WELL INSTALLATION AND GROUNDWATER SAMPLING

2415 Marnier Square Drive
Alameda, California

SEPTEMBER 1999

Prepared for

Alameda County Health Care
Services Agency
Environmental Protection Division
Attention: Mr. Larry Seto
Senior Hazardous Materials Specialist

Prepared by

EARTH SYSTEMS CONSULTANTS
Northern California
47853 Warm Springs Boulevard
Fremont, California 94539-7400

9-28

It was agreed with Bischke and Berry that we will wait until the the most recent results from MW-5 are rec'd. before determining whether to close MW-5.

Earth Systems Consultants
Northern California

47853 Warm Springs Blvd.
Fremont, CA 94539-7400
(510) 353-0320
Fax (510) 353-0344

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Alameda County Health Care Services Agency
Environmental Protection Division
1131 Harbor Bay Parkway, Room 250
Alameda, CA 94502-6577

Attention: Mr. Larry Seto, Senior Hazardous Materials Specialist

Subject: 2415 Mariner Square Drive
Alameda, California
WELL INSTALLATION AND GROUNDWATER SAMPLING

Dear Mr. Seto:

Earth Systems Consultants Northern California (ESCNC) is submitting this report which describes the groundwater sampling and analysis, the installation of the replacement well for MW-6, and the installation of one new groundwater monitoring well near the former underground storage tank (UST) T1 at the subject site (Figure 1). The new wells could not be installed prior to the end of the second quarter, and well MW-4 was covered with a concrete stockpile and inaccessible for sampling. Therefore, the initial round of groundwater sampling, not including wells MW-4, MW-6A, and MW-10, was completed during the second quarter on June 24, 1999. The new wells were installed on July 6, 1999 and well MW-4 was not uncovered until early August 1999. As a result, on August 10, 1999 wells MW-6A and MW-10 were developed and sampled, and well MW-4 was sampled.

Groundwater Sampling

On June 24, 1999, Blaine Tech Services conducted the groundwater monitoring and sampling for wells MW-1 through MW-3, MW-5, and MW-7 through MW-9. Well MW-4 was covered by a concrete pile and was not accessible for sampling. All wells were purged of at least three well casing volumes of water and allowed to recharge to at least 90% prior to collecting samples. Samples were collected with new disposable bailers. Purge water was stored in labeled 55-gallon drums at the subject site. Well monitoring forms are included in Attachment A.

Groundwater elevations across the site ranged from 7.22 to 11.47 feet above mean sea level. The groundwater flow direction was toward the southeast. The groundwater gradient map is shown on Figure 2.

The groundwater samples were delivered under chain of custody protocol to Entech Analytical Labs, Inc. (ELAP #2346). Subcontracted laboratories to Entech Analytical included Applied P&Ch Laboratory (ELAP #1431) and Kiff Analytical LLC (ELAP #2236). The samples were analyzed for total petroleum hydrocarbons as gasoline, diesel, and motor oil (TPHg, TPHd, and TPHmo, respectively) using EPA methods 3510/3630/8015; benzene, toluene, ethylbenzene, total xylenes (BTEX), and methyl tert-butyl ether (MTBE) using EPA method 8020; polynuclear aromatics (PNAs) using EPA method 8310; and vinyl chloride using EPA method 8010. The

results are summarized in Tables 1 and 2, and are discussed in the conclusions section below. The laboratory analytical reports are included in Attachment A.

Well Installation

On July 6, 1999, after permitting through the Alameda County Public Works Agency (ACPWA), groundwater monitoring wells MW-6A and MW-10 were installed at the subject site at the locations shown on Figure 3. Well MW-6A, the replacement well for MW-6 which was destroyed in 1998, was installed on the western side of the proposed building (dry stack facility) and on the north side of the fire wall. Well MW-10 was installed on the north side of the former UST T1.

The borings were advanced by Environmental Control Associates, Inc. (C57 #695970), and the soils were logged by an ESCNC geologist. Due to the limited access, a portable direct push drill rig was used. The borings for wells MW-6A and MW-10 were advanced to a depths of 15 and 13 feet below ground surface (bgs), respectively. The soils consisted of fine-grained, poorly sorted sand to a depth of approximately 14.5 feet where bay mud was encountered. Soils from 7 to 9 feet bgs in boring MW-6A were described as dark gray sand with a moderate to strong hydrocarbon odor. Soils from 6 to 13 feet bgs in boring MW-10 were also gray sand but had only a slight hydrocarbon odor noted. No soil samples were collected.

The wells were constructed of 1-inch diameter PVC casing screened from 3 to 13 feet bgs using 0.010 slot. The annulus was completed with #2/12 sand from 2 to 13 feet bgs. The upper two feet were completed with bentonite and cement. After the wells were completed, the depth to water in each well was approximately 4 feet bgs. No groundwater samples were collected at this time. Well completion and boring log information is included in Attachment B.

Sampling New Groundwater Monitoring Wells

On August 10, 1999, Blaine Tech Services developed wells MW-6A and MW-10. The well development consisted of purging approximately 10 well casing volumes (or 5 gallons) from each well using a pin bailer and/or diaphragm pump. Sheen was noted in both wells during development. A mild hydrocarbon odor was noted in well MW-6A, while a strong odor was noted in well MW-10.

After the two new wells were developed and allowed to recharge to at least 80%, wells MW-6A, MW-10 and MW-4 were each purged of at least three well casing volumes of water and allowed to recharge to at least 80% prior to collecting samples. Samples were collected with a cleaned pin bailer. Development and purge water was stored in labeled 55-gallon drums and stored at the subject site. Well development and sampling data are included in Attachment C.

All wells were monitored by Blaine Tech Services on August 10, 1999. Groundwater elevations across the site ranged from 7.22 to 11.47 feet above mean sea level. Since the two new wells have not been surveyed relative to mean sea level, the groundwater elevations could not be determined. Therefore, wells MW-6A and MW-10 were not used in the gradient interpretation. The groundwater gradient determined on August 10, 1999 was toward the southeast and is shown on Figure 3.

The groundwater samples were delivered under chain of custody protocol to Entech Analytical Labs, Inc. (ELAP #2346), and subcontracted to Applied P&Ch Laboratory (ELAP #1431). The samples were analyzed for TPHg, TPHd, and TPHmo using EPA methods 3510/3630/8015; BTEX and MTBE using EPA method 8020; PNAs using EPA method 8310; and vinyl chloride using EPA method 8010. As approved in the workplan, dated May 18, 1999, vinyl chloride was not analyzed for the sample collected from MW-10.

Conclusions

Based on the two groundwater sampling events at the subject site, the conclusions are itemized on a well by well basis below. The analytical results are summarized in Tables 1 and 2.

1. Well MW-1 did not contain analytes above historical detection levels.
2. Well MW-2 did not contain detectable TPHg for the first time since sampling began in 1992. Other analytes were similar to historical levels or nondetectable.
3. Well MW-3 contained minor levels of ethylbenzene and total xylenes. The concentration of MTBE detected was at the detection limit.
4. Well MW-4 contained detectable levels of TPHg, TPHd, and TPHmo and minor levels of BTX and MTBE. The TPHd and TPHmo concentrations are not consistent with the previous three quarters of nondetectable levels.
5. Well MW-5 showed a significant decrease in TPHg concentrations, but an increase in benzene concentrations. Other analytes are similar to historical concentrations.
6. Well MW-6A contained TPHg, benzene, and total xylenes. In addition, there were detectable levels of TPHd and TPHmo, but the chromatographic patterns were not typical of those fuels.
7. Well MW-7 contained BTEX concentrations at levels greater than those detected historically.
8. Well MW-8 contained TPHg and BTEX concentrations at levels greater than those detected historically.
9. Well MW-9 contained BTEX concentrations at levels greater than those detected historically.
10. Well MW-10 contained levels of TPHg, TPHd, TPHmo, and BTEX.

MTBE was detected in the sample from well MW-3 at the detection limit and in well MW-4 at 11 parts per billion. Vinyl chloride was not detected in any samples. The laboratory reports are included in Attachment C.

Recommendations

Based on analytical results, ESCNC recommends no further sampling for well MW-1. O.K.

ESCNC recommends one additional round of groundwater sampling from wells MW-4, MW-7, MW-8, and MW-9 due to anomalous analytical results relative to historical concentrations. The wells should be analyzed for TPHg and TPHd using modified EPA method 8015 and BTEX and MTBE using EPA method 8020. In addition, well MW-4 should be analyzed for TPHmo using modified EPA method 8015. Additional sampling of these wells will be reevaluated after completion of the third quarter 1999 sampling. After evaluation of the additional round, a recommendation for destruction of wells MW-1, MW-4, MW-7, MW-8, and MW-9 may be applicable. O.K.

ESCNC recommends sampling wells MW-2, MW-3, MW-5, MW-6A, and MW-10 on a consecutive quarterly basis until first quarter 2000. These wells should be analyzed for TPHg and TPHd using modified EPA method 8015 and BTEX and MTBE using EPA method 8020. In addition, wells MW-6A and MW-10 should be analyzed for TPHmo using modified EPA method 8015. Additional sampling of these wells will be reevaluated after completion of the first quarter 2000 sampling is completed. O.K.

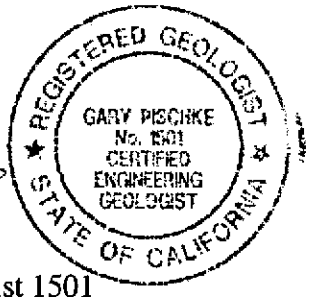
If you have any questions regarding this report, please call the undersigned at your earliest convenience.

Very truly yours,

EARTH SYSTEMS CONSULTANTS
Northern California

Jeanne Buckthal
Staff Geologist

Gary Pischke
Senior Geologist
Certified Engineering Geologist 1501



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Distribution: 1 to addressee
1 to Mr. John Beery

TABLE 1
Historical Groundwater Elevations
Mariner Square, Alameda, California

Well	Date	Top of Casing (feet above MSL)	Depth to Water (feet)	Free Product Thickness (feet)	Groundwater Elevation (feet above MSL)
MW-1	07/30/92	5.08	6.41	-	-1.33
	07/31/92	5.08	6.41	-	-1.33
	08/03/92	5.08	6.50	-	-1.42
	08/05/92	5.08	6.50	-	-1.42
	11/20/92	5.08	6.23	-	-1.15
	06/13/94	11.99	5.69	-	6.30
	09/27/94	11.99	5.64	-	6.35
	10/25/94	11.99	5.86	-	6.13
	06/28/96	11.99	5.34	-	6.65
	10/31/96	11.99	5.38	-	6.61
	09/30/97	11.99	5.08	-	6.91
	12/12/97	11.99	4.16	-	7.83
	02/18/98	11.99	2.97	-	9.02
	05/08/98	11.99	4.55	-	7.44
	06/24/99	11.99	4.75	-	7.24
	08/10/99	11.99	4.82	-	7.17
MW-2	07/30/92	8.30	5.98	-	2.32
	07/31/92	8.30	6.07	-	2.23
	08/03/92	8.30	6.11	-	2.19
	08/05/92	8.30	6.18	-	2.12
	11/20/92	8.30	6.42	-	1.88
	06/13/94	15.21	5.92	-	9.29
	09/26/94	15.21	6.51	-	8.70
	10/25/94	15.21	6.67	-	8.54
	06/28/96	15.21	5.68	-	9.53
	10/31/96	15.21	6.37	-	8.84
	09/30/97	15.21	6.17	-	9.04
	12/12/97	15.21	5.18	-	10.03
	02/18/98	15.21	3.96	-	11.25
	05/08/98	15.21	4.82	-	10.39
	06/24/99	15.21	4.69	-	10.52
	08/10/99	15.21	4.72	-	10.49

