

# THE MARTIN GROUP

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August 14, 1991

Mr. Larry Seto  
Division of Hazardous Materials  
Department of Environmental Health  
80 Swan Way, Room 200  
Oakland, CA 94621

Dear Larry:

Enclosed please find a copy of the "Quarterly Groundwater Monitoring Report, Emery Bay Marketplace, Emeryville, California".

If you should have any questions, please do not hesitate to call me.

Sincerely,

CHRISTIE AVENUE PARTNERS-JS



Lynn Tolin

Enclosure

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**QUARTERLY GROUNDWATER  
MONITORING REPORT,**

**EMERY BAY MARKETPLACE,  
EMERYVILLE, CALIFORNIA**

**August 14, 1991**





August 14, 1991

Ms. Lynn Tolin  
Christie Avenue Partners-JS  
6475 Christie Avenue, Suite 500  
Emeryville, California 94608

Dear Ms. Tolin:

**QUARTERLY GROUNDWATER MONITORING REPORT, EMERY BAY  
MARKETPLACE, EMERYVILLE, CALIFORNIA**

This letter report documents the results of the groundwater monitoring activities conducted at the Emery Bay Marketplace property during February through June 1991. This is the fourth quarterly report submitted in accordance with the "Work Plan for Groundwater Monitoring and Free Product Removal at the Marketplace Site, Emeryville, California," July 6, 1990 (Work Plan) (McLaren, 1990b). The Work Plan was submitted to address recommendations made in the report "Groundwater Characterization, Emery Bay Marketplace," June 19, 1990 (Groundwater Characterization Report) (McLaren, 1990a).

It was determined in the Groundwater Characterization Report that a former asphalt refining plant, located on the northeast side of the site, may be the source of: 1) hydrocarbons detected in groundwater samples from monitoring wells located downgradient from the former refining plant location, and 2) free product observed in Well W-5 which is located near the former refining plant location.

The following activities have been completed as proposed in the Work Plan:

- Depths to groundwater were measured at all monitoring wells on a quarterly basis (July and October 1990; January and April 1991) and the data were used to prepare groundwater elevation maps.
- Groundwater from six downgradient wells (Wells W-7, W-13, W-14, W-19, W-20, and W-24) was sampled on a quarterly basis (July and October 1990; and January and April 1991) to verify that petroleum hydrocarbons in groundwater are confined to the Marketplace property and have not migrated off-site. Samples were analyzed for total petroleum hydrocarbons as diesel (TPH/D) and motor oil (TPH/MO) by modified EPA Method 8015.

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- Free product was removed from Well W-5 on a bi-weekly basis for approximately four months (July through October 1990) and on a monthly basis since October 1990.
- Well W-10, which could not be used for sampling because of low groundwater recharge, was abandoned on October 1, 1990. The well abandonment activities are described in the Quarterly Report dated November 28, 1990 (McLaren/Hart, 1990b).

This letter report: 1) describes the field methods used to obtain groundwater elevation and quality data in April 1991, and to remove product from Well W-5 during February through June, 1991, 2) presents and evaluates the results of the April 1991 depth to groundwater measurements and groundwater quality analyses, and the February through June 1991 free product removal from Well W-5, 3) summarizes conclusions from the monitoring activities and free product removal performed during this quarter, and 4) presents recommendations for continued groundwater monitoring and free product removal. The data evaluation compares data collected during this quarter, to historic data collected at the site.

## FIELD METHODS

Depths to groundwater in all existing wells at the Emery Bay Marketplace property were measured with a Marine Moisture Control Company (MMCC) oil-water interface probe prior to collecting groundwater samples on April 3, 1991. The hydrologic data sheet is provided in Attachment A. A summary of historic depth to groundwater measurements, monitoring well surface casing elevations, and calculated groundwater surface elevations is presented in Table 1.

A peristaltic pump was used to purge groundwater prior to sampling with a disposable bailer on April 3 and 4, 1991. Groundwater was purged until: 1) a minimum of three casing volumes of groundwater were removed, 2) turbidity readings were below 50 NTUs, and 3) temperature, conductivity and pH readings were stabilized. Groundwater samples were contained in one-liter amber bottles and were sent under chain-of-custody to McLaren Analytical Laboratory (MAL) in Rancho Cordova, California. One travel blank was sent on each day of sampling as a Quality Assurance (QA) sample.

The groundwater samples were analyzed for total petroleum hydrocarbons (TPH) in the gasoline, kerosene, diesel and motor oil ranges by Modified EPA Method 8015. The analytical laboratory data sheets, QA laboratory results, chain-of-custody records, and sampling data sheets are included in Appendix B. The analytical results are summarized and presented with the historic analytical data in Table 2.





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Free product was removed from Well W-5 on a monthly basis during this quarter. The free product thickness was measured with a MMCC oil-water interface probe prior to removal. Product was then removed with a peristaltic pump and the product thickness in the well was remeasured to confirm that most of the product had been removed. The product thickness, both before and after product removal, and an estimate of the volume of fluid removed, is recorded in Table 3. It should be noted that the volume of fluid removed includes an undetermined amount of water.

## **DATA EVALUATION**

The data which are evaluated consists of: 1) groundwater surface elevations as determined by the April 1991 depths to groundwater measurements, 2) groundwater flow directions as determined from the groundwater surface contour map that was prepared based on the groundwater elevations, 3) groundwater quality data obtained in April 1991, and 4) removal of free product during February through May 1991. This data evaluation compares data collected during this quarter, to data collected during the previous three quarters as well as to historic data collected at the site.

### **Groundwater Elevation**

The April 3, 1991 groundwater elevations were generally 0.5 to 2 feet higher than the elevations measured during the previous three quarters. As shown in Table 1, groundwater elevations similar to the April 1991 elevations have previously been observed at the site, most commonly during winter and early spring months (January through April). The higher groundwater elevations observed in April 1991 probably reflect seasonal variations related to shallow recharge from precipitation during winter and early spring months.

### **Groundwater Flow Direction**

The April 3, 1991 groundwater surface elevation contours for the artificial fill are presented in Figure 1. Elevations from the following wells were omitted from the preparation of groundwater surface elevation contours for the reasons described:

- Elevations from Wells W-15, W-16, and W-22, were not used because these wells are completed in the native material below the artificial fill material. It was determined in the Groundwater Characterization Report (McLaren, 1990a) that elevations from wells completed only in the native material are not consistent with



elevations from wells completed in the fill material, because confined or semi-confined conditions may exist in the native material that are not present in the fill material.

- The elevation from Well W-5 was not used because the free product which occurs in the well may affect the groundwater elevation.
- The elevation from Well W-7 was not used because it is significantly higher than elevations in adjacent wells. The higher elevation at Well W-7 has consistently been observed when water elevations have previously been measured. As discussed in the Groundwater Characterization Report, perched groundwater conditions may occur at this location.

The April 1991 groundwater flow map for the artificial fill (Figure 1) is consistent with previously presented groundwater flow maps (McLaren, 1990a; McLaren/Hart, 1990a, 1990b, 1991) and indicates that groundwater flows in a westerly to southwesterly direction, toward Christie Avenue. As discussed in the Groundwater Characterization Report (McLaren, 1990a) local variations in groundwater flow near Wells W-4 and W-8 may be caused by a slurry wall installed to a depth of 35 feet on the adjacent upgradient property.

### Groundwater Quality

Groundwater samples were collected on April 3 and 4, 1991 from six wells on the downgradient side of the property (W-7, W-13, W-14, W-19, W-20 and W-24) to confirm that petroleum hydrocarbons are confined to the Marketplace property and have not migrated off-site. TPH/D and/or TPH/MO have previously been detected in groundwater from Wells W-7 and W-19 which define the downgradient extent of hydrocarbons in groundwater. These constituents have not been detected in groundwater from Wells W-13, W-14, W-20 and W-24 which are located downgradient of Wells W-7 and W-19.

The April 1991 sampling results are generally consistent with previous results, with the exception that TPH/MO was detected for the first time in Wells W-20 and W-24 (2.3 and 1.1 ppm, respectively). TPH/MO has not previously been detected above the reporting limits of 1 ppm, in samples from these wells. It was noted by MAL that although the chromatographic pattern for the samples from these wells overlapped with the motor oil standard chromatograph, it did not exactly match the motor oil standard chromatographic pattern. MAL also indicated that the pattern did not match the TPH/MO pattern on the chromatographs from Wells W-7 and W-19. Therefore, it is possible that the petroleum

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hydrocarbons detected in the April 1991 samples from these wells are not related to the hydrocarbons detected in upgradient Wells W-7 and W-19.

The reason(s) that petroleum hydrocarbons were detected for the first time in the April 1991 samples from Wells W-20 and W-24 are not known. Possible explanations include: 1) introduction of hydrocarbons to groundwater from overlying soil due to recharge from precipitation in March 1991 or 2) migration of hydrocarbons in groundwater from a new, or previously unrecognized, source. Future groundwater sampling and analyses may establish: 1) whether TPH/MO is consistently detected in groundwater from these wells and 2) the possible source of the TPH/MO.

#### **Free Product Removal from Well W-5**

Free product, including a relatively small but undetermined amount of water, has been removed from Well W-5 on a biweekly basis from July through October 1990 and on a monthly basis since October 1990. The total amount of fluid which has been removed from Well W-5 since July 1990, is nearly 12 gallons (Table 3).

Product thickness in Well W-5 has ranged from 0.71 to 1.66 feet prior to removal, except when it was 2.12 feet prior to removal the first time, on July 25, 1990 (Table 3). Product thickness prior to removal has remained relatively consistent since product removal was initiated in July 1990, regardless of whether product was removed on a biweekly or monthly basis.

#### **CONCLUSIONS**

In summary, the results of the groundwater monitoring activities conducted at the Emery Bay Marketplace during this quarter are as follows:

- The April 3, 1991 groundwater elevations were generally 0.5 to 2 feet higher than the elevations measured during the previous three quarters. However, groundwater elevations similar to the April 1991 elevations have previously been observed at the site, most commonly during winter and early spring months (January through April), and probably reflect seasonal variations related to shallow recharge from precipitation during these months.





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- The April 1991 groundwater flow map for the artificial fill (Figure 1) and previous groundwater flow maps (McLaren, 1990a; McLaren/Hart, 1990a, 1990b, 1991), consistently show that groundwater flows in a westerly to southwesterly direction, toward Christie Avenue.
- Relatively low levels of TPH/MO were detected in the April 1991 samples from Wells W-20 and W-24, where petroleum hydrocarbons have not previously been detected. Because the chromatographic patterns from the April 1991 samples did not exactly match the motor oil standard and did not match the chromatographic pattern for the motor oil detected in upgradient Wells W-7 and W-19, it is possible that the petroleum hydrocarbons detected in the samples from these wells are not related to the hydrocarbons detected in Wells W-7 and W-19 which are associated with the former asphalt refining plant at the site.
- Free product has been removed from Well W-5 on a biweekly basis from July through October 1990 and on a monthly basis since October 1990. Since product removal was initiated in July 1990, product thickness prior to removal has remained relatively consistent, ranging from approximately 1.0 to 1.5 feet (Table 3).

If you have any questions regarding this report, please do not hesitate to call.

