

PORT OF OAKLAND

February 21, 2001

Mr. Barney Chan
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502

Subject: Annual Groundwater Monitoring Report, Former Seabreeze Yacht Center, Oakland

Dear Mr. Chan:

Please find enclosed the annual groundwater monitoring report for the former Seabreeze Yacht Center, 280 Sixth Avenue, Oakland. This report documents the results of sampling monitoring wells MW-SB2, MW-SB3, MW-SB4, and MW-SB5 for total extractable hydrocarbons (TEPH) as diesel with silica gel cleanup, and MTBE.

The results indicate that neither TEPH (0.05mg/l) or MTBE (0.005mg/l) were detected in the four monitoring wells. If you have any questions, please contact me at 510-627-1184.

Sincerely,

Douglas P. Herman
Associate Port Environmental Scientist

Cc (w/encl.): Betty Graham, RWQCB

Cc:(w/o encl): Yane Nordhav, Baseline

C:\win\mydocs\projects\seebreeze\february22,2001 transmittal

BASELINE

ENVIRONMENTAL CONSULTING

15 February 2001
S9171-C1

Mr. Douglas Herman
Port of Oakland
Environmental Health and Safety Compliance Department
530 Water Street
Oakland, California 94607

Subject: Annual Groundwater Monitoring Report, January 2001, Former Seabreeze Yacht Center, Inc. Site, 280 6th Avenue, Oakland, California

Dear Douglas:

This report documents the groundwater sampling activities performed in January 2001 at the former Seabreeze Yacht Center, Inc. site (Site), located at 280 6th Avenue in Oakland, California (Figure 1). The groundwater monitoring was conducted in accordance with the 2 September 1997 letter from Alameda County Health Care Services Agency, Department of Environmental Health (County) to the Port. The County approved the Port's request to: 1) modify the groundwater monitoring network to include only monitoring wells MW-SB2, MW-SB3, MW-SB4, and MW-SB5 (Figure 2); 2) perform groundwater monitoring on an annual basis; and 3) analyze collected groundwater samples for total extractable petroleum hydrocarbons (TEPH) as diesel, with a silica gel cleanup. The County required the Port to conduct groundwater monitoring during the first quarter of each year for an unspecified period. The Port also decided to analyze collected groundwater samples for methyl tertiary butyl ether (MTBE) beginning in February 2000.

FIELD ACTIVITIES, JANUARY 2001

The presence of free product was checked and water levels were measured in the monitoring wells on 17 January 2001 using a dual-interface probe. Water levels were measured and recorded to the nearest one-hundredth of a foot. The dual-interface probe was decontaminated after each use by washing in a trisodium phosphate (TSP) solution and rinsing with deionized water. No sheen or free product was observed in any of the wells.

During groundwater monitoring activities last year (February 2000), the aboveground portion of monitoring well MW-SB2 could not be located and was later determined to have been

Mr. Douglas Herman
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damaged during site grading activities. In March 2000, the damaged portion of the well was repaired and the well was resurveyed. The survey is included in Attachment A.

Following collection of water level measurements, the monitoring network wells were purged of approximately three well casing volumes. The wells were slowly purged using a peristaltic pump with new, disposable polyethylene tubing lowered inside the wells (the portion of tubing attached to the pump consisted of silicone; the remaining sections of the tubing consisted of polyethylene). Electrical conductivity, turbidity, pH, and temperature parameters of the purge water were monitored during purging. Stable parameter readings were obtained from all wells. Dissolved oxygen readings of the groundwater from each well were collected after purging activities.

The water levels in all the monitoring wells did not recover to 80 percent of their original water levels on the day the wells were purged. Therefore, groundwater samples were collected on 19 January 2001 after sufficient water was available in all the wells. Groundwater samples were collected from the wells using a peristaltic pump with new disposable tubing.

The groundwater samples were submitted under chain-of-custody protocol to Chromalab of Pleasanton and were analyzed for TEPH as diesel (EPA Method 8015M) and MTBE (EPA Method 8021B). Prior to the TEPH analysis, the samples were subjected to a silica gel cleanup (EPA Method 3630). The groundwater sampling forms, documenting sampling activities, are included in Attachment B and the chain-of-custody form is included in Attachment C.

One drum, containing purge and decontamination water, was generated from the January 2001 sampling activities. The drum was labeled and stored on-site for future off-site disposal (conducted by the Port).

ANALYTICAL RESULTS

The analytical results are summarized in Table 1 and the laboratory report is presented in Attachment C. TEPH as diesel and MTBE were not identified in any of the samples collected from the monitoring network wells above the laboratory reporting limits.

A quality control review of the laboratory report was conducted by BASELINE; the corresponding quality control checklist is provided in Attachment D. In summary, the samples were analyzed within an appropriate time frame and the laboratory quality control results were reported within laboratory specified recovery limits.

Mr. Douglas Herman
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GROUNDWATER FLOW DIRECTION

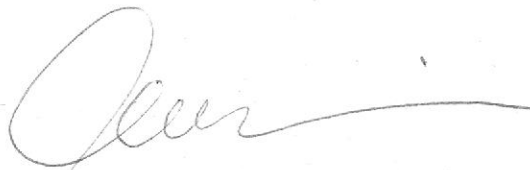
Recently collected and historic groundwater elevation data are summarized in Table 2. The groundwater elevation data collected on 17 January 2001 were used to develop groundwater elevation contours (Figure 2). The groundwater flow direction is generally toward the east.

Should you have any questions, or need further information, please contact us at your convenience.

Sincerely,



Yane Nordhav
Principal

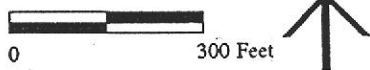
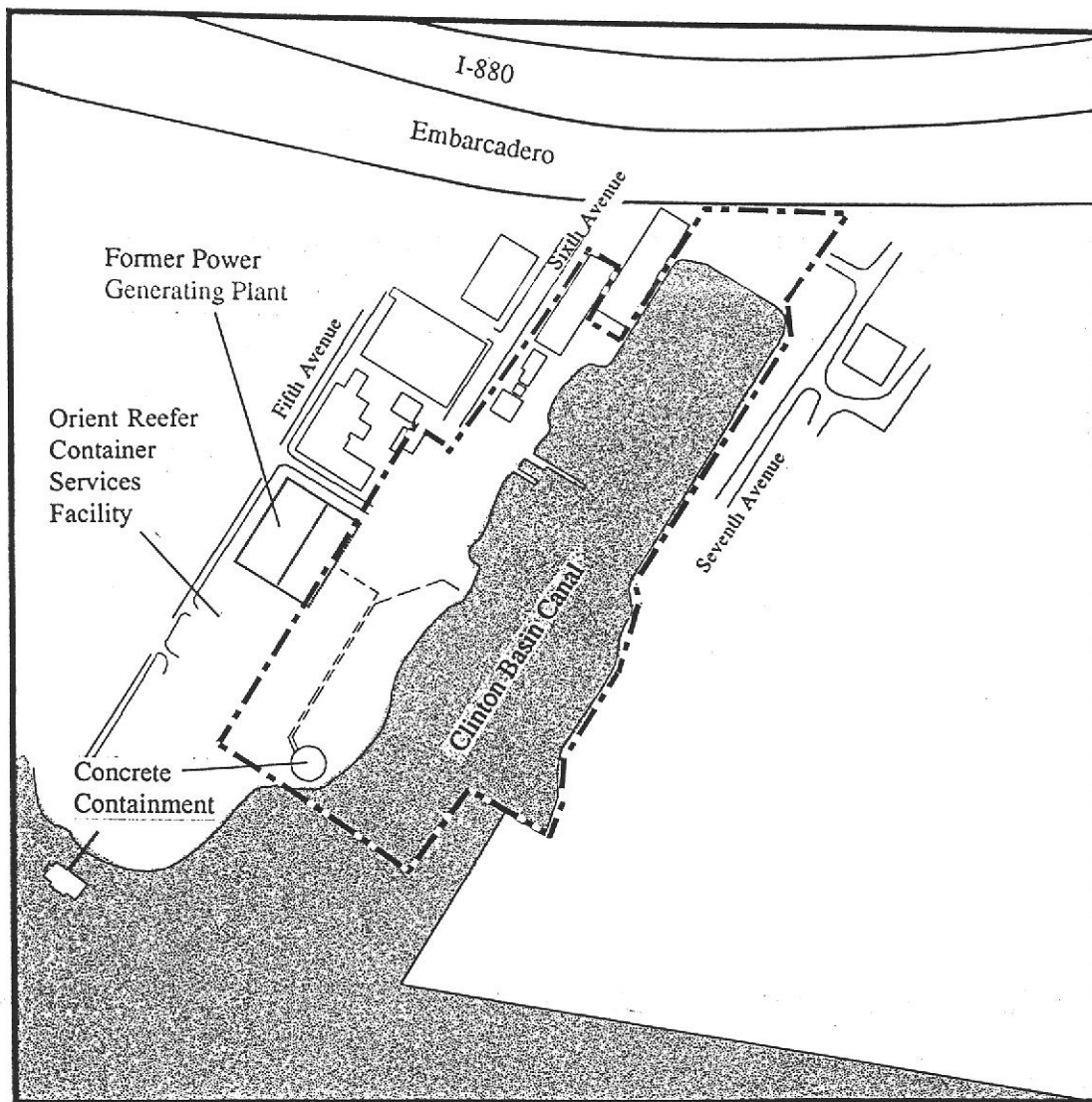