TABLE 1
Historical Groundwater Elevations
Mariner Square, Alameda, California

Well	Date	Top of Casing (feet above MSL)	Depth to Water (feet)	Free Product Thickness (feet)	Groundwater Elevation (feet above MSL)
MW-3	07/30/92	7.28	4.97	-	2.31
	07/31/92	7.28	5.05	-	2.23
	08/03/92	7.28	4.43	-	2.85
	08/05/92	7.28	5.06	-	2.22
	11/20/92	7.28	5.27	-	2.01
	06/13/94	14.19	4.91	-	9.28
	09/27/94	14.19	5.29	-	8.90
	10/25/94	14.19	5.42	-	8.77
	06/28/96	14.19	4.69	-	9.50
	10/31/96	14.19	5.24	-	8.95
	09/30/97	14.19	5.04	-	9.15
	12/12/97	14.19	4.32	-	9.87
	02/18/98	14.19	2.97	-	11.22
	05/08/98	14.19	3.85	-	10.34
	06/24/99	14.19	2.95	-	11.24
	08/10/99	14.19	3.01	-	11.18
MW-4	07/30/92	7.05	4.81	-	2.24
	07/31/92	7.05	4.88	-	2.17
	08/05/92	7.05	4.96	-	2.09
	11/20/92	7.05	5.13	-	1.92
	06/13/94	13.95	4.50	-	9.45
	09/27/94	13.95	5.39	-	8.56
	10/25/94	13.95	5.55	-	8.40
	06/28/96	13.95	4.25	-	9.70
	10/31/96	13.95	5.05	-	8.90
	09/30/97	13.95	4.73	-	9.22
	12/12/97	13.95	3.65	-	10.30
	02/18/98	13.95	2.38	-	11.57
	05/08/98	13.95	3.47	-	10.48
	6/24/99	13.95	Inaccessible	-	-
	08/10/99	13.95	4.90	-	9.05

TABLE 1
Historical Groundwater Elevations
Mariner Square, Alameda, California

Well	Date	Top of Casing (feet above MSL)	Depth to Water (feet)	Free Product Thickness (feet)	Groundwater Elevation (feet above MSL)
MW-5	07/30/92	7.68	5.30	-	2.38
	07/31/92	7.68	5.42	-	2.26
	08/03/92	7.68	5.40	-	2.28
	08/05/92	7.68	5.47	-	2.21
	11/20/92	7.68	5.74	-	1.94
	06/13/94	14.60	5.30	-	9.30
	09/26/94	14.60	5.82	-	8.78
	10/25/94	14.60	5.95	-	8.65
	06/28/96	14.60	5.04	-	9.56
	10/31/96	14.60	5.73	-	8.87
	09/30/97	14.60	5.45	-	9.15
	12/12/97	14.60	4.71	-	9.89
	02/18/98	14.60	3.10	-	11.50
	05/08/98	14.60	4.13	-	10.47
	06/24/99	14.60	3.65	-	10.95
	08/10/99	14.60	3.71	-	10.89
MW-6	6/13/94	14.81	5.96	0.02	8.85
	9/27/94	14.81	5.90	0.03	8.91
	10/07/94	14.81	5.82	Sheen	8.99
	10/14/94	14.81	5.89	Sheen	8.92
	10/21/94	14.81	5.90	Sheen	8.91
	10/25/94	14.81	5.99	Sheen	8.82
	06/28/96	14.81	5.33	0.16	9.48
	10/31/96	14.81	5.17	0.02	9.64
	09/30/97	14.81	5.58	Sheen	9.23
	12/12/97	14.81	4.84	0.39	9.97
	02/18/98	14.81	3.70	0.55	11.11
	04/28/98		Well Destroyed		
MW-6A	08/10/99	NS	4.96	Sheen	NA

TABLE 1
Historical Groundwater Elevations
Mariner Square, Alameda, California

Well	Date	Top of Casing (feet above MSL)	Depth to Water (feet)	Free Product Thickness (feet)	Groundwater Elevation (feet above MSL)
MW-7	09/27/94	13.61	5.95	-	7.66
	10/25/94	13.61	6.09	-	7.52
	06/28/96	13.61	5.42	-	8.19
	10/31/96	13.61	5.90	-	7.71
	09/30/97	13.61	5.71	-	7.90
	12/12/97	13.61	4.58	-	9.03
	02/18/98	13.61	3.21	-	10.40
	05/08/98	13.61	4.49	-	9.12
	06/24/99	13.61	4.78	-	8.83
	08/10/99	13.61	4.76	-	8.85
MW-8	09/27/94	12.64	6.06	-	6.58
	10/25/94	12.64	6.26	-	6.38
	06/28/96	12.64	6.00	-	6.64
	10/31/96	12.64	5.85	-	6.79
	09/30/97	12.64	5.60	-	7.04
	12/12/97	12.64	4.87	-	7.77
	02/18/98	12.64	3.80	-	8.84
	05/08/98	12.64	5.30	-	7.34
	06/24/99	12.64	5.42	-	7.22
	08/10/99	12.64	5.48	-	7.16
MW-9	09/26/94	14.92	5.88	-	9.04
	10/25/94	14.92	6.04	-	8.88
	06/28/96	14.92	5.14	-	9.78
	10/31/96	14.92	6.37	-	8.55
	09/30/97	14.92	5.59	-	9.33
	12/12/97	14.92	4.53	-	10.39
	02/18/98	14.92	3.12	-	11.80
	05/08/98	14.92	4.20	-	10.72
	06/24/99	14.92	3.45	-	11.47
	08/10/99	14.92	3.56	-	11.36

TABLE 1
Historical Groundwater Elevations
Mariner Square, Alameda, California

Well	Date	Top of Casing (feet above MSL)	Depth to Water (feet)	Free Product Thickness (feet)	Groundwater Elevation (feet above MSL)
MW-10	08/10/99	NS	4.55	Sheen	NA

MSL	Mean Sea Level	NS	Not Surveyed
-	None Measured	NA	Not Available

TABLE 2

Historical Groundwater Analytical Results -- Organics
Mariner Square, Alameda, California

ppb

WELL	DATE	TPHg	TPHd	TPHmo	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES	MTBE	VOCs	VINYL CHLORIDE
MW-1	08/03/92	-	580	<5,000	<0.5	<0.5	<0.5	<0.5	-	-	-
	11/20/92	<50	600	<5,000	<0.5	<0.5	<0.5	<0.5	-	-	<2
	09/27/94	<50	530	<50	<0.3	<0.3	<0.3	<0.3	-	-	-
	06/28/96	<100	<50	<200	<0.5	<1.0	<1.0	<2.0	-	-	<0.5
	10/31/96	<100	93	<200	<0.5	<1.0	<1.0	<2.0	<10	-	<1.0
	09/30/97	120	<50	<200	4.7	<1.0	3.7	21	<10	-	<0.8
	12/12/97	<50	<50	<200	<0.5	<0.5	<0.5	<2.0	<5	-	<2
	02/18/98	<50	<50	<200	1.5	0.6	1.8	8	<5	-	<2
	05/08/98	<50	<50	<200	1.0	<0.5	0.7	5	<5	-	<2
	06/24/99	<50	<50	110	<0.50	<0.50	<0.50	<1.5	<5.0	-	<0.50
MW-2	08/03/92	-	2,200	<5,000	<0.5	6.5	3.2	5.3	-	-	-
	11/20/92	340	2,100	<5,000	<0.5	<0.5	<0.5	2.4	-	-	<2
	09/26/94	320	<50	240	<3.0	<3.0	<3.0	<3.0	-	-	-
	06/28/96 (1)	980	100 (2,3)	<200	0.5	<1.0	2.3	3.1	-	-	<0.5
	10/31/96	220	180	<200	<0.5	<1.0	<1.0	<2.0	<10	-	<1.0
	09/30/97	900	150 (2)	<200	0.8	<1.0	2	6.2	<10	-	<0.8
	12/12/97	360	<50	<200	1.1	<0.5	2.2	3	<5	-	<2
	02/18/98	90	<50	<200	<0.5	<0.5	1.1	2	<5	-	<2
	05/08/98	170	<50	<200	<0.5	<0.5	1.7	3	<5	-	<2
	06/24/99	<50	<50	<100	<0.50	0.66	<0.50	<1.5	<5.0	-	<0.50
MW-3	08/03/92	-	1,000	<5,000	<0.5	1	<0.5	2.4	-	-	-
	11/20/92	98	2,000	<5,000	<0.5	<0.5	0.9	1	-	-	<2
	09/27/94	<50	720	<50	<3.0	<0.3	<0.3	<0.3	-	-	-
	06/28/96	<100	120 (2)	<200	<0.5	<1.0	<1.0	<2.0	-	-	<0.5
	10/31/96	<100	160	<200	<0.5	<1.0	<1.0	<2.0	<10	-	<1.0
	09/30/97	<100	70	<200	0.8	<1.0	<1.0	3.3	<10	-	<0.8
	12/12/97	80	<50	<200	0.7	<0.5	0.7	4	9	-	<2
	02/18/98	60	<50	<200	<0.5	<0.5	<0.5	4	7	-	<2
	05/08/98	<50	<50	<200	0.5	<0.5	0.5	4	<5	-	<2
	06/24/99	<50	<50	<100	<0.50	1.1	<0.50	2.6	5.0	-	<0.50

TABLE 2

Historical Groundwater Analytical Results -- Organics
Mariner Square, Alameda, California

WELL	DATE	TPHg	TPHd	TPHmo	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES	MTBE	VOCs	VINYL CHLORIDE
MW-4	08/05/92	-	1,300	<5,000	16	2.6	0.6	2.7	-	-	9.0
	11/20/92	330	2,400	<5,000	31	5.2	0.7	2	-	-	13
	09/27/94	<50	890	<50	12	0.43	<0.3	<0.3	-	-	8.0
	06/28/96	180	170 (2,3)	<200	4	<1.0	<1.0	<2.0	-	-	2.5
	10/31/96	110	330	<200	6.2	<1.0	<1.0	<2.0	<10	-	4.3
	09/30/97	650	170 (2)	<200	3.9	<1.0	<1.0	<2.0	460	-	3.1
	12/12/97	260	<50	<200	4.9	0.9	<0.5	<2.0	320	-	3
	02/18/98	240	<50	<200	1.0	1.0	2.1	10	290	-	2
	05/08/98	90	<50	<200	0.5	0.5	0.8	5	30	-	<2
	08/10/99	93	270 (4)	320	0.59	1.4	<0.5	4.2	11	-	<0.5
MW-5	08/03/92	-	2,200	<5,000	9	6	49	11	-	-	-
	11/20/92	4,800	1,500	<5,000	7.6	12	5.8	26	-	-	<2
	09/26/94	3,100	780	<500	7.9	11	8.7	14	-	-	-
	06/28/96	5,000	610 (2,3)	790	1.2	6.8	21	14	-	-	<0.5
	10/31/96	6,800	4,900	860	20	5.9	15	19	<10	-	<1.0
	09/30/97	9,000	4,100 (2)	520	35	5.3	36	32	12	-	<0.8
	12/12/97	3,400	90	<200	26	4.6	5.9	13	11	-	<2
	02/18/98	3,200	<50	<200	7.9	1.4	14	12	<5	-	<2
	05/08/98	3,900	<50	<200	8.0	22	19	10	<5	-	<2
	06/24/99	290	60	<100	48	8.8	8.6	33	<5.0		<0.50
MW-6	05/25/93	460	2,700,000	-	<5.0	<5.0	<5.0	<5.0	-	-	<10
	9/27/94	1,100	9,900	3,200	<3.0	<3.0	<3.0	<3.0	-	-	<1.0
	06/28/96					Not Sampled--Sheen Present					
	09/30/97					Not Sampled--Sheen Present					
	12/12/97	21,000	1,900,000	43,000	5	<0.5	8	19	<50	-	<2
	02/18/98	70,000	<50	<200	20	20	20	70	<100	-	<2
	04/28/98	800	920	<200	<0.5	<0.5	<0.5	<2	<5	-	<2
	04/28/98					Well Destroyed					

