

ENVIRONMENTAL
PROTECTION

PORT OF OAKLAND

0001R-3 PH 3:42

March 1, 2000

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-SB3, SB4, and SB5 for total extractable hydrocarbons (TEPH) as diesel with silica gel cleanup. MW-SB2 was not sampled because it could not be located during field activities (MW-SB2 will be repaired in the next several weeks).

The results indicate TEPH was not detected (50ug/l) in the three monitoring wells. If you have any questions, please contact me at 510-627-1184.

Sincerely,

Douglas P. Herman
Port Environmental Scientist

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

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

C:\win\mydocs\projects\seebreeze\March1trans.doc

BASELINE

ENVIRONMENTAL CONSULTING

25 February 2000
S9171-C1

Ms. Diane Heinze
Port of Oakland
Environmental Health and Safety Compliance Department
530 Water Street
Oakland, California 94607

Subject: Annual Groundwater Monitoring Report, February 2000, Former Seabreeze Yacht Center, Inc. Site, 280 6th Avenue, Oakland, California

Dear Ms. Heinze:

This report documents the groundwater sampling activities performed in February 2000 at the former Seabreeze Yacht Center, Inc. Site (Site), located at 280 6th Avenue, 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.

FIELD ACTIVITIES, FEBRUARY 2000

The presence of free product was checked and water levels were measured in monitoring wells MW-SB3 and MW-SB4 on 4 January 1999, and MW-SB5 on 1 February 2000 using a dual-interface probe. The water level was not measured in monitoring well MW-SB2 because the well could not be located after grading activities at the site during the previous year had resulted in removal of the well head and covering up of the well location. 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.

Following collection of water level measurements, the monitoring network wells were purged of more than 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

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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, except MW-SB3. The electrical conductivity readings from the purge water from well MW-SB3 did not stabilize after the removal of more than five well volumes; the well was pumped dry. 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 days the wells were purged. Therefore, groundwater samples were collected on 4 February 2000 after sufficient water was available in all the wells. Groundwater samples were collected from wells MW-SB3, MW-SB4, and MW-SB5 using new disposable polyethylene bailers. A duplicate groundwater sample (MW-SB3A) was collected from well MW-SB3.

The groundwater samples were submitted under chain-of-custody protocol to Curtis and Tompkins of Berkeley 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 A and the chain-of-custody form is included in Attachment B.

One drum, containing purge and decontamination water, was generated from the February 2000 sampling activities. The drum was labeled and stored on-site for future off-site disposal (conducted by the Port).

On 17 February 2000, Bates and Bailey, a surveying firm, was successful in relocating MW-SB2. The well was found to have been buried under six inches of soil and the top portion of the well missing. The well will be restored and will be included in the next sampling event.

ANALYTICAL RESULTS

The analytical results are summarized in Table 1 and the laboratory report is presented in Attachment B. TEPH as diesel and MTBE were not identified in any of the samples collected from the monitoring network wells and duplicate water sample (MW-SB3A) 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 C. In summary, the samples were analyzed within an appropriate time frame and the laboratory quality control results were reported within laboratory specified recovery limits.

BASELINE

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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 1 February 2000 were used to develop groundwater elevation contours (Figure 2). The groundwater flow direction is generally toward the south.

