PORT OF OAKLAND

April 21, 2006

Mr. Barney Chan
Hazardous Materials Specialist
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, 2nd Floor
Alameda, CA 94502

RE: RO#0000010 and RO#0000185_2005 Annual Monitoring Report – Free Product Recovery System, Port of Oakland Harbor Facilities Center, Oakland, California_2006-04-21

Dear Mr. Chan:

Please find enclosed the subject Port of Oakland (Port) 2005 free product monitoring report entitled, *2005 Annual Monitoring Report – Free Product Recovery System, Port of Oakland Harbor Facilities Center, Oakland, California*, for the former 2277 and 2225 Seventh Street site in Oakland, California. This report is being submitted in accordance with Alameda County Health Care Services Agency (County) requirements[1].

This report is the final work product by the Port's remediation consultant, Treadwell & Rollo, Inc. The Port has retained Baseline Environmental Consulting (Baseline) to continue free product system monitoring, maintenance, and future enhancements. If you have any questions or comments regarding the information contained in this report, please contact Jeff Rubin at (510) 627-1134.

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached report prepared by Treadwell & Rollo, Inc. are true and correct to the best of my knowledge. Please note that the report is stamped by a Professional Geologist in the State of California.

Sincerely,

Roberta L. Reinstein
Manager
Environment and Safety

Jeffrey L. Rubin, CPSS, REA
Port Associate Environmental Scientist
Environment and Safety

Enclosure: noted

Cc (w encl.): Michele Heffes

Cc (w/o encl.): Jeff Jones
James McCarty (Baseline Environmental)
Yane Nordhav (Baseline Environmental)
Lydia Huang (Baseline Environmental)

[1] Technical report due by 21 April 2006, as specified in letter from Mr. Barney Chan (County) to Mr. Jeff Rubin (Port), regarding *Fuel Leak Cases RO0000010 and RO0000185, 2277 and 2225 7th St., Oakland, CA 94607*, dated March 23, 2006.

FREE PRODUCT RECOVERY SYSTEM
2005 ANNUAL MONITORING REPORT

Harbor Facilities Center

Maritime and 7th Streets
Port of Oakland
Oakland, California

Prepared by:
Treadwell and Rollo

April 2006

Treadwell&Rollo

17 April 2006
Project 4000.01

Mr. Jeffrey L. Rubin, CPSS, REA
Port of Oakland
530 Water Street
Oakland, California 94607

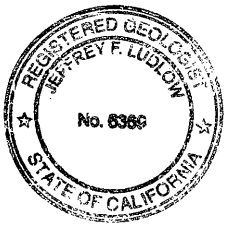
Subject: 2005 Annual Monitoring Report
Free Product Recovery System
Port of Oakland Harbor Facilities Center
Oakland, California

Dear Mr. Rubin:

Treadwell & Rollo's 2005 Annual Monitoring Report for the free product recovery system operating at the Port of Oakland Harbor Facilities Center at 2227 Seventh Street in Oakland, California is attached.

We appreciate the opportunity of assisting you with this project. If you have any questions, please contact us.

Sincerely yours,
TREADWELL & ROLLO, INC.



Gregory Johnson
Senior Staff Scientist

For
Jeffrey F. Ludlow, P.G.
Senior Project Manager

40000107.JFL

Attachment

Treadwell & Rollo, Inc. *Environmental & Geotechnical Consultants*
555 Montgomery Street, Suite 1300, San Francisco, California 94111
Telephone (415) 955-9040, Facsimile (415) 955-9041

Treadwell&Rollo

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1.0 INTRODUCTION

In 2004, Beliveau Engineering Contractors, Inc (Beliveau), installed a new free product recovery system at the Port of Oakland (Port) Harbor Facilities Center (HFC). The former free product recovery system installed at the HFC property was shut down as approved by the Alameda County Health Care Services Agency (ACHCSA) in a letter dated March 27, 2003, to accommodate the HFC construction, with the contingency that a new free product recovery system would be installed upon construction completion. On December 12, 2003, the design for the new free product recovery system was submitted to ACHCSA. Per their requirements, final, "as-built drawings" for the new free product recovery system were submitted to ACHCSA in a letter dated July 19, 2005.

The initial system startup occurred on December 14, 2004. After initial startup, the data collection and troubleshooting phase of the system startup began. The goal of the data collection and troubleshooting phase was three-fold:

- Respond to regulatory directives to remove free product and monitor site conditions;
- Use data collected over several cycles to assess the system's performance; and
- Perform adjustments/troubleshoot the system to increase performance.

2.0 SYSTEM OVERVIEW

The following is a brief description of the system and components, a detailed system description is provided in the report titled: *Free Product Recovery System Operation And Maintenance Manual, Harbor Facilities Center, Maritime and 7th Streets, Port Of Oakland, Oakland, California, July 2005*, prepared by Treadwell and Rollo.

The main components of the system are:

1. Air Production and Regulation
    - Components include – the air compressor, compressed air dryer, air filter and air pressure regulator.
2. Pumping Cycle and Duration Regulation
    - 5000ES 8-Station Programmable Site Manager (5000ES)
3. Free Product Recovery
    - Recovery wells and ADJ smart skimmer pumps
4. Recovered Product Storage and Monitoring
    - Convault and Sensor

In general:

1. Air pressure is built up in the air compressor (housed in a Securall B200 safety cabinet), until it reaches 160 pounds per square inch (PSI), at which point the compressor switches off. Air from the compressor is forced through a compressed air dryer where it is cooled by mechanical refrigeration which produces condensed water which is removed through an automatic drain valve. The "dry" air is then passed from the air dryer via piping through the cabinet wall and into an air filter that removes particulates. Air exiting the filter is then regulated by turning a screw fitting clockwise or counter-clockwise located on the air pressure regulator, which adjusts the PSI up or down before air enters the 5000ES.

2. Dry, "clean" air enters the 5000ES through an inlet located on the side of the unit. There are eight (labeled) outlets on the unit (four on each side), where air lines exit and pass into a conduit located below the unit, and subsequently connect to each recovery well. The 5000ES is programmed to send air pulses at set frequencies (cycles) for set lengths of time (duration), to ADJ 200 Smart Skimmer pumps (ADJ 200) installed in whichever recovery wells are currently part of the recovery program.

3. Air pulses from the 5000ES enter the ADJ 200 installed in the recovery well and force product from the recovery well through free product return lines into the Convault.

4. Product return lines exit a conduit located below a manifold at the Convault, into a manifold, from here the product enters the Convault. A sensor located in the top of the Convault is connected by wires to the 5000ES. This sensor is designed to detect when

the product level in the Convault reaches maximum capacity and subsequently shuts down the 5000ES to prevent any additional product from being pumped.

3.0 MONITORING DATA

3.1 Measurement Methodology

The following is a brief description of the methodology used by Treadwell & Rollo for measuring water and free product levels in 2005. The details are provided in the operation and maintenance manual.

Delineators or traffic cones were setup around the well box cover and PPE was donned (latex gloves). The recovery well box cover was removed with a crowbar, and the well cap and ADJ 200 (ADJ 200 is attached to the cap) were removed from the well and placed in a pump tray lined with towels. After waiting for 5 to 10 minutes for well to settle, the blue mark on well was found and the water/interface meter was turned on and lowered slowly into the well at the blue mark. When the probe tip of the meter came in contact with product (meter emitted a steady tone) the depth was recorded in the space provided on the PUMP DEPTH SETTING SHEET. When the tone changed into an intermittent tone (contact with water), the depth was recorded in the space provided on the PUMP DEPTH SETTING SHEET. Several layers of paper towel were layed out and the meter was removed from the well. The probe tip and entire length of the meter tape that was in the well was layed on the paper towel and sprayed down with Liquinox thoroughly, then washed down with clean water. The clean tape was reeled in and the meter was placed in its carrying case. The ADJ 200 was returned to the well, the well cap was replaced and the pump tray was wiped down. Soiled towels and latex gloves were placed in a large garbage bag to be placed in a hazardous waste storage unit at the Port. The well box cover was replaced and the delineators or traffic cones were removed from around the well box cover to be placed around the next well.

3.2 Measurement Data

The following tables show the data collected from the system over the first year of operation.

