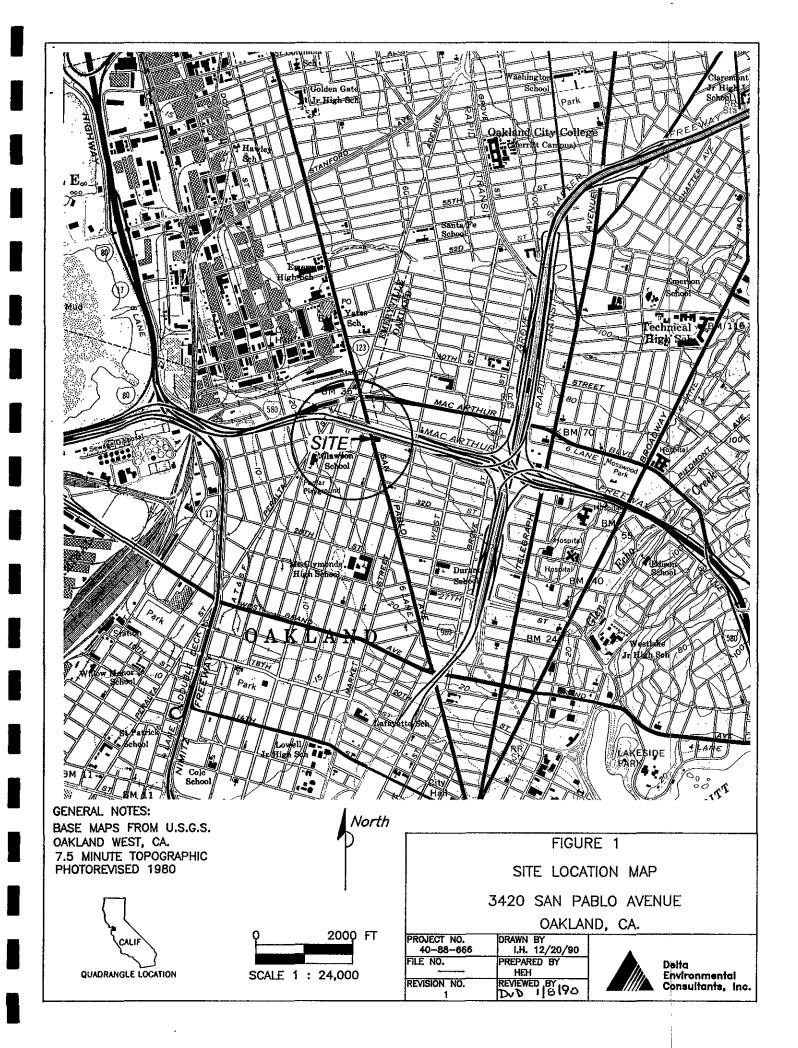
Monitoring		Top of Riser	Water Depth	Ground Water	Physical
Well	<u>Date</u>	Elevation (ft)	<u>(ft)</u>	Elevation (ft)	Observations
MW-7	01/23/90	20.36	6.98	13.38	No sheen or product
	02/02/90		8.91	11.45	No sheen or product
	02/21/90		6.65	13.71	No sheen or product
	04/10/90		6.99	13.37	No sheen or product
	07/26/90		7.33	13.03	***
	10/25/90		9.43	10.93	
	01/28/91		7.82	12.54	*
MW-8	01/23/90	20.95	7.19	13.76	•
	02/02/90		7.32	13.36	No sheen or product
	02/21/90		6.90	14.05	No sheen or product
	04/10/90		7.20	13.75	No sheen or product
	07/26/90		7.58	13.37	No sheen or product
	10/25/90		10.11	10.84	· -
	01/28/91		9.33	11.62	*
MW-9	01/23/90	21.19	9.31	11.88	****
	02/02/90		9.02	12.17	No sheen or product
	02/21/90		8.28	12.91	No sheen or product
	04/10/90		8.41	12.78	No sheen or product
	07/26/90		9.18	12.01	No sheen or product
	10/25/90		11.57	9.62	***
	01/28/91		10.38	10.81	***