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

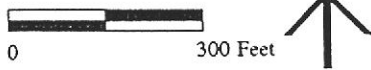
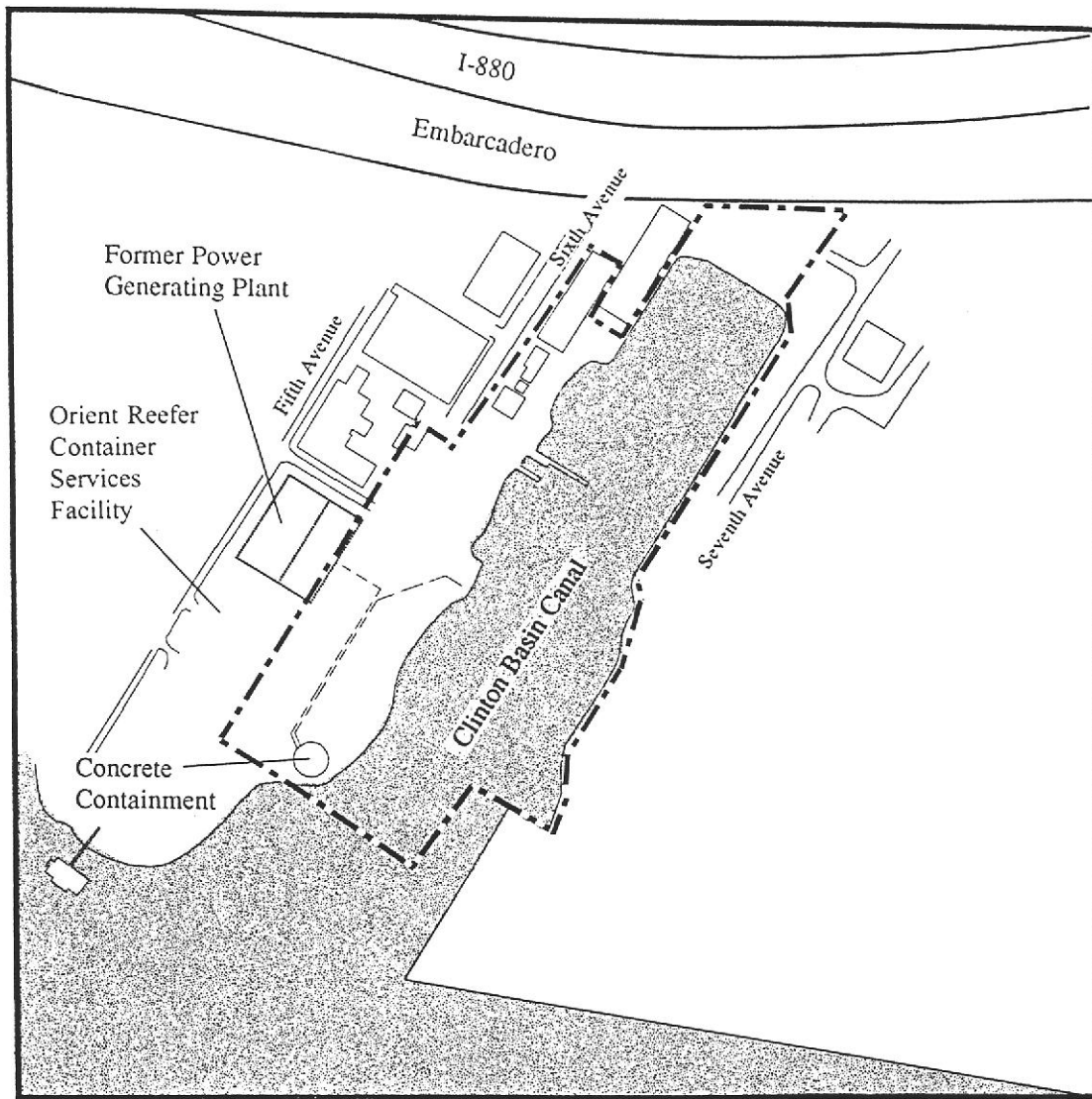
Sincerely,


Yane Nordhav
Principal


William K. Scott
Cert. Eng. Geologist #2006

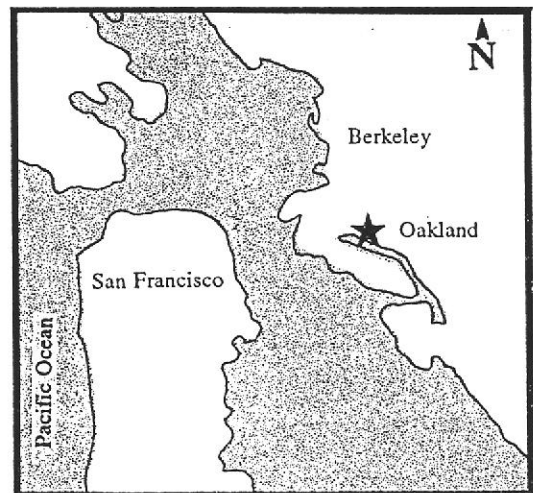
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Attachments