TABLE 1
1st Quarter 2005

	Recovery Well ID	12/14/04	12/23/04	1/3/05	1/13/05	1/27/05	2/10/05	3/23/05	3/25/05	3/29/05	3/30/05
Depth to Water	RW-3	11.17	11.10	9.15	8.86	10.85	10.66	8.75	8.64	8.19	8.26
	RW-4	9.24	9.45	7.80	7.87	8.05	8.41	8.05	NM	7.45	NM
	RW-6	9.36	9.47	8.70	8.48	8.36	8.47	7.98	NM	8.01	7.41
	RW-7	8.31	8.45	7.57	7.38	7.67	7.70	7.67	NM	7.39	NM
	RW-8	9.09	9.13	8.66	8.5	8.40	8.55	8.40	NM	8.16	NM
Depth to Product	RW-3	9.86	10.25	8.50	8.32	8.81	9.26	8.16	8.17	8.14	8.22
	RW-4	9.22	9.44	7.79	7.86	8.04	8.30	8.04	NM	7.30	NM
	RW-6	8.36	8.49	7.95	7.81	7.72	7.78	7.37	NM	7.40	7.39
	RW-7	8.11	8.21	7.33	7.38	7.39	7.51	7.39	NM	7.06	NM
	RW-8	9.05	9.10	8.63	8.48	8.38	8.54	8.38	NM	8.15	NM
Product Thickness	RW-3	1.31	0.85	0.65	0.54	2.04	1.40	0.59	0.47	0.05	0.04
	RW-4	0.02	0.01	0.01	0.01	0.01	0.11	0.01	NM	0.15	NM
	RW-6	1.00	0.98	0.75	0.67	0.64	0.69	0.61	NM	0.61	0.02
	RW-7	0.20	0.24	0.24	0.30	0.28	0.19	0.28	NM	0.33	NM
	RW-8	0.04	0.03	0.03	0.02	0.02	0.01	0.02	NM	0.01	NM

NM = Not Measured
Units are in feet.
System operation from initial startup in December of 2004 to the end of the first quarter of 2005.

TABLE 2
2nd Quarter 2005

	Recovery Well ID	4/5/05	4/8/05	4/22/05	5/6/05
Depth to Water	RW-3	8.65	8.61	9.50	9.88
	RW-4	7.73	7.23	7.96	8.15
	RW-6	7.61	7.63	7.91	7.92
	RW-7	7.39	7.33	7.35	7.42
	RW-8	8.02	8.03	8.08	8.23
Depth to Product	RW-3	8.38	8.32	8.78	8.99
	RW-4	7.60	7.11	7.94	8.10
	RW-6	7.42	7.41	7.58	7.66
	RW-7	7.02	6.98	7.16	7.28
	RW-8	8.01	8.02	8.07	8.22
Product Thickness	RW-3	0.27	0.29	0.72	0.89
	RW-4	0.13	0.12	0.02	0.05
	RW-6	0.19	0.22	0.33	0.26
	RW-7	0.37	0.35	0.19	0.14
	RW-8	0.01	0.01	0.01	0.01

Units are in feet.

System operation for the second quarter of 2005.

Note:

In general, the frequency of measurement of free product and water levels in the recovery wells is governed by weather patterns. During the dryer months (typically May – November) measurements can be taken on a monthly basis. Starting with the first rain (typically December) this should be stepped up to bi-weekly. In the case of extremely heavy rainfall during any given week, the measurement frequency may need to be increased to weekly intervals.

TABLE 3
3rd Quarter 2005

	Recovery Well ID	9/12/05	9/27/05
Depth to Water	RW-1	7.85	8.40
	RW-2	10.23	10.33
	RW-3	11.11	11.26
	RW-4	9.74	9.92
	RW-5	7.83	NM
	RW-6	8.79	8.93
	RW-7	8.04	8.15
	RW-8	9.26	9.32
	RW-9	10.27	10.73
Depth to Product	RW-1	ND	ND
	RW-2	ND	ND
	RW-3	10.11	10.26
	RW-4	1.00	9.58
	RW-5	ND	NM
	RW-6	8.26	8.34
	RW-7	7.85	7.92
	RW-8	8.62	8.68
	RW-9	ND	ND
Product Thickness	RW-1	ND	ND
	RW-2	ND	ND
	RW-3	1.00	1.00
	RW-4	0.39	0.34
	RW-5	ND	NM
	RW-6	0.53	0.59
	RW-7	0.19	0.23
	RW-8	0.64	0.64
	RW-9	ND	ND

NM = Not Measured

ND = Not Detected

Units are in feet.

System operation for the third quarter of 2005.

TABLE 4
4th Quarter 2005

	Recovery Well ID	10/5/05	10/21/05	11/2/05	11/16/05	12/2/05	12/14/05	12/28/05
Depth to Water	RW-1	7.96	8.10	8.12	8.72	8.63	NM	NM
	RW-2	10.42	10.52	10.50	10.66	10.01	9.79	8.11
	RW-3	10.85	10.87	10.82	12.08	12.13	11.89	9.83
	RW-4	9.83	9.76	9.99	10.11	9.36	9.82	8.65
	RW-5	NM	8.04	NM	NM	NM	7.96	6.81
	RW-6	8.74	8.65	8.81	8.71	8.73	8.49	7.44
	RW-7	8.14	8.17	8.21	8.30	8.37	8.14	7.22
	RW-8	9.31	9.33	9.42	9.41	9.33	9.02	7.89
	RW-9	10.73	10.42	10.42	10.81	10.67	10.43	9.40
Depth to Product	RW-1	ND	ND	ND	ND	ND	NM	NM
	RW-2	ND	ND	ND	ND	ND	ND	ND
	RW-3	10.28	10.42	10.57	11.43	9.84	10.18	9.36
	RW-4	9.64	9.73	9.76	9.94	9.28	9.56	8.33
	RW-5	NM	ND	NM	NM	NM	ND	ND
	RW-6	8.42	8.48	8.52	8.53	8.57	8.37	7.38
	RW-7	7.97	8.03	8.05	8.09	8.11	7.99	7.06
	RW-8	8.71	8.76	8.81	8.87	8.85	8.78	7.48
	RW-9	ND	ND	ND	ND	ND	ND	ND
Product Thickness	RW-1	ND	ND	ND	ND	ND	NM	NM
	RW-2	ND	ND	ND	ND	ND	ND	ND
	RW-3	0.57	0.45	0.25	0.65	2.29	1.71	0.47
	RW-4	0.19	0.03	0.23	0.17	0.08	0.26	0.32
	RW-5	NM	ND	NM	NM	NM	ND	ND
	RW-6	0.32	0.17	0.29	0.18	0.16	0.12	0.06
	RW-7	0.17	0.14	0.16	0.21	0.26	0.15	0.16
	RW-8	0.60	0.57	0.61	0.54	0.48	0.24	0.41
	RW-9	ND	ND	ND	ND	ND	ND	ND

NM = Not Measured

ND = Not Detected

Units are in feet.

System operation for the fourth quarter of 2005.

3.3 Results of first year of monitoring

Similar to water levels, free product (product) levels typically change with seasonal change. In general, greater apparent product thickness was observed during lower water table conditions (during late summer and fall) than during higher water table conditions (during winter and spring months). Variations in these observations were encountered during high or low rainfall periods within a particular season.

4.0 SYSTEM CALIBRATION AND OPERATION

In 2005, system calibration was an ongoing process, consisting of physical adjustment of pump depths in recovery wells and adjustment of the frequency and duration of the pumping cycle as programmed into the 5000ES. The 5000ES allows for the adjustment of pumps individually to desired pumping frequencies and duration. Adjustment of the pumps in the wells mainly occurred during late March during efforts to troubleshoot problems with pumps in recovery wells RW-3 and RW-6, as discussed in Section 5.1 of this report. The next physical adjustment of pump depths in recovery wells occurred in September of 2005, based on drops in the water level over the drier months.

Adjustment of the frequency and duration of the pumping cycles occurred more often, based on how much product was recovered and on recharge rates, which vary for each well. At the end of 2004 and beginning of 2005, after test pumping cycles had been performed to assist in determining system cycles and frequencies for each pump, maintenance issues (addressed in Section 5.0), prevented regular system cycling until late March 2005. Starting April 8th 2005 (based on observed well recovery rates in late 2004 and early 2005), Recovery Wells (RW) RW-3 and RW-6 were setup to cycle once every 14 days for a duration of 20 minutes, RW-7 was setup to cycle once every 14 days for a duration of 10 minutes, and RW-4 and RW-8 were setup to cycle once every 14 days for a duration of 5 minutes. On April 22nd 2005, it was noted that water levels had dropped up to as much as 0.89 feet (in RW-3), and free product thicknesses had subsequently increased. On observing the pumping cycle it was seen that free product was being removed for longer durations in each well. Based on this, on April 25th 2005, the duration of

cycles was adjusted to remove more free product. RW-3 was setup to cycle once every 14 days for a duration of one and a half hours, RW-6 was setup to cycle once every 14 days for a duration of one-hour, RW-4 and RW-7 were setup to cycle once every 14 days for a duration of 10 minutes, and RW-8 was setup to cycle once every 14 days for a duration of 20 minutes. On May 6th 2005, again based on measurements of product, RW-7 was setup to cycle once every 14 days for a duration of 20 minutes, and RW-8 was setup to cycle once every 14 days for a duration of 10 minutes. The frequencies and durations remained as set for RW-3, RW-4 and RW-6 on April 25th 2005, and as set for RW-7 and RW-8 on May 6th 2005, until the end of 2005. However, pump depth settings were changed in September 2005. The system maintenance logs in the appendix give details of field operations, including 2005 system calibration, both physically at the well and also at the 5000ES controller.

