

1 May 2007  
Project 4511.01

Mr. Steven Plunkett  
Alameda County Environmental Health Department  
1131 Harbor Bay Parkway  
Alameda, California 94502

Subject: Groundwater Monitoring Well Redevelopment and Sampling Report  
SLIC Case No. RO0002624  
Pacific Shops, Inc.  
1829 Clement Avenue  
Alameda, California

Dear Mr. Plunkett:

This letter summarizes the monitoring well redevelopment and sampling activities conducted at 1829 Clement Avenue (Site) in Alameda, California (Figure 1). This work was completed by Treadwell & Rollo, Inc. (Treadwell & Rollo) on behalf of Pacific Shops, Inc. The work was conducted in response to the 15 February 2007 letter by the Alameda County Environmental Health Department (ACEH) requesting development and sampling of existing groundwater monitoring wells at the Site<sup>1</sup>.

In conformance with the letter and subsequent communication, Treadwell and Rollo has conducted the monitoring well redevelopment and sampling, and has prepared this report which describes the Site background, current work, and presents recommendations.

## **BACKGROUND**

The Site is located along Clement Avenue in Alameda, California (Figure 1), and is part of the Alameda Marina Site owned by Pacific Shops. During the late 1980s it was discovered that a Site tenant, Chem-Mil-Co had a release of photochemicals containing metals and cyanide. In 1990 a soil investigation was conducted, and soil remediation was completed<sup>2</sup>. A groundwater quality investigation followed in September and October 1990. The investigation was performed to satisfy the requirements of the ACEH, as outlined in their site remediation letter dated 17 April 1990 (Kaldveer, 1990).

On 11 September 1990, three monitoring wells were installed and developed at the Site. The wells were completed to approximately 15 feet below ground surface using Schedule 40, 2-inch nominal, flush threaded, PVC well casing (Kaldveer, 1990). Each well was completed with one 10-foot section of 0.010-inch slotted well screen packed with a Lonestar #2/12 gravel filter material. The well seal was completed by adding 6-inches of 3/8-inch, hydrated bentonite pellets to the top of the filter pack and then the

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<sup>1</sup> Letter from Alameda County Health Care Services, 2007, *SLIC Case No. RO0002624, Pacific Shops Inc., 1829 Clement Avenue, Alameda, CA*, 15 February.

<sup>2</sup> Kaldveer Associates, 1990, Ground Water Quality Report, 1829 Clement Avenue, Alameda, California, 5 November.

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remaining annular space was filled with a Portland Cement grout mixture (Kaldveer, 1990). Kaldveer's boring logs and well construction details are presented in Attachment A.

Groundwater samples were collected from the wells on three occasions: 12 September 1990, 26 September 1990, and 9 October 1990. Groundwater elevation data is presented in Table 1. Groundwater samples were analyzed for chromium, molybdenum, and copper using EPA Method 6010, lead using EPA Method 7421, chromium VI using EPA Method 7195, arsenic using EPA Method 7060, and cyanide using EPA Method 335.2 and 9010. Analytical results of the three rounds of sampling are summarized in Table 2.

The concentrations of metals detected in groundwater were all below laboratory detection limits or below United States Environmental Protection Agency (USEPA) Maximum Contaminant Levels for drinking water (MCLs) at the time, with the exception of total chromium measured in one sampling episode from monitoring well MW-3. Total cyanide was only detected in monitoring well MW-1 at concentrations ranging from 350 to 2,400 micrograms per liter ( $\mu\text{g/l}$ ), which exceeded the total cyanide MCL.

It was Kaldveer's opinion that metals concentrations for the site soil and groundwater did not represent a significant environmental concern and the sampling program was stopped. Treadwell and Rollo understands that the wells have not been sampled since the final sampling event in October 1990.

## **MONITORING WELL DEVELOPMENT ACTIVITIES**

Treadwell and Rollo commissioned Blaine Tech Services (Blaine Tech) of San Jose, California to conduct the well development activities. On 16 March 2007, Blaine Tech performed the redevelopment of MW-1, MW-2, and MW-3 (Figure 2). Prior to development activities, water levels were collected at all wells and recorded in the well gauging data field form (Attachment B).

Development began by lowering a close-fitting surge block into the well and gently surging to allow any material blocking the screen to break up, go into suspension, and move into the well. The surging continued for 5-10 minutes. Immediately following the surging activities, the well was purged using a positive air displacement pump. Groundwater field parameters (temperature, pH, conductivity, and turbidity) were measured and recorded during development. Development continued until the field parameters stabilized. All three wells dewatered after approximately three case volumes were removed. Once dewatering of the well occurred during the purge, Blaine Tech allowed the well to recharge, returned to surge the well, and continued purging. Each well dewatered a second time after approximately an additional four case volumes were removed. After surging the wells for a third time, the wells were purged of three casing volumes and sampled. All development data sheets are presented in Attachment B. The purged water was stored in 55-gallon drums onsite pending testing and disposal.

## **MONITORING WELL SAMPLING ACTIVITIES**

On 16 March 2007, Blaine Tech performed the groundwater sampling activities at wells MW-1, MW-2 and MW-3. After receiving verbal permission from ACEH, the wells were sampled on the same day as the development, after the field parameters had stabilized.