Sincerely,

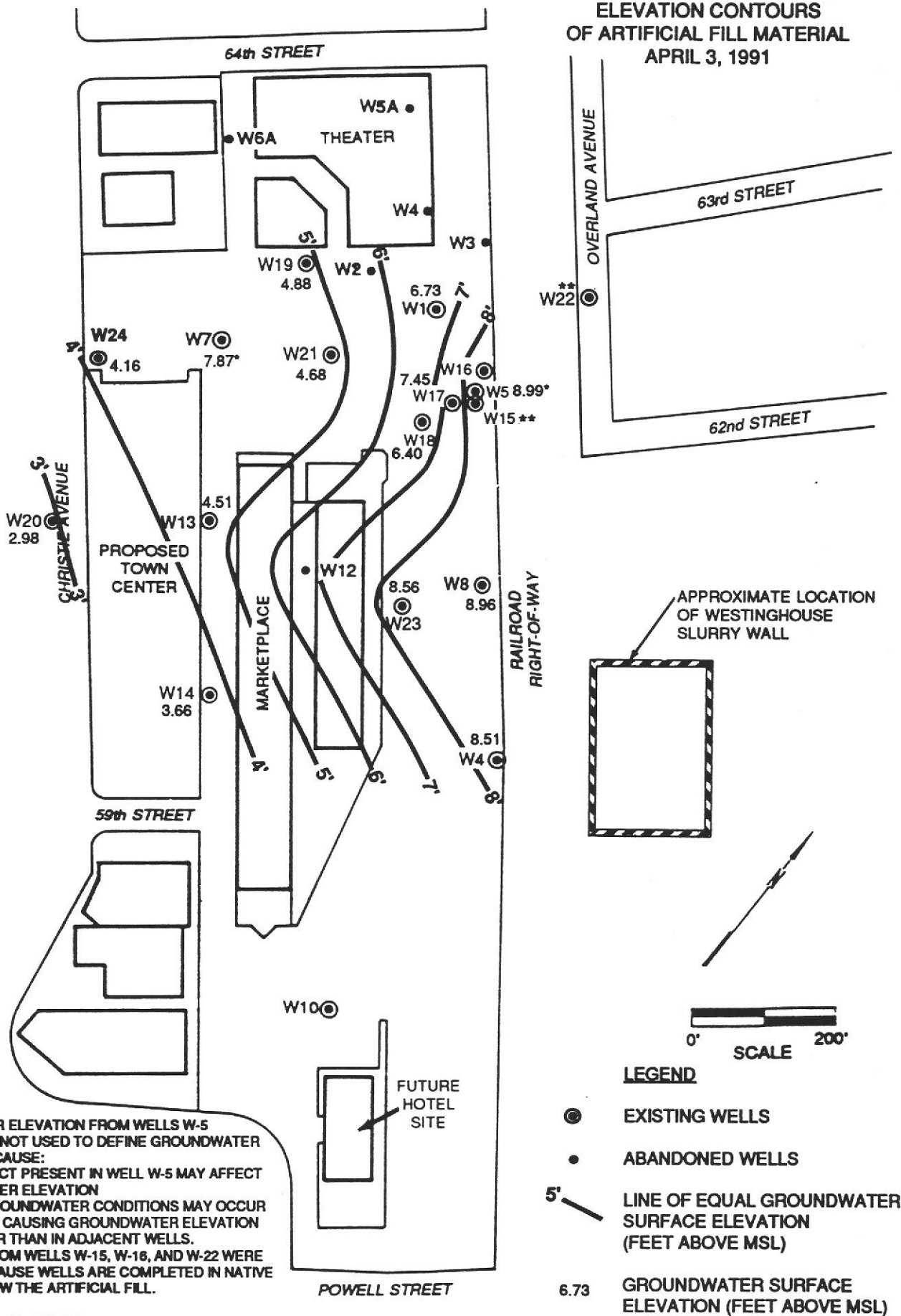
  
Julie S. Menack, RG #4440  
Supervising Hydrogeologist

  
Albert A. Doyle  
Principal Engineer

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FIGURE 1  
GROUNDWATER SURFACE  
ELEVATION CONTOURS  
OF ARTIFICIAL FILL MATERIAL  
APRIL 3, 1991



\* GROUNDWATER ELEVATION FROM WELLS W-5 AND W-7 WERE NOT USED TO DEFINE GROUNDWATER CONTOURS BECAUSE:

- FREE PRODUCT PRESENT IN WELL W-5 MAY AFFECT GROUNDWATER ELEVATION
- PERCHED GROUNDWATER CONDITIONS MAY OCCUR AT WELL W-7, CAUSING GROUNDWATER ELEVATION TO BE HIGHER THAN IN ADJACENT WELLS.

\*\* ELEVATIONS FROM WELLS W-15, W-16, AND W-22 WERE NOT USED BECAUSE WELLS ARE COMPLETED IN NATIVE MATERIAL BELOW THE ARTIFICIAL FILL.

**LEGEND**

- EXISTING WELLS
- ABANDONED WELLS
- 5' — LINE OF EQUAL GROUNDWATER SURFACE ELEVATION (FEET ABOVE MSL)
- 6.73 GROUNDWATER SURFACE ELEVATION (FEET ABOVE MSL)

TABLE 1  
GROUNDWATER DEPTHS AND ELEVATIONS  
EMERY BAY MARKETPLACE SITE

Well Number	Top of Casing (Feet)	Date	Depth to Groundwater (Feet)	Groundwater Elevation (Feet)	Product Thickness (Feet)
W-1 <sup>a</sup>	11.47	8-7-81	4.30	6.20 <sup>b</sup>	
		9-10-81	4.40	6.10 <sup>b</sup>	
		5-6-87	6	6.08 <sup>b</sup>	
		8-20-89	5.60	5.87	
		10-11-89	5.63	5.84	
		2-22-90	4.92	6.55	
		2-28-90	5.02	6.45	
		4-9-90	5.44	6.03	
		6-7-90	5.37	6.10	
		7-25-90	5.26	6.21	
		10-3-90	5.43	6.04	
		1-3-91	5.69	5.78	
		4-3-91	4.74	6.73	
W-4	9.96	8-7-81	4.30	6.20 <sup>b</sup>	
		9-10-81	4.40	6.10 <sup>b</sup>	
		1-18-82	2.50	8.00 <sup>b</sup>	
		3-27/28-85	c	8.65	
		8-20-89	3.95	6.01	
		10-11-89	3.87	6.09	
		2-22-90	2.0	7.96	
		2-28-90	2.39	7.57	
		4-9-90	3.17	6.79	
		6-7-90	2.73	7.23	
		7-25-90	3.71	6.25	
		10-3-90	4.18	5.78	
		1-3-91	3.64	6.32	
		4-3-91	1.45	8.51	
		W-5	11.41	8-7-81	4.70
9-10-81	4.90			7.30 <sup>b</sup>	c
1-18-82	2.50			9.60 <sup>b</sup>	c
3-27/28-85	c			9.28	c
10-11-89	4.43			6.98	0.71
2-22-90	3.80			7.61	0.88
2-28-90	4.43			6.98	1.65
4-9-90	4.73			6.68	1.82
6-7-90	4.30			7.11	1.80
7-25-90	5.10			6.31	2.12
10-3-90	4.90			6.51	1.11
1-3-91	4.77			6.64	0.85
4-3-91	2.42			8.99	0.03
W-7 <sup>a</sup>	9.05	5-6-87	3	6.88 <sup>b</sup>	
		8-20-89	3.59	5.46	
		10-11-89	3.08	5.97	
		2-22-90	1.75	7.30	
		2-28-90	1.31	7.74	
		4-9-90	2.42	6.63	
		6-7-90	1.21	7.84	
		7-25-90	2.76	6.29	
		10-3-90	3.22	5.83	
		1-3-91	3.17	5.88	
		4-3-91	1.18	7.87	
		W-8	10.43	5-6-87	5.5
8-20-89	3.59			6.84	
2-22-90	1.5			8.93	
2-28-90	1.78			8.65	
4-9-90	3.12			7.31	
6-7-90	2.90			7.53	
7-27-90 <sup>d</sup>	3.33			7.10	
10-3-90	3.65			6.78	
1-3-91	3.46			6.97	
4-3-91	1.47	8.96			

TABLE 1  
 GROUNDWATER DEPTHS AND ELEVATIONS  
 EMERY BAY MARKETPLACE SITE  
 (Continued)

Well Number	Top of Casing (Feet)	Date	Depth to Groundwater (Feet)	Groundwater Elevation (Feet)	Product Thickness (Feet)
W-13	8.15	8-20-89	4.64	3.51	
		10-11-89	4.60	3.55	
		2-22-90	3.85	4.30	
		2-28-90	4.18	3.97	
		4-9-90	4.31	3.84	
		6-7-90	3.93	4.22	
		7-25-90	4.40	3.75	
		10-3-90	4.67	3.48	
		1-3-91	4.43	3.72	
		4-3-91	3.64	4.51	
W-14	7.97	8-20-90	5.02	2.95	
		2-22-90	4.19	3.78	
		2-28-90	4.46	3.51	
		4-9-90	4.36	3.61	
		6-7-90	5.29	2.68	
		7-25-90	4.83	3.14	
		10-3-90	5.09	2.88	
		1-3-91	4.32	3.65	
		4-3-91	4.31	3.66	
		W-15	11.53	8-20-89	3.43
10-11-89	4.26			7.27	
2-22-90	2.58			8.95	
2-28-90	2.53			9.00	
4-9-90	2.48			9.05	
6-7-90	4.54			6.99	
7-25-90	4.00			7.53	
10-3-90	3.46			8.07	
1-3-91	2.97			8.56	
4-3-91	3.05			8.48	
W-16	10.94	10-11-89	4.81	6.13	0.07
		2-22-90	3.92	7.02	NM <sup>e</sup>
		2-28-90	3.88	7.06	NM
		4-9-90	7.81	3.13	NM
		6-7-90	6.19	4.75	NM
		7-27-90 <sup>f</sup>	4.44	6.50	NM
		10-3-90	4.38	6.56	0.02
		1-3-91	4.67	6.27	0.02
		4-3-91	3.50	7.48	0.02
		W-17	12.14	10-11-89	9.12
2-22-90	5.42			6.72	
2-28-90	5.35			6.79	
4-9-90	5.72			6.42	
6-7-90	---			---	
7-26-90	5.59			6.55	
10-3-90	5.72			6.42	
1-3-91	6.28			5.86	
4-3-91	4.69			7.45	
W-18	11.34			10-11-89	5.52
		2-22-90	4.42	6.92	
		2-28-90	4.77	6.57	
		4-9-90	5.24	6.10	
		6-7-90	4.28	7.06	
		7-25-90	4.98	6.36	
		10-3-90	5.44	5.90	
		1-3-91	5.84	5.50	
		4-3-91	4.94	6.40	
		W-19	10.27	4-9-90	5.11
6-7-90	4.77			5.50	
7-25-90	4.93			5.34	
10-3-90	4.95			5.32	
1-3-91	5.95			4.32	
4-3-91	5.39			4.88	
W-20	6.82	4-9-90	4.08	2.74	
		6-7-90	3.79	3.03	
		7-25-90	4.00	2.82	
		10-3-90	4.03	2.79	
		1-3-91	4.12	2.70	
		4-3-91	3.84	2.98	