System calibration is a common task and should be expected to be performed on a continued basis as seasonal changes occur. As the water level drops, free product levels often rise; therefore the system operator may wish to run the cycle for a longer time or on a more regular basis, and vice versa – water level rises, free product level drops, therefore the system operator may wish to so run the cycle for a shorter time or less regularly. In making this decision, the system operator may wish to consult historic data.

5.0 SYSTEM REPAIR/TROUBLESHOOTING AND MAINTENANCE

5.1 System Repair/Troubleshooting

During 2005, four System Repair/Troubleshooting events occurred:

- Replacement of Leaking Valves at Convault Tank Manifold;
- Repair of 5000ES Programmable Site Manager (5000ES);
- Tank Sensor Replacement; and
- Water Passing through Pumps Located in Wells RW-3 and RW-6.

Replacement of Leaking Valves at Convault Tank Manifold

It was noted on December 23, 2004, that the "closed" valves at the manifold for RW-1, RW-2, RW-5, RW-9 and extra line 1 were leaking product. The manifold design was such that the product recovery line from each recovery well connected to a valve and all the valves then connected to one central pipe. In theory, if a valve were closed then product would not backflow from the central pipe into a dormant line. It was noted that the type of valves used were not creating an adequate seal.

By leaving all valves open the leaking could temporarily be prevented, however, the issue of product backflowing into a dormant line still remained; leaving all the valves open was not an adequate solution. The problem was resolved in February 2005, when all the valves were replaced by the system construction subcontractor and subsequent testing revealed no leaks.

Repair of 5000ES Programmable Site Manager

During scheduled system maintenance on February 4, 2005, an audible hissing was detected coming from the 5000ES. After electrical system shutdown and lockout/tagout procedures were in place, the control panel for the 5000ES was opened (the compressor was not purged as the hissing needed to continue for detection purposes), and it was clear that three of the nuts at the air out locations needed tightening. Tape was placed around each leaking line to identify which needed tightening; the compressor was drained to allow completion of scheduled maintenance activities. Upon completion of scheduled maintenance, the nuts at the leaking locations were tightened, the tape was removed and the panel was closed. After the compressor was charged back up to 160 PSI, the 5000ES was checked for audible hissing and none was heard. This concluded the 5000ES air line out repair procedure.

Tank Sensor Replacement

During scheduled system startup on February 10, 2005, after the valve was replaced at the manifold, the system failed to start. The full tank sensor light was lit on the 5000ES, indicating the Convault tank was full; the light comes on when the tank sensor detects the tank is full and

the system automatically shuts down the 5000ES to prevent product overflow. Based on the amount of free product pumped to the tank during each cycle, it seemed unlikely the Convault was full, subsequent, opening of the tank revealed that it was very low.

After electrical system shutdown and lockout/tagout procedures were in place, the power lines from the sensor to the 5000ES were re-routed pursuant to a Xitech procedure; this was done to by-pass the sensor as one of two steps in determination of sensor failure. After re-routing was completed, the electrical system was switched back on and the 5000ES was tested manually; it operated. The second step was to again shutdown and lockout/tagout the electrical system, route the power lines from the sensor to the 5000ES back to standard configuration and restart the system. If the light comes on again, then the sensor is at fault. The light did come on and therefore the sensor needed to be replaced. The sensor was replaced by the system construction subcontractor in late March 2005 and the system returned to functioning as prescribed.

Water Passing Through Pumps Located in Wells RW-3 and RW-6

During 2005, there were four occasions during which water was pumped from either or both recovery wells RW-3 and RW-6.

There had been one instance previously, on December 2, 2004, where water had been pumped from RW-6, but this had been resolved by the removal of a zip tie that was used to hold the filter in place during transportation, which had been missed during pump installation and hence was preventing the filter from traveling up and down in the pump as it was designed to do.

January 27, 2005

During pumping cycle adjustment, water was observed to be coming out of the free product return line for RW-6. Subsequently, the pumps were shut down pending investigation into the cause. The system was started on February 10, 2005, to check valve replacement at the manifold and, subsequently, observe if more water was pumped through the lines. Unfortunately, the system could not be started due to a tank sensor failure.

March 23, 2005

The system was restarted and water was again observed coming from both RW-3 and RW-6. After consultation with Xitech and a review of water level data, the possibility of "flooded" filters was considered. This occurs when the water level in the wells rises above where the pumps are set and water enters a hole in the top of the hydrophobic filter. Based on the water level data from initial pump installation to March 23, 2005, which showed a change of at least two and a half feet, it seemed clear the filters were indeed flooded.

March 25, 2005

The pump was removed from RW-3 and the depth adjusted, so that filter would be sitting in product and not underwater. After starting the system, it was observed that RW-3 still pumped water; the filter appeared to no longer retain its hydrophobic properties. The system was shut down.

March 29, 2005

The pump was removed from RW-6 and the depth adjusted, so that like RW-3 the filter would be sitting in product and not underwater. After starting the system it was observed that RW-6 also still pumped water; the filter in RW-6 appeared to no longer retain its hydrophobic properties. The system was shut down.

March 30, 2005

After other avenues of troubleshooting had been exhausted, Treadwell & Rollo personnel removed the pumps and did a full scale breakdown of each pump, which included removing and cleaning the filter and removing, inspecting and cleaning the pump assembly. The filter and pump assembly were disassembled, cleaned using shop towels, and inspected for damage, before being reassembled and reinstalled into the recovery well at the appropriate depth. This procedure was performed first on the pump from RW-3 and then repeated on the pump from RW-6. The system was restarted and left to run until the product in the wells had been removed

to determine if water would be pumped after product removal; however, water was not pumped. Cleaning the pumps allowed for the filters to work in the hydrophobic manner they were designed for.

After March 30, 2005, through the remainder of 2005, the pumps in RW-3 and RW-6 performed as designed and the water problem did not reoccur.

5.2 Maintenance

A general overview of the standard bi-weekly maintenance checks that were performed during 2005 is provided below. Full maintenance procedures were performed as described in the operation and maintenance manual.

- At the recovery well heads, Convault intake manifold and the 5000ES Programmable Station Manager, air lines and free product lines (as applicable) were examined for wear and tear and repaired/replaced as needed. Lines were also checked to see that they were still clearly marked.
- While shut down, the compressor was drained of moisture, and checked visually for correct oil level, rust, cracks and leaks. Once restarted, the compressor was checked to see that it built up pressure and shut off at approximately 160 PSI. It was also checked for unusual noise or vibration, oil leaks and again for rust, cracks and leaks.
- The compressed air dryer was checked for any unusual noise.
- The lines between the air compressor and compressed air dryer, compressed air dryer and air filter, air filter and air pressure regulator and air pressure regulator and 5000ES Programmable Station Manager were checked for damage, rust and leaks.
- The Convault was checked visually for fuel leaks and damage.

6.0 PRODUCT RECOVERY

During 2005, the free product recovery system recovered approximately one and a half inches of product (measured using a stake marked off in ½ inch increments); this measurement was taken in the Convault. Using the Convault inches to gallons conversion chart for a 500 gallon capacity tank, this converts to approximately 32.4 gallons. Based the observed product levels, at least 95% of the recovered product came from well RW-3 and RW-6.

7.0 RECOMMENDATIONS FOR SYSTEM IMPROVEMENT

Based on the results of system performance, data collected, and subsequent free product recovery during 2005, Treadwell & Rollo offers the following recommendations for improving system performance.

Each well box contains a point adjacent to the well head where a vacuum can be applied. Application of a vacuum may increase the chances of recovery by changing the water capillary pressure and subsequently raising the water and free product level in the well.

During the course of 2005, product thickness was measured on several occasions. The table below shows the greatest product thickness recorded for each well during 2005.

Table 5

Recovery Well ID	Greatest Product Thickness (ft) During 2005
RW-1	ND
RW-2	ND
RW-3	2.29
RW-4	0.39
RW-5	ND
RW-6	1.0
RW-7	0.37
RW-8	0.64
RW-9	ND

ND = Non-detect
Greatest product thickness detected in recovery wells RW-1 through RW-9 in 2005.

As the table shows, the greatest product thickness was found in RW-3, followed by RW-6, RW-8, RW-4 and RW-7, in decreasing thickness.