After each well had been dewatered for the second time, the wells were allowed to recharge and were purged of an additional two case volumes to ensure stability of field parameters and then sampled using

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a new disposable bailer. All samples for metals analyses were field-filtered using a 0.45-micron filter. The groundwater samples were preserved and submitted for analysis to McCampbell Analytical, a California-certified laboratory in Pittsburg, California, under chain-of-custody protocol.

All reusable pumping equipment was decontaminated using a Hotsy® steam cleaner and pressure washer. Decontamination rinse water was contained on the Blaine Tech truck and transferred to 55-gallon drums along with the purge water. Drums were stored onsite pending testing and disposal. All field sampling data forms are presented in Attachment B.

### **GROUNDWATER ELEVATION AND FLOW DIRECTION**

Depth to groundwater from the top of casing was measured in each well prior to development and sampling. Groundwater elevation data is presented in Table 1 and presented graphically in Figure 2. The groundwater flow appears to be towards the north at a calculated gradient of 0.0008 ft/ft.

### **GROUNDWATER ANALYTICAL RESULTS**

The analytical plan was developed based on the previous sampling conducted by Kaldveer in 1990. The EPA analytical method numbers were adjusted to present-day methods. All samples were analyzed for the following:

- chromium, molybdenum, and copper using EPA Method 200.8;
- lead using EPA Method 200.8;
- chromium VI using EPA Method 218.6;
- arsenic using EPA Method 200.8; and
- total cyanide using EPA Method 335.3.

Table 2 summarizes the current and previous sampling results, and for comparison purposes lists the MCLs and the Regional Water Quality Control Board Environmental Screening Levels from Table B (ESLs). No total chromium, chromium VI, copper, lead or molybdenum were detected above the laboratory reporting limits. Arsenic was detected in MW-1, MW-2, and MW-3 at concentrations of 1.4, 0.57, and 0.83 µg/L, respectively, which are below the drinking water MCL of 10 µg/l and the ESL of 36 µg/l. Total cyanide was detected in well MW-1 at a concentration of 16 micrograms per liter (µg/L), which is below the drinking water MCL of 200 µg/l. There is no ESL for total cyanide. Wells MW-2 and MW-3 did not contain cyanide above the laboratory reporting limit of 2.0 µg/L.

### **SUMMARY AND RECOMMENDATIONS**

During the late 1980s it was discovered that a release of photochemicals containing metals and cyanide had occurred at the Site and it was listed as a SLIC Site on the RWQCB database. After soil remediation was completed in 1990, three monitoring wells were installed and sampled three times to evaluate potential groundwater impacts and confirm Site cleanup. No metals exceeded the MCLs with the exception of total chromium measured in one sampling episode from monitoring well MW-3. Cyanide was only detected in monitoring well MW-1, and twice exceeded the MCL of 200 µg/l.

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The Site was sold in 2006 and Treadwell & Rollo was retained by the new owner to assess the Site's regulatory status. At the request of the ACEHD the wells were redeveloped and sampled. Arsenic was the only metal detected, but at concentrations below the drinking water MCL and ESLs, and within the range of naturally occurring arsenic concentrations. Total cyanide was only detected in one well, at less than a tenth of the drinking water MCL.

The Cyanide concentration detected is much lower than detected in 1990, and will continue to naturally degrade. According to the USEPA fact sheet on cyanide, "Cyanides are generally not persistent when released to water or soil, and are not likely to accumulate in aquatic life. They rapidly evaporate and are broken down by microbes."<sup>3</sup> Regarding the 200 µg/l MCL, the cyanide fact sheet states that EPA believes this level of protection would not cause potential human health problems, and that "given present technology and resources, this is the lowest level to which water systems can reasonably be required to remove this contaminant should it occur in drinking water."

On the basis of groundwater samples at the Site being below the RWQCB ESLs and USEPA drinking water MCLs, Treadwell & Rollo recommends that the wells be destroyed and the SLIC case be closed.

If you have any questions regarding this report please call either of the undersigned at (415) 955-9040.

Sincerely yours,  
TREADWELL & ROLLO, INC.



Christopher Gordon  
Senior Staff Scientist

45110105.DGD



David Dixon  
Senior Associate Geologist, PG 7066



### Attachments:

Table 1 Well Construction Details and Groundwater Elevation Data  
Table 2 Groundwater Analytical Results

Figure 1 Site Location Map  
Figure 2 Site Plan and Groundwater Potentiometric Map

Attachment A Soil Boring Logs and Well Construction Data  
Attachment B Field Sampling Forms  
Attachment C Chain-of-Custody Record and Certified Laboratory Reports

cc: Sean Svendsen – Pacific Shops, Inc.