TABLE 2

Historical Groundwater Analytical Results -- Organics
Mariner Square, Alameda, California

WELL	DATE	TPHg	TPHd	TPHmo	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES	MTBE	VOCs	VINYL CHLORIDE
MW-6A	08/10/99	770	5,400 (4)	3,900 (4)	1.7	<0.5	<0.5	1.9	<5.0	-	<0.5
MW-7	09/27/94	<250	1,800	<250	<0.3	<0.3	<0.3	<0.3	-	-	<1.0
	06/28/96	560	490 (2,3)	<200	0.6	<1.0	<1.0	2.7	-	-	<0.5
	10/31/96	200	420	<200	1.1	<1.0	<1.0	<2.0	<10	-	<1.0
	09/30/97	750	190 (2)	<200	8.1	5.3	<1.0	6.9	<10	-	<0.8
	12/12/97	420	<50	<200	7.9	<0.5	<0.5	5	<5	-	<2
	02/18/98	650	<50	<200	9.5	0.6	<0.5	6	16	-	<2
	05/08/98	710	<50	<200	3.4	4.8	0.8	7	34	0.9 (5)	<2
	06/24/99	620	<250	<100	89	16	16	64	<5.0		<0.50
MW-8	09/27/94	<50	320	<50	<0.3	<0.3	<0.3	<0.3	-	-	-
	06/28/96	<100	58 (2)	<200	<0.5	<1.0	<1.0	<2.0	-	-	<0.5
	10/31/96	<100	120	<200	<0.5	<1.0	<1.0	<2.0	<10	-	<1.0
	09/30/97	110	70 (2)	<200	4.2	<1.0	3.4	16	<10	-	<0.8
	12/12/97	<50	<50	<200	<0.5	<0.5	<0.5	<2.0	15	-	<2
	02/18/98	<50	<50	<200	0.9	<0.5	0.8	3	<5	-	<2
	05/08/98	<50	<50	<200	<0.5	<0.5	<0.5	<2.0	<5	-	<2
	06/24/99	350	<50	<100	64	11	12	45	<5.0	-	<0.50
MW-9	09/26/94	<500	2,200	<500	<0.3	<0.3	<0.3	<0.3	-	-	<1.0
	06/28/96	390	550 (2,3)	<200	5.2	<1.0	<1.0	<2.0	-	-	<0.5
	10/31/96	300	590	720	5.9	<1.0	<1.0	<2.0	<10	-	<1.0
	09/30/97	150	460 (2)	<200	0.6	<1.0	<1.0	2.7	<10	-	<0.8
	12/12/97	180	<50	<200	<0.5	<0.5	<0.5	<2.0	<5	-	<2
	02/18/98	100	<50	<200	<0.5	0.5	<0.5	<2.0	6	-	<2
	05/08/98	70	130	<200	<0.5	<0.5	<0.5	<2.0	16	-	<2
	06/24/99	380	140	<100	51	10	11	39	<5.0	-	<0.50

TABLE 2

Historical Groundwater Analytical Results -- Organics
Mariner Square, Alameda, California

WELL	DATE	TPHg	TPHd	TPHmo	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES	MTBE	VOCs	VINYL CHLORIDE
MW-10	08/10/99	1,300	3,000 (4)	8,200 (4)	9.2	1.9	12	46	<5.0	-	NA
HP-1	09/03/98	10,000	410,000	12,000	<0.5	18	8	63	<0.5	-	<5.0
HP-2	09/03/98	1,400	230,000	10,000	<0.5	4	2	24	<0.5	-	<5.0
HP-3	09/03/98	230	78,000	3,000	1.0	<0.5	<0.5	<1.0	<0.5	-	<5.0

Notes:

All results reported in parts per billion

TPHg	Total Petroleum Hydrocarbons as gasoline	TPHmo	Total Petroleum Hydrocarbons as motor oil
THPd	Total Petroleum Hydrocarbons as diesel	TRPH	Total Recoverable Petroleum Hydrocarbons
MTBE	Methyl Tert-Butyl Ether	VOCs	Volatile Organic Compounds

< Analyte not detected at or above stated detection limit

(1) Water sample also analyzed for Freon 113 by EPA Method 8010A. Results were below the detection limit of 1.0 ppb.

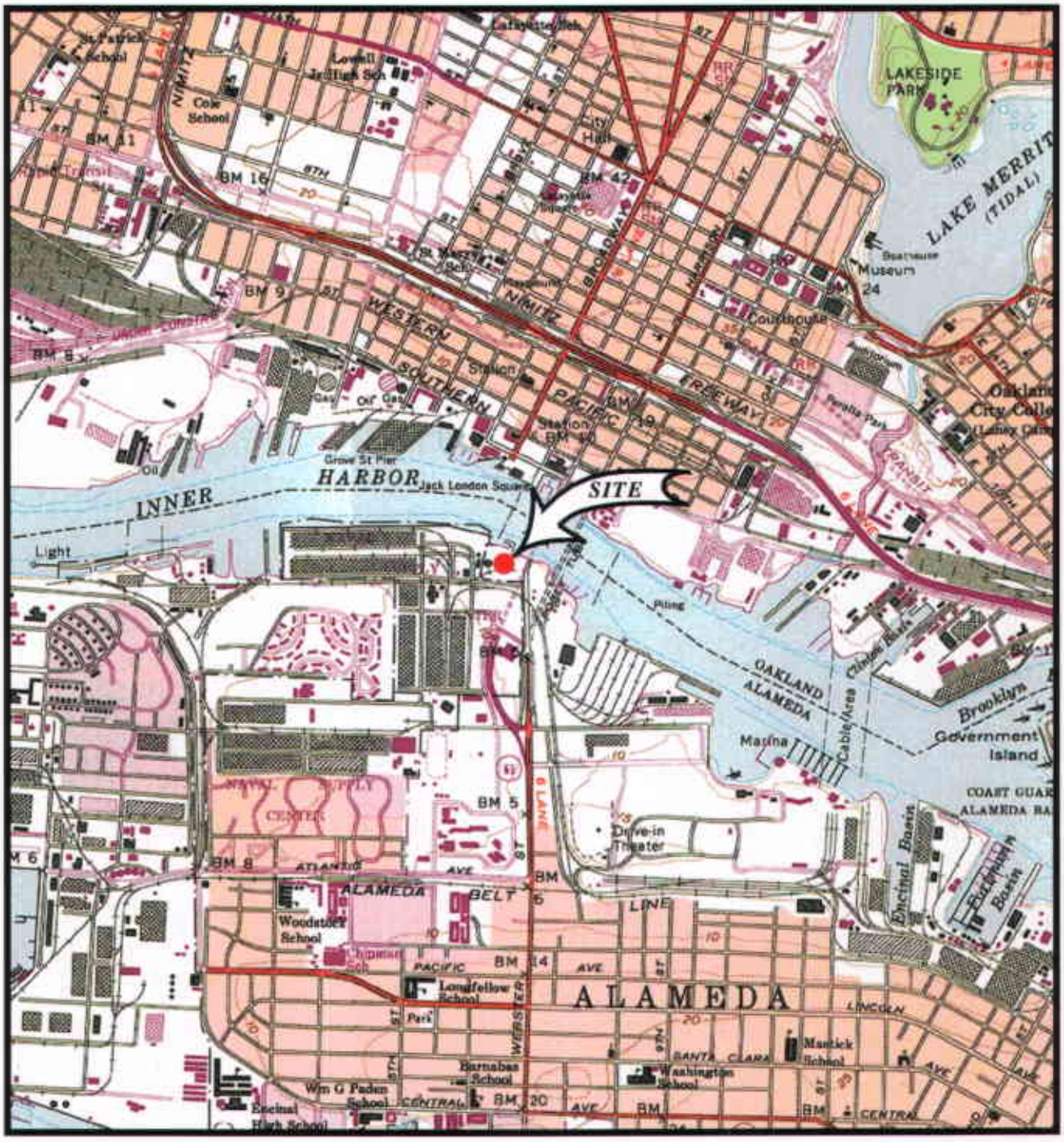
(2) Qualitative identification is uncertain because the material present does not match laboratory standards.

(3) Quantitation uncertain due to matrix interferences

(4) Results within quantitation range; chromatographic pattern not typical of fuel

(5) Tetrochloroethene reported by lab on vinyl chloride sample unedited run.

File No. NFE-4392-01
September 1999



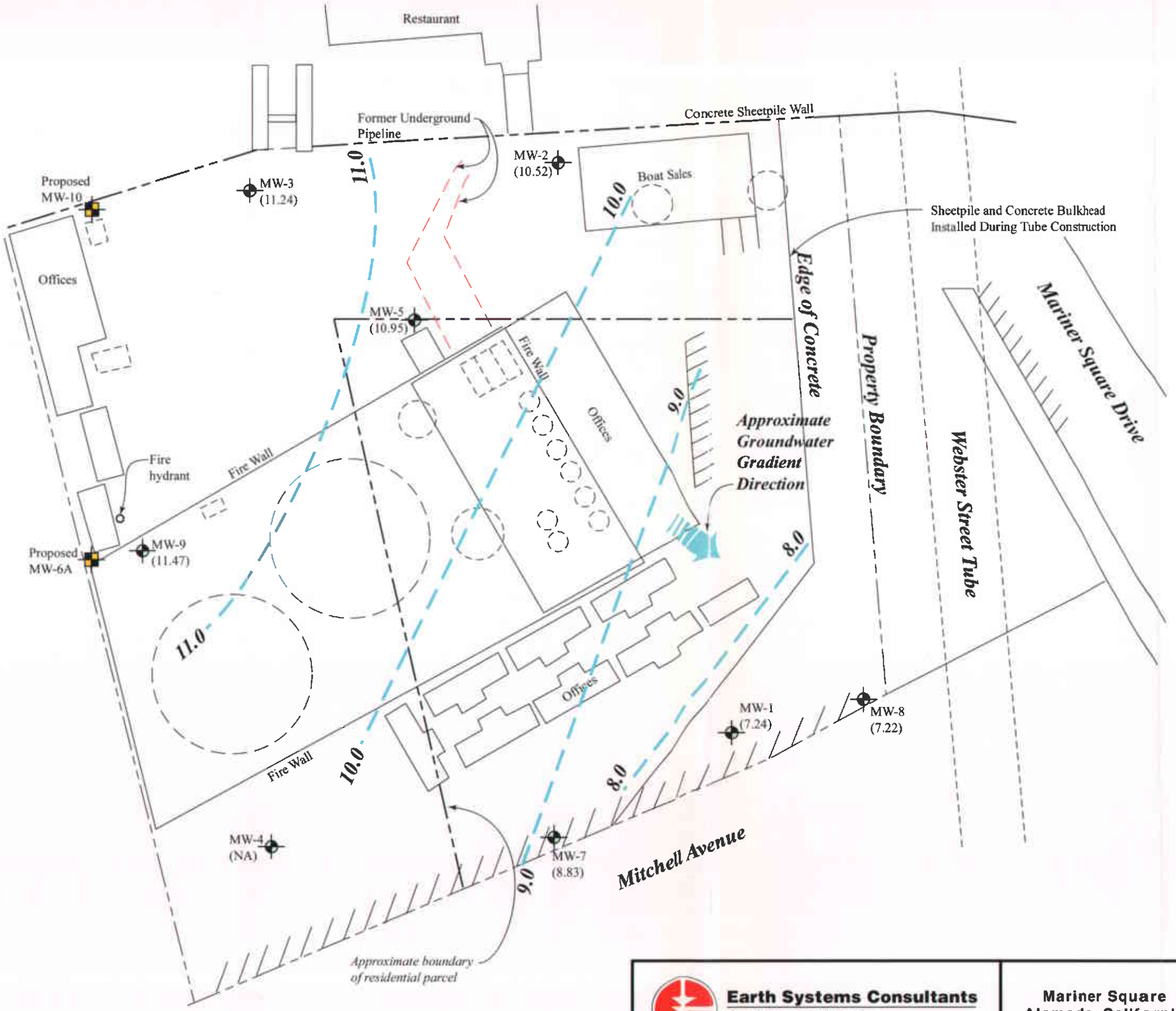
Approximate Scale 1: 24,000

1 0 1 Mile

1 0 1 Kilometer

Base: U.S.G.S. 7.5 minute Oakland West Quadrangle (1980)
Printed from TOPO!™ ©1997 Wildflower Productions (415) 558-8700, www.topo.com