Product was not detected at any time in RW-1, RW-2, RW-5 and RW-9, with the exception of RW-5 (possibly in a zone where product is not easily transported). These latter wells are all perimeter wells and suggest the main locations (RW-3, RW-6, RW-8, RW-4 and RW-7), from which to pull product are in a fairly tight group. Accordingly, Treadwell and Rollo recommends considering installation of one or two wells between RW-3 and RW-6, west of RW-5, to increase free product recovery. However, the installation of additional wells should be considered only following attempting to enhance the system via vacuum application.

8.0 CONCLUSION

In conclusion, the free product system operates in a manner consistent with the design. Adding vacuum to existing wells and/or installing additional recovery wells at the site may increase the efficiency and volume of product recovered.

Treadwell&Rollo

APPENDIX

System Maintenance Logs

Treadwell&Rollo

FIELD REPORT NO. ____
Sheet 1 of 2

Project: Port of Oakland Oandm
Subject: **FIELD INVESTIGATION DAILY REPORT**
Field Engineer: Greg Johnson
Time: 1230
Reviewed by: _____ Date: _____

Project No: 4000.01
Date: 1/3/05
To: _____
Weather: cool/overcast

1230 Arrive on Site to collect DTP/DTW measurements and monitor cycle #3
1250 Collect DTP/DTW measurements.
RW-3 has recovered to 0.65/ft of product
RW-4 has recovered to 0.01 ft of product
RW-6 has recovered to 0.75/ft of product
RW-7 has recovered to 0.24/ft of product
RW-8 has recovered to 0.03/ft of product.

RW-4, RW-7 and RW-8 have recovered to pre-cycle 2 levels.
RW-3 and RW-6 have recovered to about 3/4 of their pre-cycle 2 levels.

DTW levels have risen due to recent rainfall, ranging from 0.47 ft at RW-8 to 1.95 ft at RW-3.

1400 Pumps start in all wells. No fuel leaking at manifold.
1405 Pumps at RW-4, RW-7 and RW-8 switch off.
1420 Pumps at RW-3 and RW-6 switch off.
1445 Leave site after securing compressor cabinet and programmable station manager.

Attachments: _____

Initials _____

GROUNDWATER GAUGING FORM

JOB NAME: Port of Oakland – Cycle 3 JOB NUMBER: 4000.01 2 of 2
*Wells Measured Pre-Cycle Start
IP#: DATE: 1/3/05
MEASURED TO TOC OR GRADE? Name: Greg Johnson

WELL I.D.	Time	DTB Est/Actual (Feet)	WELL DIAM. (inches)	DTP (Feet)	DTW (Feet)	COMMENTS Please note if well needs repair
RW-1	Not Measured – Not part of					initial Cycles
RW-2	Not Measured – Not part of					initial cycles
RW-3	1250			8.50	9.15	
RW-4	1300			7.79	7.80	
RW-5	Not measured – Not part of					initial cycles
RW-6	1308			7.95	8.70	
RW-7	1320			7.33	7.57	
RW-8	1330			8.63	8.66	
RW-9	Not measured – Not part of					initial cycles

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FIELD REPORT NO. ____
Sheet 1 of 2

Project: Port of Oakland O and M
Subject: **FIELD INVESTIGATION DAILY REPORT**
Field Engineer: Greg Johnson
Time: 1145
Reviewed by: _____ Date: _____

Project No: 4000.01
Date: 1/13/05
To: _____
Weather: Cool / overcast

1145 Arrive on Site
1150 Collect DTP/DTW Measurements
Rw-3 has recovered to 0.54 ft of product
Rw-4 has recovered to 0.01 ft of product
Rw-6 has recovered to 0.67 ft of product
Rw-7 has recovered to 0.30 ft of product
Rw-8 has recovered to 0.02 ft of product

Rw-4, Rw-7 and Rw-8 are very close to their pre-cycle #3 levels.
Rw-3 and Rw-6 are at ~~5/8~~ 7/8 of their pre-cycle #3 levels.

DTW have risen recently due to rainfall from 0.07~~0~~ ft at Rw-4 to 0.29 feet at Rw-3

1200 Jeff Ludlow onsite to look at the system
1345 Michael McGuire (T and R) onsite to look at the system.
1350 Jeff Rubin (port of Oakland) and several other port personnel on site to look at the Systems
1400 System Startup
1405 Pumps at Rw-4, Rw-7 and Rw-8 switch off
1420 Pumps at Rw-3 and Rw-6 switch off
Discuss Current System Status with Jeff Ludlow and Jeff Rubin.
1450 Jeff Rubin and entourage leave site
1500 Michael McGuire leaves site. Jeff Ludlow and I look at Methane system installed Components.
1600 Leave site.

Attachments: _____

Initials _____

GROUNDWATER GAUGING FORM

JOB NAME: Port of Oakland — Cycle 4 JOB NUMBER: 4000.01

* Wells Measured Pre-Cycle Start

IP#: DATE: 1/13/05

MEASURED TO TOC OR GRADE? Name: ~~Greg~~ Johnson

WELL I.D.	Time	DTB Est/Actual (Feet)	WELL DIAM. (inches)	DTP (Feet)	DTW (Feet)	COMMENTS Please note if well needs repair
RW-1	Not	measured	-	Not	part of cycles	
RW-2	Not	Measured	-	Not	part of Cycles	
RW-3	1150			8.32	8.86	
RW-4	1200			7.86	7.87	
RW-5	Not	Measured	-	Not	part of Cycles	
RW-6	1215			7.81	8.48	
RW-7	1225			7.38	7.68	
RW-8	1230			8.48	8.50	
RW-9	Not	Measured	-	Not	part of Cycles	

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FIELD REPORT NO. ____
Sheet 1 of 2

Project: Port of Oakland - O and M
Subject: **FIELD INVESTIGATION DAILY REPORT**
Field Engineer: Greg Johnson
Time: 1255
Reviewed by: _____ Date: _____

Project No: 4000.01
Date: 1/27/05
To: _____
Weather: Warm/overcast

1255 Arrive on site.
1300 Collect DTP/DTW measurements, this is 15 days since last cycle - stepped up time between cycles from 10 days to 15 days.
RW-3 has recovered to 2.04 ft of product
RW-4 has recovered to 0.01 ft of product
RW-6 has recovered to 0.64 ft of product
RW-7 has recovered to 0.28 ft of product
RW-8 has recovered to 0.02 ft of product

RW4, RW7 and RW8 remain at a very similar product level to pre cycle #3 levels.
RW-6 has not recovered substaincially from the amount of recovery in between 10 day cycles.
RW-3 has recovered to almost the same level as ~~prev~~ cycle #1, 15 day interval has or appears to have vastly improved RW-3 recovery.

Should be noted that the water levels have gone down in RW-3 and RW-4 - in RW-3 by almost 2 feet which would explain the product increase.
In contrast the water levels in RW-6 RW-7 and RW-8 have gone up - again explaining the static product levels in RW-7 and RW-8 and the lower level in RW-6.

1405 After double checking - again! with Mitch about if a cycle counted the day you started - i.e. start date 1/5/05 cycle 5 days
Next cycle 1/9/05, and being told yes - again! last cycle was 1/13/05, so today should be 15 days

Attachments: _____

Initials _____

Treadwell&Rollo

FIELD REPORT NO. ____
Sheet 3 of 3

Project: Port of Oakland - Oardm
Project No: 4000.01
Subject: **FIELD INVESTIGATION DAILY REPORT**
Date: 1/27/05
Field Engineer: Greg Johnson

as per Xitech — well cycle should have started 4 minutes ago — it didn't. Have reset start for 1/27/05 at 1410 will assume next cycle is 15 days from tommorow NOT TODAY!

1410 System starts, check product from RW-3 and RW-6. RW-6 appears very water like. will discuss with Jeff Ludlow (T and R) and Xitech.

1415 RW-4, RW-7 and RW-8 switch off.

1430 RW-3 and RW-6 switch off.

1445 Leave site.

Attachments: _____

Initials _____

GROUNDWATER GAUGING FORM

JOB NAME: Port of Oakland - Cycle 5
* Wells measured pre-Cycle start
IP#:
MEASURED TO TOC OR GRADE?

JOB NUMBER: 4000.01
DATE: ~~10/29/2004~~ 1/27/05
Name: Greg Johnson

WELL I.D.	Time	DTB Est/Actual (Feet)	WELL DIAM. (inches)	DTP (Feet)	DTW (Feet)	COMMENTS Please note if well needs repair
RW1	Not measured					
RW2	Not measured					
RW3	1300			8.81	10.85	
RW4	1310			8.04	8.05	
RW5	Not measured					
RW6	1320			7.72	8.36	
RW7	1330			7.39	7.67	
RW8	1345			8.38	8.40	
RW9	Not measured					

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FIELD REPORT NO. ____
Sheet 1 of ___

Project: Port of Oakland O and M
Subject: **FIELD INVESTIGATION DAILY REPORT**
Field Engineer: Greg Johnson
Time: 1025
Reviewed by: _____ Date: _____

Project No: 4000.01
Date: 2/4/05
To: _____
Weather: clear/warm

1025 Perform maintenance on Compressor and 5000 ES programmable site manager. Compressor purged and checked for leaks, oil level checked. 5000 ES has some air leaks, tighten components.
1115 Restart Compressor to build air back up.
1130 Return to Methane System.
1300 Take measurements for As-Builts.
1445 Leave Site.