<sup>3</sup> [http://www.epa.gov/safewater/contaminants/dw\\_contamfs/cyanide.html](http://www.epa.gov/safewater/contaminants/dw_contamfs/cyanide.html)

## TABLES

**Table 1**  
**Well Construction Details and Groundwater Elevation Data**  
**Former Chem-Mil-Co Site**  
 1829 Clement Avenue  
 Alameda, CA

Well ID	Installation Date	Sample Date	Borehole Diameter (inches)	Casing Diameter (inches)	Bottom of Casing (depth in feet)	Top of Screen (depth in feet)	Bottom of Screen (depth in feet)	Top of Casing Elevation <sup>1</sup> (feet-msl)	Depth to Water (feet-below TOC)	Groundwater Elevation <sup>1</sup> (feet-msl)
MW-1	11-Sep-90	16-Mar-07							3.04	88.48
		9-Oct-90							3.40	88.12
		26-Sep-90							3.83	87.69
		13-Sep-90	8	2	15.0	5.0	15.0	91.52	3.82	87.70
MW-2	11-Sep-90	16-Mar-07							2.93	88.43
		9-Oct-90							3.83	87.53
		26-Sep-90							3.73	87.63
		13-Sep-90	8	2	15.0	5.0	15.0	91.36	3.67	87.69
MW-3	11-Sep-90	16-Mar-07							2.42	88.39
		9-Oct-90							3.38	87.43
		26-Sep-90							3.21	87.60
		13-Sep-90	8	2	15.0	5.0	15.0	90.81	3.17	87.64

Notes

feet-msl = feet above mean sea level

TOC = Top of casing

<sup>1</sup> top of casing elevations were surveyed by Kalveer Associates in 1990 and is based on an arbitrary datum.

**Table 2**  
**Groundwater Analytical Results**  
**Former Chem-Mil-Co Site**  
 1829 Clement Avenue  
 Alameda, CA

Sample ID	Sampling Date	As	Total Cr	Cr VI	Cu	Total CN	Mo	Pb
		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-1	16-Mar-2007	1.4	<0.5	<0.2	<0.5	16 (i)	<0.5	<0.5
	9-Oct-1990	--	--	--	--	950	--	--
	26-Sep-1990	<10.0	<5.0	<10.0	40	350	<10.0	<30.0
	13-Sep-1990	5.0	7.0	<10.0	20	2,400	<10.0	<30.0
MW-2	16-Mar-2007	0.57	<0.5	<0.2	<0.5	<2.0	<0.5	<0.5
	9-Oct-1990	--	--	--	--	<20.0	--	--
	26-Sep-1990	<5.0	170	<10.0	30	<20.0	<10.0	<30.0
	13-Sep-1990	40	83	<10.0	10	<20.0	<10.0	<30.0
MW-3	16-Mar-2007	0.83	<0.5	<0.2	<0.5	<2.0	<0.5	<0.5
	9-Oct-1990	--	--	--	--	<20.0	--	--
	26-Sep-1990	<5.0	<5.0	<10.0	20	<20.0	<10.0	<30.0
	13-Sep-1990	5.0	<5.0	<10.0	<10.0	<50.0	<10.0	<30.0
<b>Regulatory Agency Screening Levels</b>								
<b>ESLs</b>		36	180	11	3.1	None <sup>1</sup>	35	2.5
<b>MCL</b>		10	100	None	1,300	200	None	15

**Notes:**

As = Arsenic using Method 200.8

Cr = Total Chromium using EPA Method 200.8

Cr VI = Chromium VI using EPA Method 218.6

Cu = Copper using EPA Method 200.8

CN = Total cyanide using EPA Method 335.3

Mo = Molybdenum using EPA Method 200.8

Pb = Lead using EPA Method 200.8

µg/L = Micrograms per liter

<10.0 = Not detected at or above the laboratory reporting limit

-- = Analysis not requested

ESLs = California Regional Water Quality Control Board Environmental Screening Levels, Table B

MCL = United States Environmental Protection Agency Maximum Contaminant Level (MCL) for drinking water

1 = There is no ESL for total cyanide, but there is one for free cyanide.

**Laboratory Notes:**

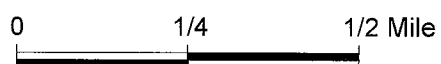
i = Liquid sample contains greater than ~ 1 vol. % sediment