Earth Systems Consultants Northern California	Mariner Square Alameda, California	**SITE LOCATION** Figure 1



LEGEND

- MW-9 (11.47) — Monitoring Well and Groundwater Elevation (in feet above mean sea level 6/24/99)
- Existing Structures
- Former above Ground Fuel Storage Tanks
- Former Underground Gasoline Storage Tank
- Approximate Property Boundary
- (NA) — Not Accessible
- 11.0 — Line of Approximate Equal Groundwater Elevation (In feet above mean sea level)

N

60 0 60 120

Approximate Scale in Feet

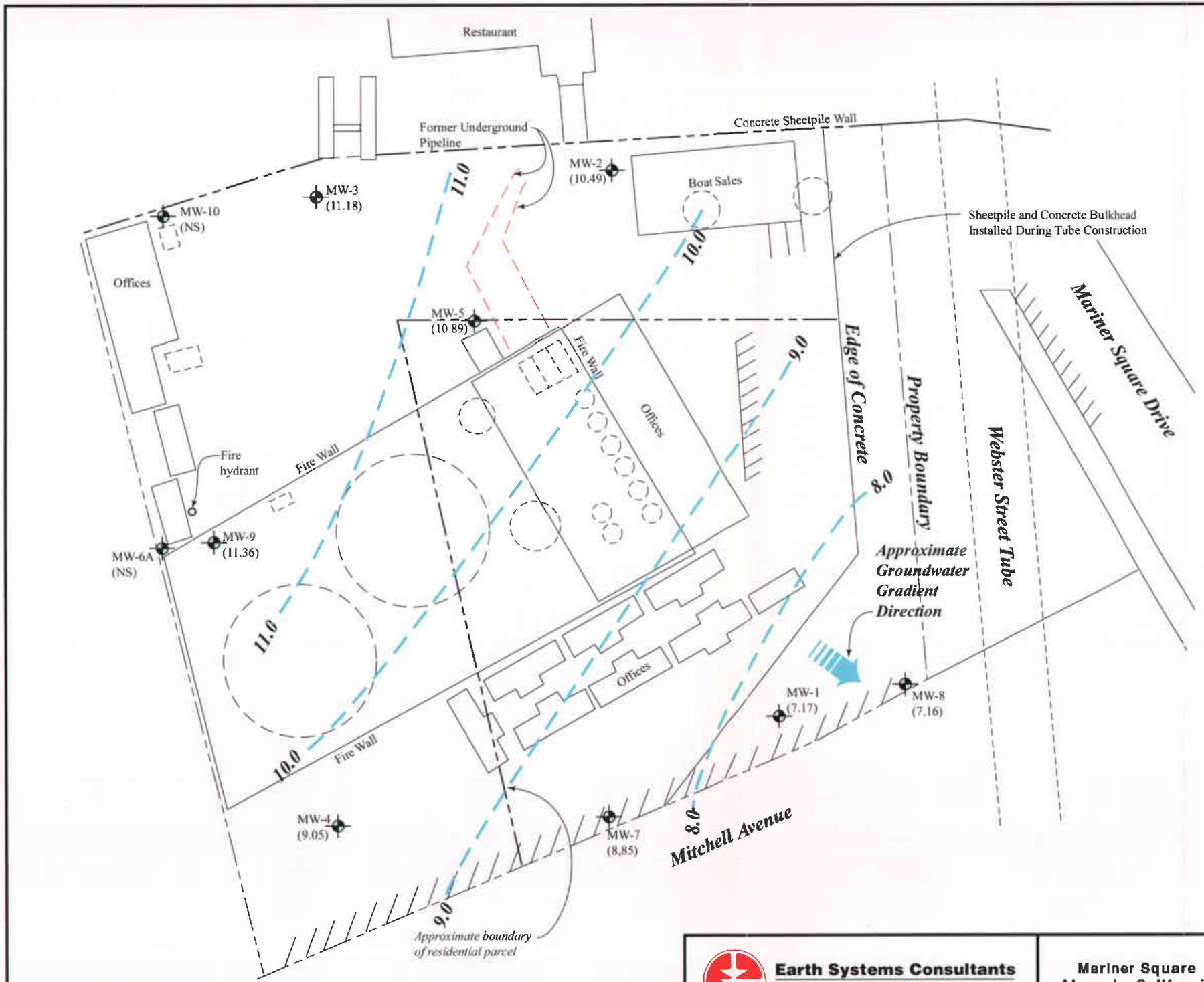
Earth Systems Consultants
Northern California

Mariner Square
Alameda, California

GROUNDWATER GRADIENT MAP 6/24/99

Date: September 1999
File No: NFE-4392-01

Figure 2



Earth Systems Consultants
Northern California

Mariner Square
Alameda, California

GROUNDWATER GRADIENT MAP 8/10/99

Date: September 1999
File No: NFE-4392-01

Figure 3

ATTACHMENT A

Well Monitoring Forms and Laboratory Analytical Reports
for June 24, 1999 sampling

WELL GAUGING DATA

Project # 990624-P1 Date 6-24-99 Client Earth Systems

Site Mariner Square

Well ID	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	
MW-1	2					4.75	11.55		
MW-2	2					4.69	14.10		
MW-3	2					2.95	11.70		
MW-4	Inaccessible, Covered by Rock Pile								
MW-5	2					3.65	12.21		
MW-7	4					4.78	13.45		
MW-8	4					5.42	13.90		
MW-9	4					3.45	13.30		

WELL MONITORING DATA SHEET

Project #: 990624-P1	Client: Earth Systems
Sampler: Pat	Start Date: 6-24-99
Well I.D.: MW-1	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 11.55'	Depth to Water: 4.75
Before: After:	Before: After:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH

Purge Method: Bailer ✓
Disposable Bailer
Middleburg
Electric Submersible
Extraction Pump
Other: _____

Sampling Method: Bailer ✓
Disposable Bailer
Extraction Port
Other: _____

1.0 (Gals.) X 3 = 3.0 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
2"	0.16	5"	1.02
3"	0.37	6"	1.47
4"	0.65	Other	radius² * 0.163

Time	Temp (°F)	pH	Cond.	Turbidity	Gals. Removed	Observations
10:23	69.8	7.0	7439	>200	1	
10:25	69.4	7.1	7396	>200	2	
10:27	69.2	7.1	7353	>200	3	
						OTW = 4.69

Did well dewater? Yes (No) Gallons actually evacuated:

Sampling Time: 10:35 Sampling Date: 6-24-99

Sample I.D.: MW-1 Laboratory: Eatech

Analyzed for: (TPH-G BTEX MTBE TPH-D Other:)

Equipment Blank I.D.: @ Time Duplicate I.D.:

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
ORP (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 990624-P1	Client: Earth Systems
Sampler: Paul	Start Date: 6-24-99
Well I.D.: MW-2	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 14.10	Depth to Water: 4.69
Before: After:	Before: After:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	D.O. Meter (if req'd): YSI HACH

Purge Method: Bailer ✓ / Disposable Bailer (✓) / Middleburg / Electric Submersible / Extraction Pump / Other: ____

Sampling Method: Bailer ✓ / Disposable Bailer / Extraction Port / Other: ____

1.5 (Gals.) X 3 = 4.5 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
2"	0.16	5"	1.02
3"	0.37	6"	1.47
(4")	0.65	Other	radius² * 0.163

Time	Temp (°F)	pH	Cond.	Turbidity	Gals. Removed	Observations
12:19	70.4	7.4	5436	>200	1.5	
12:21	69.8	7.3	5420	>200	3.0	
12:23	69.4	7.3	5374	>200	4.5	
						DTW=4.58

Did well dewater? Yes (No) Gallons actually evacuated: 4.5

Sampling Time: 12:30 Sampling Date: 6-24-99

Sample I.D.: MW-2 Laboratory: Entech

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

Equipment Blank I.D.: @ Time Duplicate I.D.:

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
ORP (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 990624-P1	Client: Earth Systems
Sampler: Paul	Start Date: 6-24-99
Well I.D.: MW-3	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth: 11.70	Depth to Water: 2.95
Before: After:	Before: After:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH

Purge Method: Bailer ✓
Disposable Bailer
Middleburg
Electric Submersible
Extraction Pump
Other: _____

Sampling Method: Bailer ✓
Disposable Bailer
Extraction Port
Other: _____

1.4 (Gals.) X 3 = 4.2 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
2"	0.16	5"	1.02
3"	0.37	6"	1.47
4"	0.65	Other	radius² * 0.163

Time	Temp (°F)	pH	Cond.	Turbidity	Gals. Removed	Observations
10:51	69.6	7.4	3421	>200	1.5	
10:54	69.4	7.3	3376	>200	3.0	
10:58	68.8	7.3	3326	>200	4.5	
						DTW=2.91

Did well dewater? Yes (No) Gallons actually evacuated: 4.5

Sampling Time: 11:07 Sampling Date: 6-24-99

Sample I.D.: MW-3 Laboratory: Entech

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

Equipment Blank I.D.: @ Time Duplicate I.D.:

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
ORP (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 990624-P1	Client: Earth Systems
Sampler: Pa-1	Start Date: 6-24-95
Well I.D.: MW-5	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 12.21	Depth to Water: 3.65
Before: After:	Before: After:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH

Purge Method: Bailer ✓
Disposable Bailer
Middleburg
Electric Submersible
Extraction Pump
Other: _____

Sampling Method: Bailer ✓
Disposable Bailer
Extraction Port
Other: _____

1.3 (Gals.) X 3 = 4.1 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
2"	0.16	5"	1.02
3"	0.37	6"	1.47
4"	0.65	Other	radius² * 0.163

Time	Temp (°F)	pH	Cond.	Turbidity	Gals. Removed	Observations
12:46	70.4	7.4	5512	>200	1.5	
12:48	71.2	7.2	4765	>200	3.0	
12:51	70.6	7.2	4673	>200	4.5	
						DTW=3.47

Did well dewater? Yes (No) Gallons actually evacuated: 4.5

Sampling Time: 12:58 Sampling Date: 6-24-95

Sample I.D.: MW-5 Laboratory: Eatech

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

Equipment Blank I.D.: @ Time Duplicate I.D.:

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
ORP (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 990624-P1	Client: Earth Systems
Sampler: Dan	Start Date: 6-24-95
Well I.D.: MW-7	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth: 13.45	Depth to Water: 4.78
Before: After:	Before: After:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH

Purge Method: Bailer / Disposable Bailer / Middleburg / Electric Submersible ✓ / Extraction Pump / Other: ___

Sampling Method: Bailer ✓ / Disposable Bailer / Extraction Port / Other: ___

5.6 (Gals.) X 3 = 16.9 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
2"	0.16	5"	1.02
3"	0.37	6"	1.47
(4")	0.65	Other	radius² * 0.163

Time	Temp (°F)	pH	Cond.	Turbidity	Gals. Removed	Observations
13:09	73.2	7.3	2179	>200	6	
13:10	71.6	7.1	2136	>200	12	
13:11	70.4	7.1	2045	>200	18	
						OTW = 4.52

Did well dewater? Yes (No)	Gallons actually evacuated: 18
Sampling Time: 13:20	Sampling Date: 6-24-95
Sample I.D.: MW-7	Laboratory: Entech
Analyzed for: TPH-G BTEX MTBE TPH-D Other	
Equipment Blank I.D.: @ Time	Duplicate I.D.:
Analyzed for: TPH-G BTEX MTBE TPH-D Other:	