Attachments: _____

Initials _____

Treadwell&Rollo

FIELD REPORT NO. ____
Sheet 1 of 2

Project: Port of Oakland - O and M
Project No: 4000.01
Subject: **FIELD INVESTIGATION DAILY REPORT**
Date: 2/10/05
Field Engineer: Greg Johnson
To:
Time: 1240
Weather: Warm
Reviewed by: _____ Date: _____

1240 Arrive on site
1245 Bleed air from compressor to remove moisture
1255 Close valves, air purged from compressor. Switch compressor back on to rebuild PSI.
1300 Collect DTP/DTW measurements, this is 14 days since last cycle because I could not monitor the cycle tommorow and Relivean replaced the valves on the manifold yesterday (I checked yeiterday), and I wish to see that they are not leaking.

RW-3 has recovered to 1.40 ft of product
RW-4 has recovered to 0.11 ft of product
RW-6 has recovered to 0.69 ft of product
RW-7 has recovered to 0.19 ft of product
RW-8 has recovered to 0.01 ft of product.

1400 System is not running - do not know why.
1410 Troubleshoot.
1500 Appears the Product Tank full light is on, I guess this stops the system from switching on.
1515 Shut whole system down, empty compressor, will have to discuss with Jeff Ludlow.
1520 Follow Troubleshooting guide (Xitech) to assess if it is a sensor malfunction.
1540 System works when sensor is biparsed - Sensor is malfunctioning.
1545 call Jeff Ludlow to discuss.
1550 Reinstate sensor wires to previous configuration.
1610 Leave site.

Attachments: _____

Initials _____

GROUNDWATER GAUGING FORM

sheet 2 of 2

JOB NAME: Port of Oakland – Cycle 6
* wells measured pre cycle start
IP#:
MEASURED TO TOC OR GRADE?

JOB NUMBER: 4000.01
DATE: 2/10/05
Name: Greg Johnson

WELL I.D.	Time	DTB Est/Actual (Feet)	WELL DIAM. (inches)	DTP (Feet)	DTW (Feet)	COMMENTS Please note if well needs repair
RW-1	Not measured					
RW-2	Not measured					
RW-3	1300			9.26	10.66	
RW-4	1310			8.30	8.41	
RW-5	Not measured					
RW-6	1325			7.78	8.47	
RW-7	1335			7.51	7.70	
RW-8	1345			8.54	8.55	
RW-9	Not measured					

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FIELD REPORT NO. ____
Sheet 1 of 2

Project: Port of Oakland - Oandm
Project No: 4000.01
Subject: **FIELD INVESTIGATION DAILY REPORT**
Date: 3/23/05
Field Engineer: Greg Johnson
To:
Time: 1300
Weather: Cool/clear
Reviewed by: _____ Date: _____

1300 Arrive on site and start air compressor, turn power on to 5000 ES programmable site manager
1310 Compressor charged to ≥ 165 PSI (switches off).
1315 Collect DTP/DTW measurements from RW-3 and RW-6.

RW-3 DTP = 8.16, DTW = 8.75, product = 0.59 ft
RW-6 DTP = 7.37, DTW = 7.98, product = 0.61 ft

Rest of wells not measured, today is a continuous test to see if RW-3 and RW-6 are pumping water.

1340 Switch on RW-3 and RW-6
1342 RW-3 pumping product.
1345 RW-6 pumping what appears to be water at Compound. Lines at both well heads appear to be pumping water
1347 Shutdown RW-6 as it still appears to be water at the Compound.
1354 pump RW-6 into a small bucket - definitely water -
1355 Switch RW-6 off. RW-3 now appears to be pumping a water/gasoline mix.
Check liquid, appears to be an emulsified mix of gasoline and water.
1358 Shutdown System
1445 Leave site

Attachments: _____

Initials _____

GROUNDWATER GAUGING FORM

JOB NAME: Port of Oakland — JOB NUMBER: 4000.01

Operation and Maintenance

IP#: — DATE: 3/23/05

MEASURED TO TOC OR GRADE? — Name: Greg Johnson

WELL I.D.	Time	DTB Est/Actual (Feet)	WELL DIAM. (inches)	DTP (Feet)	DTW (Feet)	COMMENTS Please note if well needs repair
RW-1	Not	Measured				
RW-2	Not	measured				
RW-3				8.16	8.75	
RW-4	Not	measured				
RW-5	Not	measured				
RW-6				7.37	7.98	
RW-7	Not	measured				
RW-8	Not	measured				
RW-9	Not	measured				

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FIELD REPORT NO. ____
Sheet 1 of 2

Project: Port of Oakland
Subject: **FIELD INVESTIGATION DAILY REPORT**
Field Engineer: Greg Johnson
Time: 1300
Reviewed by: _____ Date: _____

Project No: 4000.01
Date: 3/25/05
To: _____
Weather: Warm/clear

1300 Arrive on site, setup up delineators around RW-3 and open well box.
1315 Start Compressor at Compound.
1320 Compressor reaches 160 PSI
Remove pump from well RW-3 and adjust depth to 8.17 at center of pump, to place pump at product water interface. After meeting with Dwight Patterson (Xitech) he suggested RW-3 and RW-6 were pumping water and it was because the water table had risen above the range of the pump.
1345 Begin RW-3 pumping, some water (expected while filter clears).
1350 Product flowing.
1400 Water! – shut system down
1415 clean up.
1430 recheck pump depth.
1500 leave site. will run RW-3, RW-6 ~~GAC~~ DT next week, if they are still pumping water will consult with Dwight on possible filter replacement.

Attachments: _____

Initials _____

GROUNDWATER GAUGING FORM

JOB NAME: Port of Oakland JOB NUMBER: 4000.01

IP#: DATE: 3/25/05

MEASURED TO TOC OR GRADE? Name: Greg Johnson

WELL I.D.	Time	DTB Est/Actual (Feet)	WELL DIAM. (inches)	DTP (Feet)	DTW (Feet)	COMMENTS Please note if well needs repair
RW-1	Not measured					
RW-2	Not measured					
RW-3	1315			8.17	8.64	
RW-4	Not measured					
RW-5	Not measured					
RW-6	Not measured					
RW-7	Not measured					
RW-8	Not measured					
RW-9	Not measured.					

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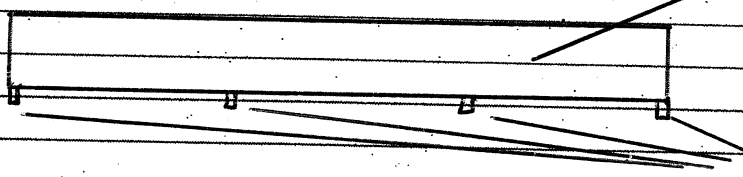
FIELD REPORT NO. ____
Sheet 1 of 3

Project: Port of Oakland
Subject: **FIELD INVESTIGATION DAILY REPORT**
Field Engineer: Greg Johnson
Time: 0830
Reviewed by: _____ Date: _____

Project No: 4000.01
Date: 3/29/05
To: _____
Weather: cool/raining periodically

0830 Arrive on site. Picked up PVC drain pipe and some fittings to construct a tray to rest pumps in when pulled from wells
0845 Begin construction of tray.
0915 Leave site to work on methane system correspondence
1115 Return to site.
1135 Finish construction of tray.



When pumps are removed from wells, they will be placed in the tray (lined with shop towells) to limit fuel spills.

1140 Start Compressor
1145 Compressor reaches 160 PSI, remove pump from RW-3 and place in tray.
1155 Measure DTW = 8.19 and DTP = 8.14 at RW-3
1200 Turn on system to pump at RW-3 (after cleaning and returning pump to well at 8.19 ft bgs). Does not seem as if any water is being pumped, but appears some does get pumped if drain is switched to valve (product) at well.
1210 Switch pump off, will discuss this with Dwight later. Close well cover to RW-3
1240 Move to RW-6 → Continued

Attachments: _____

Initials _____

Treadwell&Rollo

FIELD REPORT NO. ____
Sheet 2 of 3

Project: Port of Oakland
Subject: **FIELD INVESTIGATION DAILY REPORT**
Field Engineer: Greg Johnson

Project No: 4000.01
Date: 3/29/05

Measure DTW = 8.01 and DTP = ~~8.01~~ 7.60
1245 Remove pump and set depth to 8.01 ft bgs. Switch drum to valve (product) at well
1250 Turn on system to pump at RW-6. Pumping free product.
1305 Pumping what appears to be foam, may be emulsified product.
1310 Pumping water.
1315 Turn off system, purge compressor. clean up and remove delineators from RW-6.
1340 Measure DTW = 7.45 and DTP = 7.30 at RW-4. Reset pump to 7.45 ft bgs. clean up and move to RW-7.
1355 Measure DTP = 7.06 and DTW = 7.39 at RW-7. Reset pump to 7.39 ft bgs. clean up and move to RW-8.
1420 Measure DTP = 8.15 and DTW = 8.16 at RW-8. Reset pump to 8.16 ft bgs. clean up and return to compound. clean up at compound.
1500 leave site.