## FIGURES





Base map: The Thomas Guide  
Alameda County  
1999



Approximate scale



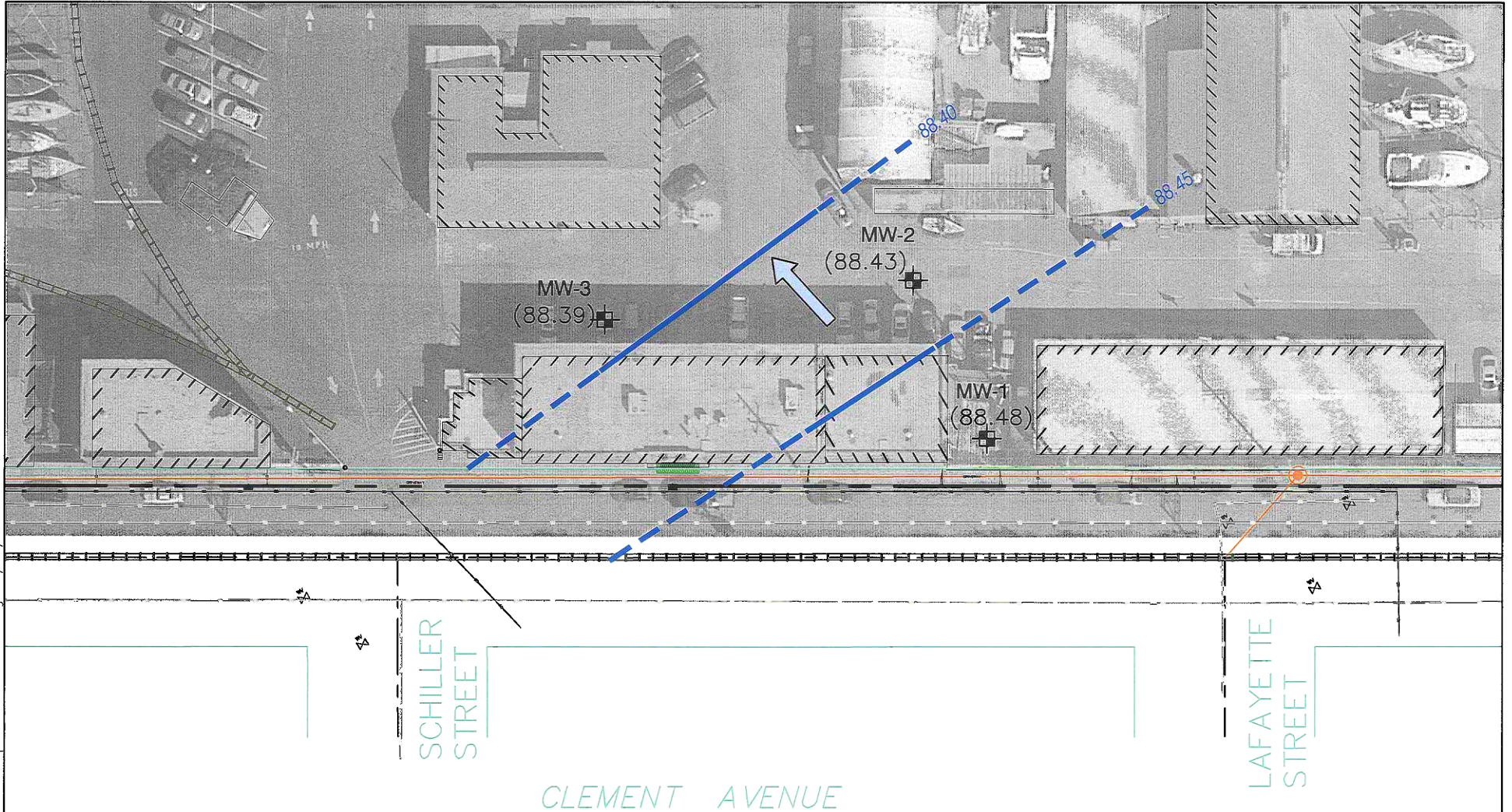
**PACIFIC SHOPS**  
1829 CLEMENT AVENUE  
Alameda, California

**SITE LOCATION MAP**




**Treadwell&Rollb**

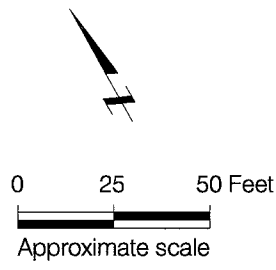


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EXPLANATION

- MW-1  Approximate location of Monitoring well
- (88.48) Groundwater Elevation
-  88.45 Groundwater elevation contour
-  Approximate direction of groundwater flow




<b>PACIFIC SHOPS</b> 1829 CLEMENT AVENUE Alameda, California		
<b>SITE PLAN AND</b> <b>GROUNDWATER POTENTIOMETRIC MAP</b> 16 MARCH 2007		
Date 04/04/07	Project No. 4511.01	Figure 2
<b>Treadwell&amp;Rollo</b>		



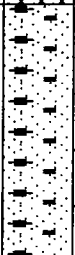
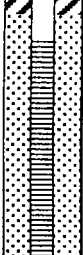

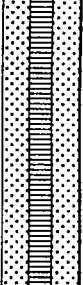


**ATTACHMENT A**  
**Soil Boring Logs and Well Construction Data**


DRILL RIG	<b>CME 45</b>	SURFACE ELEVATION	<b>N.S.</b>	LOGGED BY	<b>G. Fiedler</b>
DEPTH TO GROUNDWATER	<b>3.2 feet</b>	BORING DIAMETER	<b>8-inch</b>	DATE DRILLED	<b>9/11/90</b>