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
ORP (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 990624-P1	Client: Earth Systems
Sampler: Paul	Start Date: 6-24-99
Well I.D.: MW-8	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth: 13.90	Depth to Water: 5.42
Before: After:	Before: After:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH

Purge Method: Bailer; Disposable Bailer; Middleburg; Electric Submersible ✓; Extraction Pump; Other: _____

Sampling Method: Bailer ✓; Disposable Bailer; Extraction Port; Other: _____

5.5 (Gals.) X 3 = 16.5 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
2"	0.16	5"	1.02
3"	0.37	6"	1.47
4"	0.65	Other	radius² * 0.163

Time	Temp (°F)	pH	Cond.	Turbidity	Gals. Removed	Observations
10:03	70.2	6.5	1117	56	6	
10:04	69.6	6.6	1079	29	12	
10:05	69.2	6.6	1054	17	18	
						DTW = 5.38

Did well dewater? Yes (No) Gallons actually evacuated: 18

Sampling Time: 10:13 Sampling Date: 6-24-99

Sample I.D.: MW-8 Laboratory: Entech

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

Equipment Blank I.D.: @ Time Duplicate I.D.:

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
ORP (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 990624-P1	Client: Earth Systems
Sampler: Paul	Start Date: 6-24-99
Well I.D.: MW-9	Well Diameter: 2 3 (4) 6 8 ____
Total Well Depth: 13.30	Depth to Water: 3.45
Before: After:	Before: After:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH

Purge Method: Bailer / Disposable Bailer / Middleburg / Electric Submersible ✓ / Extraction Pump / Other: ____

Sampling Method: Bailer ✓ / Disposable Bailer / Extraction Port / Other: ____

6.4 (Gals.) X 3 = 19.2 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
2"	0.16	5"	1.02
3"	0.37	6"	1.47
(4")	0.65	Other	radius² * 0.163

Time	Temp (°F)	pH	Cond.	Turbidity	Gals. Removed	Observations
11:22	71.4	7.4	2179	7200	7	
11:23	70.2	7.3	2106	7200	14	
11:24	70.0	7.3	1986	7200	21	
						DTW=3.21

Did well dewater? Yes (No) Gallons actually evacuated: 21

Sampling Time: 11:38 Sampling Date: 6-24-99

Sample I.D.: MW-9 Laboratory: Entech

Analyzed for: ~~TPH-G BTEX MTBE TPH-D~~ (Other:)

Equipment Blank I.D.: @ Time Duplicate I.D.:

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
ORP (if req'd):	Pre-purge:	mV	Post-purge:	mV

Entech Analytical Labs, Inc.

CA ELAP# I-2346

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

Earth Systems Consultants
47853 Warm Springs Blvd.
Fremont, CA 94539-7400
Attn: Jeanne Buckthall

Date: 7/6/99
Date Received: 6/25/99
Project: Mariners Square
PO #:
Sampled By: Client

Certified Analytical Report

Water Sample Analysis:

Sample ID	MW-8			MW - 1			MW - 3				
Sample Date	6/24/99			6/24/99			6/24/99				
Sample Time	10:13			10:35			11:07				
Lab #	G14200			G14201			G14202				
	Result	DF	DLR	Result	DF	DLR	Result	DF	DLR	PQL	Method
Results in µg/Liter:											
Analysis Date	6/29/99			6/29/99			6/29/99				
Vinyl Chloride	**ND**	1.0	0.50	**ND**	1.0	0.50	**ND**	1.0	0.50	0.50	8010

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

· Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #I-2346)

Michelle L. Anderson, Lab Director

Environmental Analysis Since 1983

Entech Analytical Labs, Inc.

CA ELAP# I-2346

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

Earth Systems Consultants
47853 Warm Springs Blvd.
Fremont, CA 94539-7400
Attn: Jeanne Buckthall

Date: 7/6/99
Date Received: 6/25/99
Project: Mariners Square
PO #:
Sampled By: Client

Certified Analytical Report

Water Sample Analysis:

Sample ID	MW - 9			MW - 2			MW - 5				
Sample Date	6/24/99			6/24/99			6/24/99				
Sample Time	11:38			12:30			12:58				
Lab #	G14203			G14204			G14205				
	Result	DF	DLR	Result	DF	DLR	Result	DF	DLR	PQL	Method
Results in µg/Liter:											
Analysis Date	6/29/99			6/29/99			6/29/99				
Vinyl Chloride	**ND**	1.0	0.50	**ND**	1.0	0.50	**ND**	1.0	0.50	0.50	8010

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

· Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #I-2346)

Michelle L. Anderson, Lab Director

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CA ELAP# I-2346

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

Earth Systems Consultants
47853 Warm Springs Blvd.
Fremont, CA 94539-7400
Attn: Jeanne Buckthall

Date: 7/6/99
Date Received: 6/25/99
Project: Mariners Square
PO #:
Sampled By: Client

Certified Analytical Report

Water Sample Analysis:

Sample ID	MW - 7										
Sample Date	6/24/99										
Sample Time	13:20										
Lab #	G14206										
	Result	DF	DLR							PQL	Method
Results in µg/Liter:											
Analysis Date	6/29/99										
Vinyl Chloride	**ND**	1.0	0.50							0.50	8010

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

· Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #I-2346)

Michelle L. Anderson, Lab Director

Environmental Analysis Since 1983

Entech Analytical Labs, Inc.

CA ELAP# I-2346

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

July 16, 1999

Jeanne Buckthall
Earth Systems Consultants
47853 Warm Springs Blvd
Fremont, CA 94539-7400

Subject:	7 Water Samples
Lab #'s:	G14200 through G14206
Project Name:	Mariners Square
Project Number:	
P.O. Number:	
Method(s):	EPA 8310 – APCL
	EPA 8015M, 8020 - Kiff
Subcontract Lab(s):	Applied P & Ch Laboratory (CAELAP #1431)
	Kiff Analytical (CAELAP #2236)

Dear Jeanne Buckthall,

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 (#I-2346). If you have any questions regarding procedures or results, please call me at 408-735-1550.

Sincerely,

Michelle L. Anderson
Lab Director

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Submitted to:
Entech Analytical Labs, Inc.
Attention: Allan Aks
525 Del Rey, Suite E
Sunnyvale CA 94086
Tel: (408)735-1550 Fax: (408)735-1554

Service ID #: 801-994471
Collected by:
Collected on: 06/24/99

Received: 06/28/99
Extracted: 06/29/99
Tested: 06/29/99
Reported: 07/02/99

Sample Description: Water
Project Description: Earth Systems

Analysis of Water Samples

Component Analyzed	Method	Unit	PQL	Analysis Result G14200(MW-8) 99-04471-1	G14201(MW-1) 99-04471-2	G14202(MW-3) 99-04471-3
Polynuclear Aromatic HC (PAH)						
Dilution Factor				1	1.25	1
Acenaphthene	8310	µg/L	5	ND	<6.3	ND
Acenaphthylene	8310	µg/L	2	ND	<2.5	ND
Anthracene	8310	µg/L	0.2	ND	<0.25	ND
Benz(a)anthracene	8310	µg/L	0.2	ND	<0.25	ND
Benzo(a)pyrene	8310	µg/L	0.2	ND	<0.25	ND
Benzo(b)fluoranthene	8310	µg/L	0.2	ND	<0.25	ND
Benzo(g,h,i)perylene	8310	µg/L	0.2	ND	<0.25	ND
Benzo(k)fluoranthene	8310	µg/L	0.2	ND	<0.25	ND
Chrysene	8310	µg/L	0.2	ND	<0.25	ND
Dibenz(a,h)anthracene	8310	µg/L	0.5	ND	<0.63	ND
Fluoranthene	8310	µg/L	0.2	ND	<0.25	ND
Fluorene	8310	µg/L	1	ND	<1.3	ND
Indeno(1,2,3-cd)pyrene	8310	µg/L	0.2	ND	<0.25	ND
Naphthalene	8310	µg/L	5	ND	<6.3	ND
Phenanthrene	8310	µg/L	1	ND	<1.3	ND
Pyrene	8310	µg/L	0.2	ND	<0.25	ND

Component Analyzed	Method	Unit	PQL	Analysis Result G14203(MW-9) 99-04471-4	G14204(MW-2) 99-04471-5	G14205(MW-5) 99-04471-6	G14206(MW-7) 99-04471-7
Polynuclear Aromatic HC (PAH)							
Dilution Factor				1.25	1	1	1
Acenaphthene	8310	µg/L	5	<6.3	ND	ND	ND
Acenaphthylene	8310	µg/L	2	<2.5	ND	ND	ND
Anthracene	8310	µg/L	0.2	0.1J	ND	ND	ND
Benz(a)anthracene	8310	µg/L	0.2	<0.25	ND	ND	ND
Benzo(a)pyrene	8310	µg/L	0.2	<0.25	0.1J	ND	ND
Benzo(b)fluoranthene	8310	µg/L	0.2	<0.25	0.2J	ND	ND
Benzo(g,h,i)perylene	8310	µg/L	0.2	<0.25	0.2	ND	ND

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL QA/QC Report

Submitted to:
Entech Analytical Labs, Inc.
Attention: Allan Aks
525 Del Rey, Suite E
Sunnyvale, CA 94086
Tel: (408)735-1550 Fax: (408)735-1554

Service ID #: 801-994471
Collected by:
Collected on: 06/24/99
Sample description:
Water
Project: Earth Systems

Received: 06/28/99
Tested: 06/29/99
Reported: 7/ 8/99

Analysis of Water

801-994471QC

Component Name	Analysis Batch #	CCV (µg/L)	CCV %Rec	M-Blank	Conc. Unit	SP Level	LCS %Rec	MS %Rec	MSD %Rec	MS/MSD %RPD	Control Limit %Rec	Control Limit %Diff
Polynuclear Aromatic HC (PAH)												
Naphthalene	99G3295	12500	94	N.D.	µg/L	12.5	90	90*	74*	20	64-115	25
Acenaphthylene	99G3295	12500	95	N.D.	µg/L	12.5	90	90*	74*	20	67-113	23
Acenaphthene	99G3295	25000	90	N.D.	µg/L	25.0	86	86*	72*	18	67-114	24
Fluorene	99G3295	2500	98	N.D.	µg/L	2.50	93	93*	77*	19	66-114	24
Phenanthrene	99G3295	1000	94	N.D.	µg/L	1.00	91	91*	75*	19	66-112	23
Anthracene	99G3295	500	98	N.D.	µg/L	0.500	98	98*	81*	19	70-115	23
Fluoranthene	99G3295	1250	89	N.D.	µg/L	1.25	86	86*	71*	19	61-116	28
Pyrene	99G3295	2500	92	N.D.	µg/L	2.50	88	88*	73*	18	68-111	21
Benz(a)anthracene	99G3295	1250	91	N.D.	µg/L	1.25	81	81*	66*	20	66-113	23
Chrysene	99G3295	1250	93	N.D.	µg/L	1.25	84	84*	69*	19	67-115	24
Benzo(b)fluoranthene	99G3295	500	109	N.D.	µg/L	0.500	98	98*	90*	9	68-113	23
Benzo(k)fluoranthene	99G3295	500	96	N.D.	µg/L	0.500	89	89*	73*	20	63-117	27
Benzo(a)pyrene	99G3295	1250	95	N.D.	µg/L	1.25	90	90*	75*	19	61-120	30
Dibenz(a,h)anthracene	99G3295	5000	92	N.D.	µg/L	5.00	89	89*	73*	20	67-115	24
Benzo(g,h,i)perylene	99G3295	2000	91	N.D.	µg/L	2.00	79	79*	65*	20	63-115	26
Indeno(1,2,3-cd)pyrene	99G3295	1250	97	N.D.	µg/L	1.25	81	81*	69*	16	64-114	25

*: LCS/LCSD is used.