Attachments: ____

Initials ____

GROUNDWATER GAUGING FORM

JOB NAME: Port of Oakland JOB NUMBER: 4000.01

IP#: DATE: 3/29/05

MEASURED TO TOC OR GRADE? Name: Cody Johnson

WELL I.D.	Time	DTB Est/Actual (Feet)	WELL DIAM. (inches)	DTP (Feet)	DTW (Feet)	COMMENTS Please note if well needs repair
RW-1	Not measured					
RW-2	Not measured					
RW-3	1155			8.14	8.19	
RW-4	1340			7.30	7.45	
RW-5	Not Measured					
RW-6	1240			7.40	8.01	
RW-7	1355			7.06	7.39	
RW-8	1420			8.15	8.16	
RW-9	Not measured					

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FIELD REPORT NO. ____
Sheet 1 of 2

Project: Port of Oakland
Subject: FIELD INVESTIGATION DAILY REPORT
Field Engineer: Greg Johnson
Time: 1200
Reviewed by: _____ Date: _____

Project No: 4000.01
Date: 3/30/05
To: _____
Weather: Warm/clear

1200 Arrive on site.
1215 Start Compressor
1220 Compressor reaches 160 PSI
1230 Open well Cover to RW-3, remove pump and place in tray lined with shop towells. Remove skimmer from pump screen. Remove filter from top of skimmer. Clean assembly. Measure DTP = 8.22 and DTW = 8.26, adjust tubing to allow the center of the slotted screen to sit at the product/water interface — 8.26 ft bgs. Reassemble skimmer, filter and pump. Return pump to well. Turn system on. Pump is no longer purging water. Replace well cover, remove delineators from around well and place them around RW-6.
1330 Switch off System. Open well Cover to RW-6, remove pump and place in tray lined with shop towells — repeat procedure performed on RW-3 pump. Measure DTP = 7.39 and DTW = 7.41, adjust tubing to allow the center of the slotted screen to sit at the product/water interface - 7.41 ft bgs. Reassemble skimmer, filter and pump, return pump to well. Turn System on.
1400 Pump is removing product.
1420 Product removal finished — no water being pumped. Switch System off. clean up site.
1500 Leave site.

Attachments: _____

Initials _____

GROUNDWATER GAUGING FORM

JOB NAME: Port of Oakland JOB NUMBER: 4000.01

IP#: DATE: 3/30/05

MEASURED TO TOC OR GRADE? Name: Gregory Johnson

WELL I.D.	Time	DTB Est/Actual (Feet)	WELL DIAM. (inches)	DTP (Feet)	DTW (Feet)	COMMENTS Please note if well needs repair
RW-1	Not	measured				
RW-2	Not	measured				
RW-3	1300			8.22	8.26	
RW-4	Not	measured				
RW-5	Not	measured				
RW-6	1350			7.39	7.41	
RW-7	Not	measured				
RW-8	Not	measured				
RW-9	Not	measured				

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FIELD REPORT NO. ____
Sheet 1 of 2

Project: Port of Oakland
Subject: **FIELD INVESTIGATION DAILY REPORT**
Field Engineer: Greg Johnson
Time: 1400
Reviewed by: _____ Date: _____

Project No: 4000.01
Date: 4/5/05
To: _____
Weather: Warm/clear

1400 Arrive on site
1415 Start collecting well DTP/DTW measurements
RW-3 - DTP = 8.38, DTW = 8.65 = 0.27 product
RW-4 - DTP = 7.60, DTW = 7.73 = 0.13 product
RW-6 - DTP = 7.42, DTW = 7.61 = 0.19 product
RW-7 - DTP = 7.02, DTW = 7.39 = 0.37 product
RW-8 - DTP = 8.01, DTW = 8.02 = 0.01 product
Decide not run the system based on these product levels. Will return in 2 weeks - a month to check levels. Will check historic data for groundwater level changes.
1545 Leave site.

Attachments: _____

Initials _____

GROUNDWATER GAUGING FORM

JOB NAME: Port of Oakland JOB NUMBER: 4000.01

IP#: DATE: 4/5/05

MEASURED TO TOC OR GRADE? Name: Greg Johnson

WELL I.D.	Time	DTB Est/Actual (Feet)	WELL DIAM. (inches)	DTP (Feet)	DTW (Feet)	COMMENTS Please note if well needs repair
RW-1	Not	measured				
RW-2	Not	Measured				
RW-3	1415			8.38	8.65	
RW-4	1430			7.60	7.73	
RW-5	Not	Measured				
RW-6	1440			7.42	7.61	
RW-7	1455			7.02	7.39	
RW-8	1505			8.01	8.02	
RW-9	Not	measured				

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FIELD REPORT NO. ____
Sheet 1 of 2

Project: Port of Oakland - free Product Project No: 4000.01
Subject: FIELD INVESTIGATION DAILY REPORT Date: 4/8/05
Field Engineer: Greg Johnson To:
Time: 1145 Weather: Cloudy/showers
Reviewed by: _____ Date: _____

1145 Arrive on site.
1200 Start Collecting well DTP/DTW measurements
RW3 - DTP = 8.32, DTW = 8.61 = 0.29 product
RW4 - DTP = 7.11, DTW = 7.23 = 0.12 product
RW6 - DTP = 7.41, DTW = 7.63 = 0.22 product
RW7 - DTP = 6.98, DTW = 7.33 = 0.35 product
RW8 - DTP = 8.02, DTW = 8.03 = 0.01 product
1300 John (Technicraft) on site to discuss current conditions and roof access. — NO ACCESS TODAY
1315 Start Compressor
1320 Compressor reaches 160 PSI
1325 Switch on Dryer
1330 Program - SOLOES, each pump will run in sequence not at the same time. Pump start times and duration are:-
RW-3 - 1330 - 20 minutes
RW-4 - 1350 - 5 minutes
RW-6 - 1355 - 20 minutes
RW-7 - 1415 - 10 minutes
RW-8 - 1425 - 5 minutes.
All Pumps are on a 14 day cycle.
1430 All cycles end. Clean up site.
1500 Leave Site.

Attachments: _____

Initials _____

GROUNDWATER GAUGING FORM

JOB NAME: Port of Oakland JOB NUMBER: 4000.01

IP#: DATE: 4/8/05

MEASURED TO TOC OR GRADE? Name: Greg Johnson

WELL I.D.	Time	DTB Est/Actual (Feet)	WELL DIAM. (inches)	DTP (Feet)	DTW (Feet)	COMMENTS Please note if well needs repair
Rw-1	Not measured					
Rw-2	Not measured					
Rw-3	1200			8.32	8.61	
Rw-4	1210			7.11	7.23	
Rw-5	Not measured					
Rw-6	1225			7.41	7.63	
Rw-7	1235			6.98	7.33	
Rw-8	1245			8.02	8.03	
Rw-9	Not measured					

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FIELD REPORT NO. ____
Sheet 1 of 3

Project: Port of Oakland - Free Product Project No: 4000.01
Subject: FIELD INVESTIGATION DAILY REPORT Date: 4/22/05
Field Engineer: Greg Johnson / Eric Deratzian To:
Time: 1130 Weather: Warm / clear
Reviewed by: _____ Date: _____

1130 Arrive on site and spray paint ID's on well box covers Rw-2, Rw-5 and Rw-9

1145 Start collecting well DTP / DTW measurements

Rw-3	DTP = 8.78	DTW = 9.50	= 0.72	product
Rw-4	DTP = 7.94	DTW = 7.96	= 0.02	
Rw-6	DTP = 7.58	DTW = 7.91	= 0.33	
Rw-7	DTP = 7.16	DTW = 7.35	= 0.19	
Rw-8	DTP = 8.07	DTW = 8.08	= 0.01	

Depths to water have changed since 4/8/05 ranging from .02 feet at Rw-7 to 0.89 feet at Rw-3, expect water to continue going down as time progresses and rainfall goes from little to none.

Adjust pump in Rw-3 so that center of slotted screen is at 9.50 ft bgs — product/water interface.