DESCRIPTION AND CLASSIFICATION	SOIL TYPE	DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	PID READING	REMARKS	WELL CONSTRUCTION
Asphalt							
<b>SILTY SAND (SM)</b> , dusky yellowish brown, moist, soft, fine to medium, poorly graded, (FILL)							
<b>SAND (SW)</b> , light brown, moist, loose, medium grained, well graded				5			
<b>CLAYEY SAND (SC)</b> , pale to moderate yellowish brown, moist, firm, moderate plasticity, minor dusky brown oxidation mottling		5		6			
<b>SILTY SAND (SM)</b> , light brown, moist, firm, well graded, rootlets, some clay, moderate oxidation mottling							
<b>SAND (SW)</b> , light brown, wet, loose, trace clay		10		10			
		15		16			
Total Depth = 16.5 Feet Notes: Well Construction Details <ul style="list-style-type: none"> <li>- 2-inch PVC, Schedule 40, solid and slotted (0.010-inch) casing</li> <li>- 2/12 washed sand filter pack</li> <li>- bentonite pellets plug</li> <li>- cement grout surface seal with steel stovepipe locking cover</li> </ul> N.S.- Not surveyed							







 <b>Kaldveer Associates</b> Geoscience Consultants A California Corporation	<b>EXPLORATORY BORING LOG</b>		
	<b>1829 CLEMENT AVENUE</b> <b>Alameda, California</b>		
	PROJECT NO.	DATE	BORING NO.
	<b>KE1179-1A-272</b>	<b>November 1990</b>	<b>MW-3</b>

DRILL RIG	<b>CME 45</b>	SURFACE ELEVATION	<b>N.S.</b>	LOGGED BY	<b>G. Fiedler</b>
DEPTH TO GROUNDWATER	<b>3.8 feet</b>	BORING DIAMETER	<b>8-inch</b>	DATE DRILLED	<b>9/11/90</b>

DESCRIPTION AND CLASSIFICATION		DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	PID READING	REMARKS	WELL CONSTRUCTION
DESCRIPTION AND REMARKS	SOIL TYPE						
Asphalt and base rock, some tar-like material <b>SAND (SP)</b> , dusky brown, damp, loose, poorly graded (fill)							
<b>SAND (SW)</b> , pale to moderate yellowish brown, damp, firm, well graded, with moderately plastic clay		5		9			
grading pale yellowish brown, wet, loose, trace clay		10		7			
grading moist		15		15			
Bottom of boring 15.5 feet Notes: Well Construction Details - 2-inch PVC, Schedule 40, solid and slotted (0.010-inch) casing - 2/12 washed sand filter pack - bentonite pellets seal - cement grout surface seal with steel stovepipe locking cover N.S.- Not surveyed							

 <b>Kaldveer Associates</b> Geoscience Consultants A California Corporation	<b>EXPLORATORY BORING LOG</b>		
	<b>1829 CLEMENT AVENUE</b> <b>Alameda, California</b>		
	PROJECT NO.	DATE	BORING NO
	<b>KE1179-1A-272</b>	<b>November 1990</b>	<b>MW-1</b>

DRILL RIG	<b>CME 45</b>	SURFACE ELEVATION	<b>N.S.</b>	LOGGED BY	<b>G. Fiedler</b>
DEPTH TO GROUNDWATER	<b>3.7 feet</b>	BORING DIAMETER	<b>8-inch</b>	DATE DRILLED	<b>9/11/90</b>

DESCRIPTION AND CLASSIFICATION		DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	PID READING	REMARKS	WELL CONSTRUCTION
DESCRIPTION AND REMARKS	SOIL TYPE						
Asphalt and fill							
SAND (SP), yellowish brown, dry, loose, fine to medium grading dusky brown, moist, moderate plasticity							
SAND (SW), light brown, moist, very loose, fine to medium							
CLAYEY SAND (SC), pale to moderate yellowish brown, moist, firm, moderate to low plasticity, moderately weathered, moderate dusky brown oxidation mottling		5		9			
SILTY SAND (SM), medium bluish gray, moist, loose, minor yellowish brown oxidation staining, trace carbonized rootlets		10		9			
grading yellowish brown, wet, loose, well graded		15		19			
Total Depth = 16 Feet Notes: Well Construction Details <ul style="list-style-type: none"> <li>- 2-inch PVC, Schedule 40, solid and slotted (0.010-inch) casing</li> <li>- 2/12 washed sand filter pack</li> <li>- bentonite pellets seal</li> <li>- cement grout surface seal with steel stovepipe locking cover</li> </ul> N.S.- Not surveyed							



**Kaldveer Associates**  
**Geoscience Consultants**  
 A California Corporation

**EXPLORATORY BORING LOG**

**1829 CLEMENT AVENUE**  
**Alameda, California**

PROJECT NO.	DATE	BORING NO	<b>MW-2</b>
<b>KE1179-1A-272</b>	<b>November 1990</b>		

**ATTACHMENT B**  
**Field Sampling Forms**

# WELLHEAD INSPECTION CHECKLIST

Date 3/16/2007 Client Trendwell & Rollo  
 Site Address 1815 Clement Ave. , Alameda  
 Job Number 070316-MN1 Technician Mike N

Well ID	Well Inspected - No Corrective Action Required	Water Bailed From Wellbox	Wellbox Components Cleaned	Cap Replaced	Debris Removed From Wellbox	Lock Replaced	Other Action Taken (explain below)	Well Not Inspected (explain below)
MW-1						cut * lock		
MW-2						cut * lock		
MW-3						cut * lock		