Notation:
ICV - Initial Calibration Verification
CCV - Continuation Calibration Verification
LCS - Lab Control Spike
MS - Matrix Spike
MSD - Matrix Spike Duplicate
ICS - Interference Check Standard
MD - Matrix Duplicate
N.D. - Not detected or less than PQL
CCB - Continuation Calibration Blank
M-blank - Method Blank
SP Level - Spike Level
%Rec - Recovery Percent
%RPD - Relative Percent Differences
%Diff - Control Limit for %RPD
ICP-SD - ICP Serial Dilution
N.A. - Not Applicable

Respectfully submitted,

Kevin Xie, Ph. D.,
QA Director
Applied P & Ch Laboratory

KIFF ANALYTICAL LLC

Report Number : 14430
Date : 07/07/99

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

Subject : 7 Water Samples
Project Name : Earth Systems
Project Number :

Dear Ms. Anderson,

Chemical analysis of 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. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

Joel Kiff

KIFF ANALYTICAL LLC

Report Number : 14430

Date : 07/07/99

Project Name : **Earth Systems**

Project Number :

Sample : **G14200 (MW-8)** Matrix : Water

Sample Date :06/24/99

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Diesel	**< 50**	50	ug/L	M EPA 8015	07/03/99
TPH as Motor Oil	**< 100**	100	ug/L	M EPA 8015	07/03/99

Sample : **G14201 (MW-1)** Matrix : Water

Sample Date :06/24/99

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Diesel	**< 50**	50	ug/L	M EPA 8015	07/03/99
TPH as Motor Oil	**110**	100	ug/L	M EPA 8015	07/03/99

Sample : **G14202 (MW-3)** Matrix : Water

Sample Date :06/24/99

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Diesel	**< 50**	50	ug/L	M EPA 8015	07/04/99
TPH as Motor Oil	**< 100**	100	ug/L	M EPA 8015	07/04/99

Approved By: Joel Kiff

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

KIFF ANALYTICAL LLC

Report Number : 14430

Date : 07/07/99

Project Name : **Earth Systems**

Project Number :

Sample : **G14203 (MW-9)** Matrix : Water

Sample Date :06/24/99

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Diesel	**140**	50	ug/L	M EPA 8015	07/04/99
TPH as Motor Oil	**< 100**	100	ug/L	M EPA 8015	07/04/99

Sample : **G14204 (MW-2)** Matrix : Water

Sample Date :06/24/99

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Diesel	**< 50**	50	ug/L	M EPA 8015	07/04/99
TPH as Motor Oil	**< 100**	100	ug/L	M EPA 8015	07/04/99

Sample : **G14205 (MW-5)** Matrix : Water

Sample Date :06/24/99

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Diesel	**60**	50	ug/L	M EPA 8015	07/04/99
TPH as Motor Oil	**< 100**	100	ug/L	M EPA 8015	07/04/99

Approved By: Joel Kiff

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

KIFF ANALYTICAL LLC

Report Number : 14430

Date : 07/07/99

Project Name : **Earth Systems**

Project Number :

Sample : **G14206 (MW-7)** Matrix : Water

Sample Date :06/24/99

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Diesel	**< 250**	250	ug/L	M EPA 8015	07/04/99
TPH as Motor Oil	**< 100**	100	ug/L	M EPA 8015	07/04/99

Approved By: Joel Kiff

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

KIFF ANALYTICAL LLC

Report Number : 14466
Date : 07/16/99

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

Subject : 7 Water Samples
Project Name : Earth Systems
Project Number :

Dear Ms. Anderson,

Chemical analysis of 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. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

Joel Kiff

KIFF ANALYTICAL LLC

Report Number : 14466

Date : 07/16/99

Project Name : **Earth Systems**

Project Number :

Sample : **G14200 (MW-8)** Matrix : Water

Sample Date :06/24/99

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**64**	0.50	ug/L	EPA 8020	07/07/99
Toluene	**11**	0.50	ug/L	EPA 8020	07/07/99
Ethylbenzene	**12**	0.50	ug/L	EPA 8020	07/07/99
Total Xylenes	**45**	1.5	ug/L	EPA 8020	07/07/99
Methyl-t-butyl ether	**< 5.0**	5.0	ug/L	EPA 8020	07/07/99
TPH as Gasoline	**350**	50	ug/L	M EPA 8015	07/07/99
aaa-Trifluorotoluene (8020 Surrogate)	93.1		% Recovery	EPA 8020	07/07/99
aaa-Trifluorotoluene (Gasoline Surrogate)	95.9		% Recovery	M EPA 8015	07/07/99

Sample : **G14201 (MW-1)** Matrix : Water

Sample Date :06/24/99

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.50**	0.50	ug/L	EPA 8020	07/07/99
Toluene	**< 0.50**	0.50	ug/L	EPA 8020	07/07/99
Ethylbenzene	**< 0.50**	0.50	ug/L	EPA 8020	07/07/99
Total Xylenes	**< 1.5**	1.5	ug/L	EPA 8020	07/07/99
Methyl-t-butyl ether	**< 5.0**	5.0	ug/L	EPA 8020	07/07/99
TPH as Gasoline	**< 50**	50	ug/L	M EPA 8015	07/07/99
aaa-Trifluorotoluene (8020 Surrogate)	103		% Recovery	EPA 8020	07/07/99
aaa-Trifluorotoluene (Gasoline Surrogate)	96.8		% Recovery	M EPA 8015	07/07/99

Approved By: Joel Kiff

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

KIFF ANALYTICAL LLC

Report Number : 14466

Date : 07/16/99

Project Name : **Earth Systems**

Project Number :

Sample : **G14202 (MW-3)** Matrix : Water

Sample Date :06/24/99

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.50**	0.50	ug/L	EPA 8020	07/07/99
Toluene	**1.1**	0.50	ug/L	EPA 8020	07/07/99
Ethylbenzene	**< 0.50**	0.50	ug/L	EPA 8020	07/07/99
Total Xylenes	**2.6**	1.5	ug/L	EPA 8020	07/07/99
Methyl-t-butyl ether	**5.0**	5.0	ug/L	EPA 8020	07/07/99
TPH as Gasoline	**< 50**	50	ug/L	M EPA 8015	07/07/99
aaa-Trifluorotoluene (8020 Surrogate)	116		% Recovery	EPA 8020	07/07/99
aaa-Trifluorotoluene (Gasoline Surrogate)	104		% Recovery	M EPA 8015	07/07/99

Sample : **G14203 (MW-9)** Matrix : Water

Sample Date :06/24/99

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**51**	0.50	ug/L	EPA 8020	07/07/99
Toluene	**10**	0.50	ug/L	EPA 8020	07/07/99
Ethylbenzene	**11**	0.50	ug/L	EPA 8020	07/07/99
Total Xylenes	**39**	1.5	ug/L	EPA 8020	07/07/99
Methyl-t-butyl ether	**< 5.0**	5.0	ug/L	EPA 8020	07/07/99
TPH as Gasoline	**380**	50	ug/L	M EPA 8015	07/07/99
aaa-Trifluorotoluene (8020 Surrogate)	100		% Recovery	EPA 8020	07/07/99
aaa-Trifluorotoluene (Gasoline Surrogate)	96.5		% Recovery	M EPA 8015	07/07/99

Approved By: Joel Kiff

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

KIFF ANALYTICAL LLC

Report Number : 14466

Date : 07/16/99

Project Name : **Earth Systems**

Project Number :

Sample : **G14204 (MW-2)** Matrix : Water

Sample Date :06/24/99

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.50**	0.50	ug/L	EPA 8020	07/07/99
Toluene	**0.66**	0.50	ug/L	EPA 8020	07/07/99
Ethylbenzene	**< 0.50**	0.50	ug/L	EPA 8020	07/07/99
Total Xylenes	**< 1.5**	1.5	ug/L	EPA 8020	07/07/99
Methyl-t-butyl ether	**< 5.0**	5.0	ug/L	EPA 8020	07/07/99
TPH as Gasoline	**< 50**	50	ug/L	M EPA 8015	07/07/99
aaa-Trifluorotoluene (8020 Surrogate)	104		% Recovery	EPA 8020	07/07/99
aaa-Trifluorotoluene (Gasoline Surrogate)	102		% Recovery	M EPA 8015	07/07/99

Sample : **G14205 (MW-5)** Matrix : Water

Sample Date :06/24/99

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**48**	0.50	ug/L	EPA 8020	07/07/99
Toluene	**8.8**	0.50	ug/L	EPA 8020	07/07/99
Ethylbenzene	**8.6**	0.50	ug/L	EPA 8020	07/07/99
Total Xylenes	**33**	1.5	ug/L	EPA 8020	07/07/99
Methyl-t-butyl ether	**< 5.0**	5.0	ug/L	EPA 8020	07/07/99
TPH as Gasoline	**290**	50	ug/L	M EPA 8015	07/07/99
aaa-Trifluorotoluene (8020 Surrogate)	99.7		% Recovery	EPA 8020	07/07/99
aaa-Trifluorotoluene (Gasoline Surrogate)	98.1		% Recovery	M EPA 8015	07/07/99

Approved By: Joel Kiff

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

KIFF ANALYTICAL LLC

Report Number : 14466

Date : 07/16/99

Project Name : **Earth Systems**

Project Number :

Sample : **G14206 (MW-7)** Matrix : Water

Sample Date :06/24/99

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**89**	0.50	ug/L	EPA 8020	07/07/99
Toluene	**16**	0.50	ug/L	EPA 8020	07/07/99
Ethylbenzene	**16**	0.50	ug/L	EPA 8020	07/07/99
Total Xylenes	**64**	1.5	ug/L	EPA 8020	07/07/99
Methyl-t-butyl ether	**< 5.0**	5.0	ug/L	EPA 8020	07/07/99
TPH as Gasoline	**620**	50	ug/L	M EPA 8015	07/07/99
aaa-Trifluorotoluene (8020 Surrogate)	94.5		% Recovery	EPA 8020	07/07/99
aaa-Trifluorotoluene (Gasoline Surrogate)	99.6		% Recovery	M EPA 8015	07/07/99

Approved By: Joel Kiff

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

Entech Analytical Labs, Inc.

525 Del Rey Avenue, Suite E
Sunnyvale, CA 94086

QUALITY CONTROL RESULTS SUMMARY

METHOD: Gas Chromatography - Volatile Organics

QC Batch #: VOC2W990624
Matrix: Water
Units: µg/L

Date Analyzed: 06/24/99
Quality Control Sample: Blank Spike

PARAMETER	Method #	SA µg/L	SR µg/L	SP µg/L	**SP % R**	SPD µg/L	**SPD %R**	RPD	QC LIMITS RPD	QC LIMITS %R
Benzene	602/8020	40	ND	42	**105**	41	**102**	3.1	25	83-113
Chlorobenzene	601/8010	40	ND	43	**108**	42	**105**	2.8	25	82-123
1,1-Dichloroethane	601/8010	40	ND	42	**104**	40	**101**	3.4	25	81-130
Toluene	602/8020	40	ND	39	**97**	38	**94**	3.1	25	80-120
Trichloroethene	601/8010	40	ND	48	**119**	47	**117**	1.7	25	74-129
2-Bromo-1-chloropropane	601/8010		93%	97%		97%				75-125
aaa-Trifluorotoluene	602/8020		115%	109%		107%				75-125

Note: LCS and LCSD results reported for the following Parameters:
All

Definition of Terms:

na: Not Analyzed in QC batch
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

Subcontract Lab: APCL		Date Sent: 6/25/99	Project Name: Earth Systems		Due Date: 7/2/99	
Sample ID and Source	Matrix	Required Analysis	Date Taken	Time Taken	Containers	Pres?
G14200 (MW-8)	W	PNAs by 8310	6/24/99		1x1 L AG	NO
G14201 (MW-1)						
G14202 (MW-3)						
G14203 (MW-9)						
G14204 (MW-2)						
G14205 (MW-5)						
G14206 (MW-7)						

6/25/99

Relinquished By:	Received By:	Date:	Time:
Jennifer Dunkin	Via CA Overnight	6/25/99	18:00
Relinquished By:	Received By:	Date: 06/28/99	Time: 0850
Relinquished By:	Received By:	Date:	Time:

Notes:

Entech Analytical Labs, Inc.