Legend

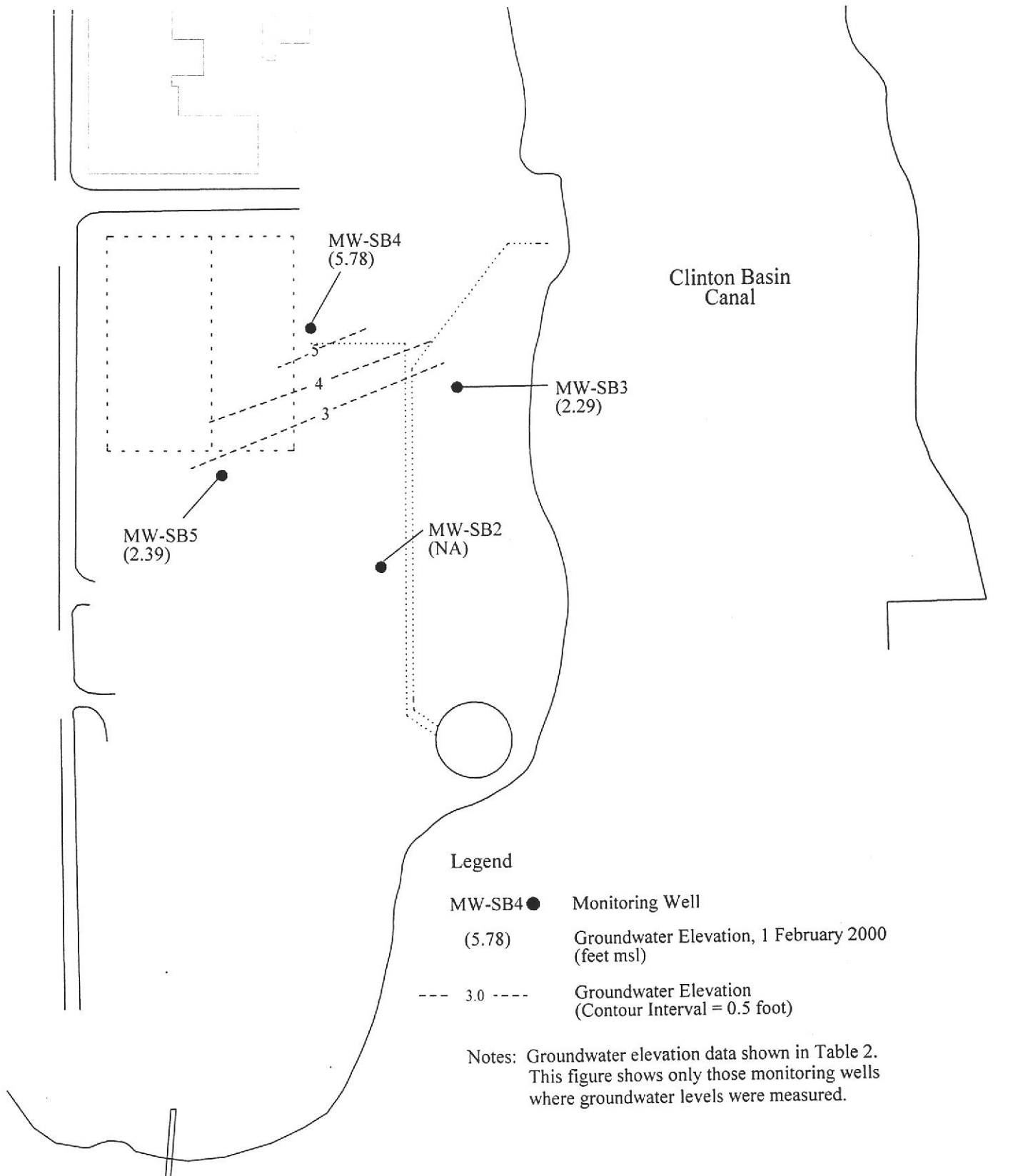
--- Seabreeze Yacht Center



Seabreeze Yacht Center
Oakland, California

MONITORING WELL LOCATIONS AND GROUNDWATER CONTOUR, FEBRUARY 2000

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			
		Lead	Copper	Diesel	Bunker C	Motor Oil	MTBE ³
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	0.0101¹¹	<0.003 ¹²	0.11¹⁴	<0.5	<0.25	--
	03/14/97	0.00401¹¹	<0.003 ¹²	<0.05	<0.5	<0.25	--
	06/20/97	--	--	<0.05	--	--	--
MW-SB2	04/09/91	<0.06 ⁸	<0.02 ⁹	--	--	--	--
	04/19/91	<0.07	0.0481	--	--	--	--
	01/10/94	<0.10 ⁸	<0.02 ⁹	--	--	--	--
	12/26/94	<0.0048 ⁹	0.014⁹	--	--	--	--
	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	0.00855¹¹	0.00354¹²	0.16¹⁴	<0.5	<0.25	--
	03/14/97	0.00314¹¹	<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	--	--	--	--	--	--
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	0.17⁷	<0.3 ⁵	--	--
	09/16/96	<0.003 ¹¹	<0.005 ¹²	0.17	<0.5 ⁵	<0.25	--
MW-SB3	03/06/95	--	--	4.5^{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	0.28⁴	--
	12/11/96	<0.003 ¹¹	<0.003 ¹²	0.19¹⁴	<0.5	<0.25	--
	03/14/97	<0.003 ¹¹	0.00529¹²	0.085¹⁵	<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

(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	--	--	<0.02
MW-SB4	03/03/95	--	--	4.5 ⁴	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	--	--	<0.02
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	--	--	<0.02
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 1999).

Laboratory reports for the January 1999 sampling event are included in Attachment B.

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 8021B.

⁴ Sample chromatogram does not resemble hydrocarbon standard.

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.

Table 1 *continued*

- 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			
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

(continued)

Table 2 continued

Well	Date	Time	Surface Elevation (msl)	TOC Elevation (msl)	Depth to Groundwater (feet)	Groundwater Elevation (msl)
MW-SB4 ¹	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
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

- 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.
 -- = 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 1999).

- 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.
- 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.

ATTACHMENT A
GROUNDWATER SAMPLING FORMS

GROUNDWATER SAMPLING

Project no.:	S9171-C1	Well no.:	MW-SB2	Date:	2/1/00
Project name:	Seabreeze Yacht Center	Depth of well from TOC (feet):	11.0		
Location:	280 6th Avenue	Well diameter (inch):	2		
	Oakland, CA	Screened interval from TOC (feet):	3-11		
Recorded by:	WKS	TOC elevation (feet):	7.18		
Weather:	Sunny	Water level from TOC (feet):	NA	Time:	
Precip in past		Product level from TOC (feet):	NA	Time:	
5 days (inch):	≈ 1.5	Water level measurement:	Dual interface probe		

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

$$[(11.0 \text{ ft}) - (3.30 \text{ ft})] \times (0.083 \text{ ft})^2 \times 3.14 \times 7.48 = \text{NA gallons in one well volume}$$

Well depth Water level Well radius NA gallons in 3 well volumes

NA total gallons removed

CALIBRATION:

	Time	Temp (° C)	pH	EC (µmho/cm)
Calibration Standard:				
Before Purging:				
After Purging:				

Note: No sample collected, well missing.