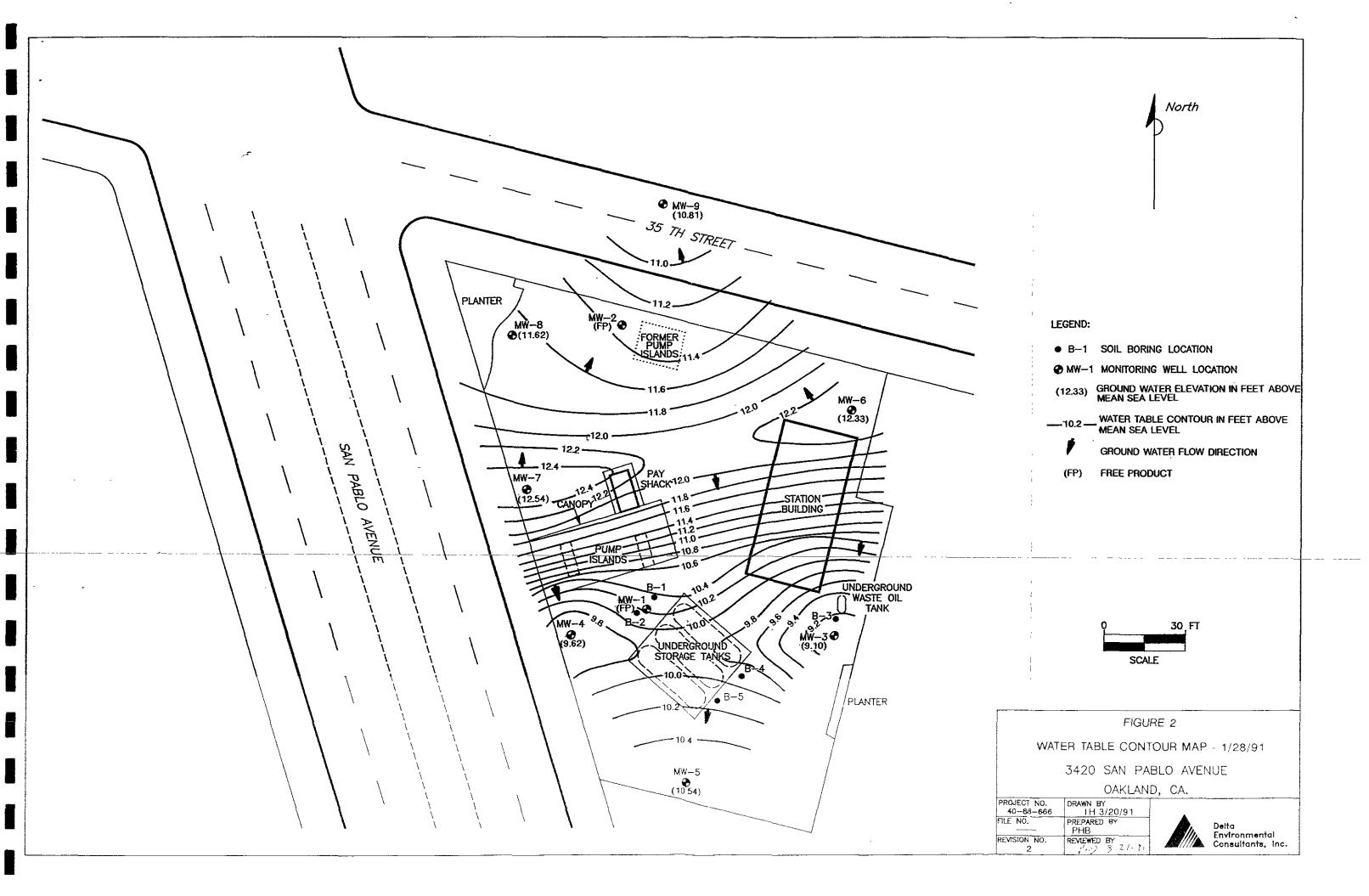
 $^{^{}a}$ Not measured; inaccessible due to obstruction.