TABLE 1  
GROUNDWATER DEPTHS AND ELEVATIONS  
EMERY BAY MARKETPLACE SITE  
(Continued)

Well Number	Top of Casing (Feet)	Date	Depth to Groundwater (Feet)	Groundwater Elevation (Feet)	Product Thickness (Feet)
W-21	9.48	4-9-90	5.21	4.27	
		6-7-90	4.84	4.64	
		7-25-90	5.05	4.43	
		10-3-90	5.18	4.30	
		1-3-91	5.47	4.01	
		4-3-91	4.80	4.68	
W-22	11.67	4-9-90	7.50	4.17	
		6-7-90	7.36	4.31	
		7-25-90	7.49	4.18	
		10-3-90	7.68	3.99	
		1-3-91	7.88	3.79	
		4-3-91	7.64	4.03	
W-23	9.16	4-9-90	1.51	7.65	
		6-7-90	1.78	7.38	
		7-27-90 <sup>f</sup>	2.63	6.53	
		10-3-90	3.20	5.96	
		1-3-91	2.36	6.80	
		4-3-91	0.60 <sup>h</sup>	8.56	
W-24	8.72	6-7-90	4.75	3.97	
		7-25-90	5.02	3.70	
		10-3-90	5.00	3.72	
		1-3-91	5.25	3.47	
		4-3-91	4.56	4.16	

a Nielson Property  
b Groundwater elevation taken from earlier reports; may not agree with calculated elevation using current top of casing.  
c Data not available.  
d Well W-8 was not accessible on 7-25-90 and 7-26-90. It was sounded on 7-27-90.  
e NM indicates product thickness not measurable.  
f Wells W-16 and W-23 were under pressure when sounded in 7-25-90. The wells were allowed to equilibrate and were resounded on 7-27-90.  
g Well W-17 not accessible on 6-7-90.  
h Depth to groundwater measured with tape measure because water level was too shallow to measure with oil-water interface probe.



TABLE 2  
HYDROCARBONS IN GROUNDWATER  
EMERY BAY MARKETPLACE SITE

Number Well	Sample Date	TPH/D Concentration (ppm)	TPH/MO Concentration (ppm)
W-1	4-14-87	--- <sup>a</sup>	<5 <sup>b,c</sup>
	2-28-90	<0.5	---
	4-11-90	<0.1	0.57
W-2 <sup>d</sup>	4-15-87	<1	---
W-3 <sup>d</sup>		---	---
W-4 <sup>d</sup>	4-14-87	---	<5 <sup>c</sup>
W-4	3-01-90	<0.5	---
	4-10-90	<0.1	<0.25
W-5 <sup>e</sup>	9-27-89	20	---
B-5 <sup>d</sup>		---	---
W-5A <sup>d</sup>	4-16-87	<1 <sup>f</sup>	<1 <sup>f</sup>
W-6 <sup>d</sup>	4-16-87	<1 <sup>f</sup>	<1 <sup>f</sup>
W-7	9-26-89	1.1	---
	2-28-90	<0.5 <sup>g</sup>	---
	4-11-90	5.6	7.5
	7-30-90	2.6	2
	10-4-90	5	6
	1-4-91	4	12
	4-3-91	<1.0 <sup>h</sup>	3.2
W-8	4-17-87	10 <sup>i</sup>	---
	9-26-89	7.1	---
	3-01-90	4.5	---
	4-18-90	5.3	---
W-13	2-28-90	<0.5	---
	4-12-90	<0.5	---
	7-27-90	<0.5	<1
	10-4-90	<0.5	<1
	1-3-91	<0.5	<1
	4-4-91	<0.50	<1.0
W-14	2-28-90	<0.5	---
	4-11-90	<0.1	<0.25
	7-30-90	<0.6	<1
	10-4-90	<0.5	<1
	1-4-91	<0.5	<1
	4-4-91	<0.50	<1.0
W-15	9-25-89	1.2	---
	4-13-90	1.5	---
W-16	9-27-89	4.7	---
	2-28-90	22	---
	4-13-90	9.0	---
W-17	9-25-89	0.7	---
	4-13-90	1.6	---
W-18	9-26-89	3.1	---
	4-13-90	5.1	---
W-19	4-12-90	1.1 <sup>j</sup>	---
	4-16-90	<0.5 <sup>j</sup>	---
	7-27-90	<1	8
	10-3-90	<0.5 <sup>k</sup>	3
	1-3-91	<0.5	<1
	4-3-91	<2.5 <sup>h</sup>	8.4

TABLE 2  
(Continued)

HYDROCARBONS IN GROUNDWATER  
EMERY BAY MARKETPLACE SITE

Number Well	Sample Date	TPH/D Concentration (ppm)	TPH/MO Concentration (ppm)
W-20	4-12-90	<0.5	---
	4-16-90	<0.5	---
	7-30-90	<0.5	<1
	10-3-90	<0.5	<1
	1-4-91	<0.5	<1
	4-4-91	<0.50	2.3 <sup>l</sup>
W-21	4-12-90	1.4	---
	4-18-90	1.7	---
W-22	4-12-90	<0.5	---
	4-18-90	<0.5	---
W-23	4-12-90	2.9	---
	4-18-90	3.6	---
W-24	6-7-90	<0.5	---
	7-27-90	<0.5	<1
	10-3-90	<0.5	<1
	1-3-91	<0.5	<1
	4-3-91	<0.50	1.1 <sup>l</sup>

a --- indicates no analysis made for constituent.  
b < indicates constituent not detected above this level.  
c Grease also not detected above 5 ppm in Wells W-1 and W-4 (Nielson)  
d Abandoned well on Nielson property.  
e Free product in Well W-5.  
f Indicates total gasoline, diesel, and motor oil also not detected above 1 ppm in wells W-5A and W-6.  
g Review of gas chromatograph indicated TPH/D present at 0.3 ppm in Well W-7 on 2-28-90.  
h Reporting limits increased from 0.5 ppm to 1.0 ppm (W-7) and 2.5 ppm (W-19) TPH/D on 4-3-91 because samples were diluted due presence of motor oil.  
i Semiquantified results include gasoline, diesel, and some oil and grease in well W-8.  
j Review of gas chromatograph indicated TPH/D present at 0.4 ppm in Well W-19 on 4-16-90.  
k Review of gas chromatograph indicated TPH/D present at 0.3 ppm in Well W-19 on 10-3-90.  
l The chromatographic pattern in the sample does not exactly match the motor oil standard chromatograph.

TABLE 3  
 PRODUCT THICKNESS DATA FOR WELL W-5  
 EMERY BAY MARKETPLACE SITE

Date	Before Product Removal			After Product Removal			Volume Removed (Gal.)
	Depth to Oil	Depth to Water	Product Thickness	Depth to Oil	Depth to Water	Product Thickness	
<b>Biweekly Product Removal</b>							
7/25/90	2.98	5.10	2.12	*	*	*	0.7**
8/8/90	3.56	4.72	1.16	4.43	4.47	0.04	1.0**
8/24/90	3.56	4.80	1.24	4.94	4.94	0.00	0.5
9/7/90	3.62	4.83	1.21	4.58	4.79	0.21	0.3**
9/21/90	3.72	4.93	1.21	4.44	4.54	0.10	0.4**
10/4/90	3.84	4.94	1.10	3.24	3.96	0.72	0.3
10/17/90	3.92	4.96	1.04	3.94	3.96	0.02	0.2
10/31/90	4.06	5.24	1.18	4.65	4.72	0.07	0.4
<b>Monthly Product Removal</b>							
11/29/90	4.34	5.64	1.30	5.64	5.65	0.01	1.5
12/28/90	3.97	4.68	0.71	5.46	5.48	0.02	2.0
1/31/91	3.65	4.64	0.99	5.22	5.25	0.03	2.0
2/28/91	2.67	4.17	1.50	3.7	3.72	0.02	0.4
3/28/91	2.08	3.57	1.49	3.71	3.71	0.00	0.8
4/29/91	2.77	4.43	1.66	3.64	3.73	0.09	0.4
5/30/91	3.14	4.26	1.12	5.15	5.15	0.00	2.0
6/24/91	3.56	4.72	1.16	4.11	4.12	0.01	0.8**
<b>TOTAL AMOUNT OF PRODUCT REMOVED***</b>							<b>13.7</b>

\*Product thickness not measured after product was removed on 7/25/90.

\*\*Product removed with a bailer.

\*\*\*Total amount of product removed includes an undetermined amount of water.

**ATTACHMENT A**  
**HYDROLOGIC DATA SHEET**



PROJECT: Marketplace EVENT: Sounding SAMPLER: CMS

NO.	WELL OR LOCATION	DATE			TIME		MEASUREMENT	CODE	COMMENTS
		MO	DA	YR	HR	MIN			
1	W1	4	3	91	8	50	4.74	SWL	
2	W4				7	30	1.45	SWL	
3	W5				8	15	2.39	OIL	2.42 OWI
4	W7				9	05	1.18	SWL	
5	W8				7	55	1.47	IWL	vault flooded
6	W10						abandoned		
7	W13				9	25	3.64	SWL	
8	W14				9	35	4.31	SWL	vault flooded
9	W15				8	00	3.05	SWL	vault flooded
10	W16				8	20	3.48	OIL	3.50 OWI
11	W17				8	25	4.69	SWL	
12	W18				8	30	4.94	SWL	vault flooded
13	W19				8	55	5.39	SWL	
14	W20				9	55	3.84	SWL	vault flooded
15	W21				9	00	4.80	SWL	
16	W22				9	50	7.14	SWL	
17	W23				10	10	0.0	SWL	
18	W24				9	20	4.56	SWL	
19									
20									

CODES:

- \*SWL - Static Water Level (Feet)
- \*IWL - Instant Water Level; Non-Static (Feet)
- \*OIL - Oil Level (Feet)
- \*OWI - Oil/Water Interface (Feet)
- \*MTD - Measured Total Depth (Feet)
- FLO - Flow Rate (Gallons/Minute)
- CUM - Cumulative (Gallons)

- HRS - Total (Hours)
- PSI - Pressure (psi)<sup>2</sup>
- pH - 1 to 14
- Ec - Conductivity (µm HOS)
- TMP - Temperature (°C)
- TRB - Turbidity (NTU)
- \_\_\_\_\_ (Additional Code)

\*All levels are depth from inner casing - describe any other reference points in comments column; when in doubt, describe reference point.  
 Note in comments column if well is not: properly labeled, locked, or able to be locked. Describe corrective action.  
 Note flooding of vault by odor, access problems.  
 \*Negative pressure (Vacuum) psi = approx -(1/2 x mmHg)



**ATTACHMENT B**

**LABORATORY ANALYTICAL DATA SHEETS,  
QA LABORATORY RESULTS,  
CHAIN-OF-CUSTODY FORMS, AND  
SAMPLING DATA SHEETS**

TOTAL PETROLEUM HYDROCARBONS

Analytical Method: Modified EPA 8015 (a)  
Preparation Method: EPA 3510

Project Name: Marketplace

Project Number: 59804

Sample Description: Trip Blank

Lab Project-ID Number: 4297-001

Sample Number: 193180

Date Sampled: 04/03/91

Date Received: 04/04/91

Date Extracted: 04/05/91

Date Analyzed: 04/10/91

Batch Number: 910405-1901

PETROLEUM HYDROCARBONS

CONCENTRATION  
mg/L (ppm)

REPORTING LIMIT  
mg/L (ppm)

Gasoline Range	BRL	0.50
Jet Fuel/Kerosene Range	BRL	0.50
Diesel Range	BRL	0.50
Motor Oil Range	BRL	1.0
Total Petroleum Hydrocarbons	BRL	1.0

Dilution: None

Comments: (a) Derived from EPA 8015. Gas Chromatograph with flame ionization detector is used to perform the analysis. Modification is due to the quantitation of petroleum fraction instead of non-halogenated volatile compounds.