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (µmho/cm)	Cumulative Gallons Removed	Appearance

DO meter calibration:		Time:	
DO result (after purging well, mg/L):	NA	Time:	
Water level after purging prior to sampling (feet):	NA	Time:	
Appearance of sample:	NA	Time:	
Duplicate/blank number:	NA	Time:	
Purge method:	NA		
Sampling equipment:	NA	VOC attachment:	
Sample containers:	NA		
Sample analyses:	NA	Laboratory:	
Decontamination method:	NA	Rinsate disposal:	

* A disposable bailer could not be inserted in well: well top observed to be damaged during sampling activities. S9171C1.gw198.xls (1/11/99)

GROUNDWATER SAMPLING

Project no.:	S9171-C1	Well no.:	MW-SB3	Date:	2/1/00
Project name:	Seabreeze Yacht Center	Depth of well from TOC (feet):	11.06		
Location:	280 6th Avenue	Well diameter (inch):	2		
	Oakland, CA	Screened interval from TOC (feet):	4.86-11.06		
Recorded by:	WKS	TOC elevation (feet):	8.10		
Weather:	Sunny	Water level from TOC (feet):	5.97	Time:	8:20
Precip in past		Product level from TOC (feet):	None	Time:	9:50
5 days (inch):	≈ 1.5	Water level measurement:	Dual interface probe		

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

$$[(11.06 \text{ ft}) - (5.81 \text{ ft})] \times (0.083 \text{ ft})^2 \times 3.14 \times 7.48 =$$

Well depth	Water level	Well radius		0.8 gallons in one well volume
				2.5 gallons in 3 well volumes
				4.2 total gallons removed

CALIBRATION:

	Time	Temp (° C)	pH	EC (µmho/cm)	NTU
Calibration Standard:	--	--	7.00/10.01	1,000	10
Before Purging:	9:20	19.2	7.00/10.01	1,000	10.12
After Purging:	13:10	19.4	7.17/10.13	1,000	9.94

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (mg)	Cumulative Gallons Removed	NTU	Appearance
10:00	15.4	6.84	15.78	1.0	24.3	Clear with black particulate matter
10:06	15.4	6.82	7.79	2.0	4.16	Clear with black particulate matter
10:12	15.8	6.79	17.83	3.0	2.28	Clear with black particulate matter
10:18	16.3	6.80	19.7	4.0	1.56	Clear with black particulate matter
10:20	Well Pumped Dry		--	4.2		Clear with black particulate matter

Note: Recharge rate too slow to allow 80% recharge in all wells on 1/4/99. Sample collected 1/6/99, after all wells had recharged to within 80%.

DO meter calibration:	9.72 mg/L @ 17.1° C	Time:	8:30
DO result (after purging well, mg/L):	0.3	Time:	8:10
Water level after purging prior to sampling (feet):	6.88	Time:	8:10 (2/4/00)
Appearance of sample:	Clear, NTU of sampler 7.85	Time:	8:15:00 (2/4/00)
Duplicate/blank number:	MW-SB3A	Time:	8:20:00 (2/4/00)
Purge method:	Peristaltic pump		
Sampling equipment:	Disposable polyethylene bailer	VOC attachment:	None required
Sample containers:	Two 2-liter amber glass, 2-VOAs		
Sample analyses:	TEPH as diesel, MTBE	Laboratory:	Curtis & Tompkins
Decontamination method:	TSP and water, DI water rinse	Rinsate disposal:	On-site drum

S9171C1.gw198.xls (1/11/99)

GROUNDWATER SAMPLING

Project no.:	S9171-C1	Well no.:	MW-SB4	Date:	2/1/00
Project name:	Seabreeze Yacht Center	Depth of well from TOC (feet):	14.75		
Location:	280 6th Avenue	Well diameter (inch):	2		
	Oakland, CA	Screened interval from TOC (feet):	2.55-14.75		
Recorded by:	WKS	TOC elevation (feet):	6.39		
Weather:	Sunny	Water level from TOC (feet):	2.55	Time:	10:43
Precip in past		Product level from TOC (feet):	None	Time:	10:43
5 days (inch):	≈ 1.5	Water level measurement:	Dual interface probe		

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

$$[(14.75 \text{ ft}) - (0.061 \text{ ft})] \times (0.083 \text{ ft})^2 \times 3.14 \times 7.48 =$$

Well depth	Water level	Well radius		2.3 gallons in one well volume
				7.0 gallons in 3 well volumes
				6.0 total gallons removed

CALIBRATION:

	Time	Temp (° C)	pH	EC (umho/cm)	NTU
Calibration Standard:	--	--	7.00/10.01	1,000	10
Before Purging:	9:20	19.2	7.00/10.01	1,000	10.12
After Purging:	13:10	19.4	7.17/10.13	1,000	9.94