14430

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

Subcontract Chain of Custody

Subcontract Lab: Kiff		Date Sent: 6/25/99	Project Name: Earth Systems		Due Date: 7/2/99	
Sample ID and Source	Matrix	Required Analysis	Date Taken	Time Taken	Containers	Pres?
G14200 (MW-8)	W	Diesel & Motor Oil	6/24/99		1x1 L A/G	NO -01
G14201 (MW-1)						-02
G14202 (MW-3)						-03
G14203 (MW-9)						-04
G14204 (MW-2)						-05
G14205 (MW-5)						-06
G14206 (MW-7)						-07

6/25/99

Relinquished By:	Received By:	Date:	Time:
Jennifer Durkin	via CA Overnight	6/25/99	18:00
Relinquished By:	Received By:	Date:	Time:
Relinquished By:	Received By:	Date:	Time:
	Mary Corbett	062699	1955

Notes: Cooler temp. @ 15°C upon receipt; received via CA overnight -mec 062699 1955

Entech Analytical Labs, Inc.

14466 mrc
~~14451~~

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

Subcontract Chain of Custody

Subcontract Lab: Kiff		Date Sent: 6/28/99	Project Name: Earth Systems		Due Date: 7/6/99	
Sample ID and Source	Matrix	Required Analysis	Date Taken	Time Taken	Containers	Pres?
G14200(MW-8)	L	GPHG, BTEX, MTBE	6/24	1013	2 VOAs	HCl -01
G14201(MW-1)				1035		-02
G14202(MW-3)				1107		-03
G14203(MW-9)				1138		-04
G14204(MW-2)				1230		-05
G14205(MW-5)				12:58		-06
G14206(MW-7)				13:20		-07

mg 6/28/99

Relinquished By:	Received By:	Date:	Time:
Mara Gnesis	Calif. overnight	6/28/99	1800
Relinquished By:	Received By: Margaret Edwards	Date: 6/29/99	Time: 0730
Relinquished By:	Received By:	Date:	Time:

Notes: received via Ca. overnight @ 6°C mpe 6/29

BLAINE TECH SERVICES INC.

1680 ROGERS AVENUE
SAN JOSE, CALIFORNIA 95112-1105
FAX (408) 573-7771
PHONE (408) 573-0555

CHAIN OF CUSTODY: BTS #990624-P1

CLIENT: EARTH SYSTEMS

SITE: MARINERS SQUARE
ALAMEDA, CA

LAB: ENTECH

DHS #:

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND

☐ EPA ☐ RWQCB REGION ____
☐ LIA
☐ OTHER

SPECIAL INSTRUCTIONS

INVOICE TO: MARINER SQUARE ASSOCIATES
ATTN: JOHN BEERY
2900 MAIN ST. SUITE 100
ALAMEDA, CA 94601

REPORT TO: EARTH SYSTEMS
ATTN: JOANNE BUCKTHALL

CONDUCT ANALYSIS TO DETECT

SAMPLE I.D.		MATRIX S=SOIL W=H2O	CONTAINERS TOTAL	C=COMPOSITE ALL CONTAINERS	TPH-G (8015) (8020)	TPH-DIESEL (8015)	TPH-MOTOR OIL	PNA by 8310	VINYL CHLORIDE by 8010	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
MW-8	6/24 10:13	W	10		X	X	X	X	X				G14200
MW-1	10:35												G14201
MW-3	11:07												G14202
MW-9	11:38												G14203
MW-2	12:30												G14204
MW-5	12:58												G14205
MW-7	13:20												G14206

SAMPLING COMPLETED	DATE	TIME
	6/24/99	13:30

SAMPLING PERFORMED BY: PAUL SAUNA

RESULTS NEEDED NO LATER THAN: PER CLIENT

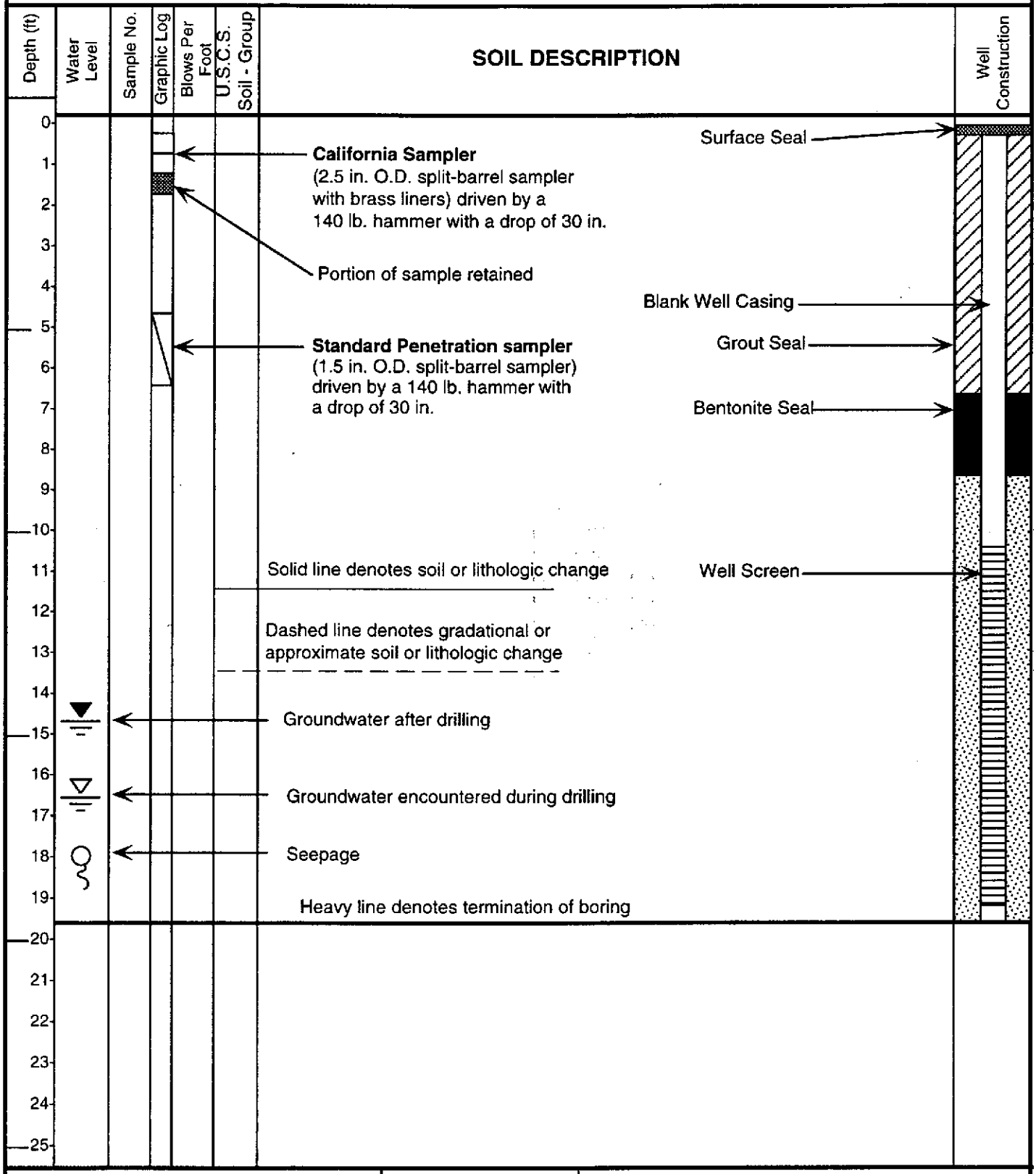
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
Paul Sauna	6/25	2:40	S. McClure	6/25/99	2:40
S. McClure	6/25/99	3:40	Jennifer Durkin	6/25/99	17:10

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #

ATTACHMENT B

Well Completion and Boring Logs
for Well MW-6A and MW-10

Key to Exploratory Boring Logs



Earth Systems Consultants
Northern California

Mariner Square
Alameda, California

BORING LOG EXPLANATION

Figure B2

File No. NFE-4392-01
September 1999

Signature of Registered Professional _____

Depth of boring: 15 ft.	Screen Interval: 3-13	Drilling Company: BCA
Diameter of Boring: 2 in.	Slot Size: 0.010	Driller: Jeff
Date Drilled: 7/6/99	Casing Diameter: 1 in.	Drilling Method: Limited access direct push
Field Geologist: J. Buckthal	Annulus: Bentonite over #2/12 sand	Depth to Groundwater: 4 ft.

Log of Exploratory Boring No. MW-6A

Depth (ft)	Water Level	Sample No.	Graphic Log	Blows Per Foot	U.S.C.S. Soil - Group	
0		No soil samples collected				Surface - Soil
1					SP	0-7' Fine grained, poorly graded **SAND**, brown, moist to wet, no hydrocarbon odor. (Fill)
2						
3						
4	▼					
5						
6						
7						7-9' Same, except dark gray, wet, moderate to strong hydrocarbon odor.
8						
9						9-10' Color change to brown, slight hydrocarbon odor.
10						10-14.5' Color change to dark gray.
11						
12						
13						
14						
15						**BAY MUD** at ~14.5 feet
16						Boring terminated at 15 feet. Groundwater encountered at 4 feet.
17						
18						
19						
20						
21						
22						
23						
24						
25						

Well Construction: Slough

Earth Systems Consultants
Northern California

Mariner Square
Alameda, California

LOG OF BORING MW-6A

Figure B3

File No. NFE-4392-01
September 1999

Signature of Registered Professional _____

Depth of boring: 13 ft.	Screen Interval: 3-13	Drilling Company: BCA
Diameter of Boring: 2 in.	Slot Size: 0.010	Driller: Jeff
Date Drilled: 7/6/99	Casing Diameter: 1 in.	Drilling Method: Limited access direct push
Field Geologist: J. Buckthal	Annulus: Bentonite over #2/12 sand	Depth to Groundwater: 4.5 ft.

Log of Exploratory Boring No. MW-10

Depth (ft)	Water Level	Sample No.	Graphic Log	Blows Per Foot	U.S.C.S. Soil - Group	Description	Well Construction
0		No soil samples collected				Surface - 4 inch thick **CONCRETE**.	
1					SP	0-6' Fine grained, poorly graded **SAND**, brown, moist, no hydrocarbon odor.	
2							
3							
4	▼						
5	▽						
6						6-13' Same, except color change to gray, wet, slight hydrocarbon odor.	
7							
8							
9							
10							
11							
12							
13							
14						Boring terminated at 13 feet. Groundwater encountered at 4.5 feet.	
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

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Northern California

Mariner Square
Alameda, California

LOG OF BORING MW-10

Figure B4

ATTACHMENT C

Well Monitoring Forms and Laboratory Analytical Reports
for August 10, 1999 sampling

WELL GAUGING DATA

Project # 990810R-2 Date 8-10-99 Client Earth Systems

Site Mariner Square

Well ID	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	
MW-1	2					4.82	11.55		
MW-2	2					4.72	14.10		
MW-3	2					3.01	11.70		
MW-4	2					4.90	12.92		
MW-5	2					3.71	12.20		
MW-6R	1	Sheen Odor				4.96	11.95		
MW-7	4					4.76	13.45		
MW-8	4					5.48	13.90		
MW-9	4					3.56	13.32		
MW-10	1	Sheen Odor				4.55	12.00		

WELL MONITORING DATA SHEET

Project #: 990810 R-2	Client: Earth Systems
Sampler: Sim	Start Date: 8-10-99
Well I.D.: MW-4	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 9.91	Depth to Water: 4.90
Before: After:	Before: After:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH

Purge Method: Bailer; (Disposable Bailer); Middleburg; Electric Submersible; Extraction Pump; Other: ___