1300 Make changes to system run times as Eric is not on site yet and I want him to be able to see the system run.

1315 Get call from Eric, he has been trying to call me, but I didn't hear the cell phone due to the train in the background (Eric is stuck waiting for the same train to clear Maritime street)

1320 Eric on site. Discuss system and change to depth of Rw-3 pump. Run the pumps.

1430 Rw-3 has been pumping free product for over an hour — may need to readjust run time. Moisture came from Rw-3 and Rw-6, but there was no water being pumped — believe it is condensation from the free product line.

1445 Set Rw-3 to 3 day cycle to test if it will run 3 days from now including today or 3

Attachments: _____

Initials _____

Treadwell&Rollo

FIELD REPORT NO. ____
Sheet 2 of 3

Project: Port of Oakland - Free Product. Project No: 4000.01
Subject: FIELD INVESTIGATION DAILY REPORT Date: 4/22/05
Field Engineer: Greg Johnson / Eric Deratzian

days from Saturday. Have never cleared this up as system changes were made today. In the past we were informed it included the day the system was set so RW-3 should run on Sunday, but I think this is incorrect, I believe 3 days from 1445 friday = 1445 Monday. Eric and I will return on Monday to check this.
1530 Leave site.

Attachments: _____

Initials _____

GROUNDWATER GAUGING FORM

JOB NAME: Port of Oakland JOB NUMBER: 4000.01

IP#: DATE: 4/22/05

MEASURED TO TOC OR GRADE? Name: Greg Johnson / Eric Deratzian

WELL I.D.	Time	DTB Est/Actual (Feet)	WELL DIAM. (inches)	DTP (Feet)	DTW (Feet)	COMMENTS Please note if well needs repair
Rw-1	Not measured					
Rw-2	Not measured					
Rw-3	11:45			8.78	9.50	center of screen adjusted to 9.50 ft bgs
Rw-4	11:55			7.94	7.96	Left at setting
Rw-5	Not measured					
Rw-6	12:10			7.58	7.91	Left at setting
Rw-7	12:20			7.16	7.35	Left at setting
Rw-8	12:35			8.07	8.08	Left at setting
Rw-9	Not measured.					

Treadwell&Rollo

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FIELD REPORT NO. ____
Sheet 1 of 1

Project: Port of Oakland - Free Product
Project No: 4000.01
Subject: **FIELD INVESTIGATION DAILY REPORT**
Date: 4/25/05
Field Engineer: Greg Johnson
To:
Time: 1440
Weather: Warm/clear
Reviewed by: _____ Date: _____

1440 Arrive on site
1445 Rw-3 starts up confirming that 3 days from Friday would be today and not Sunday.
1450 Rw-3 test shuts down. Reinstall hardware to end of Rw-3 product line after removing leaking section of hose (≈ 1").
1500 Start setting cycles for 5/6/05
Rw-3 set to 12:00 for 1:30 duration
Rw-4 set to 13:30 for 0:10 duration
Rw-6 set to 13:40 for 1:00 duration
Rw-7 set to 14:40 for 0:10 duration
Rw-8 set to 14:50 for 0:20 duration
All set for 14 day intervals.
1520 Leave site.

Attachments: _____

Initials _____

Treadwell&Rollo

FIELD REPORT NO. ____
Sheet 1 of ___

Project: Port of Oakland - Free Product | Project No: 4000.01
Subject: **FIELD INVESTIGATION DAILY REPORT** | Date: 5/6/05
Field Engineer: Greg Johnson / Eric Deratzian | To: ____
Time: 1130 | Weather: Windy / dry
Reviewed by: ____ Date: ____

1130 Arrive on site
1145 Collect well DTP/DTW measurement from RW-3
RW-3 DTP = 8.99 DTW = 9.88 = 0.89 feet product
1200 System starts RW-3 begins pumping.
1310 Collect well DTP/DTW measurement from RW-4
RW-4 DTP = 8.10 DTW = 8.15 = 0.05 feet product
1330 RW-3 shuts off, RW-4 begins cycle
1335 Collect well DTP/DTW measurement from RW-6
RW-6 DTP = 7.66 DTW = 7.92 = 0.26 feet product
~~1340~~ ~~1405~~ RW-4 shuts off, RW-6 begins cycle.
1405 Collect well DTP/DTW measurements from RW-7
RW-7 DTP = 7.28 DTW = 7.42 = 0.14 feet product
1415 Collect well DTP/DTW measurements from RW-8
RW-8 DTP = 8.22 DTW = 8.23 = 0.01 feet product
1440 ~~RW-7 starts~~ RW-6 Shuts off, RW-7 begins cycle
1500 RW-7 shuts off, RW-8 begins cycle.
1520 RW-8 shuts off.
Based on today product thicknesses, Eric resets the cycle for RW-7 to 20 minutes and RW-8 to 10 minutes, to begin on 5/20/05 with the other cycles.
1530 Perform 8 hour (by compressor manual) inspection on compressor. Top up oil. Perform inspection on air dryer, lines from air dryer to air filter and air pressure regulator. Perform Convault inspection.
1630 clean up and leave site Call Lawrence Dirksen (Port of Oakland) for storage of used PPE.

Attachments: ____

Initials ____

GROUNDWATER GAUGING FORM

JOB NAME: Port of Oakland JOB NUMBER: 4000.01

IP#: DATE: 5/6/05

MEASURED TO TOC OR GRADE? Name: Greg Johnson/Eric Deratzian

WELL I.D.	Time	DTB Est/Actual (Feet)	WELL DIAM. (Inches)	DTP (Feet)	DTW (Feet)	COMMENTS Please note if well needs repair
Rw-2	Not measured					
Rw-3	1145			8.99	9.88	
Rw-4	1310			8.10	8.15	
Rw-5	Not measured					
Rw-6	1335			7.66	7.92	
Rw-7	1405			7.28	7.42	
Rw-8	1415			8.22	8.23	
Rw-9	Not measured					

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FIELD REPORT NO. ____
Sheet 1 of ___

Project: Port of Oakland - Free Product
Project No: 4000.01
Subject: **FIELD INVESTIGATION DAILY REPORT**
Date: 9/12/05
Field Engineer: Greg Johnson / Gil Shenker
To:
Time: 1215
Weather: Cool / Cloudy
Reviewed by: _____ Date: _____

Note:- Gil Shenker to perform field work, Greg Johnson to take notes and direct from field vehicle.

1215 Arrive on site, explain system and well arrangement to Gil.
1240 Collect measurement from RW-1.
1255 Collect measurement from RW-2.
1300 Collect measurement from RW-3.
1310 Collect measurement from RW-4
Cannot Collect measurement from RW-5 as a street Sweeper is parked over the well cover, call Lawrence Dirksen (Port Environmental) to ask if the truck can be moved — no answer.
1315 Lawrence arrives and gets sweeper moved
1320 Collect measurement from RW-5, Lawrence leaves
1325 Collect measurement from RW-6
1330 Collect measurement from RW-7
1335 Collect measurement from RW-8
1340 Collect measurement from RW-9
1400 Leave Site.

Attachments: _____

Initials _____

GROUNDWATER GAUGING FORM

JOB NAME: Port of Oakland JOB NUMBER: 4000.01

IP#: DATE: 9/12/05

MEASURED TO TOC OR GRADE? Name: Gil Shenbrer / Greg Johnson

	WELL I.D.	Time	DTB Est/Actual (Feet)	WELL DIAM. (Inches)	DTP (Feet)	DTW (Feet)	COMMENTS Please note if well needs repair
	RW-1	12:40		4"	ND	7.85	
	RW-2	12:55			ND	10.23	
*	RW-3	13:00			10.11	11.11	
*	RW-4	13:10			9.35	9.74	
	RW-5	13:20			ND	7.83	
*	RW-6	13:25			8.26	8.79	
*	RW-7	13:30			7.85	8.04	
*	RW-8	13:35			8.62	9.26	
	RW-9	13:40			ND	10.27	

* Measured with pump installed

Treadwell&Rollo

Environmental and Geotechnical Consultants

Treadwell&Rollo

FIELD REPORT NO. ____
Sheet 1 of 1

Project: Port of Oakland — Project No: 4000.01
Subject: **FIELD INVESTIGATION DAILY REPORT** — Date: 9/27/05
Field Engineer: Gil Shenker / Greg Johnson — To: ____
Time: 0845 — Weather: Warm / clear
Reviewed by: ____ Date: ____

0845 Arrive on site.
0850 Meet with Lawrence Dirksen (Port of Oakland) and obtain Lockout/Tagout materials (Lawrence has only key).
0900 Shut down Compressor and apply Lockout/Tagout procedures.
0910 Begin Biweekly and Monthly inspection.
1005 Complete inspection, Compressor switched back on. (Complete product line/air line inspection during DTP/DTW measurements)
1010 measure product level in Convault = 0.10 ft
1015 Begin measuring DTP/DTW in recovery wells, starting with RW-1. All well data will be recorded in the O and M manual in the table provided. All pumps (RW-3, RW-4, RW-6, RW-7 and RW-8) will be adjusted today, so Gil can learn the System.
1045 Begin RW-3, setup cones and caution tape, layout "Pump tray" to lay pump in during resetting of pump depth.
1110 Gil Completes RW-3. Same setup will be followed for resetting pumps RW-4, RW-6, RW-7 and RW-8. Cannot measure RW-5 — truck parked over well box cover.
1200 Jim McCarty from Baseline on site to look over System and maintanance procedures.
1300 Gil Completes resetting pumps and collecting all DTP/DTW measurements. Start going over operation of the 5000ES Programmable Station Manager.
1400 Clean up and call Lawrence Dirksen to let him know we are done.
1415 Leave site.