Approved By: C. Fong Date: 4/16/91

The cover letter and attachments are integral parts of this report.

030191



**TOTAL PETROLEUM HYDROCARBONS**

**Analytical Method: Modified EPA 8015 (a)  
Preparation Method: EPA 3510**

Project Name: Marketplace

Project Number: 59804

Sample Description: W-19

Lab Project-ID Number: 4297-002

Sample Number: 193182

Date Sampled: 04/03/91

Date Received: 04/04/91

Date Extracted: 04/05/91

Date Analyzed: 04/10/91

Batch Number: 910405-1901

PETROLEUM HYDROCARBONS

CONCENTRATION  
mg/L (ppm)

REPORTING LIMIT  
mg/L (ppm)

Gasoline Range	BRL	2.5
Jet Fuel/Kerosene Range	BRL	2.5
Diesel Range	BRL	2.5
Motor Oil Range	8.4	5.0
Total Petroleum Hydrocarbons	8.4	5.0

Dilution: 1:5 (b)

Comments: (a) Derived from EPA 8015. Gas Chromatograph with flame ionization detector is used to perform the analysis. Modification is due to the quantitation of petroleum fraction instead of non-halogenated volatile compounds.

(b) Revised 05/29/91.

Approved By: A. Mendite for Date: 5/29/91  
C. Fong

The cover letter and attachments are integral parts of this report.

030191





**TOTAL PETROLEUM HYDROCARBONS**

Analytical Method: Modified EPA 8015 (a)  
Preparation Method: EPA 3510

Project Name: Marketplace

Project Number: 59804

Sample Description: W-7

Lab Project-ID Number: 4297-003

Sample Number: 193184

Date Sampled: 04/03/91

Date Received: 04/04/91

Date Extracted: 04/05/91

Date Analyzed: 04/14/91

Batch Number: 910405-1901

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> mg/L (ppm)	<u>REPORTING LIMIT</u> mg/L (ppm)
Gasoline Range	BRL	1.0
Jet Fuel/Kerosene Range	BRL	1.0
Diesel Range	BRL	1.0
Motor Oil Range	3.2	2.0
Total Petroleum Hydrocarbons	3.2	2.0

Dilution: 1:2 (b)

Comments: (a) Derived from EPA 8015. Gas Chromatograph with flame ionization detector is used to perform the analysis. Modification is due to the quantitation of petroleum fraction instead of non-halogenated volatile compounds.  
(b) Revised 05/29/91.

Approved By: C. Fong *A. Meydite for* Date: 5/29/91

The cover letter and attachments are integral parts of this report.

030191



TOTAL PETROLEUM HYDROCARBONS

Analytical Method: Modified EPA 8015 {a}  
Preparation Method: EPA 3510

Project Name: Marketplace

Project Number: 59804

Sample Description: Trip Blank

Lab Project- ID Number: 4301-001

Sample Number: 193188

Date Sampled: 04/04/91

Date Received: 04/05/91

Date Extracted: 04/08/91

Date Analyzed: 04/11/91

Batch Number: 910408-0301

PETROLEUM HYDROCARBONS

CONCENTRATION  
mg/L (ppm)

REPORTING LIMIT  
mg/L (ppm)

Gasoline Range	BRL	0.50
Jet Fuel/Kerosene Range	BRL	0.50
Diesel Range	BRL	0.50
Motor Oil Range	BRL	1.0
Total Petroleum Hydrocarbons	BRL	1.0

Dilution: None

Comments: {a} Derived from EPA 8015. Gas Chromatograph with flame ionization detector is used to perform the analysis. Modification is due to the quantitation of petroleum fraction instead of non-halogenated volatile compounds.

Approved By: C. Fong Date: 4/22/91  
C. Fong

The cover letter and attachments are integral parts of this report.

030191



TOTAL PETROLEUM HYDROCARBONS

Analytical Method: Modified EPA 8015 {a}  
Preparation Method: EPA 3510

Project Name: Marketplace

Project Number: 59804

Sample Description: W-13

Lab Project-ID Number: 4301-003

Sample Number: 193193

Date Sampled: 04/04/91

Date Received: 04/05/91

Date Extracted: 04/08/91

Date Analyzed: 04/11/91

Batch Number: 910408-0301

PETROLEUM HYDROCARBONS

CONCENTRATION  
mg/L (ppm)

REPORTING LIMIT  
mg/L (ppm)

Gasoline Range	BRL	0.50
Jet Fuel/Kerosene Range	BRL	0.50
Diesel Range	BRL	0.50
Motor Oil Range	BRL	1.0
Total Petroleum Hydrocarbons	BRL	1.0

Dilution: None

Comments: {a} Derived from EPA 8015. Gas Chromatograph with flame ionization detector is used to perform the analysis. Modification is due to the quantitation of petroleum fraction instead of non-halogenated volatile compounds.

Approved By: C. Fong Date: 4/22/91

The cover letter and attachments are integral parts of this report.

030191



TOTAL PETROLEUM HYDROCARBONS

Analytical Method: Modified EPA 8015 {a}  
Preparation Method: EPA 3510

Project Name: Marketplace

Project Number: 59804

Sample Description: W-14

Lab Project- ID Number: 4301-004

Sample Number: 193195

Date Sampled: 04/04/91

Date Received: 04/05/91

Date Extracted: 04/08/91

Date Analyzed: 04/11/91

Batch Number: 910408-0301

PETROLEUM HYDROCARBONS

CONCENTRATION  
mg/L (ppm)

REPORTING LIMIT  
mg/L (ppm)

Gasoline Range	BRL	0.50
Jet Fuel/Kerosene Range	BRL	0.50
Diesel Range	BRL	0.50
Motor Oil Range	BRL	1.0
Total Petroleum Hydrocarbons	BRL	1.0

Dilution: None

Comments: {a} Derived from EPA 8015. Gas Chromatograph with flame ionization detector is used to perform the analysis. Modification is due to the quantitation of petroleum fraction instead of non-halogenated volatile compounds.

Approved By: C. Fong Date: 4/22/91

The cover letter and attachments are integral parts of this report.

030191





RECEIVED

APR 16 1991

McLAREN/HART

Date: April 16, 1991  
LP #: 4297

Gary Foote  
McLaren/Hart  
1135 Atlantic Avenue  
Alameda, CA 94501

Dear Mr. Foote:

Enclosed are the laboratory results for the four samples submitted by you to the McLaren Analytical Laboratory on April 4, 1991, for the project *Marketplace*.

The analyses you requested are:

Mod. EPA 8015 (4 - Water)

The report consists of the following sections:

1. A copy of the chain of custody
2. Quality Control Report
3. Comments
4. Analytical results
5. Copy of final billing submitted to accounting.

Unless otherwise instructed by you, samples will be disposed of two weeks from the date of this letter.

Thank you for choosing McLaren Analytical Laboratory. We are looking forward to serving you in the future. Should you have any questions concerning this analytical report or the analytical methods employed, please do not hesitate to call.

Sincerely,

A handwritten signature in cursive script that reads 'Anthony S. Wong'.

Anthony S. Wong, Ph.D.  
Director, Laboratory/Managing Principal



# CHAIN OF CUSTODY RECORD

MAL 1/1  
 FOR LABORATORY USE ONLY  
 Laboratory Project No.: 4297  
 Storage Refrigerator ID: 4-4  
 Storage Freezer ID: \_\_\_\_\_

Secured  
 Yes   
 No

Project Name: Marketplace Project #: 59804 Sampler: colette shelly colette shelly  
 Relinquished by: (Signature and Printed Name) colette shelly Received by: (Signature and Printed Name) FedEx Date: 4-3-91 Time: 16:00  
 Relinquished by: (Signature and Printed Name) Fed-Ex Received by: (Signature and Printed Name) Duan J. Chan Date: 4/4/91 Time: 09:30  
 Relinquished by: (Signature and Printed Name) \_\_\_\_\_ Received by: (Signature and Printed Name) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

SHIP TO:  
 McLaren Analytical Laboratory  
 11101 White Rock Road  
 Rancho Cordova, CA 95670  
 (916) 638-3696  
 FAX (916) 638-2842

Method of Shipment: FedEx  
 Shipment ID: 73A1327996

- Circle or Add Analysis(es) Requested
- 601/8010 (Halogenated Volatiles-GC)
  - 602/8020 (Aromatic Volatiles-GC)
  - 604/8040 (Phenols-GC)
  - 608/8080 (Pesticides/PCB-GC)
  - 610/8100 (PNA-GC)
  - 624/8240 (Volatiles-GC/MS)
  - 625/8250 (BNA-GC/MS)
  - TPH/G (Gasoline-GC)
  - TPH/D (Diesel-GC)
  - 418/1418
  - 8015 Modified (GC)+ Motor Oil
  - Metals: Total a
  - Metals: Soluble a
  - Fluoride/Perchlorate
  - Chloride/pH
  - TDS/Percent Solid
  - Specific Conductivity (EC)

a) Identify specific metals requested under Special Instructions

Sample ID Number	Sample Description			601/8010 (Halogenated Volatiles-GC)	602/8020 (Aromatic Volatiles-GC)	604/8040 (Phenols-GC)	608/8080 (Pesticides/PCB-GC)	610/8100 (PNA-GC)	624/8240 (Volatiles-GC/MS)	625/8250 (BNA-GC/MS)	TPH/G (Gasoline-GC)	TPH/D (Diesel-GC)	418/1418	8015 Modified (GC)+ Motor Oil	Metals: Total a	Metals: Soluble a	Fluoride/Perchlorate	Chloride/pH	TDS/Percent Solid	Specific Conductivity (EC)	FOR LABORATORY USE ONLY				
	Date	Time	Description																		TAT	Container(s) #	Type	Lab ID	
1	193180	4/3/91	800	Trip Blank																		4	1	A	4297-001
2	193181		800	↓																		4	1	A	↓ ↓
3	193182		1145	W-19																		4	1	A	002
4	193183		1145	↓																		4	1	A	↓
5	193184		1300	W-7																		4	1	A	003
6	193185		1300	↓																		4	1	A	↓
7	193186		1445	W-24																		4	1	A	004
8	193187	↓	1445	↓																		4	1	A	↓
9																									
10																									

Special Instructions/Comments: \_\_\_\_\_  
 Sample Archive/Disposal:  
 Laboratory Standard  
 Other \_\_\_\_\_

TAT (Analytical Turn-Around Times) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks  
 Container Types: B=Brass Tube, V=VOA Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette, O = Other \_\_\_\_\_

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: Sample # 193186 was recieved Broken. 4-4-91 BJO.