Sampling Method: Bailer; (Disposable Bailer); Extraction Port; Other: ___

0.8 (Gals.) X 3 = 2.4 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
2"	0.16	5"	1.02
3"	0.37	6"	1.47
4"	0.65	Other	radius² * 0.163

Time	Temp (°F)	pH	Cond.	Turbidity	Gals. Removed	Observations
11:15	66.5	6.5	1167	>200	1	turbid
11:18	66.2	6.6	1081	>200	2	
11:21	66.8	6.7	924	>200	3	

Did well dewater? Yes (No) Gallons actually evacuated: 3

Sampling Time: 11:30 Sampling Date: 8-10-99

Sample I.D.: MW-4 Laboratory:

Analyzed for: (TPH-G BTEX MTBE TPH-D) Other: PNA by 8310, vinyl chloride

Equipment Blank I.D.: @ Time Duplicate I.D.:

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
ORP (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL DEVELOPMENT DATA SHEET

Project #: 990810R-2	Client: Earth Systems
Developer: Sim	Date Developed: 8-10-99
Well I.D. MW-6A	Well Diameter: (circle one) 2 3 4 6 1
Total Well Depth: Before 11.42 After 11.95	Depth to Water: Before 4.14 After 4.96
Reason not developed:	If Free Product, thickness:
Additional Notations:	

Volume Conversion Factor (VCF):
$\{12 \times (d^2/4) \times \pi\} / 231$
where
12 = in / foot
d = diameter (in.)
π = 3.1416
231 = in 3/gal

Well dia.		VCF
2"	=	0.16
3"	=	0.37
4"	=	0.65
6"	=	1.47
10"	=	4.08
12"	=	5.87

0.5 x 13 = 6.5
1 Case Volume x Specified Volumes = gallons

Purging Device: Bailer ☐ Electric Submersible ☐
Middleburg ☐ Suction Pump ☐

Type of Installed Pump ~~Diaphragm Pump;~~
(Other) equipment used ~~Tubing w/ check valve~~ Pin Bailer

TIME	TEMP (F)	pH	COND.	TURBIDITY	VOLUME REMOVED:	NOTATIONS:
13:35	67.5	7.5	1099	7200	.5	turbid / sheen
13:37	67.6	7.5	1100	7200	1.0	silt Dark
13:39	67.2	7.4	1125	7200	1.5	Heavy
13:41	67.6	7.6	1023	7200	2.0	Agitated pump
13:43	67.8	7.6	1003	7200	2.5	Odor (Mild)
13:45	66.9	7.7	1042	7200	3.0	Still Heavy Silt
13:47	67.0	7.6	1050	7200	3.5	Agitated pump
13:49	66.5	7.6	1035	7200	4.0	Still Heavy
13:51	67.0	7.6	1020	7200	4.5	Dark
13:53	66.8	7.6	1005	7200	5.0	↓

Did Well Dewater? NO If yes, note above. Gallons Actually Evacuated: 6.5

WELL MONITORING DATA SHEET

Project #: 990860R-2	Client: Earth Systems
Sampler: Jim	Start Date: 8-10-99
Well I.D.: MW-6A	Well Diameter: 2 3 4 6 8 1
Total Well Depth: 11.95	Depth to Water: 4.96
Before: [redacted] After:	Before: After:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH

Purge Method: Bailer, Disposable Bailer, Middleburg, Electric Submersible, Extraction Pump, Other: ~~Other~~ Pin Bailer

Sampling Method: Bailer, Disposable Bailer, Extraction Port, Other: Pin Bailer

0.5 (Gals.) X 13 = 6.5 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
2"	0.16	5"	1.02
3"	0.37	6"	1.47
4"	0.65	Other	radius² * 0.163

Time	Temp (°F)	pH	Cond.	Turbidity	Gals. Removed	Observations
14:10	66.9	7.6	1018	>200	5.5	Heavy Lust
14:12	66.5	7.5	1023	>200	6.0	clearing / Hit bottom
14:14	66.3	7.5	1014	>200	6.5	waited 15 minutes
					2.3" per	for 80% Recharge
					Minute	@ DTW 7.23

Did well dewater? Yes (No) Gallons actually evacuated: 6.5

Sampling Time: 14:20 Sampling Date: 8-10-99

Sample I.D.: MW-6A Laboratory: ENTECH

Analyzed for: (TPH-G BTEX MTBE TPH-D) Other: PNA by 8310, vinyl chloride

Equipment Blank I.D.: @ Time Duplicate I.D.:

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
ORP (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL DEVELOPMENT DATA SHEET

Project #: 990810 R-2	Client: Earth Systems
Developer: Sim	Date Developed: 8-10-99
Well I.D. MW-10	Well Diameter: (circle one) 2 3 4 6 1
Total Well Depth: Before 10.90 After ~~12.00~~	Depth to Water: Before 4.55 After ~~4.86~~
Reason not developed:	If Free Product, thickness:
Additional Notations:	

Volume Conversion Factor (VCF):	Well dia.		VCF
(12 x (d^2/4) x π) /231	2"	=	0.16
where	3"	=	0.37
12 = in / foot	4"	=	0.65
d = diameter (in.)	6"	=	1.47
π = 3.1416	10"	=	4.08
231 = in 3/gal	12"	=	6.87

0.5	x	13		6.5
1 Case Volume		Specified Volumes	=	gallons

Purging Device: Bailer ☐ Electric Submersible ☐
Middleburg ☐ Suction Pump ☐
Type of Installed Pump Diaphram pump / Tubing w/ Check Valve
Other equipment used

TIME	TEMP (F)	pH	COND.	TURBIDITY	VOLUME REMOVED:	NOTATIONS:
15:10	68.3	6.9	1878	>200	0.5	Strong odor
15:12	68.1	6.9	1889	>200	1.0	Sheen
15:14	68.6	7.2	1769	>200	1.5	Heavily turbid
15:16	69.0	7.2	1671	>200	2.0	Agitated Pump
15:18	68.7	7.3	1622	>200	2.5	Odor persisting
15:20	69.1	7.4	1628	>200	3.0	Clearing
15:22	69.2	7.4	1619	>200	3.5	Still Heavy
15:24	69.3	7.4	1650	>200	4.0	but clearing
15:26	68.7	7.4	1635	>200	4.5	Bottom Felt
15:28	68.4	7.4	1651	>200	5.0	

Did Well Dewater? NO If yes, note above. Gallons Actually Evacuated: 6.5

WELL MONITORING DATA SHEET

Project #: 990810R-2	Client: Earth Systems
Sampler: Sim	Start Date: 8-10-99
Well I.D.: MW-10	Well Diameter: 2 3 4 6 8 1
Total Well Depth: 12.00	Depth to Water: 4.86
Before: 10.90 After: 12.00	Before: 4.55 After: 4.86
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH

Purge Method: Bailer, Disposable Bailer, Middleburg, Electric Submersible, Extraction Pump, Other: ~~Peristaltic~~ Diaphram Pump

Sampling Method: Bailer, Disposable Bailer, Extraction Port, Other: Pin Bailer

0.5 (Gals.) X 13 = 6.5 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
2"	0.16	5"	1.02
3"	0.37	6"	1.47
4"	0.65	Other	radius² * 0.163

Time	Temp (°F)	pH	Cond.	Turbidity	Gals. Removed	Observations
15:45	68.1	7.4	1662	156.2	5.5	Hard Bottom
15:47	67.9	7.4	1660	147.8	6.0	clearing
15:49	67.8	7.4	1632	139.6	6.5	Good Recharge
						3.5" minutes per
					Waited 15 minutes Then sampled	

Did well dewater? Yes (No) Gallons actually evacuated: 6.5

Sampling Time: 15:56 Sampling Date: 8-16-99

Sample I.D.: MW-10 Laboratory: ENTECH

Analyzed for: (TPH-G BTEX MTBE TPH-D) Other: PNA by 8310

Equipment Blank I.D.: @ Time Duplicate I.D.:

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
ORP (if req'd):	Pre-purge:	mV	Post-purge:	mV

Entech Analytical Labs, Inc.

CA ELAP# I-2346

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

Earth Systems Consultants
47853 Warm Springs Blvd.
Fremont, CA 94539-7400
Attn: Jeanne Buckthal

Date: 8/18/99
Date Received: 8/11/99
Project: BTS # 990810R-2
PO #: Mariner's Square Assoc.
Sampled By: Client

Certified Analytical Report

Water Sample Analysis:

Sample ID	MW-4			MW-6A			MW-10				
Sample Date	8/10/99			8/10/99			8/10/99				
Sample Time	11:30			14:20			15:56				
Lab #	15751-001			15751-002			15751-003				
	Result	DF	DLR	Result	DF	DLR	Result	DF	DLR	PQL	Method
Results in µg/Liter:											
Analysis Date	8/13/99			8/14/99			8/14/99				
TPH-Diesel	**270** x	1.0	50	**5,400** x	1.0	50	**3,000** x	1.0	50	50	8015M
TPH-Motor Oil	**320**	1.0	250	**3,900** x	1.0	250	**8,200** x	1.0	250	250	8015M
Analysis Date	8/13/99			8/14/99			8/14/99				
TPH-Gas	**93**	1.0	50	**770**	1.0	50	**1,300**	1.0	50	50	8015M
MTBE	**11**	1.0	5.0	**ND**	1.0	5.0	**ND**	1.0	5.0	5.0	8020
Benzene	**0.59**	1.0	0.50	**1.7**	1.0	0.50	**9.2**	1.0	0.50	0.50	8020
Toluene	**1.4**	1.0	0.50	**ND**	1.0	0.50	**1.9**	1.0	0.50	0.50	8020
Ethyl Benzene	**ND**	1.0	0.50	**ND**	1.0	0.50	**12**	1.0	0.50	0.50	8020
Xylenes (total)	**4.2**	1.0	0.50	**1.9**	1.0	0.50	**46**	1.0	0.50	0.50	8020
Analysis Date	8/14/99			8/14/99							
Vinyl Chloride	**ND**	1.0	0.50	**ND**	1.0	0.50	**na**			0.50	8010

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

· na = not analyzed

· Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #I-2346)

Michelle L. Anderson, Lab Director

Environmental Analysis Since 1983

BLAINE TECH SERVICES INC.
1680 ROGERS AVENUE
SAN JOSE, CALIFORNIA 95112
FAX (408) 573-7771
PHONE (408) 573-0555

CHAIN OF CUSTODY
BTI # 990810R-2

CLIENT: EARTH Systems Consultants

SITE: MARINER SQUARE
Alameda, CA

CONDUCT ANALYSIS TO DETECT

LAB: Entech | DHS #

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND
- ☐ EPA
- ☐ LIA
- ☐ OTHER
- ☐ RWQCB REGION ______

SPECIAL INSTRUCTIONS
INVOICE TO: MARINER SQUARE ASSOCIATES
ATTN: JOHN BEERY
2900 MAIN ST. #100
Alameda, CA 94501
REPORT TO: EARTH SYSTEMS
ATTN: JOANNE Buckthal

C = COMPOSITE ALL CONTAINERS

SAMPLE I.D.			MATRIX (S = SOIL, W = H2O)	CONTAINERS TOTAL		(8015) TPH-G (8020) / BTEX (8020) / MTBE	TPH Diesel	TPH motor oil	PNA's by 8310	Vinyl Chloride by 8010	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
MW-4	8/10	11:30	W	9	(4)	X	X	X	X	X				9?08751-001
MW-6A	|	14:20	|	~~8~~ 7	(4) 8th	↓	↓	↓	↓	X				-002
MW-10	|	15:56	|	5		↓	↓	↓	↓					-003

SAMPLING COMPLETED — DATE: 8/10 TIME: 15:56
SAMPLING PERFORMED BY: Jim Rosa

RESULTS NEEDED NO LATER THAN: Per Client

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
Jim M. Rosa	8/11	2:40	T. O.	8/11/99	2:40
T. O.	8/11/99	18:45	[signature]	8/11/99	5:3 pm

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #

AUG. 26. 1999 6:38PM No. 3828 P. 6/6