TABLE 2 Ground Water Chemical Analysis Concentrations in parts per million

Monitoring Well	Date Sampled	Benzene	Toluene	Ethyl- benzene	Xylenes	EDB^a	EDC^b	<u>TPH</u> ^c
11011	Bampico	DOMESTIC	10100110	<u> </u>	12/10/120			
MW-1	04/17/89 01/23/90 ^e	1,400	2,300	6,600	1,100	ND^d	10.0	12,000
	04/10/90 ^e							
	07/26/90 ^e 10/25/90 ^e							
	01/28/91							
MW-2	04/17/89	12,000	1,800	12,000	2,200	< 100	(36.0)	35,000
	01/23/90	110	9.6	140	3,300	NA	NA	40,000
	04/10/90	12,000	570	560	6,800	NA	NA	45,000
	07/26/90	15,000	840	1,400	10,000	NA NA	NA NA	53,000 140,000
	10/25/90 01/28/91 ^e	12,000	1,400	3,500	18,000	MA	IVA	140,000
	01/20/71						_	
MW-3	04/17/89	3.0	2.0	9.0	<1.0	< 1.0	<1.0	100
	01/23/90	1.1	<0.3	< 0.3	< 0.3	NA NA	NA NA	140 250
	04/10/90	1.1	<0.3 <0.3	<0.3 <0.3	1.2 <0.3	NA NA	NA NA	<30
	07/26/90 10/25/90	<0.3 <0.3	<0.3	<0.3	< 0.3	NA	NA	93
	01/28/91 ^g			•••				•••
100/4	04/17/00	1.2	< 1.0	3.0	1.0	< 0.1	1.5	500
MW-4	04/17/89 01/23/90	1.2	<0.3	<0.3	<0.3	NA	NA	150
	04/10/90	150	3.5	9.8	11	NA	NA	1,000
	07/26/90	78	3.7	< 0.3	12	NA	NA	3,300
	10/25/90	610	180	120	290	NA	NA	3,800
	01/28/91	590	42	60	220	NA	NA	3,300
MW-5	01/23/90	4.8	< 0.3	<0.3	< 0.3	NA	NA	290
	04/10/90	40	0.59	0.63	2.7	NA	NA	750
	07/26/90	8.9	<0.3	< 0.3	< 0.3	NA	NA	1,700
	10/25/90	15	1.8	2.4 69	9.9 280	NA NA	NA NA	320 3,100
	01/28/91	210	11	09	200	INA	TAZ.	5,100
MW-6	01/23/90	460	100	9.3	1,600	NA	NA	33,000
	04/10/90	460	21	40	170	NA	NA	9,200
	07/26/90	890	43	120	490	NA NA	NA NA	7,700 8,700
	10/25/90 01/28/91	1,000 2,500	27 190	270 1,500	260 5,400	NA NA	NA NA	38,000
	01/20/91	2,300	150	1,500	3,400	MA	1421	30,000
MW-7	01/23/90	61	1.3	< 0.3	1,600	NA	NA	3,200
	04/10/90	4,300	23	18	550	NA	NA	15,000
	07/26/90	3,800	24	280	340	NA NA	NA NA	8,800 11,000
	10/25/90 01/28/91	3,900 4,000	15 <0.3	640 620	290 150	NA NA	NA.	14,000
			500	45.0	2.200	374	37.4	22.000
MW-8	01/23/90	160 2.600	730 630	47.0 250	3,300	NA Na	NA Na	22,000
	04/10/90 07/26/90	2,600 3,600	630 1,600	250 610	2,100 3,600	NA NA	NA NA	21,000 20,000
	10/25/90	3,400	100	300	270	NA	NA.	8,600
	01/28/91	3,600	580	840	2,600	NA	NA	25,000
MW-9	01/23/90	<0.3	0.3	0.97	3.0	NA	ΝA	8.8
141 44-3	04/10/90	500	4.1	1.3	50	NA	NA	2,500
	07/26/90	730	4.0	6.7	12	NA	NA	2,500
	10/25/90	360	2.9	46	3.8	NA	NA	1,400
	01/28/91	140	12	29	47	NA	NA	1,100

^aEthylene dibromide.
^b1,2-dichloroethene.
^cTotal petroleum hydrocarbons as gasoline.
^dNot detected.
^eNot sampled due to the presence of free product.
^fNot analyzed.
^gNot sampled due to well obstruction.





APPENDIX A

Certified Analytical Laboratory Reports

FEB - 8 196

XCD 2/12/91

Delta Environmental Consultants 3330 Data Drive

Rancho Cordova, CA 95670 Attention: Hal Hanson

Project: 40-88-666

Enclosed are the results from 6 water samples received at Sequoia Analytical on January 30,1991. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
1013564	Water, MW-4	1/28/91	EPA 5030/8015/8020
1013565	Water, MW-5	1/28/91	EPA 5030/8015/8020
1013566	Water, MW-7	1/28/91	EPA 5030/8015/8020
1013567	Water, MW-8	1/28/91	EPA 5030/80 15/8020
1013568	Water, MW-6	1/28/91	EPA 5030/8015/8020
1013569	Water, MW-9	1/28/91	EPA 5030/8015/8020

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL

Maile A. McBirney Project Manager

Delta Environmental Consultants

Client Project ID:

Sampled:

Jan 28, 1991

3330 Data Drive

Matrix Descript:

40-88-666 Water

Received:

Jan 30, 1991

Rancho Cordova, CA 95670 Attention: Hal Hanson

Analysis Method: First Sample #:

EPA 5030/8015/8020 101-3564

Analyzed: Reported:

Jan 31, 1991 Feb 5, 1991

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 801/5/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons μg/L (ppb)	Benzene μg/L (ppb)	Toluene μg/L (ppb)	Ethyl Benzene μg/L (ppb)	Xylenes μg/L (ppb)
101-3564	MW-4	3,300	590	42	60	220
101-3565	MW-5	3,100	210	11	69	280
101-3566	MW-7	14,000	4,000	N.D.	620	150
101-3567	MW-8	25,000	3,600	580	840	2,600
101-3568	MW-6	38,000	2,500	190	1,500	5,400
101-3569	MW-9	1,100	140	12	29	47

1						
Detection Limits:	30	0.20	0.20	0.20	0.30	
Detection Limits.	30	0.30	0.30	0.30	0.30	
j						

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard. Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICA

Maile A. McBirney Project Manager



Delta Environmental Consultants Client Project ID: 40-88-666
3330 Data Drive
Rancho Cordova, CA 95670
Attention: Hal Hanson QC Sample Group: -- Reported: Feb 5, 1991

QC Sample Group: --

Reported: Feb 5, 1991

QUALITY CONTROL DATA REPORT

ANALYTE		<u> </u>	Ethyl-			
	Benzene	Toluene	benzene	m,p-Xylenes	o-Xylenes	
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8020	
Analyst:	G. Meyer	G. Meyer	G. Meyer	G. Meyer	G. Meyer	
Reporting Units:	ng	ng	ng	ng	ng	
Date Analyzed:	Jan 31, 1991	Jan 31, 1991		Jan 31, 1991	Jan 31, 1991	
QC Sample #:	G1012449	G1012449	G1012449	G1012449	G1012449	
	• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •	•	•		
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.	
•						
Spike Conc.						
Added:	100	100	100	200	100	
raacai	100	100	100	200	100	
Conc. Matrix	400		100			
Spike:	100	100	100	200	97	
Matrix Spike						
% Recovery:	100	100	100	100	97	
Conc. Matrix						
Spike Dup.:	100	100	99	200	100	
opine Bapi.	100	700	55	200	100	
Matrix Spike						
Duplicate						
% Recovery:	100	100	99	100	100	
Relative						
% Difference:	1.0	0	1.0	1.0	4.0	
% Difficience.	1.0	v	1.0	1,0	7.0	

SEQUOIA ANALYTICAL

Maile A. McBirney Project Manager

% Recovery:

Conc. of M.S. - Conc. of Sample Spike Conc. Added

x 100

Conc. of M.S. - Conc. of M.S.D. (Conc. of M.S. + Conc. of M.S.D.) / 2 x 100

Relative % Difference:

1013564.DLT <2>

					CHAIN	OF C	USTO	DY					Page		<u> of _</u>		
Delta Environmental Consultants, Inc.								Delta Environmental Consultants, Inc. 3330 Data Drive, Suite 100 Rancho Cordova, CA 95670 916/638-2085 • FAX 916/638-8385					LABORATORY SAMPLES SENT TO:				
PROJ. NO. PROJECT NAME: OAKLANDO SKELL PROJECT LOCATION: 3420 SAM Pablo And PROJECT MANAGER: HEH								Analysis Requested & Container Description					680 Chesapealle				
SAMPLERS (SIG			E.	·			R OF CONTAINERS	X	46	3		<u> </u>			90	4063	
LABORA- TORY SAMPLE ID	SAMPLE ID	DATE	TIME	SAMPLE TYPE	SAMPLE LOCATION		NUMBER	BT	TP					R	EMARKS		
3. 1	MW-4	1/28/91	1235	W			2	V	V				101	3	564		
	MW-5		115	W			2	/						3	505		
	mw-7		145				2	V	1					3	566	,	
	MW-8		215				2								3567		
	MW-6		255				2	V	V						35408		
0.00	MW-9		3 <u>30</u>				2	V	V				V	-	3560		
	•																
		4		1									" -	,			
Relinquished b	y: (Signature)	\$	Date /28/	Tim	Received by: (Signature)	3-2	delinquished	by: (Si		/	,	6 9/	Time 11,*20 4	Received	by: (Signati	ure)	
Relinquished by: (Signature) Date Time Received for taboratory by: (Signature) C. I. Dww 130/91 4234 Council							Date 1/30/91	Time	- 1	ımaround	Time: /		-				
700000						Dat					nipment	ent method:					
Sampler Comm	ents: 50	e11	Con	taci	: Dien Brytolat	Proff Lat	poratory Co	nments		and the second			· · · · · · · · · · · · · · · · · · ·	- () - () ()			
WIC	# 20	94-5															
WIC AFE 2	# 08	636	2 (27/	DC# 5441	Cor	ndition of Sa		- in - x / \$:	7		-	: ''/ -	

White: Return with analytical results to Delta

Yellow: Laboratory Copy

Pink: Delta's Copy