SEND DOCUMENTATION AND RESULTS TO (Check one):  
 Project Manager/Office: Gary Foote  
 Client Name: \_\_\_\_\_  
 Company: McLaren/Hart  
 Address: 1135 Atlantic Ave. Alameda  
 Phone: 415 521-5200 Fax: \_\_\_\_\_

## QUALITY CONTROL REPORT

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**METHOD BLANK RESULTS:** A method blank (MB) is a laboratory generated sample free of any contamination. The method blank assesses the degree to which the laboratory operations and procedures cause false-positive analytical results for your samples. The method blank results associated with your samples are attached.

### LABORATORY CONTROL SPIKES

The LCS Program:

The laboratory control spike is a well characterized matrix (organic pure type II water for water samples and contamination free sand for soil samples) which is spiked with certain target parameters and analyzed in duplicate at approximately 5% of the sample load in order to assure the accuracy and precision of the analytical method. The results of the laboratory control spike associated with your samples are attached.

Accuracy is measured using percent recovery, i.e.:

$$\text{Percent Recovery} = \frac{\text{(measured concentration)}}{\text{(actual concentration)}} \times 100$$

Precision is measured using the relative percent difference (RPD) from duplicate tests, i.e.:

$$\text{RPD} = \frac{\% \text{ Recovery of Spike}_{(1)} - \% \text{ Recovery of Spike}_{(2)}}{(\% \text{ Recovery of Spike}_{(1)} + \% \text{ Recovery of Spike}_{(2)})/2} \times 100$$

Control limits for accuracy and precision are different for different methods. They may also vary with the different sample matrices. They are based on laboratory average historical data and EPA limits which are approved by the Quality Assurance Department.

(DC1-CN4297)



## QUALITY CONTROL REPORT

### METHOD BLANK

Method: Mod. EPA 8015  
 Units: mg/L (ppm)

Date Analyzed: 04/09/91  
 Date Extracted: 04/05/91  
 Batch Number: 910405-1901

<u>Compound</u>	<u>Reporting Limit</u>	<u>Results of the MB</u>
Gasoline Range	0.50	BRL
Jet Fuel/Kerosene Range	0.50	BRL
Diesel Range	0.50	BRL
Motor Oil Range	1.0	BRL

### LABORATORY CONTROL SPIKE

Method: Mod. EPA 8015  
 Units: mg/L (ppm)

Date Analyzed: 03/21/91  
 Date Extracted: 03/20/91  
 Batch Number: 910320-2001

<u>Compound</u>	<u>Concentration</u>		<u>Accuracy % Recovery</u>	<u>Precision RPD</u>	<u>Acceptance Limits<sup>a</sup></u>	
	<u>Spiked</u>	<u>Measured</u>			<u>% Recovery</u>	<u>RPD</u>
Diesel Range	2.5	1.6	64	12	43 - 152	<25

<sup>a</sup> Acceptance limits were obtained statistically from McLaren quality control data.

(DC1-CN4297)





## ABBREVIATIONS USED IN THIS REPORT

---

BRL	Below Reporting Limit
MB	Method Blank
MS	Matrix Spike
MSD	Matrix Spike Duplicate
LCS	Laboratory Control Spike
LCSD	Laboratory Control Spike Duplicate
RPD	Relative Percent Difference
NS	Not Specified
NA	Not Applicable

## COMMENTS

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Test methods may include minor modifications of published EPA methods (e.g., reporting limits or parameter lists). Reporting limits are adjusted to reflect dilution of the sample when appropriate. Solids and waste are analyzed with no correction made for moisture content. Blank results are reported in the Case Narrative.

Values for total petroleum hydrocarbons were calculated based only on detected peaks.

Gasoline and diesel standard obtained from local Chevron station. Gasoline is sold commercially as unleaded gasoline and diesel as diesel fuel #2.

Kerosene standard obtained from Post Jeff Chevron/Mobil Products. It is sold commercially as jet fuel and kerosene. Other jet fuel sources may produce different instrument responses and contain different hydrocarbon chains. The kerosene standard contains the same hydrocarbon chain as commercial jet fuel.

Motor oil standard obtained from local automotive store. Manufacturer and motor oil type are Pennzoil SAE 10W-40.

Results are reported on the attached data sheets.

(DC1-CN4297)





RECEIVED  
MCLAREN/HART

Date: April 19, 1991  
LP #: 4301

Gary Foote  
McLaren/Hart  
1135 Atlantic Avenue  
Alameda, CA 94501

Dear Mr. Foote:

Enclosed are the laboratory results for the four samples submitted by you to the McLaren Analytical Laboratory on April 5, 1991, for the project *Marketplace*.

The analyses you requested are:

EPA 8015 - Mod. (4 - Water)

The report consists of the following sections:

1. A copy of the chain of custody
2. Quality Control Report
3. Comments
4. Analytical results
5. Copy of final billing submitted to accounting.

Unless otherwise instructed by you, samples will be disposed of two weeks from the date of this letter.

Thank you for choosing McLaren Analytical Laboratory. We are looking forward to serving you in the future. Should you have any questions concerning this analytical report or the analytical methods employed, please do not hesitate to call.

Sincerely,

A handwritten signature in cursive script that reads 'Anthony S. Wong'.

Anthony S. Wong, Ph.D.  
Director, Laboratory/Managing Principal



MAL  
FOR LABORATORY USE ONLY

Laboratory Project No: 4301  
Storage Refrigerator ID: 4-54  
Storage Freezer ID: BJO

Secured  
Yes   
No

# CHAIN OF CUSTODY RECORD

Project Name: Marketplace Project #: 59804 Sampler: Colette Shelly Colette Shelly

Relinquished by: (Signature and Printed Name) Colette Shelly Received by: (Signature and Printed Name) FedEx Date: 4-4-91 Time: 1500  
 Relinquished by: (Signature and Printed Name) fed-x Received by: (Signature and Printed Name) [Signature] Date: 4-5-91 Time: 11:34  
 Relinquished by: (Signature and Printed Name) Received by: (Signature and Printed Name) Date: Time:  
 Relinquished by: (Signature and Printed Name) Received by: (Signature and Printed Name) Date: Time:

**SHIP TO:**  
McLaren Analytical Laboratory  
1101 White Rock Road  
Rancho Cordova, CA 95670  
(916) 638-3696  
FAX (916) 638-2842

Method of Shipment: FedEx  
Shipment ID:

- Circle or Add Analysis(es) Requested
- 601/8010 (Halogenated Volatiles-GC)
  - 602/8020 (Aromatic Volatiles-GC)
  - 604/8040 (Phenols-GC)
  - 608/8080 (Pesticides-GC)
  - 610/8100 (PNA-GC)
  - 624/8240 (Volatiles-GC/MS)
  - 625/8270 (BNA-GC/MS)
  - TPH/G (Gasoline-GC)
  - TPHD (Diesel-GC)
  - 418.1 (IR)
  - 630/15 Modified (GC) + MOD/DI
  - Metals-Totals
  - Metals-Soluble
  - Fluoride/Perchlorate
  - Chloride/pH
  - TDS/Percent Solid
  - Specific Conductivity (EC)

a) Identify specific metals requested under Special Instructions

Sample ID Number	Sample Description		TAT	Container(s)		FOR LABORATORY USE ONLY	
	Date	Time		#	Type	Lab ID	
1	193188	4/4/91 800		4	1	Δ	4301-001
2	193189	800		4	1	Δ	↓
3	193190	930 W-20		4	1	Δ	002
4	193191	930		4	1	Δ	↓
5	193192	1200 W-13		4	1	Δ	003
6	193193	1200		4	1	Δ	↓
7	193194	1410 W-14		4	1	Δ	004
8	193195	1410		4	1	Δ	↓
9							
10							

Special Instructions/Comments: \_\_\_\_\_  
 Sample Archive/Disposal:  
 Laboratory Standard  
 Other \_\_\_\_\_

TAT (Analytical Turn-Around Times) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks  
 Container Types: B=Brass Tube, V=VOA Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette, O = Other \_\_\_\_\_

SEND DOCUMENTATION AND RESULTS TO (Check one):  
 Project Manager/Office: Evan Foote  
 Client Name: \_\_\_\_\_  
 Company: McLaren / Hart  
 Address: 1135 Atlantic Ave Alameda  
 Phone: 415 521-5200 Fax: \_\_\_\_\_

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: Sample 193192 was broken on arrival. BJO 4-5-91.

## QUALITY CONTROL REPORT

---

**METHOD BLANK RESULTS:** A method blank (MB) is a laboratory generated sample free of any contamination. The method blank assesses the degree to which the laboratory operations and procedures cause false-positive analytical results for your samples. The method blank results associated with your samples are attached.

### LABORATORY CONTROL SPIKES

The LCS Program:

The laboratory control spike is a well characterized matrix (organic pure type II water for water samples and contamination free sand for soil samples) which is spiked with certain target parameters and analyzed in duplicate at approximately 5% of the sample load in order to assure the accuracy and precision of the analytical method. The results of the laboratory control spike associated with your samples are attached.

Accuracy is measured using percent recovery, i.e.:

$$\text{Percent Recovery} = \frac{\text{(measured concentration)}}{\text{(actual concentration)}} \times 100$$

Precision is measured using the relative percent difference (RPD) from duplicate tests, i.e.:

$$\text{RPD} = \frac{\% \text{ Recovery of Spike}_{(1)} - \% \text{ Recovery of Spike}_{(2)}}{(\% \text{ Recovery of Spike}_{(1)} + \% \text{ Recovery of Spike}_{(2)}) / 2} \times 100$$

Control limits for accuracy and precision are different for different methods. They may also vary with the different sample matrices. They are based on laboratory average historical data and EPA limits which are approved by the Quality Assurance Department.

(DC3-CN4301)



## QUALITY CONTROL REPORT

---

### METHOD BLANK

Method: Mod. EPA 8015  
 Units: mg/L (ppm)

Date Analyzed: 04/11/91  
 Date Extracted: 04/08/91  
 Batch Number: 910408-0301

<u>Compound</u>	<u>Reporting Limit</u>	<u>Results of the MB</u>
Gasoline Range	0.50	BRL
Jet Fuel/Kerosene Range	0.50	BRL
Diesel Range	0.50	BRL
Motor Oil Range	1.0	BRL

### LABORATORY CONTROL SPIKE

Method: Mod. EPA 8015  
 Units: mg/L (ppm)

Date Analyzed: 03/21/91  
 Date Extracted: 03/20/91  
 Batch Number: 910320-2001

<u>Compound</u>	<u>Concentration</u>		<u>Accuracy</u>	<u>Precision</u>	<u>Acceptance Limits<sup>a</sup></u>	
	<u>Spiked</u>	<u>Measured</u>	<u>% Recovery</u>	<u>RPD</u>	<u>% Recovery</u>	<u>RPD</u>
Diesel Range	2.5	1.6	64	12	43 - 152	<25

<sup>a</sup> Acceptance limits were obtained statistically from McLaren quality control data.