Rhodora Del Rosario
Civil Engineer, PE #C57926

YN:RD:cr
Attachments

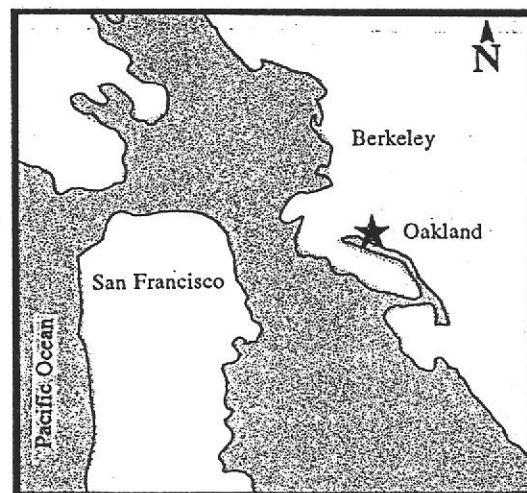
PROJECT AND REGIONAL LOCATION

Figure 1



Legend

--- Seabreeze Yacht Center

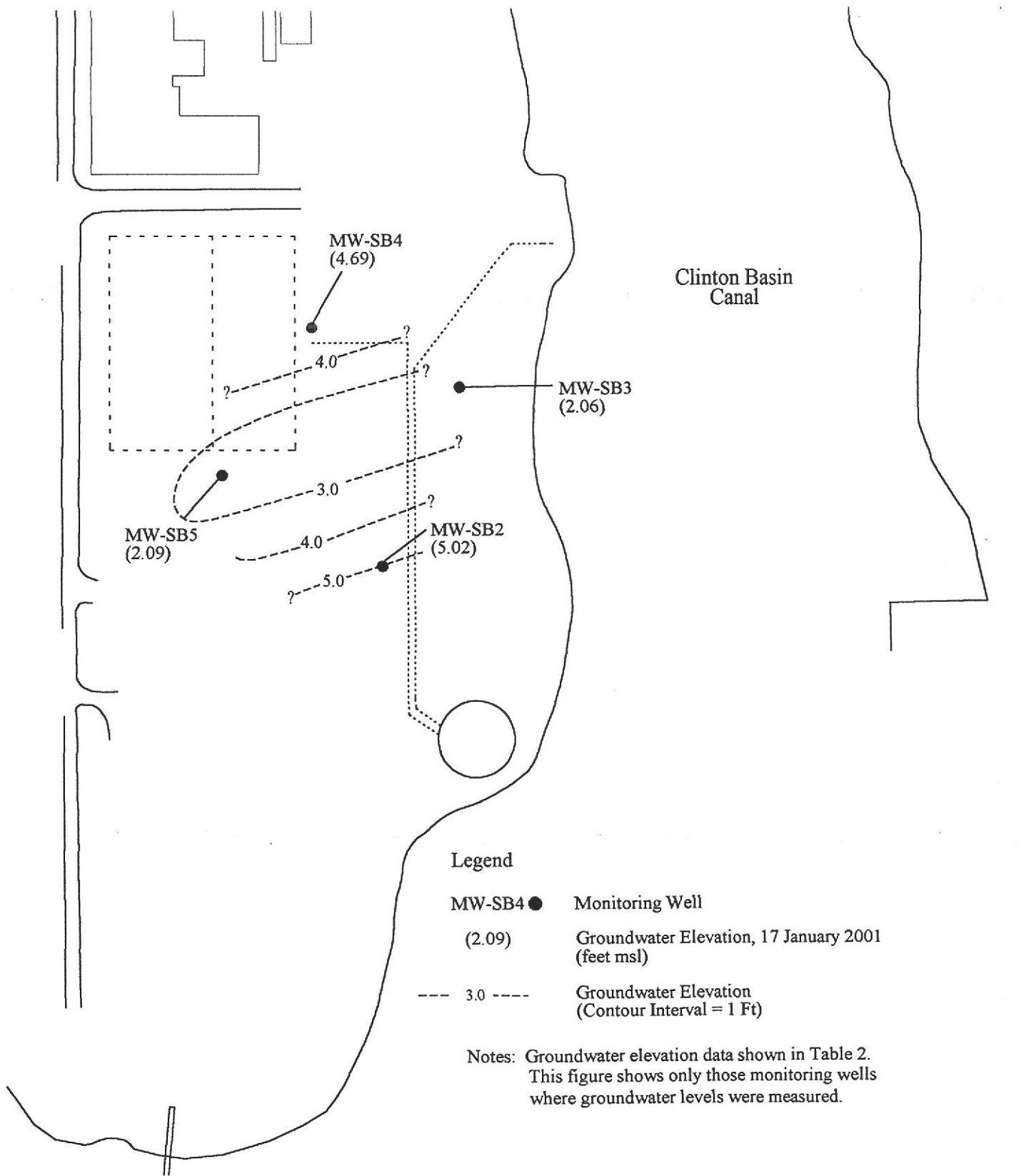


Seabreeze Yacht Center Oakland, California

BASELINE

MONITORING WELL LOCATIONS AND GROUNDWATER CONTOUR, JANUARY 2001

Figure 2



Seabreeze Yacht Center
Sixth Avenue
Oakland, California

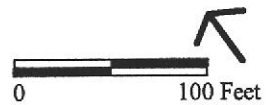


TABLE 1
ANALYTICAL RESULTS
Seabreeze Yacht Center, Oakland, California
(mg/L)