Attachments: ____

Initials ____

PUMP DEPTH SETTING SHEET

Date: 9/27/05
Name: Gil Shenker / Greg Johnson

WELL ID	Depth to Product (Feet)	Depth to Water (Feet)	Current Depth of Pump (Feet)	COMMENTS Please note if well needs repair
RW-1	ND	8.40	N/A	
RW-2	ND	10.33	N/A	
RW-3	10.26	11.26	11.26	Product line is slightly pinched
RW-4	9.58	9.92	9.92	
RW-5	No Access - Truck Parked On Well Box			
RW-6	8.34	8.93	8.93	
RW-7	7.92	8.15	8.15	
RW-8	8.68	9.32	9.32	
RW-9	ND	10.37	N/A	

PUMP DEPTH SETTING SHEET

Date: 10-5-05
Name: GIL SHENKER

WELL ID	Depth to Product (Feet)	Depth to Water (Feet)	Current Depth of Pump (Feet)	COMMENTS Please note if well needs repair
RW-1	ND	7.96	NA	
RW-2	ND	10.42	NA	
RW-3	10.28	10.85	11.26	
RW-4	9.64	9.83	9.92	
RW-5	NO ACCESS			
RW-6	8.42	8.74	8.93	
RW-7	7.97	8.14	8.15	
RW-8	8.71	9.31	9.32	
RW-9	ND	10.37	NA	

PUMP DEPTH SETTING SHEET

Date: 10-21-05
Name: GIL SHENKER

WELL ID	Depth to Product (Feet)	Depth to Water (Feet)	Current Depth of Pump (Feet)	COMMENTS Please note if well needs repair
RW-1	ND	8.10	NA	
RW-2	ND	10.52	NA	
RW-3	10.42	10.87	11.26	
RW-4	9.73	9.97	9.92	
RW-5	ND	8.04	NA	
RW-6	8.48	8.65	8.93	
RW-7	8.03	8.17	8.15	
RW-8	8.76	9.33	9.32	
RW-9	ND	10.42	NA	

PUMP DEPTH SETTING SHEET

Date: 11-2-05
Name: GIL SHENKER

WELL ID	Depth to Product (Feet)	Depth to Water (Feet)	Current Depth of Pump (Feet)	COMMENTS Please note if well needs repair
RW-1	ND	8.12	NA	
RW-2	ND	10.50	NA	
RW-3	10.57	10.82	11.26	
RW-4	9.76	9.99	9.92	
RW-5	NO ACCESS		NA	
RW-6	8.52	8.81	8.93	
RW-7	8.05	8.21	8.15	
RW-8	8.81	9.42	9.32	
RW-9	ND	10.42	NA	

PUMP DEPTH SETTING SHEET

Date: 11-16-05
Name: GIL SHENKER

WELL ID	Depth to Product (Feet)	Depth to Water (Feet)	Current Depth of Pump (Feet)	COMMENTS Please note if well needs repair
RW-1	ND	8.72	NA	
RW-2	ND	10.66	NA	
RW-3	11.43	12.08	11.26	
RW-4	9.94	10.11	9.92	
RW-5	NO ACCESS			
RW-6	8.53	8.71	8.93	
RW-7	8.09	8.30	8.15	
RW-8	8.87	9.41	9.32	
RW-9	ND	10.81	NA	

PUMP DEPTH SETTING SHEET

Date: 12-2-05
Name: GIL SHENKER

WELL ID	Depth to Product (Feet)	Depth to Water (Feet)	Current Depth of Pump (Feet)	COMMENTS Please note if well needs repair
RW-1	ND	8.63	NA	
RW-2	ND	10.01	NA	
RW-3	9.84	12.13	11.26	
RW-4	9.28	9.36	9.92	
RW-5	NA	NA	NA	NO ACCESS
RW-6	8.57	8.73	8.93	
RW-7	8.11	8.37	8.15	
RW-8	8.85	9.33	9.32	
RW-9	ND	10.67	NA	

PUMP DEPTH SETTING SHEET

Date: 12-14-05
Name: GIL SHENKER

WELL ID	Depth to Product (Feet)	Depth to Water (Feet)	Current Depth of Pump (Feet)	COMMENTS Please note if well needs repair
RW-1	NA	NA	NA	NO ACCESS
RW-2	ND	9.79	NA	
RW-3	10.18	11.89	11.26	
RW-4	9.56	9.82	9.92	
RW-5	ND	7.96	NA	
RW-6	8.37	8.49	8.93	
RW-7	7.99	8.14	8.15	
RW-8	8.78	9.02	9.32	
RW-9	ND	10.43	NA	

PUMP DEPTH SETTING SHEET

Date: 12-28-05
Name: GIL SHENKER

WELL ID	Depth to Product (Feet)	Depth to Water (Feet)	Current Depth of Pump (Feet)	COMMENTS Please note if well needs repair
RW-1	NA	NA	NA	NO ACCESS
RW-2	ND	8.11	NA	
RW-3	9.36	9.83	11.26	
RW-4	8.33	8.65	9.92	
RW-5	ND	6.81	NA	
RW-6	7.38	7.44	8.93	
RW-7	7.06	7.22	8.15	
RW-8	7.48	7.89	9.32	
RW-9	ND	9.40	NA	

FREE PRODUCT RECOVERY SYSTEM
SCHEDULED MAINTENANCE CHECKLISTS

Initial Bi-Weekly

Bi-Weekly

Maintanence Procedure	1		2		3		4		5		6	
	Date	Initials	Date	Initials	Date	Initials	Date	Initials	Date	Initials	Date	Initials
Inspect free product, air supply and exhaust lines	9.27.05	GS	10.5.05	GS	10-21-05	GS	11-2 05	GS	11-16-05	GS	12-2 05	GS
Inspect compressor	9.27 05	GS	10.5.05	GS	10-21-05	GS	11-2-05	GS	11-16-05	GS	12-2 05	GS
Inspect compressed air dryer	9 27 05	GS	10.5.05	GS	10-21-05	GS	11-2 05	GS	11-16-05	GS	12-2-05	GS
Inspect outside of convault, check secondary containment, measure level of free product in convault	9.27.05	GS	10.5.05	GS	10-21-05	GS	11-2-05	GS	11-16-05	GS	12-2.05	GS

Monthly

Maintenance Procedure	Initial Monthly					
	Date	Initials	Date	Initials	Date	Initials
Manually test pressure relief valves	9 27 05	GS	10-21 05	GS	11-16-05	GS
Clean surfaces of intercooler	9 27 05	GS	10-21-05	GS	11-16-05	GS
Check for contaminated lubricant	9 25 05	GS	10-21-05	GS	11-16-05	GS

*At the four week interval and first friday of each month, perform both the bi-weekly and monthly inspection, write in month at top of Column.
Initial and date in space provided, to show that each inspection component has been performed.

FREE PRODUCT RECOVERY SYSTEM
SCHEDULED MAINTENANCE CHECKLISTS

Bi-Weekly

Maintanence Procedure	1		2		3		4		5		6	
	Date	Initials	Date	Initials	Date	Initials	Date	Initials	Date	Initials	Date	Initials
Inspect free product, air supply and exhaust lines	12.14.05	GS	12 28 05	GS								
Inspect compressor	12.14.05	GS	12 28 05	GS								
Inspect compressed air dryer	12.14.05	GS	12 28 05	GS								
Inspect outside of convault, check secondary containment, measure level of free product in convault	12.14 05	GS	12 28 05	GS								

Monthly

Maintenance Procedure						
	Date	Initials	Date	Initials	Date	Initials
Manually test pressure relief valves	12.14.05	GS				
Clean surfaces of intercooler	12.14.05	GS				
Check for contaminated lubricant	12.14.05	GS				

*At the four week interval and first friday of each month, perform both the bi-weekly and monthly inspection, write in month at top of Column.
Initial and date in space provided, to show that each inspection component has been performed.