## ABBREVIATIONS USED IN THIS REPORT

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BRL	Below Reporting Limit
MB	Method Blank
MS	Matrix Spike
MSD	Matrix Spike Duplicate
LCS	Laboratory Control Spike
LCSD	Laboratory Control Spike Duplicate
RPD	Relative Percent Difference
NS	Not Specified
NA	Not Applicable

## COMMENTS

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Test methods may include minor modifications of published EPA methods (e.g., reporting limits or parameter lists). Reporting limits are adjusted to reflect dilution of the sample when appropriate. Solids and waste are analyzed with no correction made for moisture content. Blank results are reported in the Case Narrative.

Values for total petroleum hydrocarbons were calculated based only on detected peaks.

Gasoline and diesel standard obtained from local Chevron station. Gasoline is sold commercially as unleaded gasoline and diesel as diesel fuel #2.

Kerosene standard obtained from Post Jeff Chevron/Mobil Products. It is sold commercially as jet fuel and kerosene. Other jet fuel sources may produce different instrument responses and contain different hydrocarbon chains. The kerosene standard contains the same hydrocarbon chain as commercial jet fuel.

Motor oil standard obtained from local automotive store. Manufacturer and motor oil type are Pennzoil SAE 10W-40.

Results are reported on the attached data sheets.

(DC3-CN4301)



**SAMPLING LIST**

CLIENT: MARKETPLACE SITE: MARKETPLACE EVENT: QUARTERLY

TASK: H2O SAMPLING JOB NAME: MARKETPLACE JOB #: 59804

SOUNDING ROUND: YES SAMP. START DATE: 4/3/91

SOUNDING DATE: 4/3/91 TOTAL HRS BUDGETED: ?

# OF WELLS TO SND: ALL # OF WELLS TO SAMP.: 6

MAIN LAB: MAL COMPLETION DATE: 4/4/91

DUPLICATE LAB: 0

**QUANTITY/SPECIFIC WELLS/ANALYSIS**

<b>QA/QC:</b>	TRIP BLANKS	<u>1/PER DAY</u>
	FIELD BLANKS	<u>0</u>
	EQUIPMENT BLANKS	<u>0</u>
	MS/MSD	<u>0</u>
	REPLICATES	<u>0</u>
	DUPLICATES	<u>0</u>

**SPECIAL INSTRUCTIONS OR COMMENTS:**

CONTAINERS: 2 \* 1L AMBER







PROJECT: Marketplace EVENT: Sounding SAMPLER: CMS

NO.	WELL OR LOCATION	DATE			TIME		MEASUREMENT	CODE	COMMENTS
		MO	DA	YR	HR	MIN			
1	W1	4	3	91	8	50	4.74	SWL	
2	W4				7	30	1.45	SWL	
3	W5				8	15	2.39	OIL	2.42 OWI
4	W7				9	05	1.18	SWL	
5	W8				7	55	1.47	SWL	vault flooded
6	W10						abandoned		
7	W13				9	25	3.64	SWL	
8	W14				9	35	4.31	SWL	vault flooded
9	W15				8	00	3.05	SWL	vault flooded
10	W16				8	20	3.48	OIL	3.50 OWI
11	W17				8	25	4.09	SWL	
12	W18				8	30	4.94	SWL	vault flooded
13	W19				8	55	5.39	SWL	
14	W20				9	55	3.84	SWL	vault flooded
15	W21				9	00	4.80	SWL	
16	W22				9	50	7.14	SWL	
17	W23				10	10	0.0	SWL	
18	W24				9	20	4.56	SWL	
19									
20									

- CODES:**
- \*SWL - Static Water Level (Feet)
  - \*IWL - Instant Water Level; Non-Static (Feet)
  - \*OIL - Oil Level (Feet)
  - \*OWI - Oil/Water Interface (Feet)
  - \*MTD - Measured Total Depth (Feet)
  - FLO - Flow Rate (Gallons/Minute)
  - CUM - Cumulative (Gallons)
  - HRS - Total (Hours)
  - PSI - Pressure (psi)<sup>2</sup>
  - pH - 1 to 14
  - Ec - Conductivity (µm HOS)
  - TMP - Temperature (°C)
  - TRB - Turbidity (NTU)
  - \_\_\_\_\_ (Additional Code)

\*All levels are depth from inner casing - describe any other reference points in comments column; when in doubt, describe reference point.  
 Note in comments column if well is not: properly labeled, locked, or able to be locked. Describe corrective action.  
 Note flooding of vault by odor, access problems.  
 \*Negative pressure (Vacuum) psi = approx -(1/2 x mmHg)



McLaren

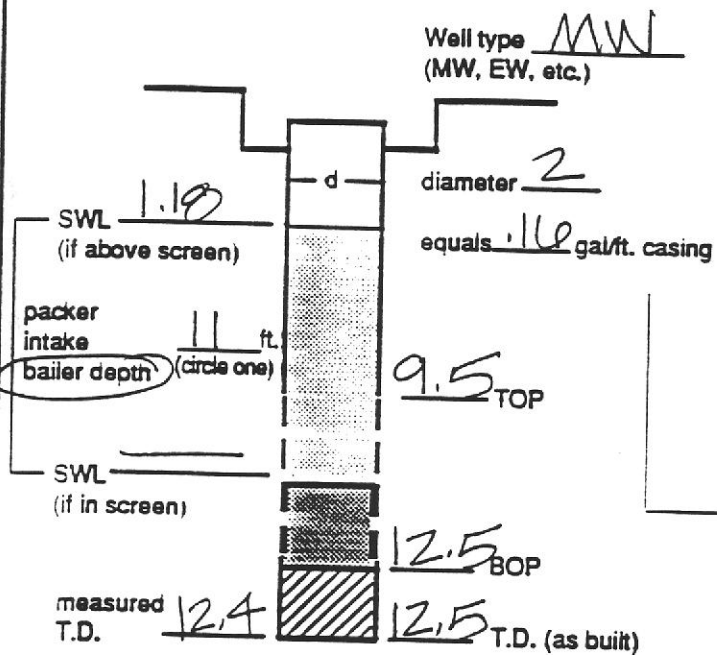
# SAMPLING EVENT DATA SHEET

(fill out completely)

WELL OR LOCATION W-7

PROJECT Marketplace EVENT Quarterly SAMPLER CMS DATE 4-3-91

### Well / Hydrologic statistics



Action	Time	Pump rate	IWL (low yield)
Start pump / Begin	1215		
Stop	1250		
Sampled	1300		
(Final IWL)	1.41		

**Purge calculation**  
 $.16 \text{ gal/ft.} \cdot 11.3 \text{ ft.} = 1.81 \text{ gals} \times 3 = 5.5 \text{ gals.}$

SWL to BOP or packer to BOP one volume purge volume-3 casings

**Head purge calculation (Airlift only)**  
 gal/ft. \* \_\_\_\_\_ ft. = \_\_\_\_\_ gals.  
 packer to SWL:

Equipment Used / Sampling Method / Description of Event:  
peristaltic used to purge 3 casing volumes. Disposable bailer used to sample.

PD 0-1.8 ppm at source  
0-1.8 ppm at breathing zone

Additional comments:

Actual gallons purged	<u>6</u>	
Actual volumes purged	<u>3</u>	
Well yield (see below)	<u>HY</u>	
COC #	<u>224297</u>	
Sample I.D.	Analysis Lab	
<u>193184</u>	<u>ED15+</u>	<u>MAL</u>
<u>193185</u>	<u>Motor Oil</u>	<u>↓</u>
_____	_____	_____
_____	_____	_____

Gallons purged *	TEMP °C / F (circle one)	EC (µs / cm)	PH	TURBIDITY (NTU)		
1. <u>2</u>	<u>70.0</u>	<u>3530</u>	<u>6.54</u>	<u>19.3</u>		
2. <u>4</u>	<u>64.9</u>	<u>3890</u>	<u>6.17</u>	<u>15.10</u>		
3. <u>5.5</u>	<u>64.0</u>	<u>3970</u>	<u>6.17</u>	<u>12.0</u>		
4.						
5.						

\* Take measurement at approximately each casing volume purged.

⊕ HY - Minimal W.L. drop    MY - WL drop - able to purge 3 volumes during one sitting by reducing pump rate or cycling pump.    LY - Able to purge 3 volumes by returning later or next day.    VLY - Minimal recharge - unable to purge 3 volumes.



McLaren

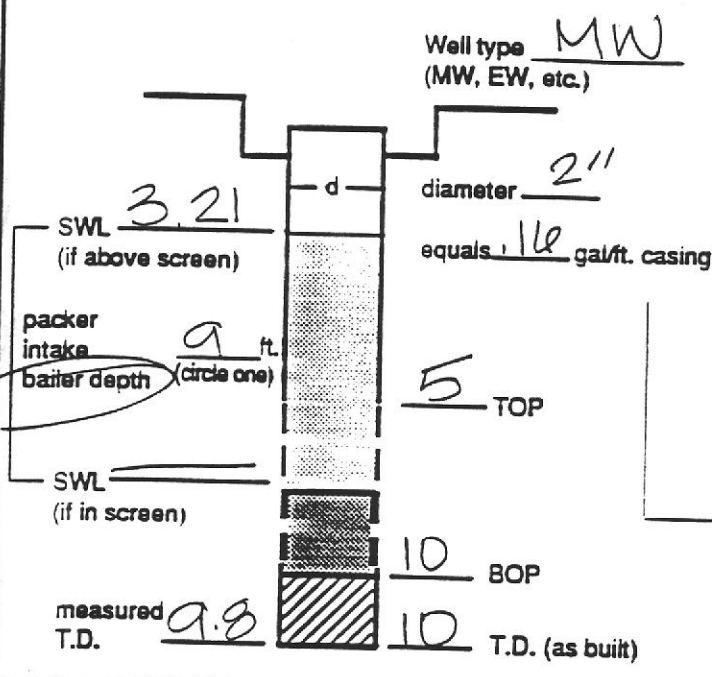
# SAMPLING EVENT DATA SHEET

(fill out completely)

WELL OR LOCATION W-13

PROJECT Marketplace EVENT Quarterly SAMPLER CMS DATE 4-4-91

### Well / Hydrologic statistics



Action	Time	Pump rate	IWL (low yield)
Start pump / Begin	<u>10:25</u>		
Stop	<u>10:50</u>		
Sampled	<u>12:00</u>		
(Final IWL)	<u>5.40</u>		

**Purge calculation**

16 gal/ft. \* 6.78 ft. = 1.08 gals x 3 = 3.25 gals.

SWL to BOP or packer to BOP one volume purge volume-3 casings

**Head purge calculation (Airlift only)**

gal/ft. \* \_\_\_\_\_ ft. = \_\_\_\_\_ gals.

packer to SWL:

Equipment Used / Sampling Method / Description of Event:  
peristaltic used to purge 3 casing volumes. Disposable bailer used to sample  
Allowed well to recharge to 4.50 prior to sampling.