Sample ID	Sample Date	Metals ¹		Total Extractable Hydrocarbons ²			MTBE ³
		Lead	Copper	Diesel	Bunker C	Motor Oil	
PW-2	02/02/95	0.0043	--	--	--	--	--
	03/06/95	--	--	1.7 ^{4,5}	4.4 ^{4,5}	1.1 ^{4,5}	--
	07/01/96	<0.003	<0.01	<0.049	<0.3	--	--
	09/16/96	<0.003 ¹¹	<0.005 ¹²	<0.05	<0.5	<0.25	--
	12/11/96	0.0101 ¹¹	<0.003 ¹²	0.11 ¹⁴	<0.5	<0.25	--
	03/14/97	0.00401 ¹¹	<0.003 ¹²	<0.05	<0.5	<0.25	--
	06/20/97	--	--	<0.05	--	--	--
MW-SB2	04/19/91	<0.07	0.0481	--	--	--	--
	07/09/91	<0.06 ⁸	<0.02 ⁹	--	--	--	--
	01/10/94	<0.10 ⁸	<0.02 ⁹	--	--	--	--
	01/26/94	0.0048 ⁹	0.014 ⁹	--	--	--	--
	03/06/95	--	--	16.0 ^{4,5}	28.0 ^{4,5}	4.9 ^{4,5}	--
	07/01/96	<0.003	0.055	<0.05	<0.3	--	--
	09/16/96 ¹⁰	<0.003 ¹¹	<0.005 ¹²	<0.05	<0.5	<0.25	--
	12/11/96	0.00855 ¹¹	0.00354 ¹²	0.16 ¹⁴	<0.5	<0.25	--
	03/14/97	0.00314 ¹¹	<0.003 ¹²	0.061	<0.5	<0.25	--
	06/20/97	--	--	0.15	--	--	--
	01/28/98	--	--	<0.05 ¹⁶	--	--	--
	01/06/99	--	--	<0.048	--	--	--
	02/04/00 ¹⁹	--	--	--	--	--	--
01/19/01	--	--	<0.05	--	--	<0.005	
MW-SB2A	03/06/95	--	--	18.0 ^{4,5,6}	33.0 ^{4,5,6}	<25.0 ^{4,5,6}	--
	07/01/96	<0.003	0.065	0.17 ⁷	<0.3 ⁵	--	--
	09/16/96	<0.003 ¹¹	<0.005 ¹²	0.17	<0.5 ⁵	<0.25	--
MW-SB3	03/06/95	--	--	2.3 ^{4,5}	5.8 ^{4,5}	1.5 ^{4,5}	--
	07/01/96	0.0036	<0.01	<0.049	<0.3	--	--
	09/16/96	<0.003 ¹¹	<0.005 ¹²	<0.05 ⁴	<0.5	0.28 ⁴	--
	12/11/96	<0.003 ¹¹	<0.003 ¹²	0.19 ¹⁴	<0.5	<0.25	--
	03/14/97	<0.003 ¹¹	0.00529 ¹²	0.085 ¹⁵	<0.5	<0.25	--
	06/20/97	--	--	0.15	--	--	--
	01/28/98	--	--	<0.05 ¹⁶	--	--	--
	01/06/99	--	--	<0.049 ¹⁷	--	--	--
	02/04/00	--	--	<0.05	--	--	<0.002
	01/19/01	--	--	<0.05	--	--	<0.005

(continued)

Table 1 *continued*

Sample ID	Sample Date	Metals ¹		Total Extractable Hydrocarbons ²			MTBE ³
		Lead	Copper	Diesel	Bunker C	Motor Oil	
MW-SB3A	06/20/97	--	--	0.11	--	--	--
	01/28/98	--	--	<0.05 ¹⁶	--	--	--
	01/06/99	--	--	0.13 ^{7,18}	--	--	--
	02/04/00	--	--	<0.05	--	--	<0.002
MW-SB4	03/03/95	--	--	1.4 ^{4,5}	3.0 ⁴	0.66 ⁴	--
	07/01/96	0.014	0.013	<0.049	<0.3	--	--
	09/16/96	<0.003 ¹¹	<0.005 ¹²	<0.05	<0.5	<0.25	--
	12/11/96	0.00465 ¹¹	0.00674 ¹²	0.12 ¹⁴	<0.5	<0.25	--
	03/14/97	0.00519 ¹¹	<0.003 ¹²	<0.05	<0.5	<0.25	--
	06/20/97	--	--	0.11	--	--	--
	01/28/98	--	--	<0.05 ¹⁶	--	--	--
	01/06/99	--	--	<0.049	--	--	--
	02/04/00	--	--	<0.05	--	--	<0.002
	01/19/01	--	--	<0.05	--	--	<0.005
MW-SB5	03/06/95	--	--	15.0 ^{4,5}	34.0 ^{4,5}	8.1 ^{4,5}	--
	07/01/96	0.0031	0.012	<0.049	<0.3	--	--
	09/16/96	<0.003 ¹¹	<0.005 ¹²	0.14 ^{4,13}	<0.5	<0.25	--
	12/11/96	0.00344 ¹¹	<0.003 ¹²	0.16 ¹⁴	<0.5	<0.25	--
	03/14/97	<0.003 ¹¹	0.00318 ¹²	0.29	<0.5	<0.25	--
	06/20/97	--	--	0.27	--	--	--
	01/28/98	--	--	<0.05 ¹⁶	--	--	--
	01/06/99	--	--	<0.05	--	--	--
	02/04/00	--	--	<0.05	--	--	<0.002
	01/19/01	--	--	<0.05	--	--	<0.005
MW-SB5A	03/06/95	--	--	15.0 ^{4,5,6}	31.0 ^{4,5,6}	6.9 ^{4,5,6}	--
	12/11/96	<0.003 ¹¹	<0.003 ¹²	0.081 ¹⁴	<0.5	<0.25	--
	03/14/97	<0.003 ¹¹	<0.003 ¹²	0.22	<0.5	<0.25	--

Notes: <x.x = analyte not identified above laboratory reporting limit of x.x.

x.x = concentrations reported at or above laboratory reporting limit.

-- = no analysis performed.

MW-SB2A = duplicate sample collected from well MW-SB2.

MW-SB3A = duplicate sample collected from well MW-SB3.

MW-SB5A = duplicate sample collected from well MW-SB5.

Refer to Figure 2 for well locations (note that the location of well PW-2 is not shown on Figure 2 as groundwater samples were not collected from this well in 2001).

Laboratory reports for the January 2001 sampling event are included in Attachment C.

¹ Analytical Method EPA 6010A, unless otherwise noted.

² Analytical Method California DOHS, LUFT Manual (EPA 8015M). Samples were subjected to silica gel cleanup (EPA Method 3630) prior to analysis, unless otherwise noted.

³ Analytical Method EPA 8020 or 8021B.

⁴ Sample chromatogram does not resemble hydrocarbon standard.

Table 1 *continued*

- ⁵ Samples were not subjected to silica gel cleanup prior to analysis.
- ⁶ Duplicate sample centrifuged prior to TEPH analyses.
- ⁷ Sample exhibited fuel pattern which did not resemble standard.
- ⁸ Analyzed using EPA Method 7420.
- ⁹ Analyzed using EPA Method 7210.
- ¹⁰ Sample also analyzed for mercury, arsenic, cadmium, chromium, iron, nickel, silver, and zinc. All metals were reported below the corresponding laboratory reporting limits except for iron, which was identified at 0.13 mg/L.
- ¹¹ Analyzed using EPA method 7421. Sample filtered by the laboratory prior to analysis.
- ¹² Analyzed using EPA Method 7211. Sample filtered by the laboratory prior to analysis.
- ¹³ Laboratory indicated that miscellaneous peaks were present in the diesel range.
- ¹⁴ The laboratory indicated that the analyte was also found in the corresponding method blank at a concentration of 0.063 mg/L as well as in the sample, verifying laboratory contamination. The sample chromatographic pattern matched that of the laboratory contaminant reported in the method blank. Therefore, the reported concentration is a false positive concentration.
- ¹⁵ The laboratory indicated that the chromatographic pattern of the sample matches a known laboratory contaminant. Based on telephone correspondence with Mr. Ron Chu of PACE, the laboratory contaminant may be due to contamination of the silica gel used to clean up the sample prior to analysis.
- ¹⁶ The corresponding method blank sample (laboratory sample) contained 0.067 mg/L of a hydrocarbon reported to be heavier than diesel. The laboratory indicated that the method blank sample result should not affect the data quality since the collected samples did not contain diesel above the laboratory reporting limit.
- ¹⁷ The corresponding duplicate sample, MW-SB3A, was reported to contain diesel above the laboratory reporting limit.
- ¹⁸ The laboratory indicated that the sample chromatogram contained heavier hydrocarbons than the diesel standard.
- ¹⁹ Well could not be located at time of sampling.