NOTES: \* Replaced w/2357 lock

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WELL GAUGING DATA

Project # 070316-MNI Date 3/16/2007 Client Treadwell & Rollo

Site 1815 Clement Ave., Alameda

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or <u>TOC</u>	Notes
MW-1	1035	2					304	14.58	↓	
MW-2	1021	2					2.93	14.71		
MW-3	1013	2					2.42	14.27 <del>14.47</del> m		

# WELL DEVELOPMENT DATA SHEET

Project #: <b>070316-MNI</b>	Client: <b>Treadwell &amp; Rollo @ IBIS Clement</b>
Developer: <b>Mike N</b>	Date Developed: <b>3/16/2007</b>
Well I.D. <b>MW-1</b>	Well Diameter: (circle one) <b>(2)</b> 3 4 6
Total Well Depth: Before <b>14.58</b> After <b>14.71</b>	Depth to Water: Before <b>3.04</b> After
Reason not developed:	If Free Product, thickness:
Additional Notations: <b>Surged well for 20min prior to purge end 1255</b>	

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

Well dia.	VCF
2"	= 0.16
3"	= 0.37
4"	= 0.65
6"	= 1.47
10"	= 4.08
12"	= 6.87

<u>1.8</u>	X	<u>10</u>	=	<u>18.0</u>	gallons
1 Case Volume		Specified Volumes			

Purging Device:

- Bailer  
 Suction Pump  
 Electric Submersible  
 Positive Air Displacement

Type of Installed Pump \_\_\_\_\_

Other equipment used \_\_\_\_\_

TIME	TEMP (F)	pH	Cond. (mS or $\mu$ S)	TURBIDITY (NTUs)	VOLUME REMOVED:	NOTATIONS:
1320	Begin	purge				Semi Soft Bottom
1323	70.4	7.98	544.1	>1000	1.8	Brown, Silty, fine Sand DTW = 10.74
1326	67.7	7.70	543.3	>1000	3.6	Brown, Silty, fine Sand DTW = 8.95
1329	67.0	7.60	544.7	>1000	5.4	Brown, Silty, fine Sand DTW = 10.95
1330	Well	dewatered			6.4	DTW = 12.80
1525	Surged	well for	10min	prior	to	purge DTW = 3.25
1541	Begin	purge				Semi Soft Bottom
1543	66.9	7.63	552.2	>1000	8.2	Brown, Less Silty DTW = 6.20
1546	64.9	7.53	551.9	>1000	10.0	Brown, Less Silty DTW = 8.35
1549	64.7	7.49	549.9	>1000	11.8	Brown, Less Silty Hard bottom DTW = 10.65
1552	64.5	7.45	547.7	>1000	13.0	Less Silty DTW = 12.81
1552	Well	dewatered			—	DTW = 12.81
1701	begin	purge				DTW = 4.03
Did Well Dewater?			If yes, note above.		Gallons Actually Evacuated:	



# WELL DEVELOPMENT DATA SHEET

Project #: <b>070316-MNI</b>	Client: <b>Treadwell &amp; Rollo @ IBIS Clement</b>
Developer: <b>Mike N</b>	Date Developed: <b>3/16/2007</b>
Well I.D. <b>MW-2</b>	Well Diameter: (circle one) <b>2</b> 3 4 6
Total Well Depth: Before <b>14.71</b> After <b>14.85</b>	Depth to Water: Before <b>2.93</b> After
Reason not developed:	If Free Product, thickness: <b>NA</b>
Additional Notations: <b>Surged well for 20min prior to purge</b> <span style="float: right;"><b>START 1157 STOP 1220</b></span>	

Volume Conversion Factor (VCF): $\{12 \times (d^2/4) \times \pi\} / 231$ where 12 = in / foot d = diameter (in.) $\pi = 3.1416$ 231 = in <sup>3</sup> /gal	Well dia.	VCF
	2"	= 0.16
	3"	= 0.37
	4"	= 0.65
	6"	= 1.47
	10"	= 4.08
	12"	= 6.87

<u>1.9</u>	X	<u>10</u>	=	<u>20.0</u> <del>19.0</del>	gallons
I Case Volume		Specified Volumes			

- Purging Device:       Bailer       Electric Submersible  
 Suction Pump       Positive Air Displacement

Type of Installed Pump \_\_\_\_\_  
 Other equipment used 2" Well Swab

TIME	TEMP (F)	pH	Cond. (mS or $\mu$ S)	TURBIDITY (NTUs)	VOLUME REMOVED:	NOTATIONS:
1224	Begin	purge				Soft Bottom
1226	63.5	8.13	700.0	>1000	2.0	Brown, Silty, Fine Sand DTW = 7.21
1229	61.4	7.76	700.5	>1000	4.0	Brown, Silty, Fine Sand DTW = 2.63
1232	61.7	7.62	705.7	>1000	6.0	Brown, Silty, Fine Sand
1232	Well	dewatered			—	DTW = 13.00
1443	Surged	Well for 10 min.				DTW = 2.95
1456	Begin	Purge				Semi Soft Bottom
1459	63.7	7.70	698.6	>1000	8.0	DTW = 6.60
1502	61.4	7.61	700.4	>1000	10.0	Hard bottom Less Silty DTW = 9.20
1505	61.5	7.55	700.3	>1000	12.0	Less Silty DTW = 11.22
1507	Well	dewatered			13.0	Less Silty DTW = 17.76
1639	Begin	purge				DTW = 3:38
1642	64.5	7.66	703.4	>1000	15.0	Less Silty DTW 6.21
1 Well Dewater?		If yes, note above.		Gallons Actually Evacuated:		