Actual gallons purged	<u>4</u>
Actual volumes purged	<u>3+</u>
Well yield (see below)	<u>MY</u>
COC #	<u>22A2AL6</u>
Sample I.D.	<u>8015 +</u>
Analysis	<u>MAL</u>
Lab	<u>↓</u>

Additional comments:

80% recharge = 4.58 IWL

Gallons purged *	TEMP °C (°F) (circle one)	EC (µs / cm)	PH	TURBIDITY (NTU)		
<u>1. 2</u>	<u>60.4</u>	<u>1580</u>	<u>7.85</u>	<u>7.0</u>		
<u>2. 3</u>	<u>60.6</u>	<u>1100</u>	<u>7.79</u>	<u>5.7</u>		
<u>3. 4</u>	<u>59.9</u>	<u>1030</u>	<u>7.67</u>	<u>4.8</u>		
<u>4.</u>						
<u>5.</u>						

\* Take measurement at approximately each casing volume purged.

⊕ HY - Minimal W.L. drop    MY - WL drop - able to purge 3 volumes during one sitting by reducing pump rate or cycling pump.

LY - Able to purge 3 volumes by returning later or next day.    VLY - Minimal recharge - unable to purge 3 volumes.



McLaren

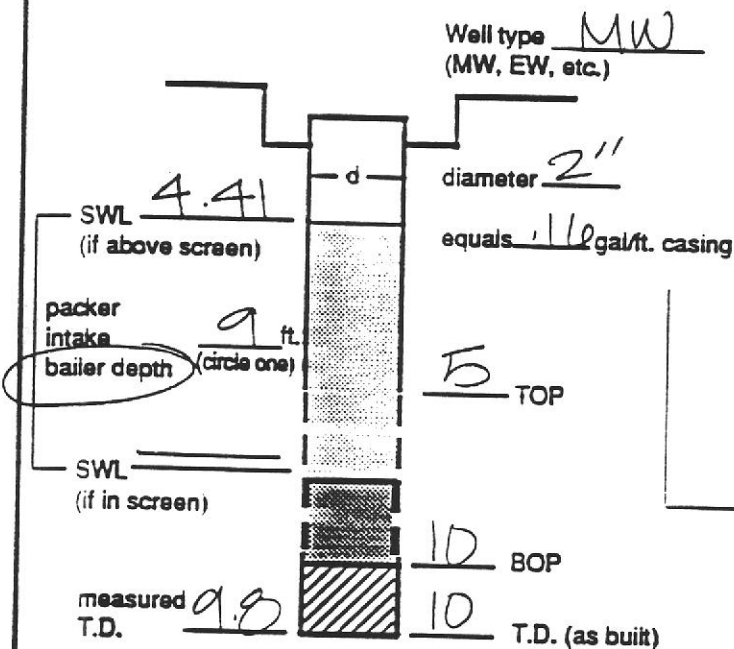
# SAMPLING EVENT DATA SHEET

(fill out completely)

WELL OR LOCATION W-14

PROJECT Marketplace EVENT Quarterly SAMPLER CMS DATE 4-4-91

### Well / Hydrologic statistics



Action	Time	Pump rate	IWL (low yield)
Start pump / Begin	1210		
<u>stop</u>	<u>1220</u>		
<u>start</u>	<u>1240</u>		
Stop	1330		8.31
Sampled	1410		
(Final IWL)	5.50		
<b>Purge calculation</b>			
<u>.16</u> gal/ft. * <u>5.6</u> ft. = <u>.89</u> gals x 3 = <u>3</u> gals.			
SWL to BOP or packer to BOP		one volume	purge volume - 3 casings
<b>Head purge calculation (Airlift only)</b>			
ga/ft. * _____ ft. = _____ gals.			
packer to SWL			

### Equipment Used / Sampling Method / Description of Event:

peristaltic used to purge 3 casing volumes. Disposable bailer used to sample.

Allowed well to recharge to 5.50 IWL before sampling

Actual gallons purged	<u>3</u>	
Actual volumes purged	<u>3</u>	
Well yield (see below) ⊕	<u>MY</u>	
COC #	<u>224296</u>	
Sample I.D.	Analysis	Lab
<u>193194</u>	<u>8015+</u>	<u>MAC</u>
<u>193195</u>	<u>Motor Oil</u>	<u>↓</u>

### Additional comments:

80% recharge = 5.52 IWL

Gallons purged *	TEMP °C (°F) (circle one)	EC (us / cm)	PH	TURBIDITY (NTU)		
1.	<u>23.0</u>	<u>2890</u>	<u>7.49</u>	<u>1.1</u>		
2.	<u>24.3</u>	<u>3070</u>	<u>7.48</u>	<u>2.3</u>		
3.	<u>25.5</u>	<u>3210</u>	<u>7.49</u>	<u>4.5</u>		
4.						
5.						

\* Take measurement at approximately each casing volume purged.

⊕ HY - Minimal W.L. drop    MY - WL drop - able to purge 3 volumes during one sitting by reducing pump rate or cycling pump.    LY - Able to purge 3 volumes by returning later or next day.    VL - Minimal recharge - unable to purge 3 volumes.





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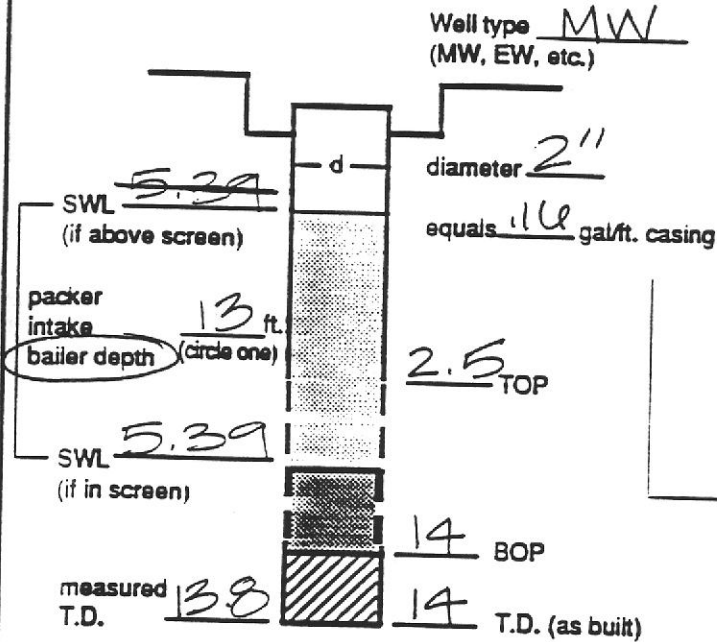
# SAMPLING EVENT DATA SHEET

(fill out completely)

WELL OR LOCATION W-19

PROJECT Marketplace EVENT Quarterly SAMPLER CMS DATE 4-3-91

### Well / Hydrologic statistics



Action	Time	Pump rate	IWL (low yield)
Start pump / Begin	<u>1055</u>		
Stop	<u>1130</u>		
Sampled	<u>1145</u>		
(Final IWL)	<u>5.52</u>		

**Purge calculation**  
1.6 gal/ft. \* 8.6 ft. = 1.37 gals x 3 = 4.13 gals.

SWL to BOP or packer to BOP one volume  
 purge volume- 3 casings

**Head purge calculation (Airlift only)**  
 gal/ft. \* ft. = gals.  
 packer to SWL:

Equipment Used / Sampling Method / Description of Event:  
peristaltic used to purge 3 casing volumes. disposable bailer used to sample.

Actual gallons purged	<u>5</u>
Actual volumes purged	<u>3+</u>
Well yield (see below)	<u>HY</u>
COC #	<u>224297</u>
Sample I.D.	Analysis Lab
<u>193182</u>	<u>8015+</u> <u>MLL</u>
<u>193183</u>	<u>Motor Oil</u> <u>↓</u>

Additional comments:  
PID -> 0-1.8 ppm at source  
0 ppm in breathing zone

Gallons purged *	TEMP °C (°F) (circle one)	EC (µs / cm)	PH	TURBIDITY (NTU)		
<u>1.5</u>	<u>15.2</u>	<u>5190</u>	<u>7.37</u>	<u>21.3</u>		
<u>2.5</u>	<u>15.1</u>	<u>4770</u>	<u>7.08</u>	<u>15.2</u>		
<u>4</u>	<u>13.8</u>	<u>3980</u>	<u>6.85</u>	<u>13.1</u>		

\* Take measurement at approximately each casing volume purged.

⊕ HY - Minimal W.L. drop    MY - WL drop - able to purge 3 volumes during one sitting by reducing pump rate or cycling pump.

LY - Able to purge 3 volumes by returning later or next day.    VLY - Minimal recharge - unable to purge 3 volumes.



McLaren

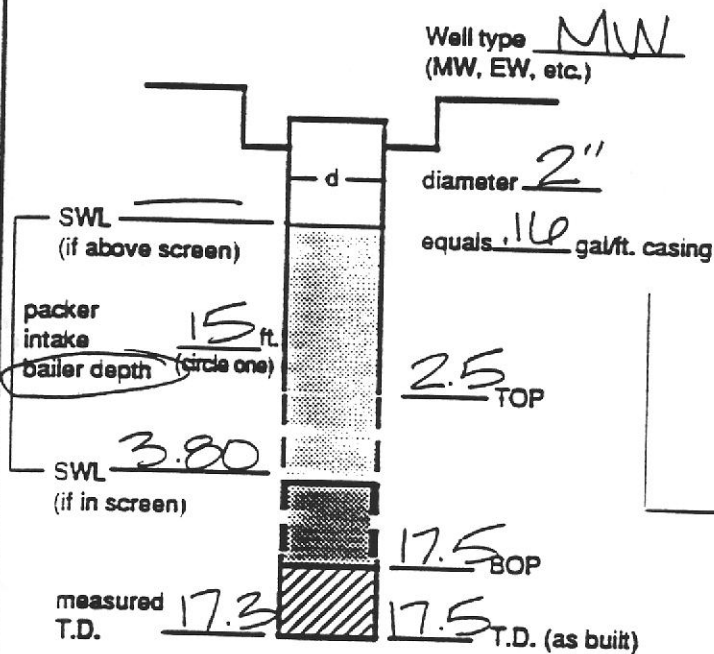
# SAMPLING EVENT DATA SHEET

(fill out completely)

WELL OR LOCATION W-20

PROJECT Marketplace EVENT Quarterly SAMPLER CMS DATE 4-4-91

### Well / Hydrologic statistics



Action	Time	Pump rate	IWL (low yield)
Start pump / Begin	<u>8:30</u>		
Stop	<u>9:20</u>		
Sampled	<u>9:30</u>		
(Final IWL)	<u>3.98</u>		

**Purge calculation**

.16 gal/ft. \* 14 ft. = 2.24 gals x 3 = 6.72 gals.

SWL to BOP or packer to BOP one volume purge volume - 3 casings

**Head purge calculation (Airlift only)**

gal/ft. \* ft. = gals.

packer to SWL

### Equipment Used / Sampling Method / Description of Event:

peristaltic used to purge 3 casing volumes. Disposable bailer used to sample.