TABLE 2
GROUNDWATER ELEVATION DATA
Seabreeze Yacht Center, Oakland, California

Well	Date	Time	Surface Elevation (msl)	TOC Elevation (msl)	Depth to Groundwater (feet)	Groundwater Elevation (msl)
PW-2 ¹	02/15/95 ²	--	5.56	6.57	4.60	1.97
	03/03/95	9:10			3.90	2.67
	06/28/96	7:37			3.83	2.74
	09/16/96	8:54			4.19	2.38
	12/11/96	10:10			3.64	2.93
	03/12/97	9:00			4.08	2.49
	06/18/97	9:08			3.45	3.12
	01/26/98	10:43			4.0	2.57
MW-SB2 ³	04/19/91	11:09	6.2	7.18	5.38	1.8
	07/09/91	11:04			3.7	3.48
	01/10/94	12:31			3.08	4.1
	01/26/94	13:40			1.63	5.5
	11/14/94	7:30			4.8	2.38
	11/14/94	11:05			4.76	2.42
	11/14/94	14:14			4.73	2.45
	11/28/94	9:00			2.85	4.33
	03/03/95	8:50			2.84	4.34
	06/28/96	7:40			3.76	3.42
	09/16/96	9:01			4.30	2.88
	12/11/96	11:15			2.00	5.18
	03/12/97	9:02			3.48	3.70
	06/18/97	9:10			3.94	3.24
	01/26/98	10:02			1.65	5.53
	01/04/99	8:11			3.30	3.88 ⁵
	02/01/00	10:20			-- ⁶	-- ⁶
	01/17/01	9:20			8.93 ⁷	3.91
MW-SB3 ³	11/14/94	7:25	6.0	8.10	8.23	-0.13
	11/14/94	11:00			8.14	-0.04
	11/14/94	14:12			8.07	0.03
	11/28/94	8:53			6.32	1.78
	12/06/94	8:37			6.15	1.95
	03/03/95	8:40			6.78	1.32
	06/28/96	7:35			5.46	2.64
	09/16/96	8:55			5.78	2.32
	12/11/96	10:32			5.31	2.79
	03/12/97	9:05			6.03	2.07
	06/18/97	9:12			5.50	2.60
	01/26/98	9:20			5.12	2.98
	01/04/99	8:20			5.97	2.13
	02/01/00	9:50			5.81	2.29
	01/17/01	9:15			6.04	2.06

(continued)

Table 2 *continued*

Well	Date	Time	Surface Elevation (msl)	TOC Elevation (msl)	Depth to Groundwater (feet)	Groundwater Elevation (msl)
MW-SB4 ⁴	11/28/94	9:02	6.6	6.39	1.05	5.34
	03/03/95	8:35			0.90	5.49
	06/28/96	8:28			3.16	3.23
	09/16/96	8:52			2.85	3.54
	12/11/96	9:28			0.65	5.74
	03/12/97	9:07			2.53	3.86
	06/18/97	9:25			3.10	3.29
	01/26/98	10:30			0.88	5.51
	01/04/99	8:26			2.55	3.84
	02/01/00	10:43			0.61	5.78
	01/17/01	9:01			1.70	4.69
MW-SB5 ⁴	11/28/94	8:40	6.9	6.30	6.32	-0.02
	03/03/95	9:00			2.54	3.76
	06/28/96	8:45			2.43	3.87
	09/16/96	10:15			2.52	3.78
	12/11/96	14:12			3.09	3.21
	03/12/97	9:11			2.42	3.88
	06/18/97	8:56			2.32	3.98
	01/26/98	14:10			1.42	4.88
	01/05/99	12:20			3.50	2.80
	02/01/00	12:27			3.91	2.39
	01/17/01	7:54			4.21	2.09

Notes:

11/14/94: High tide 9:21; Low tide 15:50.

11/28/94: High tide 7:46.

02/15/95: High tide 5:14 and 18:03; Low tide 23:34.

03/03/95: High tide 13:14; Low tide 7:03.

06/28/96: High tide 11:41 and 22:32; Low tide 4:35 and 16:09.

09/16/96: High tide 2:57 and 14:57; Low tide 8:23 and 21:07.

12/11/96: High tide 1:02 and 11:47; Low tide 5:35 and 18:30.

03/12/97: High tide 2:17 and 15:02; Low tide 8:23 and 20:29.

06/18/97: High tide 12:18 and 23:07; Low tide 5:15 and 16:49.

01/26/98: High tide 10:10; Low tide 4:00 and 16:57.

01/04/99: High tide 2:21 and 13:06; Low tide 7:13 and 19:53.

01/05/99: High tide 3:07 and 13:54; Low tide 8:09 and 20:37.

02/01/00: High tide 9:01 and 23:19; Low tide 3:03 and 16:08.

01/17/01: High tide 6:38 and 19:47; Low tide 13:25.

-- = No data.

msl = Feet above mean sea level.

TOC = Top of casing.

Refer to Figure 2 for well locations (note that the location of Well PW-2 is not shown on Figure 2 as groundwater levels were not collected from this well in 2001).

¹ Well survey conducted by Bates & Bailey 2/8/95.² Groundwater elevation measured by SOMA; all other elevations measured by BASELINE.³ Well survey conducted by Bates & Bailey 11/18/94.⁴ Well survey conducted by Bates & Bailey 11/28/94.

Table 2 *continued*

- ⁵ During groundwater sampling activities on 1/4/99, the aboveground well head protection steel outer casing and inner polyvinyl chloride casing of this monitoring well appeared to have been damaged (outer and inner casings were in a slightly slanted position); therefore, groundwater elevation measurements may be skewed.
- ⁶ During groundwater sampling activities on 1 February 2000, monitoring well MW-SB2 was not found.
- ⁷ New top of casing elevation establishing in April 2000 after the well was repaired; the well survey is included in Attachment A of the January 2001 annual groundwater monitoring report.

ATTACHMENT A

MW-SB2 SURVEY REPORT

59171-00



BATES & BAILEY

LAND SURVEYORS, INC.

15 Shattuck Square • Berkeley, CA • 94704

Telephone 510-843-2007

Fax: 510-843-2704

FACSIMILE TRANSMITTAL:Date: April 6, 2000# of Pages: 2 Including cover sheetTo: Bill ScottCompany: Baseline Environmental ConsultingPhone #: 420-8686 FAX #: 420-1707Regarding: **Seabreeze and Pacific Dry Dock site info**

Bill, attached is the sketch for the new site. The hardcopy will follow in the mail.

Also, here is the data on the new stuff at Seabreeze. Let me know if you need a sketch in addition to this table:

Seabreeze

Designation	Location	North	East	Elevation
PW-3	Top center casing	691.38	751.78	7.09
PW-3	Ground at casing			6.17
New SB-2	Top center casing	655.44	680.71	8.93
New SB-2	Ground at casing			6.42

The Seabreeze numbers are on the same assumed horizontal coordinate system as before. The elevations, as before, are on Mean Sea level datum.

From: 

Christopher Dean Bailey

ATTACHMENT B

GROUNDWATER SAMPLING FORMS

GROUNDWATER SAMPLING

Project no.:	S9171-C1	Well no.:	MW-SB2	Date:	1/17/01
Project name:	Seabreeze Yacht Center	Depth of well from TOC (feet):	11.50 (measured)		
Location:	280 6 th Avenue	Well diameter (inch):	2		
	Oakland, CA	Screened interval from TOC (feet):	4.80-12.80*		
Recorded by:	WKS	TOC elevation (feet):	8.93*		
Weather:	Sunny	Water level from TOC (feet):	3.91	Time:	9:20 (1/17/01)
Precip in past 5 days (inch):	0.23	Product level from TOC (feet):	None	Time:	9:20 (1/17/01)
		Water level measurement device:	Dual interface probe		

CALCULATION OF WELL VOLUME:

[11.50 ft) -	(3.91 ft)] x	(0.083 ft) ² x	3.14 x 7.48 =	<u>1.2</u>	gallons in one well volume
well depth	water level	well radius		<u>3.7</u>	gallons in 3 well volumes
				<u>4</u>	total gallons removed

CALIBRATION

	Time	Temp (° C)	pH	EC (µmho/cm)	NTU
Calibration Standard:	--	--	7.00/10.01	1,000	0/5
Before Purging:	7:45	11.0	7.00/10.01	1,000	0/4.98
After Purging:	11:20	11.6	7.13/10.20	1,000	0/5.01

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (µmho/cm)	Cumulative Gallons Removed	Appearance	NTU
9:37	14.5	6.86	9,070	1	Very slightly turbid with black particulate matter to clear	42.9
9:42	14.0	6.84	6,110	2	Clear	13.5
9:48	14.7	6.80	6,270	3	Very slightly turbid to clear	30.2
9:54	15.0	6.82	7,180	4	Clear	23.5

* Casing repaired and resurveyed in March 2000.