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (mg)	Cumulative Gallons Removed	Appearance	NTU
10:47	13.8	7.60	1,416	1.0	Clear	6.62
10:52	13.3	7.60	980	2.0	Clear	3.37
10:56	13.1	7.61	741	3.0	Clear	1.75
11:01	13.0	7.61	694	4.0	Clear	22:48
11:10	12.9	7.61	691	6.0	Clear	1.37

DO meter calibration:	9.72 mg/L @ 17.1° C	Time:	8:30
DO result (after purging well, mg/L):	0.75	Time:	12:08
Water level after purging prior to sampling (feet):	0.60	Time:	7:13 (2/4/00)
Appearance of sample:	Clear, NTU of sample 1.04	Time:	7:13 (2/4/00)
Duplicate/blank number:	None	Time:	--
Purge method:	Peristaltic pump		
Sampling equipment:	Disposable polyethylene bailer	VOC attachment:	None required
Sample containers:	One 2-liter amber glass, 2-VOAs		
Sample analyses:	TEPH as diesel, MTBE	Laboratory:	Curtis & Tompkins
Decontamination method:	TSP and water, DI water rinse	Rinsate disposal:	On-site drum

S9171C1.gw198.xls (1/11/99)

GROUNDWATER SAMPLING

Project no.:	S9171-C1	Well no.:	MW-SB5	Date:	2/1/00
Project name:	Seabreeze Yacht Center	Depth of well from TOC (feet):	14.75		
Location:	280 6th Avenue	Well diameter (inch):	2		
	Oakland, CA	Screened interval from TOC (feet):	2.55-14.75		
Recorded by:	WKS	TOC elevation (feet):	6.30		
Weather:	Sunny	Water level from TOC (feet):	3.50	Time:	12:20
Precip in past		Product level from TOC (feet):	None	Time:	12:20
5 days (inch):	≈ 1.5	Water level measurement:	Dual interface probe		

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

$$[(14.75 \text{ ft}) - (3.91 \text{ ft})] \times (0.083 \text{ ft})^2 \times 3.14 \times 7.48 =$$

Well depth Water level Well radius

1.8 gallons in one well volume
 5.5 gallons in 3 well volumes
 6.0 total gallons removed

CALIBRATION:

	Time	Temp (° C)	pH	EC (µmho/cm)	NTU
Calibration Standard:	--	--	7.00/10.01	1,000	10
Before Purging:	9:20	19.2	7.00/10.01	1,000	10.12
After Purging:	13:10	19.4	7.17/10.13	1,000	9.94

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (mg)	Cumulative Gallons Removed	Appearance	NTU
12:34	17.0	6.86	25.39	1.5	Light amber color	3.86
12:40	16.0	6.81	23.32	2.5	Light amber color	23.8
12:46	16.9	6.87	25.73	3.5	Light amber color	15.5
12:53	17.5	6.90	26.87	4.5	Light amber color	5.23
12:58	17.7	6.92	27.46	5.5	Clear	3.65
13:04	18.0	6.92	28.07	6.0	Clear	2.92

DO meter calibration:	9.72 mg/L @ 17.1° C	Time:	12:45
DO result (after purging well, mg/L):	0.1	Time:	14:37
Water level after purging prior to sampling (feet):	7.12	Time:	7:37 (2/4/00)
Appearance of sample:	Light amber color, NTU of sample 6.62	Time:	7:45 (2/4/00)
Duplicate/blank number:	None	Time:	--
Purge method:	Peristaltic pump		
Sampling equipment:	Disposable polyethylene bailer	VOC attachment:	None required
Sample containers:	One 2-liter amber glass, 2-VOAs		
Sample analyses:	TEPH as diesel, MTBE	Laboratory:	Curtis & Tompkins
Decontamination method:	TSP and water, DI water rinse	Rinsate disposal:	On-site drum

S9171C1.gw198.xls (1/11/99)

ATTACHMENT B

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



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900, Fax (510) 486-0532

A N A L Y T I C A L R E P O R T

RECEIVED

FEB 22 2000

BASELINE

Prepared for:

Baseline Environmental
5900 Hollis St.
Suite D
Emeryville, CA 94608

Date: 17-FEB-00
Lab Job Number: 143786
Project ID: S9171-C1
Location: Seabreeze, Port of Oakland

Reviewed by:

Reviewed by:

This package may be reproduced only in its entirety.



Total Extractable Hydrocarbons, GC/FID

Lab #:	143786	Location:	Seabreeze, Port of Oakland
Client:	Baseline Environmental	Prep:	EPA 3520
Project#:	S9171-C1	Analysis:	EPA 8015M
Matrix:	Water	Batch#:	53642
Units:	ug/L	Prepared:	02/08/00
Diln Fac:	1.000	Analyzed:	02/11/00

Type: BS Lab ID: QC107413

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,475	1,876	76	45-110

Surrogate	%REC	Limits
Hexacosane	118	44-121

Type: BSD Lab ID: QC107414

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,475	1,848	75	45-110	2	22

Surrogate	%REC	Limits
Hexacosane	103	44-121

**Total Extractable Hydrocarbons, GC/FID**

Lab #:	143786	Location:	Seabreeze, Port of Oakland
Client:	Baseline Environmental	Prep:	EPA 3520
Project#:	S9171-C1	Analysis:	EPA 8015M
Matrix:	Water	Sampled:	02/04/00
Units:	ug/L	Received:	02/04/00
Diln Fac:	1.000	Prepared:	02/08/00
Batch#:	53642	Analyzed:	02/11/00