# WELL DEVELOPMENT DATA SHEET

Project #: <b>070316-MNI</b>	Client: <b>Treadwell &amp; Rollo @ IBIS Clement</b>
Developer: <b>Mike N</b>	Date Developed: <b>3/16/2007</b>
Well I.D. <b>MW-3</b>	Well Diameter: (circle one) <b>2</b> 3 4 6
Total Well Depth: Before <b>14.27</b> After <b>14.49</b>	Depth to Water: Before <b>2.42</b> After
Reason not developed:	If Free Product, thickness:
Additional Notations: <b>Surged well for 20min prior to purge</b> <span style="float: right;">START 1048 END 1108</span>	

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

Well dia.	VCF
2" =	0.16
3" =	0.37
4" =	0.65
6" =	1.47
10" =	4.08
12" =	6.87

<u>1.9</u>	X	<u>10</u>	=	<u>19.0</u>	gallons
I Case Volume		Specified Volumes			

- Purging Device:       Bailer       Electric Submersible  
 Suction Pump       Positive Air Displacement

Type of Installed Pump \_\_\_\_\_  
 Other equipment used \_\_\_\_\_

TIME	TEMP (F)	pH	Cond. (mS or μS)	TURBIDITY (NTUs)	VOLUME REMOVED:	NOTATIONS:
1116	Begin	Purge				SOFT BOTTOM
1122	65.7	8.12	722	>1000	2.0	Brown, Silty DTW = 5.36 Fine silt
1125	61.2	7.80	737	>1000	4.0	Brown, Silty DTW = 6.90 Fine silt
1128	61.3	7.57	713	>1000	6.0	Brown, Silty DTW = 10.56 Turbidity, Fine silt
1132	Well dewatered				7.0	Brown, Silty DTW = 12.72
1347	Surged for	10 min		prior	to purge	DTW = <del>10.56</del> 2.32 Semi Soft bottom
1411	Begin	purge				
1415	64.2	8.10	724.2	>1000	9.0	Less Silty DTW = 5.33 Hard bottom
1417	60.8	7.72	747.3	>1000	11.0	Less Silty DTW = 6.57
1419	61.0	7.69	731.2	>1000	12.0	Less Silty DTW = 9.21
1421	61.1	7.59	728.6	>1000	14.0	Less Silty DTW = 11.21
1428	Well dewatered				15.5	Less Silty DTW =
1606	Surge well for	5 min		prior	to purge	DTW = 2.49
Did Well Dewater?		If yes, note above.		Gallons Actually Evacuated:		







SPH or Purge Water Drum Log

Client: Treadwell & Rollo  
 Site Address: 1815 Clement Ave., Alameda - Pacific Shops

**STATUS OF DRUM(S) UPON ARRIVAL**

Date	3/13/07				
Number of drum(s) empty:	0				
Number of drum(s) 1/4 full:	0				
Number of drum(s) 1/2 full:	0				
Number of drum(s) 3/4 full:	0				
Number of drum(s) full:	0				
Total drum(s) on site:	0				
Are the drum(s) properly labeled?	NA				
Drum ID & Contents:	NA				
If any drum(s) are partially or totally filled, what is the first use date:	NA				

- If you add any SPH to an empty or partially filled drum, drum must have at least 20 gals. of Purgewater or DI Water.
- If drum contains SPH, the drum MUST be steel AND labeled with the appropriate label.
- All BTS drums MUST be labeled appropriately.

**STATUS OF DRUM(S) UPON DEPARTURE**

Date	3/13/07				
Number of drums empty:					
Number of drum(s) 1/4 full:					
Number of drum(s) 1/2 full:					
Number of drum(s) 3/4 full:	1				
Number of drum(s) full:	1				
Total drum(s) on site:	2				
Are the drum(s) properly labeled?	Yes				
Drum ID & Contents:	Purgewater				

**LOCATION OF DRUM(S)**

Describe location of drum(s): Near MW-1. 10

**FINAL STATUS**

Number of new drum(s) left on site this event	2				
Date of inspection:	3/16/07				
Drum(s) labelled properly:	Y				
Logged by BTS Field Tech:	125				
Office reviewed by:					

**ATTACHMENT C**  
**Chain-of-Custody Record and Certified Laboratory Reports**



**McC Campbell Analytical, Inc.**

"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701  
Web: www.mcccampbell.com E-mail: main@mcccampbell.com  
Telephone: 877-252-9262 Fax: 925-252-9269