DO calibration:	10.70 mg/L @ 12.3°C	DO results after purge (mg/L):	0.71 @9:54
Water level after purging prior to sampling (feet):	4.30	Time:	8:16 (1/19/01)
Appearance of sample:	Clear	Time:	8:16 (1/19/01)
Duplicate/blank number:	None	Time:	--
Purge method:	Peristaltic pump		
Sampling equipment:	Peristaltic pump	VOC attachment:	None required
Sample containers:	Two 1-liter amber glass, 2-VOAs		
Sample analyses:	TEPH as diesel with silica gel cleanup, MTBE	Laboratory:	Chromalab
Decontamination method:	TSP and water, DI water rinse	Rinsate disposal:	On-site drum

S9171-C1gwJan01.wpd-2/1/01

GROUNDWATER SAMPLING

Project no.:	<u>S9171-C1</u>	Well no.:	<u>MW-SB3</u>	Date:	<u>1/17/01</u>
Project name:	<u>Seabreeze Yacht Center</u>	Depth of well from TOC (feet):	<u>11.06</u>		
Location:	<u>280 6th Avenue</u>	Well diameter (inch):	<u>2</u>		
	<u>Oakland, CA</u>	Screened interval from TOC (feet):	<u>4.86-11.06</u>		
Recorded by:	<u>WKS</u>	TOC elevation (feet):	<u>8.10</u>		
Weather:	<u>Sunny</u>	Water level from TOC (feet):	<u>6.04</u>	Time:	<u>9:15 (1/17/01)</u>
Precip in past 5 days (inch):	<u>0.23</u>	Product level from TOC (feet):	<u>None</u>	Time:	<u>9:15 (1/17/01)</u>
		Water level measurement device:	<u>Dual interface probe</u>		

CALCULATION OF WELL VOLUME:

$$\begin{array}{rcl}
 [(11.06 \text{ ft}) - (6.04 \text{ ft})] \times (0.083 \text{ ft})^2 \times 3.14 \times 7.48 = & \underline{0.8} & \text{gallon in one well volume} \\
 \text{well depth} \quad \text{water level} \quad \text{well radius} & \underline{2.4} & \text{gallons in 3 well volumes} \\
 & \underline{3.1} & \text{total gallons removed}
 \end{array}$$

CALIBRATION

	<u>Time</u>	<u>Temp (° C)</u>	<u>pH</u>	<u>EC (µmho/cm)</u>	<u>NTU</u>
Calibration Standard:	--	--	7.00/10.01	1,000	0/5
Before Purging:	7:45	11.0	7.00/10.01	1,000	0/4.98
After Purging:	11:20	11.6	7.13/10.20	1,000	0/5.01

FIELD MEASUREMENTS:

<u>Time</u>	<u>Temp (° C)</u>	<u>pH</u>	<u>EC (µmho/cm)</u>	<u>Cumulative Gallons Removed</u>	<u>Appearance</u>	<u>NTU</u>
10:23	15.3	6.94	21,070	1	Light amber with black particulate matter	12.7
10:28	15.6	6.91	21,090	2	Light amber with black particulate matter	4.04
10:32	15.7	6.87	21,340	3.1	Light amber with black particulate matter	3.72
10:34	Well pumped dry		--			

Note: Recharge rate too slow to allow 80% recharge in all wells on 1/17/01. Samples collected 1/19/01 after all wells had recharged to at least 80%.

DO calibration:	<u>10.70 mg/L @ 12.3°C</u>	DO results after purge (mg/L):	<u>0.5 @ 10:32</u>
Water level after purging prior to sampling (feet):	<u>8.31</u>	Time:	<u>8:40 (1/19/01)</u>
Appearance of sample:	<u>Light amber color</u>	Time:	<u>8:40 (1/19/01)</u>
Duplicate/blank number:	<u>None</u>	Time:	<u>--</u>
Purge method:	<u>Peristaltic pump</u>		
Sampling equipment:	<u>Peristaltic pump</u>	VOC attachment:	<u>None required</u>
Sample containers:	<u>Two 1-liter amber glass, 2-VOAs</u>		
Sample analyses:	<u>TEPH as diesel with silica gel cleanup, MTBE</u>	Laboratory:	<u>Chromalab</u>
Decontamination method:	<u>TSP and water, DI water rinse</u>	Rinsate disposal:	<u>On-site drum</u>

S9171-C1gwJan01.wpd-2/1/01

GROUNDWATER SAMPLING

Project no.:	S9171-C1	Well no.:	MW-SB4	Date:	1/17/01
Project name:	Seabreeze Yacht Center	Depth of well from TOC (feet):	14.75		
Location:	280 6 th Avenue Oakland, CA	Well diameter (inch):	2		
Recorded by:	WKS	Screened interval from TOC (feet):	2.55-14.75		
Weather:	Sunny	TOC elevation (feet):	6.39		
Precip in past 5 days (inch):	0.23	Water level from TOC (feet):	1.70	Time:	9:01 (1/17/01)
		Product level from TOC (feet):	None	Time:	9:01 (1/17/01)
		Water level measurement device:	Dual interface probe		

CALCULATION OF WELL VOLUME:

$$\begin{array}{rcl}
 [(14.75 \text{ ft}) - (1.70 \text{ ft})] \times (0.083 \text{ ft})^2 \times 3.14 \times 7.48 = & \underline{2.1} & \text{gallons in one well volume} \\
 \text{well depth} \quad \text{water level} \quad \text{well radius} & & \underline{6.3} \quad \text{gallons in 3 well volumes} \\
 & & \underline{8} \quad \text{total gallons removed}
 \end{array}$$

CALIBRATION

	Time	Temp (° C)	pH	EC (µmho/cm)	NTU
Calibration Standard:	--	--	7.00/10.01	1,000	0/5
Before Purging:	7:45	11.0	7.00/10.01	1,000	0/4.98
After Purging:	11:20	11.6	7.13/10.20	1,000	0/5.01

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (µmho/cm)	Cumulative Gallons Removed	Appearance	NTU
10:54	14.2	7.32	1,980	1	Clear	13.2
11:00	12.8	7.37	1,532	2.5	Clear	2.62
11:06	12.8	7.39	1,471	4	Clear	2.23
11:11	12.6	7.39	1,431	6	Clear	1.39
11:16	12.9	7.39	1,419	8	Clear	1.36

DO calibration:	10.70 mg/L @ 12.3°C	DO results after purge (mg/L):	0.34 @ 11:16
Water level after purging prior to sampling (feet):	1.70	Time:	9:00 (1/19/01)
Appearance of sample:	Clear	Time:	9:00 (1/19/01)
Duplicate/blank number:	None	Time:	--
Purge method:	Peristaltic pump		
Sampling equipment:	Peristaltic pump	VOC attachment:	None required
Sample containers:	Two 1-liter amber glass, 2-VOAs		
Sample analyses:	TEPH as diesel with silica gel cleanup, MTBE	Laboratory:	Chromalab
Decontamination method:	TSP and water, DI water rinse	Rinsate disposal:	On-site drum

S9171-C1gwJan01.wpd-2/1/01

GROUNDWATER SAMPLING

Project no.:	S9171-C1	Well no.:	MW-SB5	Date:	1/17/01
Project name:	Seabreeze Yacht Center	Depth of well from TOC (feet):	14.75		
Location:	280 6 th Avenue Oakland, CA	Well diameter (inch):	2		
Recorded by:	WKS	Screened interval from TOC (feet):	2.55-14.75		
Weather:	Sunny	TOC elevation (feet):	6.30		
Precip in past 5 days (inch):	0.23	Water level from TOC (feet):	4.21	Time:	7:54 (1/17/01)
		Product level from TOC (feet):	None	Time:	7:54 (1/17/01)
		Water level measurement device:	Dual interface probe		

CALCULATION OF WELL VOLUME:

$$[(14.75 \text{ ft}) - (4.21 \text{ ft})] \times (0.083 \text{ ft})^2 \times 3.14 \times 7.48 = \underline{1.7} \text{ gallons in one well volume}$$

$$\text{well depth} \quad \text{water level} \quad \text{well radius}$$

$$\underline{5.1} \text{ gallons in 3 well volumes}$$

$$\underline{5.3} \text{ total gallons removed}$$

CALIBRATION

	Time	Temp (° C)	pH	EC (µmho/cm)	NTU
Calibration Standard:	--	--	7.00/10.01	1,000	0/5
Before Purging:	7:45	11.0	7.00/10.01	1,000	0/4.98
After Purging:	11:20	11.6	7.13/10.20	1,000	0/5.01

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (µmho/cm)	Cumulative Gallons Removed	Appearance	NTU
8:00	17.5	7.00	32,000	1	Light amber color	3.87
8:10	16.1	6.92	28,230	2	Light amber color	7.00
8:20	16.5	6.94	28,690	3	Light amber color	4.03
8:30	17.6	6.99	31,100	4	Light amber color	2.61
8:40	18.2	7.02	32,650	5	Light amber color	5.11
8:43	Well pumped dry	--	--	5.3	--	--

Note: Recharge rate too slow to allow 80% recharge in all wells on 1/17/01. Samples collected 1/19/01 after all wells had recharged to at least 80%.