Field ID: MW-SB3 Lab ID: 143786-001
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
Hexacosane	100	44-121

Field ID: MW-SB3A Lab ID: 143786-002
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
Hexacosane	117	44-121

Field ID: MW-SB4 Lab ID: 143786-003
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
Hexacosane	115	44-121

Field ID: MW-SB5 Lab ID: 143786-004
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
Hexacosane	90	44-121

Type: BLANK Lab ID: QC107412

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
Hexacosane	93	44-121



BTXE Compounds by GC/PID

Lab #:	143786	Location:	Seabreeze, Port of Oakland
Client:	Baseline Environmental	Prep:	EPA 5030
Project#:	S9171-C1	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	53616
Units:	ug/L	Analyzed:	02/08/00
Diln Fac:	1.000		

Type: BS Lab ID: QC107307

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	16.91	85	51-125

Surrogate	%REC	Limits
Trifluorotoluene (PID)	105	56-142
Bromofluorobenzene (PID)	110	55-149

Type: BSD Lab ID: QC107308

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	20.00	17.18	86	51-125	2	20

Surrogate	%REC	Limits
Trifluorotoluene (PID)	105	56-142
Bromofluorobenzene (PID)	109	55-149

BTXE Compounds by GC/PID

Lab #:	143786	Location:	Seabreeze, Port of Oakland
Client:	Baseline Environmental	Prep:	EPA 5030
Project#:	S9171-C1	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	02/04/00
Units:	ug/L	Received:	02/04/00
Diln Fac:	1.000	Analyzed:	02/08/00
Batch#:	53616		

Field ID:	MW-SB3	Lab ID:	143786-001
Type:	SAMPLE		

Analyte	Result	RL
MTBE	ND	2.0

Surrogate	%REC	Limits
Trifluorotoluene (PID)	102	56-142
Bromofluorobenzene (PID)	108	55-149

Field ID:	MW-SB3A	Lab ID:	143786-002
Type:	SAMPLE		

Analyte	Result	RL
MTBE	ND	2.0

Surrogate	%REC	Limits
Trifluorotoluene (PID)	108	56-142
Bromofluorobenzene (PID)	113	55-149

Field ID:	MW-SB4	Lab ID:	143786-003
Type:	SAMPLE		

Analyte	Result	RL
MTBE	ND	2.0

Surrogate	%REC	Limits
Trifluorotoluene (PID)	109	56-142
Bromofluorobenzene (PID)	115	55-149



BTXE Compounds by GC/PID

Lab #:	143786	Location:	Seabreeze, Port of Oakland
Client:	Baseline Environmental	Prep:	EPA 5030
Project#:	S9171-C1	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	02/04/00
Units:	ug/L	Received:	02/04/00
Diln Fac:	1.000	Analyzed:	02/08/00
Batch#:	53616		

Field ID: MW-SB5 Lab ID: 143786-004
Type: SAMPLE

Analyte	Result	RL
MTBE	ND	2.0

Surrogate	%REC	Limits
Trifluorotoluene (PID)	107	56-142
Bromofluorobenzene (PID)	113	55-149

Type: BLANK Lab ID: QC107309

Analyte	Result	RL
MTBE	ND	2.0

Surrogate	%REC	Limits
Trifluorotoluene (PID)	104	56-142
Bromofluorobenzene (PID)	107	55-149

ND = Not Detected

RL = Reporting Limit

BASELINE
5900 Hollis Street, Suite D
Emeryville, CA 94608
(510) 420-8686

143702

CHAIN OF CUSTODY RECORD

Turn-around Time _____
Lab _____
BASELINE Contact Person Bill Scott

Project No. 59171-01		Project Name and Location Former Seabreeze Yacht Center				Analysis											Remarks/ Composite	Dete- tion Limits							
Samplers: (Signature) <i>William K Scott</i>						W/Silica gel Clean-up TEH as directed	TPH with BTX&E	Oil & Grease	Motor Oil	PNAs	Title 22 Metals	Total Lead	MTBE												
Sample ID No. Station	Date	Time	Media	Depth	No. of Contain- ers																				
MW-SB3	2-4-00	8:15	Water	-	2-0.00s 2-liters	X																			
MW-SB3A	↓	8:20	↓		↓	X																			
MW-SB4	↓	7:13	↓		↓	X																			
MW-SB5	↓	7:45	↓		↓	X																			

Relinquished by: (Signature) <i>William K Scott</i>	Date / Time 2-4-00 / 16:00	Received by: (Signature) <i>[Signature]</i>	Date / Time 2/4/02 16:00	Conditions of Samples Upon Arrival at Laboratory:
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	Remarks:
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	