Actual gallons purged	<u>7</u>				
Actual volumes purged	<u>3+</u>				
Well yield (see below)	<u>HY</u>				
COC #	<u>224296</u>				
Sample I.D.	<u>193190</u>	Analysis	<u>8015+</u>	Lab	<u>MAL</u>
	<u>193191</u>		<u>Motoroil</u>		<u>↓</u>

### Additional comments:

Gallons purged *	TEMP °C/°F (circle one)	EC (µs / cm)	PH	TURBIDITY (NTU)		
<u>2</u>	<u>60.5</u>	<u>7910</u>	<u>7.40</u>	<u>0.6</u>		
<u>4</u>	<u>60.9</u>	<u>7980</u>	<u>7.16</u>	<u>1.0</u>		
<u>6</u>	<u>60.1</u>	<u>7960</u>	<u>7.13</u>	<u>1.1</u>		

\* Take measurement at approximately each casing volume purged.

⊕ HY - Minimal W.L. drop    MY - WL drop - able to purge 3 volumes during one sitting by reducing pump rate or cycling pump.

LY - Able to purge 3 volumes by returning later or next day.    VLY - Minimal recharge - unable to purge 3 volumes.



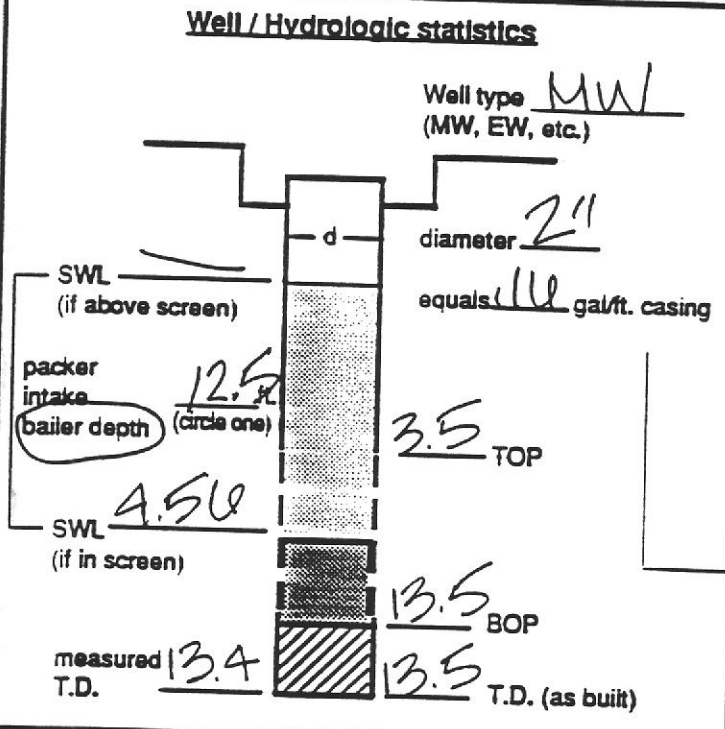
McLaren

# SAMPLING EVENT DATA SHEET

(fill out completely)

WELL OR LOCATION W-24

PROJECT Marketplace EVENT Quarterly SAMPLER CME DATE 4-3-91



Action	Time	Pump rate	IWL (low yield)
Start pump / Begin	<u>1400</u>		
		<u>5 gpm</u>	
Stop	<u>1430</u>		
Sampled	<u>1445</u>		
(Final IWL)	<u>4.90</u>		
<b>Purge calculation</b>			
<u>.116</u> gal/ft. * <u>9</u> ft. = <u>1.44</u> gals x 3 = <u>4.3</u> gals.			
SWL to BOP or one purge volume - 3 casings			
<b>Head purge calculation (Airlift only)</b>			
gal/ft. * ft. = gals.			
packer to SWL:			

Equipment Used / Sampling Method / Description of Event:  
peristaltic used to purge 3 casing volumes. Disposable bailer used to sample.

Actual gallons purged	<u>5</u>
Actual volumes purged	<u>3+</u>
Well yield (see below)	<u>HY</u>
COC # <u>224297</u>	
Sample I.D.	Analysis Lab
<u>193186</u>	<u>EDIS+</u> <u>MAI</u>
<u>193187</u>	<u>Motoroil</u> <u>↓</u>

Additional comments:

Gallons purged *	TEMP °C / °F (circle one)	EC (us / cm)	PH	TURBIDITY (NTU)		
<u>1.5</u>	<u>68.2</u>	<u>3300</u>	<u>6.96</u>	<u>10.1</u>		
<u>3</u>	<u>62.2</u>	<u>2750</u>	<u>6.85</u>	<u>8.2</u>		
<u>4.5</u>	<u>62.4</u>	<u>2700</u>	<u>6.81</u>	<u>6.5</u>		

\* Take measurement at approximately each casing volume purged.

⊕ HY - Minimal W.L. drop    MY - WL drop - able to purge 3 volumes during one sitting by reducing pump rate or cycling pump.    LY - Able to purge 3 volumes by returning later or next day.    VLY - Minimal recharge - unable to purge 3 volumes.



# CHAIN OF CUSTODY RECORD

MAL

224297

FOR LABORATORY USE ONLY

Laboratory Project No.: \_\_\_\_\_ Secured: \_\_\_\_\_  
 Storage Refrigerator ID: \_\_\_\_\_ Yes \_\_\_\_\_  
 Storage Freezer ID: \_\_\_\_\_ No \_\_\_\_\_

Project Name: Marketplace Project #: 59804 Sampler: Collette Stelly Collette Stelly  
(Signature) (Printed Name) (Signature)

Relinquished by: Collette Stelly Received by: [Signature] Date: 7-2-01 Time: 10:00  
(Signature and Printed Name) (Signature and Printed Name) (Signature)

Relinquished by: \_\_\_\_\_ Received by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
(Signature and Printed Name) (Signature and Printed Name)

Relinquished by: \_\_\_\_\_ Received by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
(Signature and Printed Name) (Signature and Printed Name)

**SHIP TO:**  
 McLaren Analytical Laboratory  
 11101 White Rock Road  
 Rancho Cordova, CA 95670  
 (916) 638-3696  
 FAX (916) 638-2842

Method of Shipment: FedEx  
 Shipment ID: 7391327916

- Circle or Add Analysis(es) Requested
- 601/8010 (Halogenated Volatiles-GC)
  - 602/8020 (Aromatic Volatiles-GC)
  - 604/8040 (Phenols-GC)
  - 608/8080 (Pesticides-GC)
  - 610/8100 (PNA-GC)
  - 624/8240 (Volatiles-PCB-GC)
  - 625/8270 (Volatiles-GC/MS)
  - TPHIG (BNA-GC/MS)
  - TPHID (Gasoline-GC)
  - 418 (LH)
  - 8015 Modified (GC) + MPD
  - Metals-Total a
  - Metals-Soluble a
  - Fluoride/Perchlorate
  - Chloride/pH
  - TDS/Percent Solid
  - Specific Conductivity (EC)

a) Identify specific metals requested under Special Instructions

Sample ID Number	Sample Description		Description	Analysis Requested												Container(s)		FOR LABORATORY USE ONLY			
	Date	Time		TAT	#	Type	Lab ID														
1	193180	7/2/01	800	Trip Blank														4	1	A	/
2	193181		800	↓														4	1	A	/
3	193182		1145	W-19														4	1	A	/
4	193183		1145	↓														4	1	A	/
5	193184		1300	W-7														4	1	A	/
6	193185		1300	↓														4	1	A	/
7	193186		1445	W-24														4	1	A	/
8	193187	↓	1445	↓														4	1	A	/
9																					/
10																					/

Special Instructions/Comments: \_\_\_\_\_  
 Sample Archive/Disposal:  
 Laboratory Standard  
 Other \_\_\_\_\_

TAT (Analytical Turn-Around Times) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks  
 Container Types: B=Brass Tube, V=VOA Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette, O = Other \_\_\_\_\_

SEND DOCUMENTATION AND RESULTS TO (Check one):  
 Project Manager/Office: Gary Foute  
 Client Name: \_\_\_\_\_  
 Company: McLaren/Hart  
 Address: 1135 Atlantic Ave Alameda  
 Phone: (916) 221-4300 Fax: \_\_\_\_\_

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: \_\_\_\_\_





224296

# CHAIN OF CUSTODY RECORD

MAL

FOR LABORATORY USE ONLY

Laboratory Project No.: \_\_\_\_\_ Secured: \_\_\_\_\_  
 Storage Refrigerator ID: \_\_\_\_\_ Yes \_\_\_\_\_  
 Storage Freezer ID: \_\_\_\_\_ No \_\_\_\_\_

Project Name: Market place Project #: 59804 Sampler: colette shelly colette shelly  
(Printed Name) (Signature)  
 Relinquished by: colette shelly Received by: FeDEX Date: 2-1-91 Time: 12:00  
(Signature and Printed Name) (Signature and Printed Name)  
 Relinquished by: \_\_\_\_\_ Received by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
(Signature and Printed Name) (Signature and Printed Name)  
 Relinquished by: \_\_\_\_\_ Received by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
(Signature and Printed Name) (Signature and Printed Name)

SHIP TO:  
 McLaren Analytical Laboratory  
 1101 White Rock Road  
 Rancho Cordova, CA 95670  
 (916) 638-3696  
 FAX (916) 638-2842

Method of Shipment: FeDEX  
 Shipment ID: \_\_\_\_\_

- Circle or Add Analysis(es) Requested
- 601/8010 (Halogenated Volatiles-GC)
  - 602/8020 (Aromatic Volatiles-GC)
  - 604/8040 (Phenols-GC)
  - 608/8080 (Pesticides/PCB-GC)
  - 610/8100 (PNA-GC)
  - 624/8240 (Volatiles-GC/MS)
  - 625/8270 (BNA-GC/MS)
  - TPHG (Gasoline-GC)
  - TPHD (Diesel-GC)
  - 418.1 (IR)
  - 8015 Modified (GC) + MOTX/DI
  - Metals Total a
  - Metals Soluble a
  - Fluoride/Perchlorate
  - Chloride/pH
  - TDS/Percent Solid
  - Specific Conductivity (EC)

a) Identify specific metals requested under Special Instructions

Sample ID Number	Sample Description		Description	TAT	Container(s)		Lab ID
	Date	Time			#	Type	
1	1/31/88	1200	W-11	✓	4	1 A	/ / /
2	1/31/88	1200	↓	✓	4	1 A	/ / /
3	1/31/88	1230	W-20	✓	4	1 A	/ / /
4	1/31/88	1230	↓	✓	4	1 A	/ / /
5	1/31/88	1200	W-13	✓	4	1 A	/ / /
6	1/31/88	1200	↓	✓	4	1 A	/ / /
7	1/31/88	1410	W-14	✓	4	1 A	/ / /
8	1/31/88	1410	↓	✓	4	1 A	/ / /
9							/ / /
10							/ / /

Special Instructions/Comments: \_\_\_\_\_

Sample Archive/Disposal:  
 Laboratory Standard  
 Other \_\_\_\_\_

TAT (Analytical Turn-Around Times) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks  
 Container Types: B=Brass Tube, V=VOA Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette, O = Other \_\_\_\_\_

SEND DOCUMENTATION AND RESULTS TO (Check one):

Project Manager/Office: Gary Flute  
 Client Name: \_\_\_\_\_  
 Company: McLaren / Hart  
 Address: 1125 Atlantic Ave Alameda  
 Phone: 415 521-5200 Fax: \_\_\_\_\_

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: \_\_\_\_\_