DO calibration:	10.70 mg/L @ 12.3°C	DO results after purge (mg/L):	0.21 @ 8:43
Water level after purging prior to sampling (feet):	10.21	Time:	8:00 (1/19/01)
Appearance of sample:	Light amber color	Time:	8:00 (1/19/01)
Duplicate/blank number:	None	Time:	--
Purge method:	Peristaltic pump		
Sampling equipment:	Peristaltic pump	VOC attachment:	None required
Sample containers:	Two 1-liter amber glass, 2-VOAs		
Sample analyses:	TEPH as diesel with silica gel cleanup, MTBE	Laboratory:	Chromalab
Decontamination method:	TSP and water, DI water rinse	Rinsate disposal:	On-site drum

S9171-C1gwJan01.wpd-2/1/01

ATTACHMENT C

**LABORATORY REPORT AND
CHAIN-OF-CUSTODY FORM**

RECEIVED
FEB - 1 2001
BASELINE

Baseline Environmental
5900 Hollis Street, Suite D
Emeryville, CA 94608-2008

Attn.: Mr. Bill Scott

Project: Seabreeze Yacht Center

Dear Mr. Scott,

Attached is our report for your samples received on Friday January 19, 2001
This report has been reviewed and approved for release. Reproduction of this report
is permitted only in its entirety.

Please note that any unused portion of the samples will be discarded after March 5, 2001
unless you have requested otherwise. We appreciate the opportunity to be of service to you.
If you have any questions, please call me at (925) 484-1919. You can also contact me via email.
My email address is: vwancil@chromalab.com

Sincerely,



Vincent Vancil

Diesel with Silica Gel Clean-up

Baseline Environmental

✉ 5900 Hollis Street, Suite D
Emeryville, CA 94608-2008

Attn: Bill Scott

Phone: (510) 420-8686 Fax: (510) 420-1707

Project #:

Project: Seabreeze Yacht Center

Samples Reported

Sample ID	Matrix	Date Sampled	Lab #
MW-SB 2	Water	01/19/2001 08:16	1
MW-SB 3	Water	01/19/2001 08:40	2
MW-SB 4	Water	01/19/2001 09:00	3
MW-SB 5	Water	01/19/2001 08:00	4

STL ChromaLab

Environmental Services (CA 1094)

Submission #: 2001-01-0359

To: **Baseline Environmental**

Test Method: 8015M

Attn.: Bill Scott

Prep Method: 3510/8015M

Diesel with Silica Gel Clean-up

Sample ID: MW-SB 2	Lab Sample ID: 2001-01-0359-001
Project: Seabreeze Yacht Center	Received: 01/19/2001 17:15
Sampled: 01/19/2001 08:16	Extracted: 01/24/2001 12:18
Matrix: Water	QC-Batch: 2001/01/24-06.10

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Diesel	ND	50	ug/L	1.00	01/26/2001 10:11	
Surrogate(s) o-Terphenyl	79.6	60-130	%	1.00	01/26/2001 10:11	

1220 Quarry Lane * Pleasanton, CA 94566-4756
Telephone: (925) 484-1919 * Facsimile: (925) 484-1096

STL ChromaLab

Environmental Services (CA 1094)

Submission #: 2001-01-0359

To: Baseline Environmental
Attn.: Bill Scott

Test Method: 8015M
Prep Method: 3510/8015M

Diesel with Silica Gel Clean-up

Sample ID: MW-SB 3	Lab Sample ID: 2001-01-0359-002
Project: Seabreeze Yacht Center	Received: 01/19/2001 17:15
Sampled: 01/19/2001 08:40	Extracted: 01/24/2001 12:18
Matrix: Water	QC-Batch: 2001/01/24-06.10

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Diesel	ND	50	ug/L	1.00	01/26/2001 10:54	
<i>Surrogate(s)</i> o-Terphenyl	60.6	60-130	%	1.00	01/26/2001 10:54	

STL ChromaLab

Environmental Services (CA 1094)

Submission #: 2001-01-0359

To: Baseline Environmental

Test Method: 8015M

Attn.: Bill Scott

Prep Method: 3510/8015M

Diesel with Silica Gel Clean-up

Sample ID: MW-SB 4	Lab Sample ID: 2001-01-0359-003
Project: Seabreeze Yacht Center	Received: 01/19/2001 17:15
Sampled: 01/19/2001 09:00	Extracted: 01/24/2001 12:18
Matrix: Water	QC-Batch: 2001/01/24-06.10

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Diesel	ND	50	ug/L	1.00	01/26/2001 11:37	
Surrogate(s) o-Terphenyl	83.9	60-130	%	1.00	01/26/2001 11:37	

1220 Quarry Lane * Pleasanton, CA 94566-4756
Telephone: (925) 484-1919 * Facsimile: (925) 484-1096

STL ChromaLab

Environmental Services (CA 1094)

Submission #: 2001-01-0359

To: **Baseline Environmental**
Attn.: Bill Scott

Test Method: 8015M
Prep Method: 3510/8015M

Diesel with Silica Gel Clean-up

Sample ID: MW-SB 5	Lab Sample ID: 2001-01-0359-004
Project: Seabreeze Yacht Center	Received: 01/19/2001 17:15
Sampled: 01/19/2001 08:00	Extracted: 01/24/2001 12:18
Matrix: Water	QC-Batch: 2001/01/24-06.10

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Diesel	ND	50	ug/L	1.00	01/26/2001 12:20	
Surrogate(s) o-Terphenyl	83.5	60-130	%	1.00	01/26/2001 12:20	

1220 Quarry Lane * Pleasanton, CA 94566-4756
Telephone: (925) 484-1919 * Facsimile: (925) 484-1096

STL ChromaLab

Environmental Services (CA 1094)

Submission #: 2001-01-0359

To: Baseline Environmental

Test Method: 8015M

Attn.: Bill Scott

Prep Method: 3510/8015M

Batch QC Report Diesel with Silica Gel Clean-up

Method Blank	Water	QC Batch # 2001/01/24-06.10
MB: 2001/01/24-06.10-001		Date Extracted: 01/24/2001 12:18

Compound	Result	Rep.Limit	Units	Analyzed	Flag
Diesel	ND	50	ug/L	01/26/2001 08:02	
<i>Surrogate(s)</i> o-Terphenyl	81.0	60-130	%	01/26/2001 08:02	

To: Baseline Environmental

Test Method: 8015M

Attn: Bill Scott

Prep Method: 3510/8015M

Batch QC Report

Diesel with Silica Gel Clean-up

Laboratory Control Spike (LCS/LCSD)		Water		QC Batch # 2001/01/24-06.10	
LCS:	2001/01/24-06.10-002	Extracted:	01/24/2001 12:18	Analyzed	01/26/2001 08:45
LCSD:	2001/01/24-06.10-003	Extracted:	01/24/2001 12:18	Analyzed	01/26/2001 16:16

Compound	Conc. [ug/L]		Exp.Conc. [ug/L]		Recovery [%]		RPD	Ctrl. Limits [%]		Flags	
	LCS	LCSD	LCS	LCSD	LCS	LCSD		Recovery	RPD	LCS	LCSD
Diesel	876	750	1250	1250	70.1	60.0	15.5	60-130	25		
Surrogate(s) o-Terphenyl	20.5	16.2	20.0	20.0	102.5	81.0		60-130			