ATTACHMENT C

QUALITY CONTROL CHECKLIST

Quality Control Checklist
for Review of Laboratory Report

Job No.: S9171-C1

Site: Sea Breeze

Laboratory: Curtis + Tumpkins

Laboratory Report No: 143786

Report Date: 02-17-00

BASELINE Review By: WES

	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?			/

Laboratory Quality Control Checklist

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	Yes	No	NA
9a. Were the samples analyzed within the appropriate holding time? (generally 2 weeks for volatiles, and up to 6 months for total metals)	/		⊗
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? (If no, contact the lab and request review/reanalysis of data, as appropriate)	/		
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>	/		

Laboratory Quality Control Checklist

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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?			/

Laboratory Quality Control Checklist

Page 4

	Yes	No	NA
<i>Sample Quality Control</i>			
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:

GROUNDWATER SAMPLING

Project no.:	S9171-C1	Well no.:	MW-SB2	Date:	2/1/00
Project name:	Seabreeze Yacht Center	Depth of well from TOC (feet):	11.0		
Location:	280 6th Avenue	Well diameter (inch):	2		
	Oakland, CA	Screened interval from TOC (feet):	3-11		
Recorded by:	WKS	TOC elevation (feet):	7.18		
Weather:	Sunny	Water level from TOC (feet):	NA	Time:	
Precip in past		Product level from TOC (feet):	NA	Time:	
5 days (inch):	≈ 1.5	Water level measurement:	Dual interface probe		

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

$$[(11.0 \text{ ft}) - (3.30 \text{ ft})] \times (0.083 \text{ ft})^2 \times 3.14 \times 7.48 =$$

Well depth	Water level	Well radius		NA	gallons in one well volume
				NA	gallons in 3 well volumes
				NA	total gallons removed

CALIBRATION:

	Time	Temp (° C)	pH	EC (µmho/cm)
Calibration Standard:				
Before Purging:				
After Purging:				

Note: No sample collected, well missing.

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (µmho/cm)	Cumulative Gallons Removed	Appearance

DO meter calibration:		Time:	
DO result (after purging well, mg/L):	NA	Time:	
Water level after purging prior to sampling (feet):	NA	Time:	
Appearance of sample:	NA	Time:	
Duplicate/blank number:	NA	Time:	
Purge method:	NA		
Sampling equipment:	NA	VOC attachment:	
Sample containers:	NA		
Sample analyses:	NA	Laboratory:	
Decontamination method:	NA	Rinsate disposal:	

* A disposable bailer could not be inserted in well; well top observed to be damaged during sampling activities. S9171C1.gw198.xls (1/11/99)

GROUNDWATER SAMPLING

Project no.:	S9171-C1	Well no.:	MW-SB3	Date:	2/1/00
Project name:	Seabreeze Yacht Center	Depth of well from TOC (feet):	11.06		
Location:	280 6th Avenue	Well diameter (inch):	2		
	Oakland, CA	Screened interval from TOC (feet):	4.86-11.06		
Recorded by:	WKS	TOC elevation (feet):	8.10		
Weather:	Sunny	Water level from TOC (feet):	5.97	Time:	8:20
Precip in past		Product level from TOC (feet):	None	Time:	9:50
5 days (inch):	≈ 1.5	Water level measurement:	Dual interface probe		

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

$$[(11.06 \text{ ft}) - (5.81 \text{ ft})] \times (0.083 \text{ ft})^2 \times 3.14 \times 7.48 =$$
0.8 gallons in one well volume
2.5 gallons in 3 well volumes
4.2 total gallons removed

Well depth Water level Well radius

CALIBRATION:

	Time	Temp (° C)	pH	EC (µmho/cm)	NTU
Calibration Standard:	--	--	7.00/10.01	1,000	10
Before Purging:	9:20	19.2	7.00/10.01	1,000	10.12
After Purging:	13:10	19.4	7.17/10.13	1,000	9.94

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (mg)	Cumulative Gallons Removed	NTU	Appearance
10:00	15.4	6.84	15.78	1.0	24.3	Clear with black particulate matter
10:06	15.4	6.82	7.79	2.0	4.16	Clear with black particulate matter
10:12	15.8	6.79	17.83	3.0	2.28	Clear with black particulate matter
10:18	16.3	6.80	19.7	4.0	1.56	Clear with black particulate matter
10:20	Well Pumped Dry		--	4.2		Clear with black particulate matter

Note: Recharge rate too slow to allow 80% recharge in all wells on 1/4/99. Sample collected 1/6/99, after all wells had recharged to within 80%.

DO meter calibration:	9.72 mg/L @ 17.1° C	Time:	8:30
DO result (after purging well, mg/L):	0.3	Time:	8:10
Water level after purging prior to sampling (feet):	6.88	Time:	8:10 (2/4/00)
Appearance of sample:	Clear, NTU of sampler 7.85	Time:	8:15:00 (2/4/00)
Duplicate/blank number:	MW-SB3A	Time:	8:20:00 (2/4/00)
Purge method:	Peristaltic pump		
Sampling equipment:	Disposable polyethylene bailer	VOC attachment:	None required
Sample containers:	Two 2-liter amber glass, 2-VOAs		
Sample analyses:	TEPH as diesel, MTBE	Laboratory:	Curtis & Tompkins
Decontamination method:	TSP and water, DI water rinse	Rinsate disposal:	On-site drum