Treadwell & Rollo 555 Montgomery St., Suite 1300 San Francisco, CA 94111	Client Project ID: 1815 Clement Ave. Alameda, CA	Date Sampled: 03/16/07
		Date Received: 03/16/07
	Client Contact: Chris Gordon	Date Reported: 03/22/07
	Client P.O.:	Date Completed: 03/22/07

**WorkOrder: 0703406**

March 22, 2007

Dear Chris:

Enclosed are:

- 1). the results of **3** analyzed samples from your **1815 Clement Ave. Alameda, CA project**,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions please contact me. McC Campbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Best regards,

Angela Rydelius, Lab Manager



# McC Campbell Analytical, Inc.



1534 Willow Pass Rd  
 Pittsburg, CA 94565-1701  
 (925) 252-9262

# CHAIN-OF-CUSTODY RECORD

WorkOrder: 0703406

ClientID: TWRF

EDF

Fax

Email

HardCopy

ThirdParty

**Report to:**

Chris Gordon  
 Treadwell & Rollo  
 555 Montgomery St., Suite 1300  
 San Francisco, CA 94111

Email: chrisgordon@treadwellrollo.com  
 TEL: (415) 955-904 FAX: (415) 955-904  
 ProjectNo: 1815 Clement Ave. Alameda, CA  
 PO:

**Bill to**

Accounts Payable  
 Treadwell & Rollo  
 555 Montgomery St., Suite 1300  
 San Francisco, CA 94111

**Requested TAT: 5 days**

*Date Received: 03/16/2007*

*Date Printed: 03/16/2007*

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
0703406-001	MW-1	Water	03/16/07 5:11:00	<input type="checkbox"/>	B	C	A									
0703406-002	MW-2	Water	03/16/07 4:50:00	<input type="checkbox"/>	B	C	A									
0703406-003	MW-3	Water	03/16/07 4:22:00	<input type="checkbox"/>	B	C	A									

**Test Legend:**

1	218_6_W	2	CN_TOTAL_W	3	METALSMS_W	4		5	
6		7		8		9		10	
11		12							

**Prepared by: Melissa Valles**

**Comments:**

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.











### QC SUMMARY REPORT FOR E218.6

W.O. Sample Matrix: Water

QC Matrix: Water

WorkOrder 0703406

EPA Method E218.6	Extraction E218.6			BatchID: 26880			Spiked Sample ID: 0703406-001b					
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
Hexachrome	ND	25	106	104	1.33	90.4	94.6	4.63	90 - 110	10	90 - 110	10

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:  
NONE

#### BATCH 26880 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0703406-001B	03/16/07 5:11 PM	03/16/07	03/16/07 8:51 PM	0703406-002B	03/16/07 4:50 PM	03/16/07	03/16/07 9:12 PM
0703406-003B	03/16/07 4:22 PM	03/16/07	03/16/07 9:34 PM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 \* (MS-Sample) / (Amount Spiked); RPD = 100 \* (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.



### QC SUMMARY REPORT FOR Kelada-01

W.O. Sample Matrix: Water

QC Matrix: Water

WorkOrder 0703406

EPA Method E335.3 / Kelada-01		Extraction E335.3 / Kelada-01				BatchID: 26839			Spiked Sample ID: 0703361-001B			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
Total Cyanide	4.2	40	102	107	3.67	95.7	97.1	1.37	80 - 120	20	90 - 110	20

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:  
NONE

#### BATCH 26839 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0703406-001C	03/16/07 5:11 PM	03/19/07	03/19/07 1:21 PM	0703406-002C	03/16/07 4:50 PM	03/19/07	03/19/07 1:22 PM
0703406-003C	03/16/07 4:22 PM	03/19/07	03/19/07 1:23 PM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 \* (MS-Sample) / (Amount Spiked); RPD = 100 \* (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.



### QC SUMMARY REPORT FOR E200.8

W.O. Sample Matrix: Water

QC Matrix: Water

WorkOrder 0703406

EPA Method E200.8		Extraction E200.8			BatchID: 26878			Spiked Sample ID: 0703406-003A				
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
Arsenic	0.83	10	98.8	99.5	0.651	102	105	2.80	75 - 125	20	85 - 115	20
Chromium	ND	10	97.7	96.7	0.995	103	104	1.06	75 - 125	20	85 - 115	20
Copper	ND	10	94.1	93.4	0.758	104	106	1.43	75 - 125	20	85 - 115	20
Lead	ND	10	98	97.4	0.675	101	102	1.09	75 - 125	20	85 - 115	20
Molybdenum	ND	10	96.7	95.6	1.18	96.3	99.5	3.30	75 - 125	20	85 - 115	20
%SS:	105	750	107	108	0.794	104	104	0	70 - 130	20	70 - 130	20

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:  
NONE

#### BATCH 26878 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0703406-001A	03/16/07 5:11 PM	03/16/07	03/19/07 5:20 PM	0703406-002A	03/16/07 4:50 PM	03/16/07	03/19/07 5:27 PM
0703406-003A	03/16/07 4:22 PM	03/16/07	03/19/07 4:16 PM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 \* (MS-Sample) / (Amount Spiked); RPD = 100 \* (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not applicable to this method.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.