Gas/BTEX Compounds by 8015M/8020

Baseline Environmental

✉ 5900 Hollis Street, Suite D
Emeryville, CA 94608-2008

Attn: Bill Scott

Phone: (510) 420-8686 Fax: (510) 420-1707

Project #:

Project: Seabreeze Yacht Center

Samples Reported

Sample ID	Matrix	Date Sampled	Lab #
MW-SB 2	Water	01/19/2001 08:16	1
MW-SB 3	Water	01/19/2001 08:40	2
MW-SB 4	Water	01/19/2001 09:00	3
MW-SB 5	Water	01/19/2001 08:00	4

STL ChromaLab

Environmental Services (CA 1094)

Submission #: 2001-01-0359

To: **Baseline Environmental**

Test Method: 8020

Attn.: Bill Scott

Prep Method: 5030

Gas/BTEX Compounds by 8015M/8020

Sample ID: MW-SB 2	Lab Sample ID: 2001-01-0359-001
Project: Seabreeze Yacht Center	Received: 01/19/2001 17:15
Sampled: 01/19/2001 08:16	Extracted: 01/24/2001 18:26
Matrix: Water	QC-Batch: 2001/01/24-01.01

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
MTBE	ND	5.0	ug/L	1.00	01/24/2001 18:26	
Surrogate(s) Trifluorotoluene	104.5	58-124	%	1.00	01/24/2001 18:26	

1220 Quarry Lane * Pleasanton, CA 94566-4756
Telephone: (925) 484-1919 * Facsimile: (925) 484-1096

STL ChromaLab

Environmental Services (CA 1094)

Submission #: 2001-01-0359

To: **Baseline Environmental**

Test Method: 8020

Attn.: Bill Scott

Prep Method: 5030

Gas/BTEX Compounds by 8015M/8020

Sample ID: MW-SB 3	Lab Sample ID: 2001-01-0359-002
Project: Seabreeze Yacht Center	Received: 01/19/2001 17:15
Sampled: 01/19/2001 08:40	Extracted: 01/24/2001 18:59
Matrix: Water	QC-Batch: 2001/01/24-01.01

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
MTBE	ND	5.0	ug/L	1.00	01/24/2001 18:59	
<i>Surrogate(s)</i> Trifluorotoluene	82.8	58-124	%	1.00	01/24/2001 18:59	

1220 Quarry Lane * Pleasanton, CA 94566-4756
Telephone: (925) 484-1919 * Facsimile: (925) 484-1096

STL ChromaLab

Environmental Services (CA 1094)

Submission #: 2001-01-0359

To: **Baseline Environmental**

Test Method: 8020

Attn.: Bill Scott

Prep Method: 5030

Gas/BTEX Compounds by 8015M/8020

Sample ID: MW-SB 4	Lab Sample ID: 2001-01-0359-003
Project: Seabreeze Yacht Center	Received: 01/19/2001 17:15
Sampled: 01/19/2001 09:00	Extracted: 01/24/2001 19:31
Matrix: Water	QC-Batch: 2001/01/24-01.01

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
MTBE	ND	5.0	ug/L	1.00	01/24/2001 19:31	
Surrogate(s) Trifluorotoluene	96.8	58-124	%	1.00	01/24/2001 19:31	

1220 Quarry Lane * Pleasanton, CA 94566-4756
Telephone: (925) 484-1919 * Facsimile: (925) 484-1096

STL ChromaLab

Environmental Services (CA 1094)

Submission #: 2001-01-0359

To: Baseline Environmental
Attn.: Bill Scott

Test Method: 8020
Prep Method: 5030

Gas/BTEX Compounds by 8015M/8020

Sample ID: MW-SB 5	Lab Sample ID: 2001-01-0359-004
Project: Seabreeze Yacht Center	Received: 01/19/2001 17:15
Sampled: 01/19/2001 08:00	Extracted: 01/24/2001 20:04
Matrix: Water	QC-Batch: 2001/01/24-01.01

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
MTBE	ND	5.0	ug/L	1.00	01/24/2001 20:04	
<i>Surrogate(s)</i> Trifluorotoluene	96.7	58-124	%	1.00	01/24/2001 20:04	

1220 Quarry Lane * Pleasanton, CA 94566-4756
Telephone: (925) 484-1919 * Facsimile: (925) 484-1096

To: Baseline Environmental

Test Method: 8015M
8020

Attn.: Bill Scott

Prep Method: 5030

Batch QC Report

Gas/BTEX Compounds by 8015M/8020

Method Blank	Water	QC Batch # 2001/01/24-01.01
MB: 2001/01/24-01.01-001		Date Extracted: 01/24/2001 10:08

Compound	Result	Rep.Limit	Units	Analyzed	Flag
Benzene	ND	0.5	ug/L	01/24/2001 10:08	
Toluene	ND	0.5	ug/L	01/24/2001 10:08	
Ethyl benzene	ND	0.5	ug/L	01/24/2001 10:08	
Xylene(s)	ND	0.5	ug/L	01/24/2001 10:08	
MTBE	ND	5.0	ug/L	01/24/2001 10:08	
Surrogate(s)					
Trifluorotoluene	107.0	58-124	%	01/24/2001 10:08	

To: Baseline Environmental

Test Method: 8015M
8020

Attn: Bill Scott

Prep Method: 5030

Batch QC Report

Gas/BTEX Compounds by 8015M/8020

Laboratory Control Spike (LCS/LCSD)	Water	QC Batch # 2001/01/24-01.01
LCS: 2001/01/24-01.01-002	Extracted: 01/24/2001 10:41	Analyzed 01/24/2001 10:41
LCSD: 2001/01/24-01.01-003	Extracted: 01/24/2001 11:14	Analyzed 01/24/2001 11:14

Compound	Conc. [ug/L]		Exp.Conc. [ug/L]		Recovery [%] RPD			Ctrl. Limits [%]		Flags	
	LCS	LCSD	LCS	LCSD	LCS	LCSD	RPD [%]	Recovery	RPD	LCS	LCSD
Benzene	99.0	98.3	100.0	100.0	99.0	98.3	0.7	77-123	20		
Toluene	88.8	88.3	100.0	100.0	88.8	88.3	0.6	78-122	20		
Ethyl benzene	95.6	94.4	100.0	100.0	95.6	94.4	1.3	70-130	20		
Xylene(s)	285	284	300	300	95.0	94.7	0.3	75-125	20		
Surrogate(s)											
Trifluorotoluene	491	484	500	500	98.2	96.8		58-124			

BASELINE

5900 Hollis Street, Suite D
Emeryville, CA 94608
Tel: (510) 420-8686 Fax: (510) 420-1707

CHAIN OF CUSTODY RECORD

2001-01-0359

Turn-around Time

Lab

BASELINE Contact Person

57015
Normal
Chromalab
Rhonda Delacruz

Project No.		Project Name and Location:										Containers		Silicon gel clean up TEPH as diesel MTBE	Remarks/ Composite
Samplers: (Signature)												Preservative			
Sample ID No. Station	Date:	Time:	Media	No.	Type	None	HCl	NO ₃	SO ₄	Other: ICE					
S9171-01		Seabreeze Yacht Center													
William K. Scott															
MW-SB2	01/19/01	8:16	W	2	VOA's		X			X		X			
MW-SB3	↓	8:40	↓	2	VOA's		X			X		X			
MW-SB4	↓	9:00	↓	2	VOA's		X			X		X			
MW-SB5	↓	8:00	↓	2	VOA's		X			X		X			
MW-SB2	01/19/01	8:16	W	2	h-Ambn	X				X	X				
MW-SB3	↓	8:40	↓	2	↓	X				X	X				
MW-SB4	↓	9:00	↓	2	↓	X				X	X				
MW-SB5	↓	8:00	↓	2	↓	X				X	X				
Relinquished by: (Signature)		Date/Time		Received by: (Signature)				Date/Time		Conditions of Samples Upon Arrival at Laboratory:					
William K. Scott		01/19/01 / 1130		[Signature]				1-19-01 / 1130		4.0°C					
Relinquished by: (Signature)		Date/Time		Received by: (Signature)				Date/Time		Remarks:					
[Signature]		1-19-01		[Signature]						* Some of VOA's are marked w/o presu. due to effervescence generated when samples were placed in VOA					
Relinquished by: (Signature)		Date/Time		Received by: (Signature)				Date/Time							
[Signature]				[Signature]				01/19/01 1715							