S9171C1.gw198.xls (1/11/99)

GROUNDWATER SAMPLING

Project no.:	S9171-C1	Well no.:	MW-SB4	Date:	2/1/00
Project name:	Seabreeze Yacht Center	Depth of well from TOC (feet):	14.75		
Location:	280 6th Avenue	Well diameter (inch):	2		
	Oakland, CA	Screened interval from TOC (feet):	2.55-14.75		
Recorded by:	WKS	TOC elevation (feet):	6.39		
Weather:	Sunny	Water level from TOC (feet):	2.55	Time:	10:43
Precip in past		Product level from TOC (feet):	None	Time:	10:43
5 days (inch):	≈ 1.5	Water level measurement:	Dual interface probe		

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

$$[(14.75 \text{ ft}) - (0.061 \text{ ft})] \times (0.083 \text{ ft})^2 \times 3.14 \times 7.48 =$$

Well depth	Water level	Well radius	
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2.3 gallons in one well volume
 7.0 gallons in 3 well volumes
6.0 total gallons removed

CALIBRATION:

	Time	Temp (° C)	pH	EC (µmho/cm)	NTU
Calibration Standard:	--	--	7.00/10.01	1,000	10
Before Purging:	9:20	19.2	7.00/10.01	1,000	10.12
After Purging:	13:10	19.4	7.17/10.13	1,000	9.94

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (mg)	Cumulative Gallons Removed	Appearance	NTU
10:47	13.8	7.60	1,416	1.0	Clear	6.62
10:52	13.3	7.60	980	2.0	Clear	3.37
10:56	13.1	7.61	741	3.0	Clear	1.75
11:01	13.0	7.61	694	4.0	Clear	22:48
11:10	12.9	7.61	691	6.0	Clear	1.37

DO meter calibration:	9.72 mg/L @ 17.1° C	Time:	8:30
DO result (after purging well, mg/L):	0.75	Time:	12:08
Water level after purging prior to sampling (feet):	0.60	Time:	7:13 (2/4/00)
Appearance of sample:	Clear, NTU of sample 1.04	Time:	7:13 (2/4/00)
Duplicate/blank number:	None	Time:	--
Purge method:	Peristaltic pump		
Sampling equipment:	Disposable polyethylene bailer	VOC attachment:	None required
Sample containers:	One 2-liter amber glass, 2-VOAs		
Sample analyses:	TEPH as diesel, MTBE	Laboratory:	Curtis & Tompkins
Decontamination method:	TSP and water, DI water rinse	Rinsate disposal:	On-site drum

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GROUNDWATER SAMPLING

Project no.:	S9171-C1	Well no.:	MW-SB5	Date:	2/1/00
Project name:	Seabreeze Yacht Center	Depth of well from TOC (feet):	14.75		
Location:	280 6th Avenue	Well diameter (inch):	2		
	Oakland, CA	Screened interval from TOC (feet):	2.55-14.75		
Recorded by:	WKS	TOC elevation (feet):	6.30		
Weather:	Sunny	Water level from TOC (feet):	3.50	Time:	12:20
Precip in past		Product level from TOC (feet):	None	Time:	12:20
5 days (inch):	≈ 1.5	Water level measurement:	Dual interface probe		

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

$$[(14.75 \text{ ft}) - (3.91 \text{ ft})] \times (0.083 \text{ ft})^2 \times 3.14 \times 7.48 =$$

Well depth	Water level	Well radius		1.8 gallons in one well volume
				5.5 gallons in 3 well volumes
				6.0 total gallons removed

CALIBRATION:

	Time	Temp (° C)	pH	EC (µmho/cm)	NTU
Calibration Standard:	--	--	7.00/10.01	1,000	10
Before Purging:	9:20	19.2	7.00/10.01	1,000	10.12
After Purging:	13:10	19.4	7.17/10.13	1,000	9.94

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (mg)	Cumulative Gallons Removed	Appearance	NTU
12:34	17.0	6.86	25.39	1.5	Light amber color	3.86
12:40	16.0	6.81	23.32	2.5	Light amber color	23.8
12:46	16.9	6.87	25.73	3.5	Light amber color	15.5
12:53	17.5	6.90	26.87	4.5	Light amber color	5.23
12:58	17.7	6.92	27.46	5.5	Clear	3.65
13:04	18.0	6.92	28.07	6.0	Clear	2.92

DO meter calibration:	9.72 mg/L @ 17.1° C	Time:	12:45
DO result (after purging well, mg/L):	0.1	Time:	14:37
Water level after purging prior to sampling (feet):	7.12	Time:	7:37 (2/4/00)
Appearance of sample:	Light amber color, NTU of sample 6.62	Time:	7:45 (2/4/00)
Duplicate/blank number:	None	Time:	--
Purge method:	Peristaltic pump		
Sampling equipment:	Disposable polyethylene bailer	VOC attachment:	None required
Sample containers:	One 2-liter amber glass, 2-VOAs		
Sample analyses:	TEPH as diesel, MTBE	Laboratory:	Curtis & Tompkins
Decontamination method:	TSP and water, DI water rinse	Rinsate disposal:	On-site drum

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