* Send invoice directly to [unclear]

ATTACHMENT D
QUALITY CONTROL CHECKLIST

**Quality Control Checklist
for Review of Laboratory Report**

Job No.: S9121-c1
 Laboratory: STL Chromalab
 Report Date: 01/29/01

Site: Seabreeze
 Laboratory Report No: 2001-01-0359
 BASELINE Review By: WKS

	Yes	No	NA
GENERAL QUESTIONS (Describe "no" responses below in "comments" section. Contact the laboratory, as required, for further explanation or action on "no" responses; document discussion in comments section.)			
1a. Does the report include a case narrative? (A case narrative <i>MUST</i> be prepared by the lab for all analytical work requested by BASELINE)	✓		X
1b. Is the number of pages for the lab report as indicated on the case narrative/lab transmittal consistent with the number of pages that are included in report?	✓		X
1c. Does the case narrative indicate which samples were analyzed by a subcontractor and the subcontractor's name?			✓
1d. Does the case narrative summarize subsequent requests not shown on the chain-of-custody (e.g., additional analyses requested, release of "hold" samples)?			✓
1e. Does the case narrative explain why requested analyses could not be performed by laboratory (e.g., insufficient sample)?			✓
1f. Does the case narrative explain all problems with the QA/QC data as identified in the checklist (as applicable)?			✓
2a. Is the laboratory report format consistent and legible throughout the report?	✓		X
2b. Are the sample and reported dates shown in the laboratory report correct?	✓		X
3a. Does the lab report include the original chain-of-custody form?	✓		X
3b. Were all samples appropriately analyzed as requested on the chain-of-custody form?	✓		X
4. Was the lab report signed and dated as being reviewed by the laboratory director, QA manager, or other appropriate personnel? (Some lab reports have signature spaces for each page). (This requirement also applies to any analyses subcontracted out by the laboratory)	✓		X
5a. Are preparation methods, cleanup methods (if applicable), and laboratory methods indicated for all analyses?	✓		X
5b. If additional analytes were requested as part of the reporting of the data for an analytical method, were these included in the lab report?			✓
6. Are the units in the lab report provided for each analysis consistent throughout the report?	✓		X
7. Are the detection limits (DL) appropriate based on the intended use of the data? (e.g., DL below applicable MCLs for water quality issues?)	✓		X
8a. Are detection limits appropriate based on the analysis performed? (i.e., not elevated due to dilution effects)	✓		X
8b. If no, is an explanation provided by the laboratory?			✓
9a. Were the samples analyzed within the appropriate holding time? (generally 2 weeks for volatiles, and up to 6 months for total metals)	✓		X

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	Yes	No	NA
9b. If no, was it flagged in the report?			✓
10. If samples were composited prior to analysis, does the lab report indicate which samples were composited for each analysis?			✓
11a. Do the chromatograms confirm quantitative laboratory results? (petroleum hydrocarbons)			✓
11b. Is a standard chromatogram(s) included in the laboratory report?			✓
11c. Do the chromatograms confirm laboratory notes, if present (e.g., sample exhibits lighter hydrocarbon than standard)			✓
12. Are the results consistent with previous analytical results from the site? <i>(If no, contact the lab and request review/reanalysis of data, as appropriate)</i>	✓		
13a. REVISED LAB REPORTS ONLY. Is the revised lab report or revised pages to a lab report signed and dated as being reviewed by the laboratory director, QA manager, or other appropriate personnel?			✓
13b. REVISED LAB REPORTS ONLY. Does the case narrative indicate the date of revision and provide an explanation for the revision?			✓
13c. REVISED LAB REPORTS ONLY. Does the revised lab report adequately address the problem(s) which triggered the need for a revision?			✓
13d. REVISED LAB REPORTS ONLY. Are the data included in the revised report the same as data reported in the original report, except where the report was revised to correct incorrectly reported data?			✓
QA/QC Questions			
Field/Laboratory Quality Control - Groundwater Analyses			
14. Are field blanks reported as "ND"? (groundwater samples) <i>A field blank is a sample of DI water which is prepared in the field using the same collection and handling procedures as the other samples collected, and used to demonstrate that the sampling procedure has not contaminated the sample.</i>	✓		
15. Are trip blanks reported as "ND"? (groundwater samples/volatile analyses) <i>A trip blank is a sample of contaminant-free matrix placed in an appropriate container by the lab and transported with the field samples collected. Provides information regarding positive interference introduced during sample transport, storage, preservation, and analysis. The sample is NOT opened in the field.</i>			✓
16. Are duplicate sample results consistent with the original sample? (groundwater samples) <i>Field duplicates consist of two independent samples collected at the same sampling location during a single sampling event. Used to evaluate precision of the analytical data and sampling technique. (Differences between the duplicate and sample results may also be attributed to environmental variability).</i>			✓

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	Yes	No	NA
<p>Batch Quality Control (Samples are batched together by matrix [soil, water] and analyses requested. A batch generally consists of 20 or fewer samples of the same matrix type, and is prepared using the same reagents, standards, procedures, and time frame as the samples. QC samples are run with each batch to assess performance of the entire measurement process.)</p>			
17. Do the sample batch numbers and corresponding laboratory QA/QC batch numbers match?	✓		
18a. Are method blanks (MB) for the analytical method(s) below the laboratory reporting limits? <i>Used to assess lab contamination and prevent false positive results. MBs should be "ND."</i>	✓		
18b. If no, is an explanation provided in the case narrative to validate the data?			✓
18c. Are analytes which may be considered laboratory contaminants reported below the laboratory reporting limit? <i>Common lab contaminants include acetone, methylene chloride, diethylhexyl phthalate, and di-n-octyl phthalate.</i>			✓
18d. If no, was the laboratory contacted to determine whether reported analyte could be a potential laboratory contaminant and was an explanation included in the case narrative?			✓
19. Are laboratory control samples (LCS) and LCS duplicate (LCSD) [a.k.a., Blank Spike (BS) and BS duplicates (BSD)] within laboratory reporting limits? Limits should be provided on the report. <i>LCS is a reagent blank spike with a representative selection of target analyte(s) and prepared in the same manner as the samples analyzed. The LCS should be spiked with the same analytes as the matrix spike (below). The LCS is free from interferences from the sample matrix and demonstrates the ability of the lab instruments to recover the target analytes. Accuracy (recovery information) is generally reported as % spike recovery; precision (reproducibility of results) between the LCS and LCSD is generally reported as the relative percent difference (RPD). LCS/LCSD can be run in addition to or in lieu of, matrix QC data.</i>	✓		
20a. Are the Matrix QC data (i.e., MS/MSD) within laboratory limits? Limits should be provided on the lab report. <i>The lab selects a sample from the batch and analyzes a spike and a spike duplicate of that sample. Matrix QC data is used to obtain precision and accuracy information and is reported in the same manner as LCS/LCSD. If the MS/MSD fails, the results may still be considered valid if the MB and either the LCS/LCSD or BS/BSD is within the lab's limits (failure is probably due to matrix interference).</i>	✓		
20b. If no, is the MB and either LCS/LCSD or BS/BSD within lab limits to validate the data?			✓

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	Yes	No	NA
Sample Quality Control			
21a. Are the surrogate spikes reported within the lab's acceptable recovery limits? <i>A surrogate is a non-target analyte, which is similar in chemical structure to the analyte(s) being analyzed for, and which is not commonly found in environmental samples. A known concentration of the surrogate is spike into the sample or QA "sample" prior to extraction or sample preparation. Results are usually reported as % recovery of the spike. Failure to meet lab's limits for primary and secondary surrogates results in rebatching and reanalysis of the sample; failure of only the primary or the secondary surrogate may be acceptable under certain circumstances. Failure generally is due to coelution with the sample matrix.</i>	✓		
21b. If no, is an explanation given in the case narrative to validate the data?			✓

Comments:
