Second Half 2005 Semiannual Groundwater Monitoring and Remediation Progress Report

Former Tosco/Unocal Bulk Terminal #0201
Eureka, California
Site ID #1THU463

Prepared for:

CBE, LLC

SHN Consulting Engineers & Geologists, Inc.
812 W. Wabash
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January 2006
098179.305

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Reference: 098179.305

January 24, 2006

Ms. Kasey Ashley
California Regional Water Quality Control Board
North Coast Region
5550 Skylane Boulevard, Suite A
Santa Rosa, CA 95403

Subject: **Second Half 2005 Semiannual Groundwater Monitoring and Remediation Progress Report, Former Tosco/Unocal Bulk Terminal #0201, Eureka, California; Site ID #1THU463**

Dear Ms. Ashley:

We have enclosed one copy of the subject report for your review.

We look forward to your response. Please call if you have any questions, or if we can help you in any way.

Sincerely,

SHN Consulting Engineers & Geologists, Inc.

Mike Foget, P.E.
Project Engineer
707-441-8855

MKF/COF:lms
Enclosure: Report
copy w/o encl: HCDEH (cover letter only)
copy w/encl: Gary Gunderson P.E., TRC Solutions

Reference: 098179.305

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January 2006

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Executive Summary

The reporting period for this *Second Half 2005 Semiannual Groundwater Monitoring and Remedial Progress Report* is from June 24, 2005 to December 29, 2005. Activities performed during the second half of 2005 included groundwater sampling in 11 monitoring wells and 12 extraction wells. Remedial measures were also conducted, including Separate Phase Hydrocarbons (SPH) removal from selected recovery wells and operation and monitoring of the Eastern and Western Biovent/ Biosparge Systems. The Dual-Phase Extraction (DPE) system was operated for 188 days during this reporting period, which relates to a 91% on-line percentage. DPE system shutdowns were due to high groundwater conditions, which account for the majority of the system downtime.

Groundwater Monitoring Results: The results of the second half of 2005 semiannual sampling effort indicated that the dissolved phase petroleum hydrocarbon contamination continues to primarily be in the vicinity of the extraction wells. Contamination by Halogenated Volatile Organic Compounds (HVOCs) continues to be confined to the vicinity of monitoring wells MW-4, MW-30, MW-31, and MW-32. Petroleum hydrocarbons were not detected in MW-29, indicating the hydrocarbon plume continues to be confined to the eastern portion of the facility and is not impacting Humboldt Bay. SPH continues to be in the vicinity of the eastern portion of the facility.

Remedial Activities: SPH recovery was conducted through semi-monthly extraction of MW-26, MW-27, and MW-28; and weekly extraction of EW-1 through EW-12. Approximately 1.5 million gallons of a SPH/groundwater mixture were removed from the 12 extraction wells, MW-26, MW-27, and MW-28 during the second half of 2005. The western biovent/biosparge system has been operating in a pulsed mode and cycled between different zones during the second half of 2005. The eastern biovent/biosparge system was operated in a continuous sparge mode during the second half of 2005 and was shut down during November 2005 to optimize the remedial activities in the eastern portion of the site.

To date, a cumulative total of approximately 9.8 million gallons of SPH/groundwater mixture have been removed. Approximately 2,600 pounds of petroleum hydrocarbons has been removed with the dual-phase extraction unit. Groundwater analytical data from the extraction wells show a general decrease in Total Petroleum Hydrocarbons as Gasoline (TPHG) and benzene concentrations since the start-up of the dual-phase extraction unit.

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Abbreviations and Acronyms

µg/L	micrograms per Liter	mV	millivolt
<	denotes a value that is "less than" the method reporting limit	°F	degrees Fahrenheit
		ppm	parts per million
>	greater than	ppmV	parts per million by volume
cfm	cubic feet per minute		
ft/min	feet per minute	psi	pounds per square inch
lbs/day	pounds per day	ug/L	micrograms per Liter

BS-#	Biosparge Well-#
BTEX	Benzene, Toluene, Ethylbenzene, and total Xylenes
DCE	cis-1,2-dichloroethene
DCO_2	Dissolved Carbon Dioxide
DO	Dissolved Oxygen
DPE	Dual-Phase Extraction
EC	Electrical Conductivity
EPA	(U. S.) Environmental Protection Agency
EW-#	Extraction Well-#
GRO	Gasoline Range Organics
Hg	Mercury
HVOC	Halogenated Volatile Organic Compound
LEL	Lower Explosive Limit
LRP	Liquid Ring Pump
M&RP	Monitoring and Reporting Program
MTBE	Methyl Tertiary-Butyl Ether
MW-#	Monitoring Well-#
NA	Not Analyzed
NAVD	North American Vertical Datum
NCUAQMD	North Coast Unified Air Quality Management District
NM	Not Measured
O&M	Operations and Maintenance
ORP	Oxidation-Reduction Potential
PCE	Tetrachloroethene
PID	Photoionization Detector
RWQCB	California Regional Water Quality Control Board, North Coast Region
SHN	SHN Consulting Engineers & Geologists, Inc.
SOP	Standard Operating Procedures
SPH	Separate Phase Hydrocarbons
TCE	Trichloroethene
TPHD	Total Petroleum Hydrocarbons as Diesel
TPHG	Total Petroleum Hydrocarbons as Gasoline
TPHMO	Total Petroleum Hydrocarbons as Motor Oil
VC	Vinyl Chloride
VOC	Volatile Organic Compound

1.0 Introduction

This report presents the results of monitoring activities and interim remedial measures conducted during the second half of 2005 at the Eureka Bulk Terminal #0201, located at 1200 Railroad Avenue in Eureka, California (Figure 1). Activities performed during this period included:

- semiannual groundwater monitoring and sampling,
- monitoring for Separate Phase Hydrocarbons (SPH),
- continuation of the SPH recovery and biosparge/biovent programs, and
- operation and maintenance of the Dual-Phase Extraction (DPE) unit.

2.0 Objectives

The objectives of work conducted during this period were to:

- monitor the extent of hydrocarbon contamination,
- monitor the extent of SPH contamination,
- monitor the extent of Halogenated Volatile Organic Compound (HVOC) contamination, and
- optimize the remedial systems effectiveness.

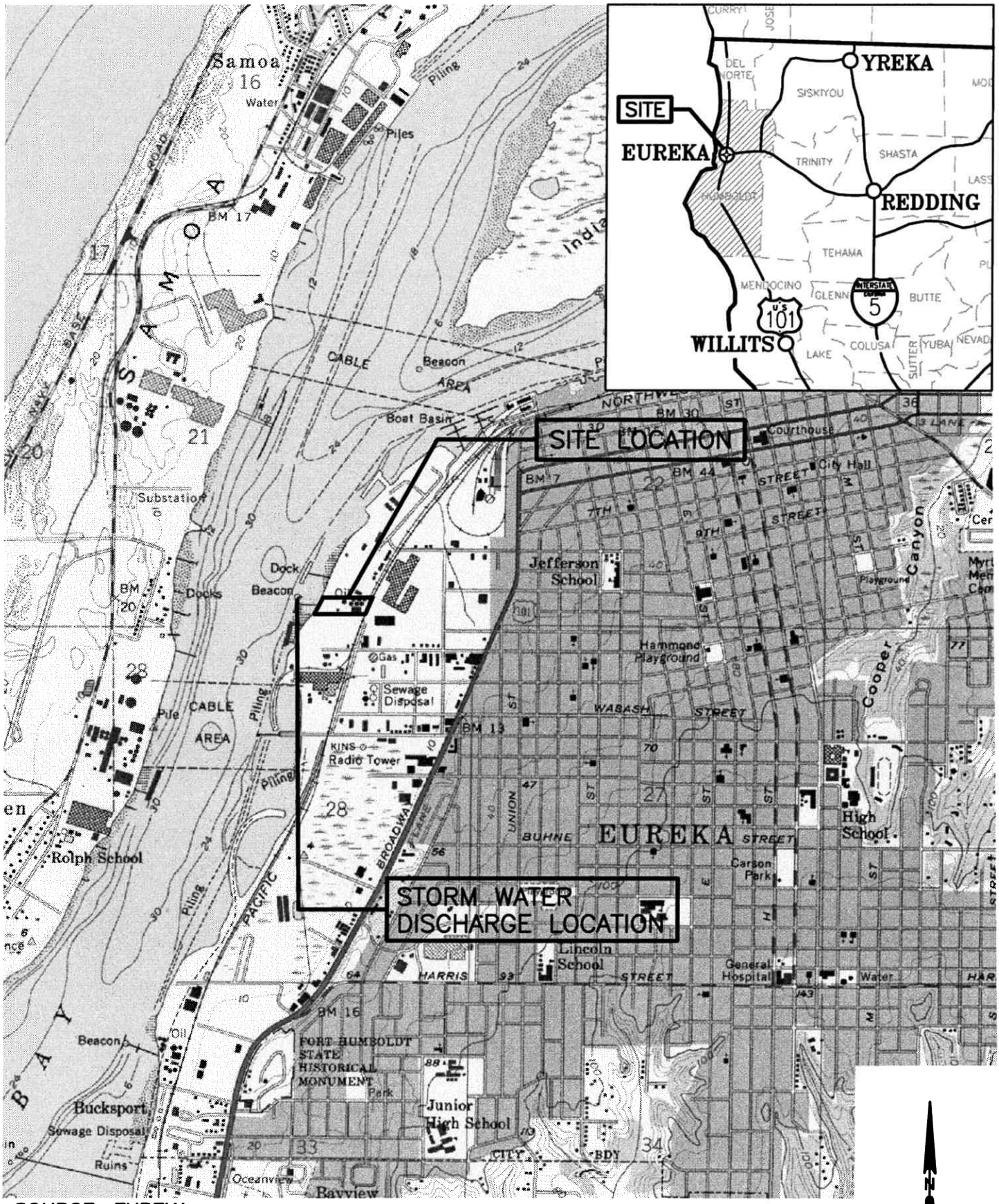
In addition, remedial measures were conducted, including SPH removal from selected recovery wells and continued operating, maintenance, and monitoring of the biovent and biosparge systems, as well as the DPE unit.

3.0 Groundwater Monitoring Program

3.1 Groundwater Monitoring Well Sampling

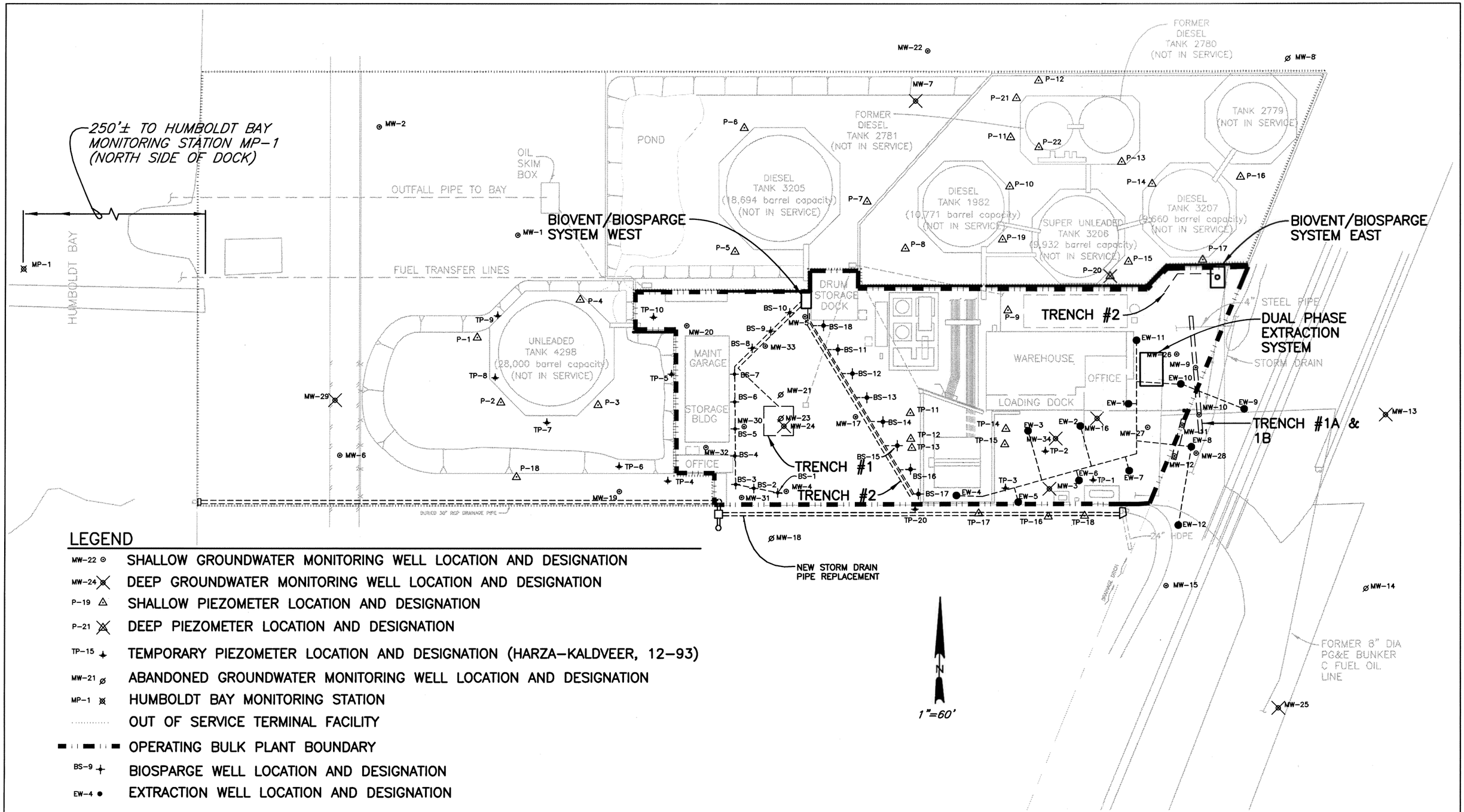
The California Regional Water Quality Control Board, North Coast Region (RWQCB) revised the site groundwater-monitoring program March 15, 2004. Groundwater monitoring was reduced for sampling parameters and frequency for some of the wells. Groundwater monitoring is performed in February and August. As part of the ongoing groundwater-monitoring program for the site, SHN Consulting Engineers & Geologists, Inc. (SHN) conducted site-monitoring activities from August 1 to August 3, 2005, which included groundwater sampling from 11 monitoring wells and 12 extraction wells. All monitoring wells were measured for depth to water on August 1, 2005. A site map showing monitoring locations is presented as Figure 2.

Groundwater monitoring was conducted in accordance with the RWQCB Monitoring and Reporting Program (M&RP) R1-2004-0022 for the second half of 2005. Monitoring of extraction wells is not required under M&RP R1-2004-0022, but is performed to measure the effectiveness of the DPE system. All groundwater monitoring and analyses were conducted in accordance with SHN's groundwater monitoring Standard Operating Procedures (SOP) for CBE, LLC (Appendix A). Field notes and water quality sampling data sheets are located in Appendix B.



SOURCE: EUREKA USGS 7.5 MINUTE QUADRANGLE

SHN Consulting Engineers & Geologists, Inc.	CBE, LLC Eureka Bulk Plant #0201 Eureka, California	Site Location Map SHN 098179.305
	January, 2006	098179.305-LOCATION	Figure 1



LEGEND

- MW-22 ⊙ SHALLOW GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- MW-24 DEEP GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- P-19 △ SHALLOW PIEZOMETER LOCATION AND DESIGNATION
- P-21 DEEP PIEZOMETER LOCATION AND DESIGNATION
- TP-15 ✦ TEMPORARY PIEZOMETER LOCATION AND DESIGNATION (HARZA-KALDVEER, 12-93)
- MW-21 ⌀ ABANDONED GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- MP-1 HUMBOLDT BAY MONITORING STATION
- OUT OF SERVICE TERMINAL FACILITY
- OPERATING BULK PLANT BOUNDARY
- BS-9 ✦ BIOSPARGE WELL LOCATION AND DESIGNATION
- EW-4 ● EXTRACTION WELL LOCATION AND DESIGNATION

SOURCE:
FIGURE MODIFIED FROM
DRAWING PROVIDED BY PEG.

SHN Consulting Engineers & Geologists, Inc.	CBE, LLC Eureka Bulk Terminal #0201 Eureka, California	Site Plan SHN 098179.305
	January, 2006 / 098179.305-SITEPLAN	Figure 2

3.2 Bioremediation Monitoring Program

The bioremediation indicators monitored during 1999 have shown that biodegradation of petroleum hydrocarbons and HVOCs is occurring at the site. Therefore, the monitoring program for indicators of bioremediation has been modified to semiannual monitoring only for field-measured parameters of dissolved oxygen, dissolved carbon dioxide, and oxidation/reduction potential. Monitoring for these field-measured parameters is scheduled for the first and third quarters of each year. Monitoring these parameters was conducted in accordance with SHN's groundwater monitoring SOP. The monitoring results are presented in Section 3.7.

3.3 Laboratory Analysis

Laboratory analysis of groundwater samples was conducted in accordance with SHN's groundwater monitoring SOP for CBE, LLC. The complete laboratory analytical reports, quality assurance/quality control data, and corresponding chain-of-custody documentation are presented in Appendix C.

3.4 Site Hydrology

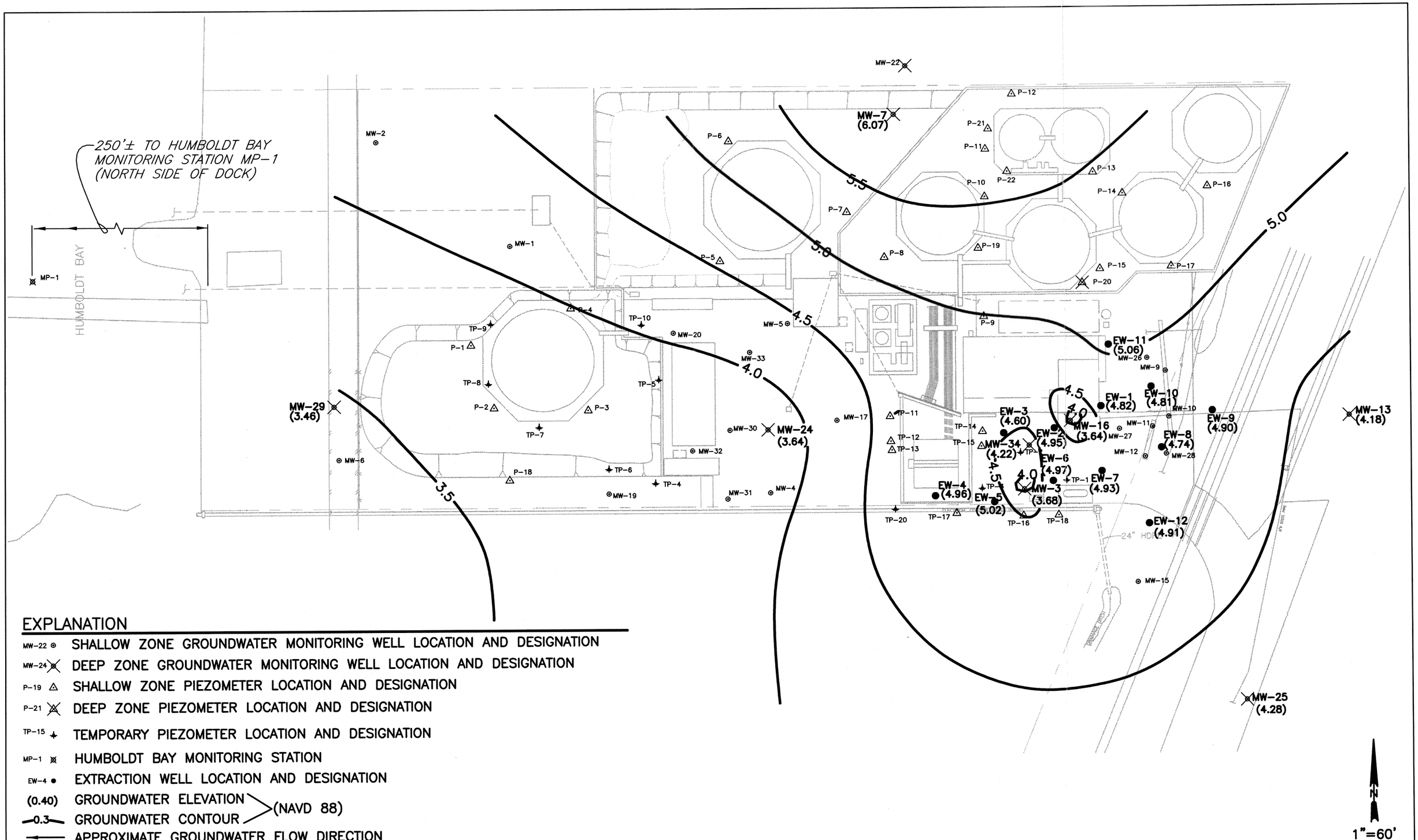
Historically, two water-bearing zones have been identified at the site. The first is a shallow water-bearing zone consisting of shallow fill and bay mud units, and the other is a deep water-bearing zone consisting of a bay sand unit.

Groundwater in the shallow water-bearing zone is perched within the fill and bay mud units, and there appear to be several localized influences on the shallow water-bearing zone. The discontinuity of the bay mud deposit beneath the site does not allow for accurate interpretation of the movement of groundwater within this perched water-bearing zone. Therefore, groundwater elevation data for the wells screened in the shallow zone are only presented in the historic groundwater elevation tables (Appendix D).

Historically, in the deep water-bearing zone, groundwater has moved from the northeast to the southwest across the site, in the expected direction of the regional groundwater flow. Groundwater flow direction and gradient varied on August 1, 2005, with a general flow direction to the southeast. An area of depressed groundwater elevation is present in the vicinity of the extraction wells.

A tidal study conducted by SHN in March 2000 indicated that regional groundwater flow beneath the site is affected, while perched zone groundwater is not affected by tidal fluctuations in Humboldt Bay. These changes in water level may act to retard movement of groundwater towards Humboldt Bay in the deep water-bearing zone. The rise in water levels in the deep water-bearing zone due to tidal influence would decrease the overall groundwater gradient, resulting in decreased groundwater flow towards Humboldt Bay (SHN, May 2000).

Table 1 summarizes groundwater elevation data for the deep water-bearing zone on August 1, 2005, and a groundwater elevation contour map is presented as Figure 3. Historic groundwater elevation data is located in Appendix D.

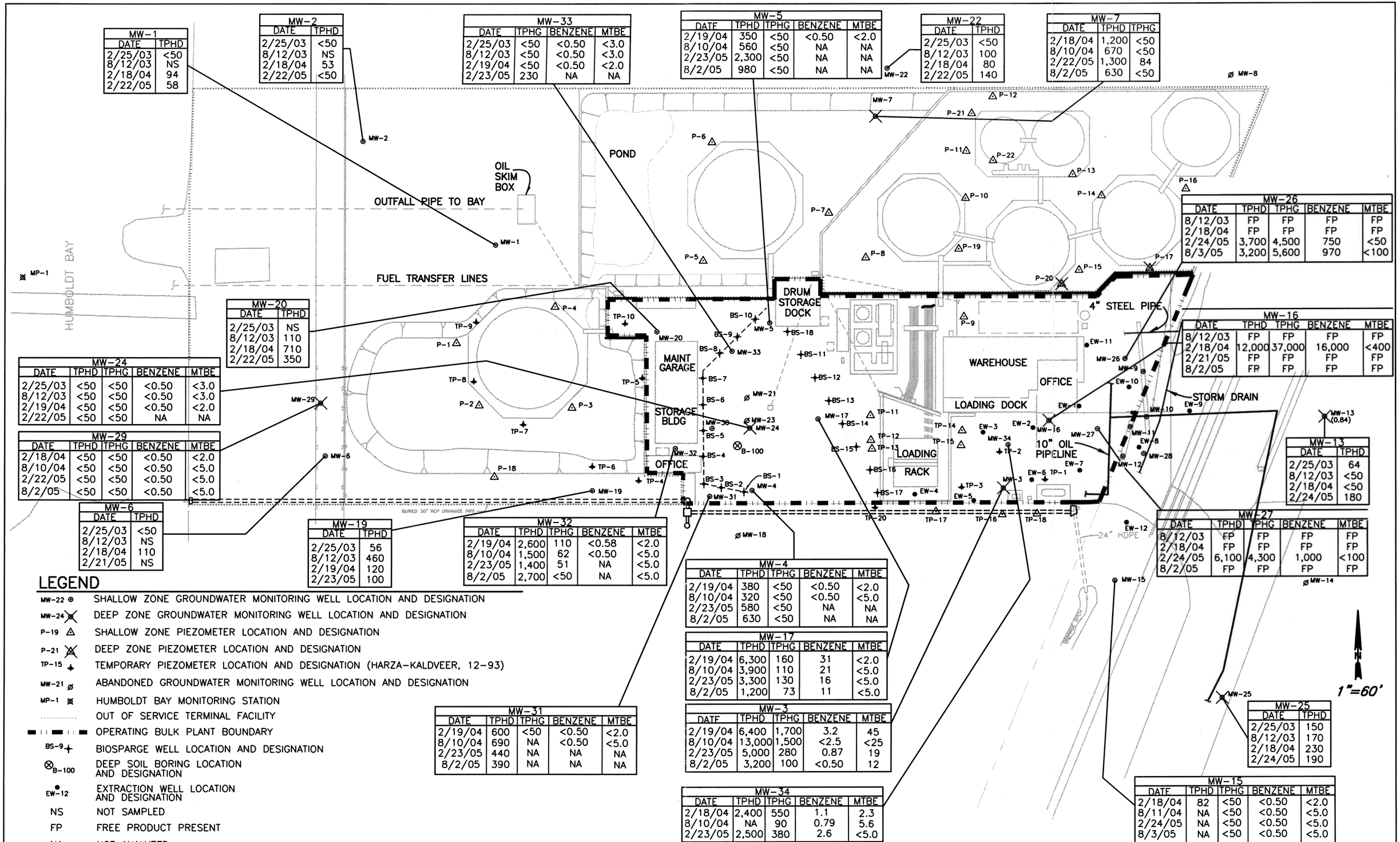


EXPLANATION

- MW-22 ⊙ SHALLOW ZONE GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- MW-24 DEEP ZONE GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- P-19 △ SHALLOW ZONE PIEZOMETER LOCATION AND DESIGNATION
- P-21 DEEP ZONE PIEZOMETER LOCATION AND DESIGNATION
- TP-15 ✦ TEMPORARY PIEZOMETER LOCATION AND DESIGNATION
- MP-1 HUMBOLDT BAY MONITORING STATION
- EW-4 ● EXTRACTION WELL LOCATION AND DESIGNATION
- (0.40) GROUNDWATER ELEVATION (NAVD 88)
- 0.3 GROUNDWATER CONTOUR (NAVD 88)
- APPROXIMATE GROUNDWATER FLOW DIRECTION

SOURCE:
FIGURE MODIFIED FROM DRAWING
PROVIDED BY PEG.

SHN Consulting Engineers & Geologists, Inc.	CBE, LLC Eureka Bulk Plant #0201 Eureka, California	Groundwater Contours August 1, 2005 SHN 098179.305
	January, 2006	098179.305-GWC-aug-2005	Figure 3



MW-1	
DATE	TPHD
2/25/03	<50
8/12/03	NS
2/18/04	94
2/22/05	58

MW-2	
DATE	TPHD
2/25/03	<50
8/12/03	NS
2/18/04	53
2/22/05	<50

MW-33			
DATE	TPHG	BENZENE	MTBE
2/25/03	<50	<0.50	<3.0
8/12/03	<50	<0.50	<3.0
2/19/04	<50	<0.50	<2.0
2/23/05	230	NA	NA

MW-5				
DATE	TPHD	TPHG	BENZENE	MTBE
2/19/04	350	<50	<0.50	<2.0
8/10/04	560	<50	NA	NA
2/23/05	2,300	<50	NA	NA
8/2/05	980	<50	NA	NA

MW-22	
DATE	TPHD
2/25/03	<50
8/12/03	100
2/18/04	80
2/22/05	140

MW-7		
DATE	TPHD	TPHG
2/18/04	1,200	<50
8/10/04	670	<50
2/22/05	1,300	84
8/2/05	630	<50

MW-26				
DATE	TPHD	TPHG	BENZENE	MTBE
8/12/03	FP	FP	FP	FP
2/18/04	FP	FP	FP	FP
2/24/05	3,700	4,500	750	<50
8/3/05	3,200	5,600	970	<100

MW-16				
DATE	TPHD	TPHG	BENZENE	MTBE
8/12/03	FP	FP	FP	FP
2/18/04	12,000	37,000	16,000	<400
2/21/05	FP	FP	FP	FP
8/2/05	FP	FP	FP	FP

MW-20	
DATE	TPHD
2/25/03	NS
8/12/03	110
2/18/04	710
2/22/05	350

MW-24				
DATE	TPHD	TPHG	BENZENE	MTBE
2/25/03	<50	<50	<0.50	<3.0
8/12/03	<50	<50	<0.50	<3.0
2/19/04	<50	<50	<0.50	<2.0
2/22/05	<50	<50	NA	NA

MW-29				
DATE	TPHD	TPHG	BENZENE	MTBE
2/18/04	<50	<50	<0.50	<2.0
8/10/04	<50	<50	<0.50	<5.0
2/22/05	<50	<50	<0.50	<5.0
8/2/05	<50	<50	<0.50	<5.0

MW-6	
DATE	TPHD
2/25/03	<50
8/12/03	NS
2/18/04	110
2/21/05	NS

MW-19	
DATE	TPHD
2/25/03	56
8/12/03	460
2/19/04	120
2/23/05	100

MW-32				
DATE	TPHD	TPHG	BENZENE	MTBE
2/19/04	2,600	110	<0.58	<2.0
8/10/04	1,500	62	<0.50	<5.0
2/23/05	1,400	51	NA	<5.0
8/2/05	2,700	<50	NA	<5.0

MW-4				
DATE	TPHD	TPHG	BENZENE	MTBE
2/19/04	380	<50	<0.50	<2.0
8/10/04	320	<50	<0.50	<5.0
2/23/05	580	<50	NA	NA
8/2/05	630	<50	NA	NA

MW-17				
DATE	TPHD	TPHG	BENZENE	MTBE
2/19/04	6,300	160	31	<2.0
8/10/04	3,900	110	21	<5.0
2/23/05	3,300	130	16	<5.0
8/2/05	1,200	73	11	<5.0

MW-31				
DATE	TPHD	TPHG	BENZENE	MTBE
2/19/04	600	<50	<0.50	<2.0
8/10/04	690	NA	<0.50	<5.0
2/23/05	440	NA	NA	NA
8/2/05	390	NA	NA	NA

MW-3				
DATE	TPHD	TPHG	BENZENE	MTBE
2/19/04	6,400	1,700	3.2	45
8/10/04	13,000	1,500	<2.5	<25
2/23/05	5,000	280	0.87	19
8/2/05	3,200	100	<0.50	12

MW-34				
DATE	TPHD	TPHG	BENZENE	MTBE
2/18/04	2,400	550	1.1	2.3
8/10/04	NA	90	0.79	5.6
2/23/05	2,500	380	2.6	<5.0

MW-13	
DATE	TPHD
2/25/03	64
8/12/03	<50
2/18/04	<50
2/24/05	180

MW-27				
DATE	TPHD	TPHG	BENZENE	MTBE
8/12/03	FP	FP	FP	FP
2/18/04	FP	FP	FP	FP
2/24/05	6,100	4,300	1,000	<100
8/2/05	FP	FP	FP	FP

MW-25	
DATE	TPHD
2/25/03	150
8/12/03	170
2/18/04	230
2/24/05	190

MW-15				
DATE	TPHD	TPHG	BENZENE	MTBE
2/18/04	82	<50	<0.50	<2.0
8/11/04	NA	<50	<0.50	<5.0
2/24/05	NA	<50	<0.50	<5.0
8/3/05	NA	<50	<0.50	<5.0

LEGEND

- MW-22 — SHALLOW ZONE GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- MW-24 — DEEP ZONE GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- P-19 — SHALLOW ZONE PIEZOMETER LOCATION AND DESIGNATION
- P-21 — DEEP ZONE PIEZOMETER LOCATION AND DESIGNATION
- TP-15 — TEMPORARY PIEZOMETER LOCATION AND DESIGNATION (HARZA-KALDVEER, 12-93)
- MW-21 — ABANDONED GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- MP-1 — HUMBOLDT BAY MONITORING STATION
- OUT OF SERVICE TERMINAL FACILITY
- OPERATING BULK PLANT BOUNDARY
- BS-9 — BIOSPARGE WELL LOCATION AND DESIGNATION
- B-100 — DEEP SOIL BORING LOCATION AND DESIGNATION
- EW-12 — EXTRACTION WELL LOCATION AND DESIGNATION
- NS — NOT SAMPLED
- FP — FREE PRODUCT PRESENT
- NA — NOT ANALYZED

SOURCE:
FIGURE MODIFIED FROM DRAWING PROVIDED BY PEG.

SHN Consulting Engineers & Geologists, Inc.

CBE, LLC
Eureka Bulk Plant #0201
Eureka, California

Summary of Groundwater Analytical Results, Monitoring Wells
SHN 098179.305

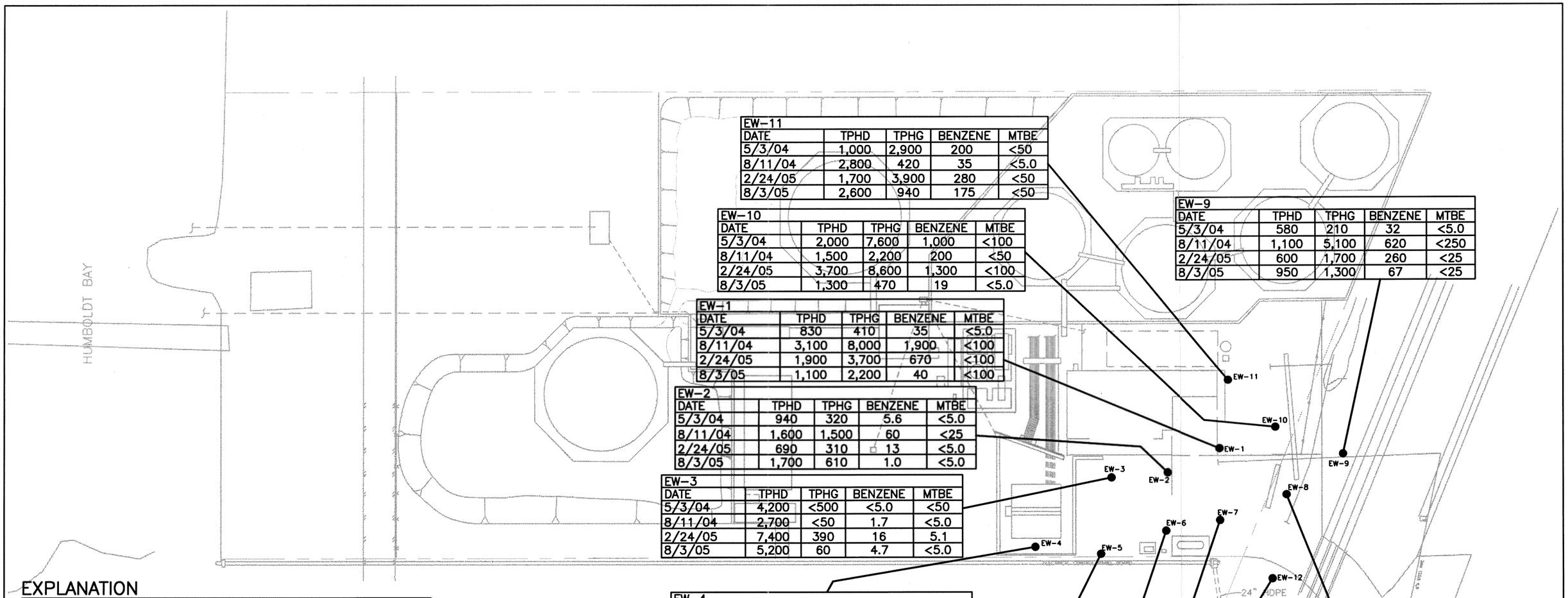
January, 2006 | 098179.305-GAR-MWELLS-05 | Figure 4

Table 1 Deep Zone Groundwater Elevation Data, August 1, 2005 Eureka Bulk Plant #0201					
Well ID	Measuring Point Elevation (feet NAVD 88)[1]	Depth to SPH[2] (feet)	SPH Thickness (feet)	Depth to Water[3] (feet)	Groundwater Elevation[4] (feet NAVD 88)
MW-3	11.80	--	--	8.12	3.68
MW-7	12.16	--	--	6.09	6.07
MW-13	10.75	--	--	6.57	4.18
MW-16	11.54	7.87	0.20	8.07[5]	3.64
MW-24	10.51	--	--	6.87	3.64
MW-25	10.26	--	--	5.98	4.28
MW-29	12.24	--	--	8.78	3.46
MW-34	11.69	--	--	7.47	4.22
EW-1	10.86	6.03	0.05	6.08[5]	4.82
EW-2	11.11	--	--	6.16	4.95
EW-3	11.04	--	--	6.44	4.60
EW-4	10.79	--	--	5.83	4.96
EW-5	11.04	--	--	6.02	5.02
EW-6	10.97	--	--	6.00	4.97
EW-7	10.92	--	--	5.99	4.93
EW-8	10.87	--	--	6.13	4.74
EW-9	10.51	--	--	5.61	4.90
EW-10	11.07	6.26	0.03	6.29[5]	4.81
EW-11	10.67	--	--	5.61	5.06
EW-12	10.90	5.91	0.54	6.45[5]	4.91

1. Top of casing elevation, in feet above North American Vertical Datum 1988 (NAVD 88).
2. SPH: Separate Phase Hydrocarbons
3. Depth to water, in feet below top of casing
4. Groundwater elevation, in feet above NAVD 88
5. Corrected for the presence of SPH. Density of SPH estimated at 0.85.

3.5 Petroleum Hydrocarbon Groundwater Monitoring Results

Table 2 summarizes second half of 2005 groundwater-monitoring results for petroleum hydrocarbons. Total Petroleum Hydrocarbons as Diesel (TPHD) and as Gasoline (TPHG), Benzene, and Methyl Tertiary-Butyl Ether (MTBE) results are shown on Figures 4 and 5. Historic analytical results for petroleum hydrocarbons are presented in Appendix D. The bulk of the dissolved phase contamination is in the vicinity of the extraction wells. Low concentrations of dissolved phase petroleum hydrocarbons were also detected in several other monitoring wells. Petroleum hydrocarbons were not detected in well MW-29, indicating that petroleum hydrocarbon plumes continue to be confined to the eastern portion of the facility and are not impacting Humboldt Bay. The bulk of SPH hydrocarbon contamination remains in the eastern portion of the facility.



EW-11				
DATE	TPHD	TPHG	BENZENE	MTBE
5/3/04	1,000	2,900	200	<50
8/11/04	2,800	420	35	<5.0
2/24/05	1,700	3,900	280	<50
8/3/05	2,600	940	175	<50

EW-10				
DATE	TPHD	TPHG	BENZENE	MTBE
5/3/04	2,000	7,600	1,000	<100
8/11/04	1,500	2,200	200	<50
2/24/05	3,700	8,600	1,300	<100
8/3/05	1,300	470	19	<5.0

EW-9				
DATE	TPHD	TPHG	BENZENE	MTBE
5/3/04	580	210	32	<5.0
8/11/04	1,100	5,100	620	<250
2/24/05	600	1,700	260	<25
8/3/05	950	1,300	67	<25

EW-1				
DATE	TPHD	TPHG	BENZENE	MTBE
5/3/04	830	410	35	<5.0
8/11/04	3,100	8,000	1,900	<100
2/24/05	1,900	3,700	670	<100
8/3/05	1,100	2,200	40	<100

EW-2				
DATE	TPHD	TPHG	BENZENE	MTBE
5/3/04	940	320	5.6	<5.0
8/11/04	1,600	1,500	60	<25
2/24/05	690	310	13	<5.0
8/3/05	1,700	610	1.0	<5.0

EW-3				
DATE	TPHD	TPHG	BENZENE	MTBE
5/3/04	4,200	<500	<5.0	<50
8/11/04	2,700	<50	1.7	<5.0
2/24/05	7,400	390	16	5.1
8/3/05	5,200	60	4.7	<5.0

EW-4				
DATE	TPHD	TPHG	BENZENE	MTBE
5/3/04	300	<50	<0.50	<5.0
8/11/04	430	<50	<0.50	<5.0
2/24/05	380	<50	<0.50	<5.0
8/3/05	70	<50	<0.50	<5.0

EW-5				
DATE	TPHD	TPHG	BENZENE	MTBE
5/3/04	9,400	380	<0.50	26
8/11/04	4,300	91	<0.50	16
2/24/05	13,000	220	<0.50	17
8/3/05	6,700	82	<0.50	11

EW-6				
DATE	TPHD	TPHG	BENZENE	MTBE
5/3/04	2,100	1,800	70	<50
8/11/04	490	95	7.9	<5.0
2/24/05	1,100	210	9.7	<5.0
8/3/05	1,300	160	4.1	<5.0

EW-7				
DATE	TPHD	TPHG	BENZENE	MTBE
5/3/04	1,600	10,000	480	<50
8/11/04	120,000	33,000	4,000	<250
2/24/05	7,500	14,000	2,400	<250
8/3/05	1,600	830	<180	<25

EW-8				
DATE	TPHD	TPHG	BENZENE	MTBE
5/3/04	1,100	11,000	81	<100
8/11/04	520	300	15	<10
2/24/05	2,800	7,300	1,200	<100
8/3/05	510	150	3.9	<5.0

EW-12				
DATE	TPHD	TPHG	BENZENE	MTBE
5/3/04	2,800	41,000	8,800	<500
8/11/04	3,300	10,000	2,100	<250
2/24/05	2,300	23,000	3,800	<500
8/3/05	1,800	20,000	1,900	<500

EXPLANATION

EW-4 ● EXTRACTION WELL LOCATION AND DESIGNATION

NOTE

ALL RESULTS IN ug/L

SOURCE:
FIGURE MODIFIED FROM DRAWING PROVIDED BY PEG.

N

1"=60'

SHN Consulting Engineers & Geologists, Inc.

CBE, LLC
Eureka Bulk Plant #0201
Eureka, California

Summary of Groundwater Analytical Results, Extraction Wells
SHN 098179.305

January, 2006 | 098179.305-GAR-EXWELLS-2005 | Figure 5

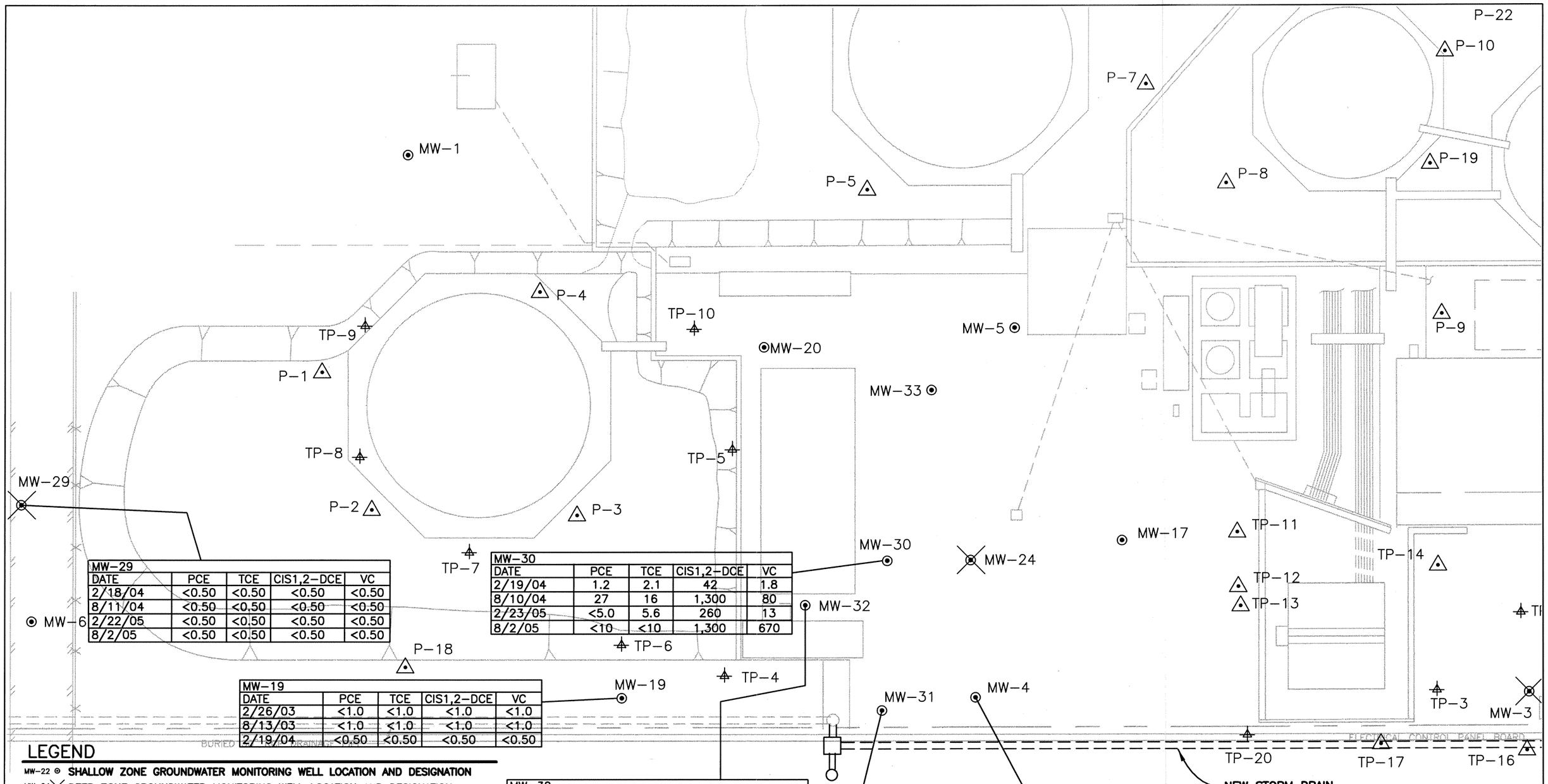
Table 2
Groundwater Monitoring Results for Petroleum Hydrocarbons, Second Half 2005
Eureka Bulk Plant #0201
(in ug/L)[1]

Sample Location	Sample Date	TPHD[2]	GRO[3]	B[3]	T[3]	E[3]	X[3]	MTBE[3]
MW-3	8/2/05	**3,200**	**100**	<0.50	<0.50	<0.50	<0.50	**12**
MW-4	8/2/05	**630**	<50	NA	NA	NA	NA	NA
MW-5	8/2/05	**980**	<50	NA	NA	NA	NA	NA
MW-7	8/2/05	**630**	<50	NA	NA	NA	NA	NA
MW-15	8/3/05	NA	<50	<0.50	<0.50	<0.50	<0.50	<5.0
MW-17	8/2/05	**1,200**	**73**	**11**	<0.50	<0.50	<0.50	<5.0
MW-26	8/3/05	**3,200**	**5,600**	**970**	**42**	**99**	**160**	<100
MW-29	8/2/05	<50	<50	<0.50	<0.50	<0.50	<0.50	<5.0
MW-31	8/2/05	**390**	NA	NA	NA	NA	NA	NA
MW-32	8/2/05	**2,700**	<50	NA	NA	NA	NA	<5.0
EW-1	8/3/05	**1,100**	**2,200**	**40**	<10	**97**	**240**	<100
EW-2	8/3/05	**1,700**	**610**	**1.0**	<0.50	**3.2**	**7.6**	<5.0
EW-3	8/3/05	**5,200**	**60**	**4.7**	<0.50	<0.50	<0.50	<5.0
EW-4	8/3/05	**70**	<50	<0.50	<0.50	<0.50	<0.50	<5.0
EW-5	8/3/05	**6,700**	**82**	<0.50	<0.50	<0.50	<0.50	**11**
EW-6	8/3/05	**1,300**	**160**	**4.1**	**0.61**	**2.5**	**6.3**	<5.0
EW-7	8/3/05	**1,600**	**830**	**180**	**3.8**	**39**	**49**	<25
EW-8	8/3/05	**510**	**150**	**3.9**	<0.50	**0.97**	**3.5**	<5.0
EW-9	8/3/05	**950**	**1,300**	**67**	**10**	**37**	**83**	<25
EW-10	8/3/05	**1,300**	**460**	**19**	**3.5**	**11**	**32**	<5.0
EW-11	8/3/05	**2,600**	**940**	**75**	**17**	**2.5**	**72**	<50
EW-12	8/3/05	**1,800**	**20,000**	**1,900**	**150**	**810**	**2,500**	<500

1. ug/L: micrograms per Liter
2. TPHD: Total Petroleum Hydrocarbons as Diesel, analyzed in general accordance with EPA Method Nos. 3510/8015B.
3. Gasoline Range Organics (GRO); Benzene (B); Toluene (T); Ethylbenzene (E); total Xylenes (X); and, Methyl Tertiary-Butyl Ether (MTBE), analyzed in general accordance with EPA Method. Nos. 8015M/8021B.
4. NA: Not Analyzed
5. <: Denotes a value that is "less than" the method detection limit.

3.6 HVOCs Groundwater Monitoring Results

Analytical results for HVOCs in groundwater are summarized in Table 3 and shown on Figure 6. Historic analytical results for HVOCs are presented in Appendix E.



MW-29				
DATE	PCE	TCE	CIS1,2-DCE	VC
2/18/04	<0.50	<0.50	<0.50	<0.50
8/11/04	<0.50	<0.50	<0.50	<0.50
2/22/05	<0.50	<0.50	<0.50	<0.50
8/2/05	<0.50	<0.50	<0.50	<0.50

MW-30				
DATE	PCE	TCE	CIS1,2-DCE	VC
2/19/04	1.2	2.1	42	1.8
8/10/04	27	16	1,300	80
2/23/05	<5.0	5.6	260	13
8/2/05	<10	<10	1,300	670

MW-19				
DATE	PCE	TCE	CIS1,2-DCE	VC
2/26/03	<1.0	<1.0	<1.0	<1.0
8/13/03	<1.0	<1.0	<1.0	<1.0
2/19/04	<0.50	<0.50	<0.50	<0.50

MW-32				
DATE	PCE	TCE	CIS1,2-DCE	VC
8/13/03	7.5	29	720	140
2/19/04	<2.50	<2.50	230	280
8/10/04	1.3	1.7	22	23
2/23/05	<2.5	<2.5	19	24

MW-4				
DATE	PCE	TCE	CIS1,2-DCE	VC
2/19/04	<0.50	.55	12	10
8/10/04	1.3	1.0	35	16
2/23/05	<0.50	<0.50	16	13
8/2/05	<0.50	0.57	20	9.0

MW-31				
DATE	PCE	TCE	CIS1,2-DCE	VC
2/19/04	<0.50	<0.50	1.1	5.1
8/10/04	1.3	<0.50	0.61	6.6
2/23/05	<0.50	<0.50	0.85	3.2
8/2/05	<0.50	<0.50	0.58	9.9

LEGEND

MW-22 ⊙ SHALLOW ZONE GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
MW-24 DEEP ZONE GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
P-19 △ SHALLOW ZONE PIEZOMETER LOCATION AND DESIGNATION
P-21 DEEP ZONE PIEZOMETER LOCATION AND DESIGNATION
TP-15 TEMPORARY PIEZOMETER LOCATION AND DESIGNATION

PCE TETRACHLOROETHENE
TCE TRICHLOROETHENE
CIS1,2-DCE CIS 1,2-DICHLORETHENE
VC VINYL CHLORIDE
} RESULTS IN ug/L

SOURCE:
FIGURE MODIFIED FROM DRAWING PROVIDED BY PEG.

SHN Consulting Engineers & Geologists, Inc.

CBE, LLC
Eureka Bulk Plant #0201
Eureka, California

Summary of HVOC Analytical Results
SHN 098179.305

January, 2006 | 098179.305-HVOC-aug-2005 | Figure 6

Table 3 Groundwater Monitoring Results for HVOCs, Second Half 2005 Eureka Bulk Plant #0201 (in ug/L)[1]							
Sample Location	**Sample Date**	**PCE[2]**	**TCE[3]**	**cis 1,2-DCE[4]**	**trans 1,2-DCE[5]**	**Chloroform**	**Vinyl Chloride**
MW-4	8/2/05	<0.50	**0.57**	**20**	**0.61**	<0.50	**9.0**
MW-17	8/2/05	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-29	8/2/05	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MW-30	8/2/05	<10	<10	**1,300**	**17**	<10	**670**
MW-31	8/2/05	<0.50	<0.50	**0.58**	<0.50	<0.50	**9.9**

1. ug/L: microgram per Liter
2. PCE: Tetrachloroethene
3. TCE: Trichloroethene
4. cis-1,2-DCE: cis-1,2-Dichloroethene
5. trans-1,2-DCE: trans-1,2-Dichloroethene
6. <: Denotes a value that is "less than" the method detection limit.

Tetrachloroethene (PCE) is a solvent that was historically used at the site and is the parent HVOC contaminant with degradation products (in order of sequential reductive dechlorination) Trichloroethene (TCE), cis-1,2-dichloroethene (DCE), and Vinyl Chloride (VC). Additional degradation products include trans 1,2-dichloroethene (trans 1,2-DCE) and 1,1-DCE. The products DCE and VC degrade aerobically; therefore, bio-sparging in this area has been conducted to promote aerobic biodegradation of these daughter products.

3.7 Groundwater Field-Measured Parameter Results

Table 4 summarizes the groundwater field-measured parameter results from the August 2005 monitoring event. Monitoring for field parameters is limited to semiannual monitoring only for Dissolved Oxygen (DO), Dissolved Carbon Dioxide (DCO_2), and Oxidation-Reduction Potential (ORP), which are measured in the field using portable instrumentation on selected monitoring wells. This data is collected to monitor the effectiveness of the biosparge system. The data in Table 4 indicate biodegradation is occurring; however, there is limited dissolved oxygen in monitoring wells MW-4, MW-30, MW-31, and MW-32. The western biosparge system, which includes biosparge wells BS-1 through BS-18 and two biovent trenches, is cycled between four separate zones weekly to elevate dissolved oxygen levels in the groundwater.

Table 4 Groundwater Field-Measured Parameters, August, 2005 Eureka Bulk Plant #0201			
Sample Location	DO[1] (ppm)	DCO_2[1] (ppm)[2]	ORP[1] (mV)[3]
MW-4	1.18	85	185
MW-5	6.81	20	286
MW-30	1.03	110	226
MW-31	1.06	75	258
MW-32	1.29	100	211

1. DO: Dissolved Oxygen, DCO_2: Dissolved Carbon Dioxide, ORP: Oxidation-Reduction Potential, and pH measured with portable equipment.
2. ppm: parts per million
3. mV: millivolts

4.0 Separate Phase Hydrocarbon Monitoring Program

4.1 SPH Recovery Program

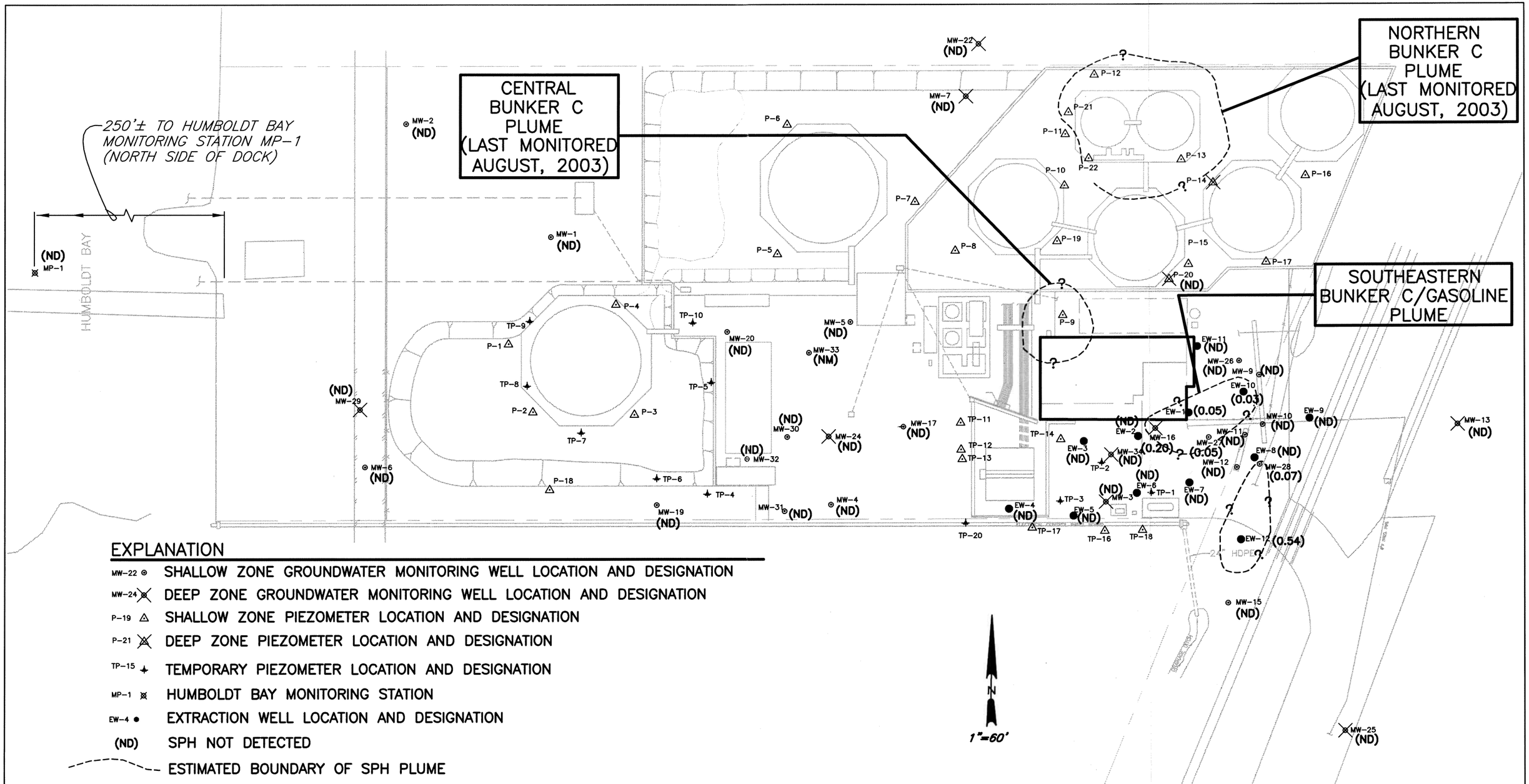
SHN is performing the semi-monthly SPH recovery program. SPH remediation is through extraction, and absorbent socks. SHN performed semi-monthly SPH removal site visits during July through December 2005. Field reports are presented in Appendix B.

4.2 SPH Monitoring Results

The semiannual SPH monitoring well gauging program included monitoring of SPH thickness at 43 monitoring points. Of the 43 points monitored, SPH was observed in 6. SPH thickness measurements are presented in Appendix B, and shown in Figure 7. Currently, only the southeastern Bunker C/Gasoline plume is monitored. The northern Bunker C plume and the central Bunker C plume have remained stable since 1997 and have not been monitored since August 2003.

4.3 Waste Handling

During this reporting period, 125-pounds of Non-RCRA Hazardous Waste Solids and 20-gallons of Non-RCRA Hazardous Waste Liquids were transported off site and disposed of by Filter Recycling Services, Inc. of Rialto, California. Disposal certificates are included in Appendix B. The free product tank of the DPE system collects SPH removed from the extraction wells, MW-26, MW-27, and MW-28. SPH in the free product tank of the DPE system is stored under vacuum, which allows the SPH to evaporate and be oxidized by the thermal oxidizer (burner) of the DPE system. This method greatly reduces the quantity of waste requiring off-site disposal.



EXPLANATION

- MW-22 ⊙ SHALLOW ZONE GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- MW-24 ⊗ DEEP ZONE GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- P-19 △ SHALLOW ZONE PIEZOMETER LOCATION AND DESIGNATION
- P-21 ⊗ DEEP ZONE PIEZOMETER LOCATION AND DESIGNATION
- TP-15 ✦ TEMPORARY PIEZOMETER LOCATION AND DESIGNATION
- MP-1 ⊗ HUMBOLDT BAY MONITORING STATION
- EW-4 ● EXTRACTION WELL LOCATION AND DESIGNATION
- (ND) SPH NOT DETECTED
- ESTIMATED BOUNDARY OF SPH PLUME
- (0.03) (MEASURED SPH THICKNESS)

SOURCE:
FIGURE MODIFIED FROM DRAWING PROVIDED BY PEG.

SHN Consulting Engineers & Geologists, Inc.	CBE, LLC Eureka Bulk Plant #0201 Eureka, California	Extent of SPH Map August, 2005 SHN 098179.305
	January, 2006	098179.305-SPH-AUG-05	Figure 7

5.0 Remediation Monitoring Program

5.1 Eastern Biovent/Biosparge System

The Eastern Biovent/Biosparge System, located near MW-9, was repaired and placed into service on August 2, 1999. SHN modified the plumbing on December 23, 1999, to change the location of airflow from the lower region to the upper region. SHN modified and expanded the Eastern Biovent/Biosparge System on May 5, 2003, to allow introduction of air into three different areas. Trench #1A is pre-existing piping that permits bioventing, Trench #1B is pre-existing piping that permits biosparging, and Trench #2 is approximately 45 feet of newly-installed piping that permits bioventing (Figure 2). Table 5 presents the air injection location, injection pressure, temperature, flow rate, and hours of operation for the second half of 2005. Biovent/Biosparge field data sheets are included in Appendix B.

On July 31, 2000, the system timer was set to operate 10 hours on and 2 hours off. On June 19, 2001, the timer was reset to operate in a pulsed mode; 2 hours on, then 2 hours off. On March 9, 2004, the system timer was reset to operate the blower on a continuous basis to prevent fluctuations of the groundwater mounding in the vicinity of the dual-phase system extraction wells. On November 23, 2005, the Eastern Biovent/Biosparge System was taken off-line to optimize the remedial activities in the eastern portion of the site.

Maintenance and repairs conducted on the eastern biovent/biosparge system included cleaning or replacing the air filter as required.

Table 5
Biovent/Biosparge System East Monitoring Results, Second Half, 2005
Eureka Bulk Plant #0201

Date	Injection Areas and Valve Position	Mode	Pressure (psi)[1]	Temperature (°F)[2]	Flow Velocity (ft/min)[3]	Flow Rate (cfm)[4]	Operation Time (hours)
7/1/05	Trench #1B	Sparge	2.0	125	11,920	278	45,910
7/8/05	Trench #1B	Sparge	2.0	122	11,460	267	46,076
7/15/05	Trench #1B	Sparge	1.75	122	11,710	273	46,247
7/22/05	Trench #1B	Sparge	1.75	128	14,180	330	46,414
7/29/05	Trench #1B	Sparge	1.75	117	13,130	306	46,582
8/5/05	Trench #1B	Sparge	1.75	119	12,630	294	46,750
8/12/05	Trench #1B	Sparge	1.75	119	11,966	279	46,919
8/19/05	Trench #1B	Sparge	1.75	119	12,620	294	47,086
8/26/05	Trench #1B	Sparge	1.5	114	11,975	279	NM[5]
9/2/05	Trench #1B	Sparge	1.5	NM	NM	NM	47,422
9/9/05	Trench #1B	Sparge	1.5	NM	NM	NM	47,590
9/16/05	Trench #1B	Sparge	1.5	NM	NM	NM	NM
9/23/05	Trench #1B	Sparge	1.5	NM	NM	NM	47,927
9/30/05	Trench #1B	Sparge	1.5	NM	NM	NM	48,093
10/6/05	Trench #1B	Sparge	1.5	NM	NM	NM	48,238
10/14/05	Trench #1B	Sparge	1.5	NM	12,285	286	48,431

Table 5 Biovent/Biosparge System East Monitoring Results, Second Half, 2005 Eureka Bulk Plant #0201							
Date	**Injection Areas and Valve Position**	**Mode**	**Pressure (psi)[1]**	**Temperature (°F)[2]**	**Flow Velocity (ft/min)[3]**	**Flow Rate (cfm)[4]**	**Operation Time (hours)**
10/20/05	Trench #1B	Sparge	1.5	117	13,390	312	NM
10/28/05	Trench #1B	Sparge	1.5	118	12,530	292	NM
11/4/05	Trench #1B	Sparge	1.5	116	12,605	294	NM
11/11/05	Trench #1B	Sparge	2.25	137	12,210	285	49,104
11/18/05	Trench #1B	Sparge	2.5	141	12,340	288	NM
11/23/05	System taken off-line						

1. psi: pounds per square inch; 1 psi = 27.7 inches of water
2. °F: degrees Fahrenheit
3. ft/min: feet per minute
4. cfm: cubic feet per minute: 0.0233 square feet x velocity (feet/minute) = cfm through a 2-inch inside diameter pipe
5. NM: Not Measured

5.2 Western Biovent/Biosparge System

The Western Biovent/Biosparge System, located near MW-5, has been operating since start up on June 14, 1999. In January 2003, the timer was reset to operate in a pulsed mode; 2 hours on, then 2 hours off. This was done to optimize operation of the blower and minimize the establishment of preferential airflow pathways in the vadose zone. SHN modified and expanded the Western Biovent/Biosparge System during January 2003 to allow introduction of air into four different areas. BS-1 thru BS-10 are pre-existing sparge wells that permits biosparging; Trench #1 is pre-existing piping that permits biosparging into a gravel pit; BS-11 thru BS-18 are newly-installed sparge wells that permit biosparging; and Trench #2 is approximately 120 feet of newly-installed piping that permits bioventing. Table 6 presents the air injection location, injection pressure, temperature, flow rate, and hours of operation for the second half of 2005. Hour meter readings were not recorded regularly due to access limitations. Biovent/biosparge field data sheets are included in Appendix B.

Maintenance and repairs conducted on the western biovent/biosparge system are as follows:

- lubricated the motor as required, and
- cleaned or replaced the air filter as required.

Table 6 Biovent/Biosparge System West Monitoring Results, Second Half, 2005 Eureka Bulk Plant #0201						
Date	**Injection Areas and Valve Position**	**Mode**	**Pressure (psi)[1]**	**Temperature (°F)[2]**	**Flow Rate (cfm)[3]**	**Operation Time (hours)**
7/1/05	Trench #1 – 100% Open	Vent	1.5	155	70	NM
7/8/05	Trench #2 – 100% Open	Vent	1.25	100	73	NM
7/15/05	BS-1 through BS-10 100% Open	Sparge	7.0	100	48	NM
7/22/05	BS-11 through BS-18 – 100% Open Trench #1 – 10% Open	Vent and sparge	9.0	160	38	NM
7/29/05	Trench #1 – 100% Open	Vent	1.5	150	69	NM
8/5/05	Trench #2 – 100% Open	Vent	0.75	92	75	NM
8/12/05	BS-1 through BS-10 100% Open	Sparge	6.75	90	50	7,648
8/19/05	BS-11 through BS-18 – 100% Open Trench #1 – 10% Open	Vent and sparge	8.5	172	40	NM
8/26/05	Trench #1 – 100% Open	Vent	1.5	160	70	NM
9/2/05	Trench #2 – 100% Open	Vent	0.75	95	75	NM
9/9/05	BS-1 through BS-10 100% Open	Sparge	6.0	95	53	NM
9/16/05	BS-11 through BS-18 – 100% Open Trench #1 – 10% Open	Vent and sparge	8.5	170	33	NM
9/23/05	Trench #1 – 100% Open	Vent	1.25	160	70	NM
9/30/05	Trench #2 – 100% Open	Vent	0.65	96	75	NM
10/6/05	Trench #1 – 100% Open	Vent	1.25	92	70	NM
10/14/05	Trench #2 – 100% Open	Vent	0.75	95	75	NM
10/20/05	BS-1 through BS-10 100% Open	Sparge	5.5	95	54	NM
10/28/05	BS-11 through BS-18 – 100% Open Trench #1 – 10% Open	Vent and sparge	8.75	155	38	NM
11/4/05	Trench #1 – 100% Open	Vent	1.5	150	70	NM
11/11/05	Trench #2 – 100% Open	Vent	0.75	94	74	NM
11/18/05	BS-1 through BS-10 100% Open	Sparge	6.25	90	52	NM
11/23/05	BS-11 through BS-18 – 100% Open	Sparge	8.75	165	40	NM
12/2/05	BS-11 through BS-18 – 100% Open Trench #1 – 10% Open	Vent and sparge	6.0	160	45	NM
12/9/05	Trench #1 – 100% Open	Vent	1.5	150	69	NM
12/23/05	Trench #2 – 100% Open	Vent	2.0	100	65	9,171

1. psi: pounds per square inch; 1 psi = 27.7 inches of water
2. °F: degrees Fahrenheit
3. cfm: cubic feet per minute
4. NM: Not Measured

Percent oxygen, carbon dioxide, and Volatile Organic Compounds (VOCs) were measured in monitoring wells in the vicinity of the biosparge wells and the bioventing trenches to monitor the effectiveness of both systems. Results of the monitoring are presented in Table 7. Field data is included in Appendix B.

Table 7 Oxygen, Carbon Dioxide, and PID Soil Vapor Measurements, August 2005 Eureka Bulk Plant #0201			
Sample Location	Oxygen[1] %	Carbon Dioxide[1] %	PID[1] (ppm)[2]
MW-4	19.5	1.8	260
MW-5	14.0	2.6	340
MW-10	20.7	0.0	120
MW-11	20.8	0.0	120
MW-19	15.0	8.6	400
MW-20	18.4	3.7	600
MW-27	14.5	5.1	46% LEL[3]
MW-28	0.8	19.6	4,980
MW-30	20.4	0.2	120
MW-31	17.0	2.1	240
MW-32	5.0	10.2	4,480
MW-33	17.9	2.6	620
MW-34	6.0	11.0	640

1. PID: Photoionization Detector
2. ppm: parts per million
3. %LEL: percent of Lower Explosive Limit (1% LEL = approximately 700 ppm)

4.3 Dual-Phase Extraction System

The DPE system operated nearly continuously during the second half of 2005, with a few temporary shutdowns primarily due to high groundwater conditions. Appendix B contains the DPE system monitoring sheets.

During the second half of 2005, the DPE system extracted 1.5 million gallons of an SPH/ groundwater mixture from the site and, to date, approximately 9.8 million gallons of an SPH/ groundwater mixture have been extracted. The mass of TPH removed through groundwater extraction during the second half of 2005 was 56 pounds, and to date, a total of 512 pounds of TPH have been removed. The mass of TPHG removed in the vapor phase during the second half of 2005 was 315 pounds and to date a total of 2,086 pounds of TPHG in the vapor phase have been removed.

Maintenance, modifications, and repairs conducted on the DPE system are as follows:

- The supplemental fuel valves were adjusted to reduce the quantity of fuel required to maintain proper thermal oxidizer operating temperatures.
- The sealing oil of the Liquid Ring Pump (LRP) was changed.
- The air stripper and discharge line were cleaned, as required.
- Restarted system, as required.
- The sight-tube of water knockout tank was cleaned.

- The sealing oil separator filter of the LRP was replaced.
- The air intake filters were cleaned, as required.
- The storage media of the chart recorder required for compliance monitoring was replaced, as needed.
- Emulsion was removed from the air stripper as required with the free product extraction hose.
- A pump test was conducted on the water discharge pump.
- The water discharge pump was disassembled, cleaned, and reassembled.
- The vacuum gauge of the LRP was replaced.
- Motors were lubricated, as required.
- The water level sensor of the water knockout pot was cleaned, as required.
- Added oil to Liquid Ring Pump, as required.

4.4 Compliance Monitoring

The City of Eureka and the North Coast Unified Air Quality Management District (NCUAQMD) regulate emissions from the DPE system. Water discharged is sampled and analyzed to ensure it meets the specific pollutant limitations set forth by City of Eureka's Sewer Use Permit #84. Samples identified as "EX-EFF" are samples collected from the discharge of the DPE system (influent to the air stripper). Samples identified as "AS-EFF" are samples collected from the discharge of the air stripper (effluent from air stripper). All water is discharged from the outlet of the air stripper. The results of the water sampling events during the second half of 2005 were in compliance with the City of Eureka's Sewer Use Permit #84, except the sample collected on October 14, 2005. A subsequent sample was collected on November 14, 2005, and was found to be in compliance with the City of Eureka's Sewer Use Permit. The results of the sampling events are presented in Table 8. The laboratory analytical results are in Appendix C.

Table 8
Dual-Phase Extraction Water Discharge Analytical Results, Second Half 2005
Eureka Bulk Plant #0201
(in ug/L)[1]

Sample ID	Date	GRO[2]	TPHD[3]	TPHMO[3]	Benzene[4]	Toluene[4]	Ethyl-benzene[4]	Total Xylenes[4]	MTBE[4]
EX-EFF	6/9/05	**5,900**	**16,000**	**12,000**	**11**	**3.4**	**27**	**72**	<5.0
AS-EFF		**18,000**	**3,900**	**2,400**	<0.50[5]	<0.50	**6.7**	**15**	<25
EX-EFF	7/15/05	**130**	**590**	<500	**2.4**	**0.71**	**2.4**	**6.0**	<0.50
AS-EFF		<50	**580**	<500	<0.50	<0.50	<0.50	<1.0	<0.50
EX-EFF	8/26/05	**21,000**	**3,700**	**1,900**	<50	<50	<50	**100**	<50
AS-EFF		**790**	**1,600**	**910**	<0.50	<0.50	<0.50	<1.0	<0.50
EX-EFF	9/16/05	**1,900**	**840**	<500	**32**	**9.6**	**22**	**76**	<0.50
AS-EFF		**160**	**890**	<500	<0.50	<0.50	<0.50	<1.0	<0.50
EX-EFF	10/14/05	**7,500**	**34,000**	<5,000	<25	<25	**120**	**430**	<25
AS-EFF		**6,400**	**16,000**	**3,600**	<10	<10	<10	**37**	<10

Table 8
Dual-Phase Extraction Water Discharge Analytical Results, Second Half 2005
Eureka Bulk Plant #0201
(in ug/L)[1]

Sample ID	Date	GRO[2]	TPHD[3]	TPHMO[3]	Benzene[4]	Toluene[4]	Ethyl-benzene[4]	Total Xylenes[4]	MTBE[4]
EXS-EFF	11/14/05	**560**	NA[6]	NA	**22**	**4.6**	**11**	**31**	<3.0
AS-EFF		<5,000	**420**	<170	0.61	<0.50	<2.0	**2.6**	<3.0
Specific Pollutant Limitations[7]		**TPH[8] 25,000**			**119**	**376**	**70**	**267**	**None**

1. ug/L: micrograms per Liter
2. Gasoline Range Organics (GRO), analyzed in general accordance with EPA Method Nos. 5030/GCFID (LUFT) or 8260B.
3. Total Petroleum Hydrocarbon as Diesel (TPHD) and Total Petroleum Hydrocarbons as Motor Oil (TPHMO), analyzed in general accordance with EPA Method No. 3510/GCFID (LUFT) or 8015M.
4. Benzene, Toluene, Ethylbenzene, and total Xylenes (BTEX), and Methyl Tertiary-Butyl Ether (MTBE), analyzed in general accordance with EPA Method Nos. 5030/8021B or 8260B.
5. <: Denotes a value that is "less than" the method detection limit.
6. NA: Not Analyzed.
7. Specific pollutant specification, as set forth by the City of Eureka, Reference: 1997 Eureka Municipal Code, Title 5, Chapter 50 Sewers, Sections 50.021 & 50.022.
8. Total Petroleum Hydrocarbon approximately equals TPHG Concentration plus TPHD Concentration plus TPHMO concentration.

The DPE system discharges all extracted groundwater to the City of Eureka's sanitary sewer under permit #84. Water discharged from the DPE system is processed through an air stripper before being discharged to the sanitary sewer. Monthly samples are collected from the water effluent of the DPE system and the air stripper. The sampling event conducted during June 2005 is included in this monitoring report and the sampling event conducted during December 2005 shall be included in the first half 2006 monitoring report.

Vapors discharged from the DPE system are sampled and analyzed to ensure they meet the limitations set forth by the NCUAQMD's Permit #NX-065. Vapors are discharged from the thermal oxidizer and the carbon beds down-stream of the air stripper. The thermal oxidizer discharges vapors extracted from the soil and vapors stripped from the groundwater in the extraction lines. The air stripper discharges vapors generated during the stripping of the groundwater prior to being discharged to the sanitary sewer. Vapors from the air stripper are passed through two carbon beds prior to discharge to the atmosphere. The results of the vapor compliance monitoring are presented in Table 9. The laboratory analytical results are in Appendix C. Samples identified as "EXS EFF" are samples collected from the vapor emissions of the thermal oxidizer. Samples identified as "CAR EFF" are emissions from the final carbon bed down-stream of the air stripper. Samples identified as "EXS-INF" are samples collected from the DPE system prior to thermal oxidation and are not related to compliance monitoring. All the results of the vapor sampling events during the second half of 2005 were in compliance with NCUAQMD's Permit #NX-065. The results of the sampling event conducted during June of 2005 are included in this second half of 2005 monitoring report. Samples collected during December 2005 shall be included in the first half of 2006 monitoring report.

Table 9
Vapor Emission Analytical Results, Second Half 2005
Eureka Bulk Plant #0201
(in ppmV)[1]

Sample ID	Date	TPHG[2]	Benzene[3]	Vinyl Chloride[3]	Trichloro-ethene[3]	Tetrachloro-ethene[3]	Methylene Chloride[3]
EXS-INF	6/24/05	**4.1**	**0.078**	<0.066	<0.066	<0.066	<0.066
EXS-EFF		<0.500[4]	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
CAR-EFF		<0.500	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
EXS-INF	7/15/05	**2.6**	**0.037**	<0.0020	<0.0020	<0.0020	<0.0020
EXS-EFF		<0.500	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
CAR-EFF		<0.500	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
EXS-INF	8/26/05	**28**	**0.340**	<0.0020	<0.0020	<0.0020	<0.0020
EXS-EFF		<0.500	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
CAR-EFF		<0.500	<0.0020	<0.0020	<0.0020	**0.0047**	<0.0020
EXS-INF	9/16/05	**23**	**0.400**	<0.0020	<0.0020	<0.0020	<0.0020
EXS-EFF		<0.500	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
CAR-EFF		<0.500	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
EXS-INF	10/14/05	**59**	**0.670**	<0.0068	<0.0068	<0.0068	<0.0068
EXS-EFF		<0.500	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
CAR-EFF		<0.500	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
EXS-INF	11/11/05	**160**	**1.8**	<0.034	<0.034	<0.034	<0.034
EXS-EFF		<0.500	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
CAR-EFF		<0.500	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Discharge Limits[5]		**30 ppmV**	**See note 5**	**See note 5**	**See note 5**	**See note 5**	**See note 5**

1. ppmV: parts per million by volume
2. TPHG: Total Petroleum Hydrocarbons as Gasoline, analyzed in accordance with EPA Method No. 21 TO-14A
3. Benzene and chlorinated compounds were analyzed in general accordance with EPA Method No. 21 TO-14A
4. <: Denotes a value that is "less than" the method detection limit
5. Discharge limits for benzene, vinyl chloride, trichloroethene, tetrachloroethene, and methyl chloride are limited to 1 pound per day.

6.0 Conclusions and Recommendations

Based on the work performed, SHN concludes that:

- Low concentrations of HVOCs were detected in shallow wells MW-4, MW-30, and MW-31.
- The SPH Monitoring and Removal Program and the Biosparge/Biovent Monitoring Program are both operating efficiently.
- The DPE unit was online from July 2005 to December 2005, and approximately 1.5 million gallons of a SPH/groundwater mixture were removed, treated, and discharged to the City of Eureka's Wastewater Collection System.
- Approximately 2,600 pounds of petroleum hydrocarbons has been removed from the subsurface with the dual-phase extraction unit.

- Groundwater analytical data from the extraction wells shows a general decrease in TPHG and benzene concentrations.

Based on these conclusions, SHN recommends the following:

- Discontinue biosparging and bioventing with the Eastern Biovent/Biosparge System.
- Continue bioventing and biosparging with the Western Biovent/Biosparge System, alternating weekly between BS-1 thru BS-10, BS-11 thru BS-18, Trench #1, and Trench #2.
- Conduct semi-monthly extraction of SPH from monitoring wells MW-26, MW-27, and MW-28 using the modified piping from the DPE System and semi-weekly extraction of SPH from the extraction wells EW-1 through EW-12.
- Continue monitoring as outlined in M&RP No. R1-2004-0022.
- Continue to operate the DPE system.
- Decommission the thermal oxidizer of the DPE system and abate the DPE system vapor stream with two 2,000-pound vapor carbon beds configured in series.

7.0 References Cited

SHN Consulting Engineers & Geologists, Inc. (May 16, 2000). "Report of Findings for Tidal Study and SPH Recovery Testing." Eureka: SHN.

Appendix A

Groundwater Monitoring Standard Operating Procedures for CBE, LLC

CBE, LLC
Eureka Bulk Plant #0201 (Site ID #1THU463)
Groundwater Monitoring Standard Operational Procedure

A. Groundwater Monitoring Well Sampling

All monitoring wells are measured for depth to water, Separate Phase Hydrocarbons (SPH) thickness and total depth during each monitoring event. During the purging operations, Electrical Conductivity (EC), temperature, and pH are measured in each well, using portable instrumentation. Bioremediation parameters Dissolved Oxygen (DO), Dissolved Carbon Dioxide (DCO_2), and Oxidation-Reduction Potential (ORP) are measured in select monitoring wells upon completion of purging activities using a field test kit or portable instrumentation.

Following purging, a groundwater sample is collected from each well using a new, disposable polyethylene bailer. The samples are then transferred into laboratory-supplied bottles. Water samples are labeled, stored in an iced cooler, and transported to the designated analytical laboratory for analysis. The samples are transported, accompanied by the proper chain-of-custody documentation. Groundwater samples are analyzed for Total Petroleum Hydrocarbons as Gasoline (TPHG) and as Diesel (TPHD); Benzene, Toluene, Ethylbenzene, and total Xylenes (BTEX); Methyl Tertiary-Butyl Ether (MTBE); and Halogenated Volatile Organic Compounds (HVOCs) using the methods described in Section C.

Water or waste generated during the purging of the groundwater monitoring wells is placed in 55-gallon Department of Transportation-rated drums. All purge water is treated by the dual-phase extraction (DPE) system/air stripper prior to discharge to the City or Eureka wastewater treatment plant under sewer use permit #84, or disposed of by a licensed hazardous waste disposal company.

B. Bioremediation Monitoring Program

To monitor the effectiveness of the biosparge systems, the following indicators of intrinsic bioremediation are monitored in selected wells using portable instrumentation:

- DO
- DCO_2
- EC
- pH

In addition, groundwater samples from selected wells were historically analyzed for the following indicators of intrinsic bioremediation:

- Nitrate
- Sulfate
- Dissolved Iron
- Dissolved Methane
- Dissolved Ethane
- Dissolved Ethene
- Chloride

To demonstrate that bioremediation is occurring, there must be evidence: 1) of contaminant reduction, and 2) that the potential exists for bioremediation at the site. Item 2 is measured by the parameters listed above.

C. Laboratory Analysis

Water samples are analyzed for TPHG in accordance with U.S. Environmental Protection Agency (EPA) Method No. 5030 GC/FID, BTEX in accordance with EPA Method No. 602, MTBE in accordance with EPA Method No. 602, TPHD in accordance with EPA Method 3550 GC/FID, and HVOCs in accordance with EPA Method No. 8021B.

Historically, groundwater samples collected for indications of bioremediation were analyzed for soluble iron in accordance with EPA Method No. 200.7; nitrate, sulfate, and chloride in accordance with EPA Method No. 300; and soluble methane, ethene, and ethane in accordance with EPA Method No. 18 (GC/FID).

Appendix B

Field Reports, Water Quality Data Sheets, and Waste Manifest

State of California—Environmental Protection Agency
Form Approved OMB No. 2050-0039 (Expires 9-30-99)
Please print or type. *Form designed for use on elite (12-pitch) typewriter.*

See Instructions on back of page 6.

Department of Toxic Substances Control
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAL000095562 | Manifest Document No. 10399 | 2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
CONOCO EUREKA TEMINAL #0201
1200 RAILROAD AVE
EUREKA, CA 95503

4. Generator's Phone (707) 269-1019

A. State Manifest Document Number: 24510437

B. State Generator's ID:

5. Transporter 1 Company Name: FILTER RECYCLING SVS, INC. - NO

6. US EPA ID Number: CAR000129304

C. State Transporter's ID [Reserved.]

D. Transporter's Phone: (510) 670-9901

7. Transporter 2 Company Name: Filter Recycling Services, Inc.

8. US EPA ID Number: CAD982444481

E. State Transporter's ID [Reserved.]

F. Transporter's Phone: (909) 873-4141

9. Designated Facility Name and Site Address
FILTER RECYCLING SERVICES, INC
180 W MONTE AVE
RIALTO, CA 92316

10. US EPA ID Number: CAD982444481

G. State Facility's ID:

H. Facility's Phone: (909) 421-2012

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste Number
a. NON RCRA HAZARDOUS WASTE SOLID	001	DM	0035	P	State 2 / EPA/Other NONE
b. NON RCRA HAZARDOUS WASTE LIQUID	001	DM	0020	G	State 331 / EPA/Other NONE
c.					State / EPA/Other
d.					State / EPA/Other

J. Additional Descriptions for Materials Listed Above
11A) CONTAMINATED SOCKS, RAGS, DEBRIS
11B) Ink Dust, Binder, Water
[illegible] clothing

K. Handling Codes for Wastes Listed Above
a. b. c. d.

15. Special Handling Instructions and Additional Information
24 Hour Emergency Response # (909) 721-2038

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: DMARTINEZ | Signature: [signature] | Month Day Year: 03/16

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: DAN SIMMONDS | Signature: [signature] | Month Day Year: 03/16

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name | Signature | Month Day Year

DO NOT WRITE BELOW THIS LINE.

GENERATOR

IN CASE OF EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802: WITHIN CALIFORNIA, CALL 1-800-852-7550

24510437

DTSC 8022A (1/99)
EPA 8700—22

Yellow: GENERATOR RETAINS

SHN CONSULTING ENGINEERS & GEOLOGISTS, INC.
812 W. Wabash • Eureka, CA 95501-2138 • 707/441-8855 • FAX: 707/441-8877 • shninfo@shn-engr.com

DAILY FIELD REPORT

Job No. 098179.305

Page of

Project Name	Client/Owner: Conocophillips	Daily Field Report Sequence No
General Location Of Work: Cop. Eureka	Owner/Client Representative	Date: 7/1/05 — Day Of Week: Fri
General Contractor: Eureka CA	Grading Contractor	Project Engineer: Mike Foget
Type Of Work: O&M	Grading Contractor, Superintendent, Or Foreman	Supervisor
Source & Description Of Fill Material	Weather: Over Cast	Technician: Dustin Tibbets
	Key Persons Contacted (Civil Engr, Architect, Developer, Etc)	

Describe Equipment Used For Hauling, Spreading, Watering, Conditioning, & Compacting

0938 On site.
0940 Taking reading from the Westbiovent system.
0945. Taking reading from the DPE system.
1034 Taking reading from the Eastbiovent system.
1044 Replacing SCDC in MW-3, MW-7 & MW-17
1115 Clean and loaded up.
1130 Off site.

Copy given to:

Reported By: Dusti Tibbets

COP - Eureka
Western Biovent/Biosparge System Monitoring Sheet
098179.304

Date: 7/1/05 Time: 0940
Performed By: DCT Weather: Over Cast

Hour Meter: _____ hours

BS-1 thru 10	Initial	Final
Valve Position (% open)		

BS-11 thru 18	Initial	Final
Valve Position (% open)	100	0

Trench #1	Initial	Final
Valve Position (% open)	10	100

Trench #2	Initial	Final
Valve Position (% open)		

Manifold Readings	Initial	Final
Temperature (°F)	172°	155° and dropping
Pressure (psig)	2.25	1.5
Flow Rate (scfm)	45	70

Comments:

COP - Eureka
DPE System Monitoring Sheet
098179.304

Date: 7/1/05 Time: 0945
Performed By: DET Weather: Over Cast

Extraction Well	Extraction Line	Manifold Readings				Well Head Readings			
		Ball Valve Position (% open)	Line Vacuum (in Hg)	Flow Type (see notes)	OV Conc. (ppm)	Line Vacuum (in Hg)	Depth to Extraction Unit (ft)	Throttle Valve (turns open)	Bleed Valve (% open)
EW-1	H_2O/Air	100	10	C					
	FP								
EW-2	H_2O/Air								
	FP								
EW-3	H_2O/Air								
	FP								
EW-4	H_2O/Air								
	FP								
EW-5	H_2O/Air								
	FP								
EW-6	H_2O/Air								
	FP								
EW-7	H_2O/Air	100	17.5	C					
	FP								
EW-8	H_2O/Air	100	22	C					
	FP								
EW-9	H_2O/Air								
	FP								
EW-10	H_2O/Air	100	28.5	C					
	FP								
EW-11	H_2O/Air								
	FP								
EW-12	H_2O/Air								
	FP								

NOTES:
in-Hg = Inches of Mercury
in-Hg = 13.6 in-H_2O
1 ft^3 = 7.48 gallons
FP = Free Product
Flow Types: B = Bubble, S = Slug, C = Churn, R = Ripple, A = Annular

OVA Calibrated with _____
OVA Type _____

COP - Eureka
DPE System Monitoring Sheet
098179.304

Date: 7/1/05 Time: 0945

Manifold

Manifold H_2O meter	N/A	gal	Manifold vacuum	19.5	in-Hg
Manifold H_2O flow rate	N/A	gpm	Manifold temp	58°	°F

Liquid Ring Pump (LRP)

LRP hr meter	11744.57	hr	LRP oil color	Dark Honey	
LRP oil filter	2.25	psi	LRP oil level	105% full	
LRP vacuum	19	in-Hg	LRP temp	180°	°F
Throttle Valve		turns closed	Dilution air valve	0	turns open
Recirculation valve		turns open			

Water Knock-out Pot

H_2O Discharge Counter	234585	counts
Discharge pressure	2	psi
Inlet vacuum	21	in-Hg H
Sediment Filter Δ P	N/A	in-H_2O

Free Product Tank

	Initial	Final
Depth to FP (ft)		
Depth to H_2O (ft)		
Main valve (4")	4 turns open	

Vapor Destruction Unit

Preheat temp (high)	1459	°F	Hour meter	12246.22	hours
Preheat temp (low)	1421	°F	OVA well field	30	ppm L
Preheat SP temp	1425	°F	OVA pre-burner		ppm
Exhaust temp (high)	1467	°F	OVA post-burner	4	ppm N
Exhaust temp (low)	1430	°F	Blower Valve		% open
Exhaust temp SP	1550	°F	Mode	Burner or Catalytic	

Chart Recorder

Flow	25-45	in-H_2O	Date Storage	87	% full
LEL	N/A	%			

Propane Supply

Primary pressure	6.5	psi	Operating pressure	10	in-H_2O
Secondary pressure	>1	psi	Supply tank level	45	%

Air Stripper

Vacuum	4	in-H_2O	OVA AS-Eff		ppm
Air Flow	.08	in-H_2O	OVA Carbon-Mid		ppm
			OVA Carbon-Eff		ppm

Comments:

COP - Eureka
Eastern Biovent/Biosparge System Monitoring Sheet
098179.304

Date: 2/1/05 Time: 1034
Performed By: DCT Weather: Over Cast

Hour Meter: 45910 8/10 hours

Trench #1A	Initial	Final
Valve Position (% open)		
Flow Rate (fpm)		

Trench #1B	Initial	Final
Valve Position (% open)	100	100
Flow Rate (fpm)	11920	11920

Trench #2	Initial	Final
Valve Position (% open)		
Flow Rate (fpm)		

Manifold Readings	Initial	Final
Temperature (°F)	124.8°	124.8°
Pressure (psig)	2	2

Comments: Replaced Air filter.

SHN CONSULTING ENGINEERS & GEOLOGISTS, INC.
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DAILY FIELD REPORT

Job No. 098179.305
Page of

Project Name	Client/Owner: Conocophillips	Daily Field Report Sequence No
General Location Of Work: Cop. Eureka	Owner/Client Representative	Date: 7/8/05 — Day Of Week: Fri.
General Contractor: Eureka CA	Grading Contractor	Project Engineer: Mike Foget
Type Of Work: O&M	Grading Contractor, Superintendent, Or Foreman	Supervisor
Source & Description Of Fill Material	Weather: Sun	Technician: Dustin Tibbets
	Key Persons Contacted (Civil Engr, Architect, Developer, Etc)	

Describe Equipment Used For Hauling, Spreading, Watering, Conditioning, & Compacting

0754 On site. System off due to Low gas pressure.
0805 Cleaning airstripper.
0812 Taking reading from the East Bioventt system.
0820 Starting system back up.
0844 Taking reading from the DPE system.
0958 Taking readings from the West Bioventt system.
1000 Clean and loaded up
1015 off site.

Copy given to:

Reported By: Dustin Tibbets

G:\FORMS\DAILY FIELD REPORT.doc

COP - Eureka
DPE System Monitoring Sheet
098179.304

Date: 7/8/05 Time: 0844
Performed By: DCT Weather: Sun

Extraction Well	Extraction Line	Manifold Readings				Well Head Readings			
		Ball Valve Position (% open)	Line Vacuum (in Hg)	Flow Type (see notes)	OV Conc. (ppm)	Line Vacuum (in Hg)	Depth to Extraction Unit (ft)	Throttle Valve (turns open)	Bleed Valve (% open)
EW-1	H_2O/Air	100	12	C					
	FP								
EW-2	H_2O/Air								
	FP								
EW-3	H_2O/Air								
	FP								
EW-4	H_2O/Air								
	FP								
EW-5	H_2O/Air								
	FP								
EW-6	H_2O/Air								
	FP								
EW-7	H_2O/Air	100	12	C					
	FP								
EW-8	H_2O/Air	100	11	C					
	FP								
EW-9	H_2O/Air								
	FP								
EW-10	H_2O/Air	100	30	C					
	FP								
EW-11	H_2O/Air								
	FP								
EW-12	H_2O/Air								
	FP								

NOTES:
in-Hg = Inches of Mercury
in-Hg = 13.6 in-H_2O
1 ft^3 = 7.48 gallons
FP = Free Product
Flow Types: B = Bubble, S = Slug
C = Churn, R = Ripple
A = Annular

OVA Calibrated with _____
OVA Type _____

COP - Eureka
DPE System Monitoring Sheet
098179.304

Date: 7/8/05 Time: 0844

Manifold

Manifold H_2O meter	N/A	gal	Manifold vacuum	22	in-Hg
Manifold H_2O flow rate	N/A	gpm	Manifold temp	58°	°F

Liquid Ring Pump (LRP)

LRP hr meter	11885.68	hr	LRP oil color	Dark Honey	
LRP oil filter	2	psi	LRP oil level	98% full	
LRP vacuum	20	in-Hg	LRP temp	178°	°F
Throttle Valve		turns closed	Dilution air valve	0	turns open
Recirculation valve		turns open			

Water Knock-out Pot

H_2O Discharge Counter	238763	counts
Discharge pressure	2.5	psi
Inlet vacuum	15	in-Hg
Sediment Filter Δ P	N/A	in-H_2O

Free Product Tank

	Initial	Final
Depth to FP (ft)		
Depth to H_2O (ft)		
Main valve (4")	4 turns open	

Vapor Destruction Unit

Preheat temp (high)	1451	°F	Hour meter	12387.25	hours
Preheat temp (low)	1419	°F	OVA well field	5	ppm
Preheat SP temp	1425	°F	OVA pre-burner		ppm
Exhaust temp (high)	1460	°F	OVA post-burner	2	ppm
Exhaust temp (low)	1429	°F	Blower Valve		% open
Exhaust temp SP	1550	°F	Mode	Burner or Catalytic	

Chart Recorder

Flow	55-65	in-H_2O	Date Storage	99	% full
LEL	N/A	%			

Propane Supply

Primary pressure	6.5	psi	Operating pressure	10.5	in-H_2O
Secondary pressure	71	psi	Supply tank level	86	%

Air Stripper

Vacuum	3	in-H_2O	OVA AS-Eff		ppm
Air Flow	N/A	in-H_2O	OVA Carbon-Mid		ppm
			OVA Carbon-Eff		ppm

Comments:

COP - Eureka
Eastern Biovent/Biosparge System Monitoring Sheet
098179.304

Date: 7/8/05 Time: 0812
Performed By: DCT Weather: Sun

Hour Meter: 46076 4/10 hours

Trench #1A	Initial	Final
Valve Position (% open)		
Flow Rate (fpm)		

Trench #1B	Initial	Final
Valve Position (% open)	100	100
Flow Rate (fpm)	11460	11460

Trench #2	Initial	Final
Valve Position (% open)		
Flow Rate (fpm)		

Manifold Readings	Initial	Final
Temperature (°F)	121.8°	121.8°
Pressure (psig)	2	2

Comments:

COP - Eureka
Western Biovent/Biosparge System Monitoring Sheet
098179.304

Date: 7/8/05 Time: 0938
Performed By: DCT Weather: Sun

Hour Meter: _____ hours

BS-1 thru 10	Initial	Final
Valve Position (% open)	0	0

BS-11 thru 18	Initial	Final
Valve Position (% open)	0	0

Trench #1	Initial	Final
Valve Position (% open)	100	0

Trench #2	Initial	Final
Valve Position (% open)	0	100

Manifold Readings	Initial	Final
Temperature (°F)	102°	100°
Pressure (psig)	1.5	1.25
Flow Rate (scfm)	70	73

Comments: Put new airfeilter in.

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DAILY FIELD REPORT

Job No. 098179.305

Page of

Project Name	Client/Owner: Conocophillips	Daily Field Report Sequence No
General Location Of Work: Cop. Eureka	Owner/Client Representative	Date: 7/14/05 — Day Of Week: Thurs.
General Contractor: Eureka CA	Grading Contractor	Project Engineer: Mike Foget
Type Of Work: O&M	Grading Contractor, Superintendent, Or Foreman	Supervisor
Source & Description Of Fill Material	Weather	Technician: Dustin Tibbets
	Key Persons Contacted (Civil Engr, Architect, Developer, Etc)	

Describe Equipment Used For Hauling, Spreading, Watering, Conditioning, & Compacting

0830 On site.
0837 Shut system off to clean transfer pump.
0953 Started system back up.
1010 Cleaned and loaded up.
1020 Off site.

Copy given to:

Reported By: Dustin Tibbets

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DAILY FIELD REPORT

Job No. 098179.305
Page of

Project Name	Client/Owner: Conocophillips	Daily Field Report Sequence No	
General Location Of Work: Cop. Eureka	Owner/Client Representative	Date: 7/15/05	Day Of Week: Fri.
General Contractor: Eureka CA	Grading Contractor	Project Engineer: Mike Foget	
Type Of Work: O&M	Grading Contractor, Superintendent, Or Foreman	Supervisor	
Source & Description Of Fill Material	Weather: Over Cast	Technician: Dustin Tibbets	
	Key Persons Contacted (Civil Engr, Architect, Developer, Etc)		

Describe Equipment Used For Hauling, Spreading, Watering, Conditioning, & Compacting

0911 On site.
0913 Taking readings from the West Bioventt system.
0923 Taking readings from the DPE system
0955 Taking Suma sample on DPE EFF — Exs-EFF
1005 Sampled Carbon filter Suma — Car-EFF
1015 Took Suma Sample on DPE-INF — Exs-INF
1025 Took DPE-EFF water sample — Ex-EFF
1035 Took Airstripper EFF sample — As-EFF
1050 Taking readings on the East Bioventt system.
1100 Doing pump test, Pump test did about 15 gpm
1105 Cleans and loaded up.
1110 Off site.

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COP - Eureka
DPE System Monitoring Sheet
098179.304

Date: 7/15/05 Time: 0923
Performed By: DCT Weather: Over Cast

Extraction Well	Extraction Line	Manifold Readings				Well Head Readings			
		Ball Valve Position (% open)	Line Vacuum (in Hg)	Flow Type (see notes)	OV Conc. (ppm)	Line Vacuum (in Hg)	Depth to Extraction Unit (ft)	Throttle Valve (turns open)	Bleed Valve (% open)
EW-1	H_2O/Air	100	14	C					
	FP								
EW-2	H_2O/Air								
	FP								
EW-3	H_2O/Air								
	FP								
EW-4	H_2O/Air								
	FP								
EW-5	H_2O/Air								
	FP								
EW-6	H_2O/Air								
	FP								
EW-7	H_2O/Air	100	15.5	C					
	FP								
EW-8	H_2O/Air	100	24	C					
	FP								
EW-9	H_2O/Air								
	FP								
EW-10	H_2O/Air	100	28.5	C					
	FP								
EW-11	H_2O/Air								
	FP								
EW-12	H_2O/Air								
	FP								

NOTES:
in-Hg = Inches of Mercury
in-Hg = 13.6 in-H_2O
1 ft^3 = 7.48 gallons
FP = Free Product
Flow Types: B = Bubble, S = Slug
C = Churn, R = Ripple
A = Annular

OVA Calibrated with _____
OVA Type _____

COP - Eureka
DPE System Monitoring Sheet
098179.304

Date: 7/15/05 Time: 0923

Manifold

Manifold H_2O meter	N/A	gal	Manifold vacuum	20	in-Hg
Manifold H_2O flow rate	N/A	gpm	Manifold temp	58°	°F

Liquid Ring Pump (LRP)

LRP hr meter	12021.47	hr	LRP oil color	Dark Honey	
LRP oil filter	1.75	psi	LRP oil level	>5 %	
LRP vacuum	22.5	in-Hg	LRP temp	178°	°F
Throttle Valve		turns closed	Dilution air valve	0	turns open
Recirculation valve		turns open			

Water Knock-out Pot

H_2O Discharge Counter	243396	counts
Discharge pressure	4.5	psi
Inlet vacuum	18	in-Hg
Sediment Filter Δ P	N/A	in-H_2O

Free Product Tank

	Initial	Final
Depth to FP (ft)		
Depth to H_2O (ft)		
Main valve (4")	0 turns open	

Vapor Destruction Unit

Preheat temp (high)	1459	°F	Hour meter	12523.05	hours
Preheat temp (low)	1421	°F	OVA well field	2 ?	ppm
Preheat SP temp	1425	°F	OVA pre-burner		ppm
Exhaust temp (high)	1467	°F	OVA post-burner	1	ppm
Exhaust temp (low)	1430	°F	Blower Valve		% open
Exhaust temp SP	1550	°F	Mode	Burner or Catalytic	

Chart Recorder

Flow	40-60	in-H_2O	Date Storage	12	% full
LEL	N/A	%			

Propane Supply

Primary pressure	6.5	psi	Operating pressure	10.5	in-H_2O
Secondary pressure	≈ less than 1	psi	Supply tank level	78	%

Air Stripper

Vacuum	3.5	in-H_2O	OVA AS-Eff		ppm
Air Flow	~~0~~	in-H_2O	OVA Carbon-Mid		ppm
			OVA Carbon-Eff	3 ?	ppm

Comments:

COP - Eureka
Western Biovent/Biosparge System Monitoring Sheet
098179.304

Date: 7/15/05 Time: 0913
Performed By: DCT Weather: Over Cast

Hour Meter: _____ hours

BS-1 thru 10	Initial	Final
Valve Position (% open)	0	100

BS-11 thru 18	Initial	Final
Valve Position (% open)	0	0

Trench #1	Initial	Final
Valve Position (% open)	0	0

Trench #2	Initial	Final
Valve Position (% open)	100	0

Manifold Readings	Initial	Final
Temperature (°F)	90°	100 and going up.
Pressure (psig)	-75	7
Flow Rate (scfm)	75	48

Comments:

COP - Eureka
Eastern Biovent/Biosparge System Monitoring Sheet
098179.304

Date: 2/15/05 Time: 1050
Performed By: DCT Weather: Over Cast

Hour Meter: 46247 1/10 hours

Trench #1A	Initial	Final
Valve Position (% open)		
Flow Rate (fpm)		

Trench #1B	Initial	Final
Valve Position (% open)	100	100
Flow Rate (fpm)	11710	11710

Trench #2	Initial	Final
Valve Position (% open)		
Flow Rate (fpm)		

Manifold Readings	Initial	Final
Temperature (°F)	121.6°	121.6°
Pressure (psig)	1.75	1.75

Comments:

STL-San Francisco

1220 Quarry Lane

Pleasanton, CA 94566

(925) 484-1919 (925) 484-1096 fax

ConocoPhillips Chain Of Custody Record

ConocoPhillips Site Manager:

INVOICE REMITTANCE ADDRESS:

CONOCOPHILLIPS
Attn: Olivia Perez
1230 W. Washington, Suite 212
Tempe, AZ 85281

ConocoPhillips Work Order Number:

ConocoPhillips Cost Object:

DATE: 7/15/05

PAGE: 1 of 1

SAMPLING COMPANY: SHN

Valid Value ID:

CONOCOPHILLIPS SITE NUMBER: 0201

GLOBAL ID NO.:

ADDRESS: 812 W. Wabash Ave CA 95501

SITE ADDRESS (Street and City): 1200 Railroad Ave Eureka CA 95501

CONOCOPHILLIPS SITE MANAGER:

PROJECT CONTACT (Hardcopy or PDF Report to): Mike Foget

TELEPHONE: (707)441-8855

FAX: (707)441-8877

E-MAIL:

EDF DELIVERABLE TO (RP or Designee):

PHONE NO.:

E-MAIL:

LAB USE ONLY

SAMPLER NAME(S) (Print):

CONSULTANT PROJECT NUMBER: 098179.304

TURNAROUND TIME (CALENDAR DAYS): ☑ 14 DAYS ☐ 7 DAYS ☐ 72 HOURS ☐ 48 HOURS ☐ 24 HOURS ☐ LESS THAN 24 HOURS

SPECIAL INSTRUCTIONS OR NOTES:

CHECK BOX IF EDD IS NEEDED ☐

REQUESTED ANALYSES

* Field Point name only required if different from Sample ID

LAB USE ONLY	Sample Identification/Field Point Name*	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	8015m - TPHd Extractable	8260B - TPHg/BTEX/MtBE	8260B - TPHg / BTEX / 8 Oxygenates	8260B - TPHg / BTEX / 8 oxygenates + methanol (8015M)	8260B - Full Scan VOCs (does not include oxygenates)	8270C - Semi-Volatiles	8015M / 8021B - TPHg/BTEX/MtBE	Lead ☐Total ☐STLC ☐TCLP	TPHD/MO
	Ex EFF	7/15/05	1025	water	4		X							X
	As EFF	↓	1035	↓	4		X							X

FIELD NOTES:

Container/Preservative or PID Readings or Laboratory Notes

TEMPERATURE ON RECEIPT C°

Please return cooler, Thank you

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Dustin Salbert			
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

9/19/03 Revision

STL-San Francisco

1220 Quarry Lane

Pleasanton, CA 94566

(925) 484-1919 (925) 484-1096 fax

ConocoPhillips Chain Of Custody Record

ConocoPhillips Site Manager:

INVOICE REMITTANCE ADDRESS:

CONOCOPHILLIPS
Attn: Olivia Perez
1230 W. Washington, Suite 212
Tempe, AZ 85281

ConocoPhillips Work Order Number

ConocoPhillips Cost Object

DATE: 7/15/05

PAGE: 1 of 1

SAMPLING COMPANY: SHN

Valid Value ID:

CONOCOPHILLIPS SITE NUMBER: 0201

GLOBAL ID NO.:

ADDRESS: 812 W. Wabash Ave, Eureka CA 95501

SITE ADDRESS (Street and City): 1200 Railroad Ave Eureka CA 95501

CONOCOPHILLIPS SITE MANAGER:

PROJECT CONTACT (Hardcopy or PDF Report to): Mike Foget

EDF DELIVERABLE TO (RP or Designee):

PHONE NO.:

E-MAIL:

LAB USE ONLY

TELEPHONE: (707)441-8855

FAX: (707)441-8877

E-MAIL:

SAMPLER NAME(S) (Print):

CONSULTANT PROJECT NUMBER: 098179.304

TURNAROUND TIME (CALENDAR DAYS): ☑ 14 DAYS ☐ 7 DAYS ☐ 72 HOURS ☐ 48 HOURS ☐ 24 HOURS ☐ LESS THAN 24 HOURS

SPECIAL INSTRUCTIONS OR NOTES: CHECK BOX IF EDD IS NEEDED ☐

* Field Point name only required if different from Sample ID

REQUESTED ANALYSES

LAB USE ONLY	Sample Identification/Field Point Name*	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	8015m - TPHd Extractable	8260B - TPHg/BTEX/MtBE	8260B - TPHg / BTEX / 8 Oxygenates	8260B - TPHg / BTEX / 8 oxygenates + methanol (8015M)	8260B - Full Scan VOCs (does not include oxygenates)	8270C - Semi-Volatiles	8015M / 8021B - TPHg/BTEX/MtBE	Lead ☐Total ☐STLC ☐TCLP	TO-14	Benzene	Vinyl Chloride	Trichloro Ethylene	Dichloro Ethylene	Methyl Chloride	FIELD NOTES: Container/Preservative or PID Readings or Laboratory Notes	TEMPERATURE ON RECEIPT C°
	Exs EFF	7/15/05	0955	air	1									X	X	X	X	X	X		
	Exs INF	✓	1015	✓	1									✓	✓	✓	✓	✓	✓		
	Car EFF	✓	1005	✓	1																

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Dustin Sabbatt			
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

9/19/03 Revision

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DAILY FIELD REPORT

Job No. 098179.305
Page of

Project Name	Client/Owner: Conocophillips	Daily Field Report Sequence No
General Location Of Work: Cop: Eureka	Owner/Client Representative	Date: 7/20-21/05 — Day Of Week: Wed.-Thur.
General Contractor: Eureka CA	Grading Contractor	Project Engineer: Mike Foget
Type Of Work: O&M	Grading Contractor, Superintendent, Or Foreman	Supervisor
Source & Description Of Fill Material	Weather: Over Cast / Sun	Technician: Dustin Tibbets
	Key Persons Contacted (Civil Engr, Architect, Developer, Etc)	

Describe Equipment Used For Hauling, Spreading, Watering, Conditioning, & Compacting

0830 On site Begin to Weed eat with weedeater.
1150 Off site
1305 Back on site.
0920 On site, Began to mow with brush field mower.
1008 Mower not working, going back to get a diffrent one.
1020 Back on site with new mower.
1430 Off site, taking mower back.

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Reported By: Dustin Tibbets

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DAILY FIELD REPORT

Job No. 098179.305
Page of

Project Name	Client/Owner: Conocophillips	Daily Field Report Sequence No	
General Location Of Work: Cop: Eureka	Owner/Client Representative	Date: 7/22/05	Day Of Week: Fri.
General Contractor: Eureka CA	Grading Contractor	Project Engineer: Mike Foget	
Type Of Work: O+M	Grading Contractor, Superintendent, Or Foreman	Supervisor	
Source & Description Of Fill Material	Weather: Over Cast	Technician: Dustin Tibbets	
	Key Persons Contacted (Civil Engr, Architect, Developer, Etc)		

Describe Equipment Used For Hauling, Spreading, Watering, Conditioning, & Compacting

0911 On site.
0915 Taking reading from the West Bioventt system.
0944 Taking reading from the DPE system.
1022 Taking reading on the East Bioventt system.
1028 Clean and loaded up.
1040 Off site.

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COP - Eureka
Western Biovent/Biosparge System Monitoring Sheet
098179.304

Date: 7/22/05 Time: 0915
Performed By: DCT Weather: Over Cast

Hour Meter: _____ hours

BS-1 thru 10	Initial	Final
Valve Position (% open)	100	0

BS-11 thru 18	Initial	Final
Valve Position (% open)	~~100~~	100

Trench #1	Initial	Final
Valve Position (% open)	0	10

Trench #2	Initial	Final
Valve Position (% open)	0	0

Manifold Readings	Initial	Final
Temperature (°F)	150°	160° and going up
Pressure (psig)	7.25	9
Flow Rate (scfm)	46	38

Comments:

COP - Eureka
DPE System Monitoring Sheet
098179.304

Date: 7/22/05 Time: 0944
Performed By: DCT Weather: Over Cast

Extraction Well	Extraction Line	Manifold Readings				Well Head Readings			
		Ball Valve Position (% open)	Line Vacuum (in Hg)	Flow Type (see notes)	OV Conc. (ppm)	Line Vacuum (in Hg)	Depth to Extraction Unit (ft)	Throttle Valve (turns open)	Bleed Valve (% open)
EW-1	H_2O/Air	100	15	C					
	FP								
EW-2	H_2O/Air								
	FP								
EW-3	H_2O/Air								
	FP								
EW-4	H_2O/Air								
	FP								
EW-5	H_2O/Air								
	FP								
EW-6	H_2O/Air								
	FP								
EW-7	H_2O/Air	100	15	C					
	FP								
EW-8	H_2O/Air	100	26	C					
	FP								
EW-9	H_2O/Air								
	FP								
EW-10	H_2O/Air	100	28	C					
	FP								
EW-11	H_2O/Air								
	FP								
EW-12	H_2O/Air								
	FP								

NOTES:
in-Hg = Inches of Mercury
in-Hg = 13.6 in-H_2O
1 ft^3 = 7.48 gallons
FP = Free Product
Flow Types: B = Bubble, S = Slug
C = Churn, R = Ripple
A = Annular

OVA Calibrated with _____
OVA Type _____

COP - Eureka
DPE System Monitoring Sheet
098179.304

Date: 7/22/05 Time: 0944

Manifold

Manifold H_2O meter	N/A	gal	Manifold vacuum	18.5	in-Hg
Manifold H_2O flow rate	N/A	gpm	Manifold temp	58°	°F

Liquid Ring Pump (LRP)

LRP hr meter	12189.83	hr	LRP oil color	Dark Honey	
LRP oil filter	2.75	psi	LRP oil level	75 % full	
LRP vacuum	20	in-Hg	LRP temp	182°	°F
Throttle Valve		turns closed	Dilution air valve	0	turns open
Recirculation valve		turns open			

Water Knock-out Pot

H_2O Discharge Counter	248414	counts
Discharge pressure	~~22~~ 5	psi
Inlet vacuum	22	in-Hg
Sediment Filter Δ P	N/A	in-H_2O

Free Product Tank

	Initial	Final
Depth to FP (ft)		
Depth to H_2O (ft)		
Main valve (4")	4 turns open	

Vapor Destruction Unit

Preheat temp (high)	1453	°F	Hour meter	12691.43	hours
Preheat temp (low)	1419	°F	OVA well field	2	ppm
Preheat SP temp	1425	°F	OVA pre-burner		ppm
Exhaust temp (high)	1462	°F	OVA post-burner	0	ppm
Exhaust temp (low)	1429	°F	Blower Valve		% open
Exhaust temp SP	1550	°F	Mode	Burner or Catalytic	

Chart Recorder

Flow	65-75	in-H_2O	Date Storage	23	% full
LEL	N/A	%			

Propane Supply

Primary pressure	6.5	psi	Operating pressure	10.5	in-H_2O
Secondary pressure	>1	psi	Supply tank level	20	%

Air Stripper

Vacuum	5	in-H_2O	OVA AS-Eff		ppm
Air Flow		in-H_2O	OVA Carbon-Mid		ppm
			OVA Carbon-Eff		ppm

Comments:

COP - Eureka
Eastern Biovent/Biosparge System Monitoring Sheet
098179.304

Date: 7/22/05 Time: 1022
Performed By: DCT Weather: Over Cast

Hour Meter: 464/4 6/10 hours

Trench #1A	Initial	Final
Valve Position (% open)		
Flow Rate (fpm)		

Trench #1B	Initial	Final
Valve Position (% open)	100	100
Flow Rate (fpm)	~~13~~ 14180	14180

Trench #2	Initial	Final
Valve Position (% open)		
Flow Rate (fpm)		

Manifold Readings	Initial	Final
Temperature (°F)	127.7°	127.7°
Pressure (psig)	1.75	1.75

Comments:

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DAILY FIELD REPORT

Job No. 098179.305
Page of

Project Name	Client/Owner: Conocophillips	Daily Field Report Sequence No
General Location Of Work: Cop. Eureka	Owner/Client Representative	Date: 7/29/05 — Day Of Week: Fri.
General Contractor: Eureka CA	Grading Contractor	Project Engineer: Mike Foget
Type Of Work: O&M	Grading Contractor, Superintendent, Or Foreman	Supervisor
Source & Description Of Fill Material	Weather: Over Cast	Technician: Dustin Tibbets
	Key Persons Contacted (Civil Engr, Architect, Developer, Etc)	

Describe Equipment Used For Hauling, Spreading, Watering, Conditioning, & Compacting

0930 On site.
0934 Taking reading from the westbiovent system
0943 Taking readings from the DPE system.
1010 Shut system off to clean Air stripper.
1022 Taking reading from the Eastbiovent system.
1030 started DPE system back up.
1105 Clean and loaded up.
1110 Off site.

Copy given to:

Reported By: Dustin Tibbets

COP - Eureka
Western Biovent/Biosparge System Monitoring Sheet
098179.304

Date: 7/29/05 Time: 0934
Performed By: DCT Weather: Over Cast

Hour Meter: _____ hours

BS-1 thru 10	Initial	Final
Valve Position (% open)		

BS-11 thru 18	Initial	Final
Valve Position (% open)	100	0

Trench #1	Initial	Final
Valve Position (% open)	10	100

Trench #2	Initial	Final
Valve Position (% open)		

Manifold Readings	Initial	Final
Temperature (°F)	178°	150° and dropping
Pressure (psig)	7.75	1.5
Flow Rate (scfm)	43	69

Comments:

COP - Eureka
DPE System Monitoring Sheet
098179.304

Date: 7/29/05 Time: 0943
Performed By: DCT Weather: Over Cast

Extraction Well	Extraction Line	Manifold Readings				Well Head Readings			
		Ball Valve Position (% open)	Line Vacuum (in Hg)	Flow Type (see notes)	OV Conc. (ppm)	Line Vacuum (in Hg)	Depth to Extraction Unit (ft)	Throttle Valve (turns open)	Bleed Valve (% open)
EW-1	H_2O/Air	100	15	C					
	FP								
EW-2	H_2O/Air								
	FP								
EW-3	H_2O/Air								
	FP								
EW-4	H_2O/Air								
	FP								
EW-5	H_2O/Air								
	FP								
EW-6	H_2O/Air								
	FP								
EW-7	H_2O/Air	100	14	C					
	FP								
EW-8	H_2O/Air	100	25	C					
	FP								
EW-9	H_2O/Air								
	FP								
EW-10	H_2O/Air	100	28	C					
	FP								
EW-11	H_2O/Air								
	FP								
EW-12	H_2O/Air								
	FP								

NOTES:
in-Hg = Inches of Mercury
in-Hg = 13.6 in-H_2O
1 ft^3 = 7.48 gallons
FP = Free Product
Flow Types: B = Bubble, S = Slug
C = Churn, R = Ripple
A = Annular

OVA Calibrated with _____
OVA Type _____

COP - Eureka
DPE System Monitoring Sheet
098179.304

Date: 7/29/05 Time: 0943

Manifold

Manifold H_2O meter	N/A	gal	Manifold vacuum	20	in-Hg
Manifold H_2O flow rate	N/A	gpm	Manifold temp	58°	°F

Liquid Ring Pump (LRP)

LRP hr meter	12357.84	hr	LRP oil color	Dark Honey	
LRP oil filter	2.75	psi	LRP oil level	50%	
LRP vacuum	20.5	in-Hg	LRP temp	180°	°F
Throttle Valve		turns closed	Dilution air valve		turns open
Recirculation valve		turns open			

Water Knock-out Pot

H_2O Discharge Counter	252925	counts
Discharge pressure	4.75	psi
Inlet vacuum	18.5	in-Hg
Sediment Filter Δ P	N/A	in-H_2O

Free Product Tank

	Initial	Final
Depth to FP (ft)		
Depth to H_2O (ft)		
Main valve (4")	4 turns open	

Vapor Destruction Unit

Preheat temp (high)	1459	°F	Hour meter	12859.43	hours
Preheat temp (low)	1421	°F	OVA well field	22	ppm
Preheat SP temp	1425	°F	OVA pre-burner		ppm
Exhaust temp (high)	1467	°F	OVA post-burner	4	ppm
Exhaust temp (low)	1430	°F	Blower Valve		% open
Exhaust temp SP	1550	°F	Mode	Burner or Catalytic	

Chart Recorder

Flow	45-65	in-H_2O	Date Storage	35	% full
LEL	N/A	%			

Propane Supply

Primary pressure	6.5	psi	Operating pressure	@ 10.5	in-H_2O
Secondary pressure		psi	Supply tank level	>1	%

Air Stripper

Vacuum	8	in-H_2O	OVA AS-Eff		ppm
Air Flow	N/A	in-H_2O	OVA Carbon-Mid		ppm
			OVA Carbon-Eff		ppm

Comments:

COP - Eureka
Eastern Biovent/Biosparge System Monitoring Sheet
098179.304

Date: 7/29/05 Time: 1022
Performed By: DCT Weather: Over Cast

Hour Meter: 46582 6/10 hours

Trench #1A	Initial	Final
Valve Position (% open)		
Flow Rate (fpm)		

Trench #1B	Initial	Final
Valve Position (% open)	100	100
Flow Rate (fpm)	13130	13130

Trench #2	Initial	Final
Valve Position (% open)		
Flow Rate (fpm)		

Manifold Readings	Initial	Final
Temperature (°F)	116.9	116.9
Pressure (psig)	1.75	1.75

Comments:

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DAILY FIELD REPORT

JOB NO 098179.305

Page of

PROJECT NAME: COP Eureka #0201	CLIENT/OWNER: Conocophillips	DAILY FIELD REPORT SEQUENCE NO
GENERAL LOCATION OF WORK: Eureka, CA	OWNER/CLIENT REPRESENTATIVE: Ed Ralston	DATE: 8/1/05 — DAY OF WEEK: Mon.
TYPE OF WORK: Semi-annual sampling	WEATHER: Over Cast	PROJECT ENGINEER/ SUPERVISOR: Mike Foget / Roland Rueber
SOURCE & DESCRIPTION OF FILL MATERIAL	KEY PERSONS CONTACTED	TECHNICIAN: Dustin Tibbets / David C. Paine

DESCRIBE EQUIPMENT USED FOR HAULING, SPREADING, WATERING, CONDITIONING, & COMPACTING

0900	On site, Open up wells taking water levels and DO readings.	
1145	off site for lunch.	
1250	Back on site.	
1445	Off site.	
0845	8/2/05 On site. set up.	
0932	Purging MW-29 with a disposable bailer. All purge water was caught in 5gal buckets.	
1020	Sampled MW-29 with it's bailer. Lock up well. A. Melody on site	MW-29
1057	Aaron started purging MW-4 with a disposable bailer. All purge water was caught in 5gal buckets.	
1058	pd Purging MW-7 with a disposable bailer. All purge water caught in 5gal. buckets	
1135	Sampled MW-7 with it's bailer. Lock up well.	MW-7
1140	Sampled MW-4 with its bailer. Lock up well.	MW-4
1339	Purging MW-5 with a disposable bailer. All purge water was caught in 5gal. buckets.	
1340	Purging MW-31 with a disposable bailer. All purge water was caught in 5 gal. buckets.	
1410	Sampled MW-5 with it's bailer. Lock up well.	MW-5
1415	Sampled MW-31 with its bailer. Lock up well	MW-31
1422	Purging MW-30 with a disposable bailer. All purge water was caught in 5gal. buckets.	
1440	Purging MW-32 with a disposable bailer. All purge water was caught in 5gal buckets	
1505	Sampled MW-30 with its bailer, Locked up well.	MW-30
1510	Sampled MW-32 with it's bailer. Locked up well	MW-32
1525	Purging MW-17 with a disposable bailer. All purge water was caught in 5 gal. buckets.	
1550	Sampled MW-17 with it's bailer. Lock up well.	MW-17
1558	Purging MW-3 with a disposable bailer.	
1610	Sampled MW-3 with it's bailer. Locked up well.	MW-3
1620	off site	

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REPORTED BY: Dustin Tibbets

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DAILY FIELD REPORT

JOB NO 098179.305
Page of

PROJECT NAME: COP Eureka #0201	CLIENT/OWNER: Conocophillips	DAILY FIELD REPORT SEQUENCE NO	
GENERAL LOCATION OF WORK: Eureka, CA	OWNER/CLIENT REPRESENTATIVE: Ed Ralston	DATE: 8/3/05	DAY OF WEEK: Wed.
TYPE OF WORK: Semi-annual sampling	WEATHER: Sun.	PROJECT ENGINEER/SUPERVISOR: Mike Foget/Roland Rueber	
SOURCE & DESCRIPTION OF FILL MATERIAL	KEY PERSONS CONTACTED	TECHNICIAN: David R. Paine	

DESCRIBE EQUIPMENT USED FOR HAULING, SPREADING, WATERING, CONDITIONING, & COMPACTING

0850	On site. set up.	
0918	Purging MW-15 with a disposable bailer. All purge water was caught in 5 gal. buckets.	
0950	Sampled MW-15 with it's bailer. locked up well.	MW-15
1010	Purging MW-26 with a disposable bailer. All purge water was caught in 5 gal. buckets.	
1030	Sampled MW-26 with it's bailer. Lock up well.	MW-26
1150	Sampled EW-1 with peristaltic pump.	
1205	Off site for lunch.	EW-1
1325	Back on site	
1350	Sampled EW-11 with peristaltic pump	EW-11
1355	" EW-10 " " "	EW-10
1405	" EW-9 " " "	EW-9
1410	" EW-8 " " "	EW-8
1420	" EW-12 " " "	EW-12
1505	" EW-7 " " "	EW-7
1510	" EW-6 " " "	EW-6
1520	" EW-3 " " "	EW-3
1540	" EW-5 " " "	EW-5
1550	" EW-4 " " "	EW-4
1555	" EW-2 " " "	EW-2
1605	Clean and loaded up	
1615	Off site.	

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K:\Forms\Field Forms\Daily Field Report.doc

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EQUIPMENT CALIBRATION SHEET

Name: Dustin Tibbets

Project Name: COP-Eureka

Reference No.: 098179.305

Date: 8/2-3/05

Equipment: ☒ pH & EC ☐ PID ☐ $GTCO_2$ ☐ GTLEL
☐ Turbidity ☒ Other Dissolved Oxygen Meter YS195

Description of Calibration Procedure and Results:

pH & Ec meter is calibrated using a 2 buffer method with 7.01 and 4.01, the Ec (conductivity) is set at 1413 µS.

DO meter is self calibrating with the Altimeter set at 0.

WELL GAUGING SHEET
EUREKA BULK PLANT #0201
1200 RAILROAD AVENUE

NAME: COP Eureka
JOB #: 098179.305
DATE: 8/1/05

WELL NO.	TIME	ELEV. OF MEAS. POINT	DEPTH TO LIQUID (FT)	DEPTH TO WATER (FT)	SPH PRESENT (Y/N) AND THICKNESS	WATER SURFACE ELEV.	PRIOR SPH	COMMENTS
MW-30	1009	5.90	4.0	4.0	N	1.90	N	
MW-31	1005	7.41	3.41	3.41	N	4	N	
MW-32		6.43		331	N	3.12	Y	
MW-33	1016	6.81	3.11	3.11	N	+3.70	Y	
MW-34*	~~0928~~	7.56		~~6.87~~	7.47 N	.09	N	
P-20*	1050 1125	8.77		8.50	N	.27	N	
MP-1	0903	10.16	10.23	10.23	N	-.07	N	
EW-1	1300	6.72	6.03	6.08	.05 Y	.64		
EW-2	1315	6.97		6.16	N	.81		
EW-3	1130	6.90		6.44	N	.46		
EW-4	1305	6.65		5.83	N	.82		
EW-5	1323	6.90		6.02	N	.88		
EW-6	1338	6.83		6.00	N	.83		
EW-7	1350	6.78		5.99	N	.79		
EW-8	1401	6.73		6.13	N	.60		
EW-9	1408	6.37		5.61	N	.76		
EW-10	1415	6.93	6.26	6.29	.03 Y	.64		
EW-11	1430	6.53		5.61	N	.92		
EW-12	1420	6.76	5.91	6.45	.54 Y	.31		

* Deep Zone Well

WELL GAUGING SHEET
EUREKA BULK PLANT #0201
1200 RAILROAD AVENUE

NAME COP - Eureka
JOB # 098179.305
DATE 8-1-05

WELL NO.	TIME	ELEV. OF MEAS. POINT	DEPTH TO LIQUID (FT)	DEPTH TO WATER (FT)	SPH PRESENT (Y/N) AND THICKNESS	WATER SURFACE ELEV.	PRIOR SPH	COMMENTS
MW-1	0917	10.02	7.46	7.46	N	2.56	N	
MW-2	0919	10.41	8.03	8.03	N	2.38	N	
MW-3*	1015	7.65	—	8.12	N	-.47	Y	
MW-4	0957	7.24	4.44	4.44	N	2.80	Y	
MW-5	1020	7.40	—	6.84	N	.56	N	
MW-6	0925	8.86	5.80	5.80	N	3.06	N	
MW-7*	1020	7.99	—	6.09	N	1.90	Y	
MW-9	1135	7.67	—	7.26	N	.41	Y	
MW-10	1110	7.28	—	6.86	N	.42	Y	
MW-11	1055	7.33	—	5.80	N	1.53	Y	
MW-12	1120	7.43	—	5.16	N	2.27	Y	
MW-13*	1103	6.61	—	6.57	N	.04	N	
MW-15	1110	6.31	—	4.87	N	1.44	N	
MW-16*	1020	7.42	7.87	8.07	.20 Y	-.65	Y	
MW-17	1022	6.92	—	7.27	N	-.35	Y	
MW-19	0954	9.84	7.29	7.29	N	2.55	N	
MW-20	1031	7.33	3.42	3.42	N	3.91	N	
MW-22	1041	6.59	—	4.76	N	1.83	N	
MW-24*	0928	6.31	—	6.87	N	-.56	N	
MW-25*	1119	6.11	—	5.98	N	.13	N	
MW-26	1130	7.00	—	6.70	N	.30	Y	
MW-27	1100	7.10	6.90	6.95	Y .05	.15	Y	
MW-28	1125	7.10	7.54	7.61	Y .07	-.51	Y	
MW-29*	0927	8.11	—	8.78	N	-.67	N	

* Deep Zone Well

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Water Sampling Data Sheet

Project Name:	COP Eureka #0201	Date/Time:	8/2/05
Project No.:	098179.305	Sampler Name:	~~David R. Paine~~
Location:	Eureka, CA	Sample Type:	Ground water
Well #:	MW-3	Weather	
Hydrocarbon Thickness/Depth (feet):		Key Needed:	YES Dolphin

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
13.60	-	8.12	=	5.48	x	0.163	=	.89 x 3 = 2.67

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
1558							0	start
1605							2.75	stop
	sample Time							

Purge Method: Hand Bail

Total Volume Removed: _____ (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-3	1 liter Amber	None	STL	TPHD
MW-3	3 - 40ml VOAs	YES HCL	STL	TPHG / BTEX / MTBE

Well Condition: Poor, all 3 flanges are stripped out.

Remarks:

Recharged to at sampling Time

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Water Sampling Data Sheet

Project Name:	COP Eureka #0201	Date/Time:	8/2/05
Project No.:	098179.305	Sampler Name:	~~David R. Paine~~ DCT
Location:	Eureka, CA	Sample Type:	Ground water
Well #:	MW-4	Weather	
Hydrocarbon Thickness/Depth (feet):	NA	Key Needed:	YES Dolphin

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
12.85	-	4.44	=	8.41	x	0.163	=	1.37 x 3 = 4.11

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
1105 1333	1005 1.18	–	–	–	–	–	0 gal	
1105	↓	85	185	–	–	–	0.25 gal	
1115	↓			862	65.7	6.73	1.50 gal	empty
1120	No flow			882	65.6	6.91	~~2.75~~ gal	empty
	then cell						~~4.25~~ gal	
						1.75		
1140	Sample	Time						

Purge Method: Hand Bail

Total Volume Removed: 1.75 (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-4	3-40ml VOA's	YES HCL	STL	TPHG / [redacted]
MW-4	3-40ml VOA's	YES HCL	STL	HVOC
MW-4	1 liter Amber	None	STL	TPHD

Well Condition: Bad, lid is missing

Remarks:

Recharged to 11.07' at sampling time (1140)

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Water Sampling Data Sheet

Project Name: COP Eureka #0201
Date/Time: 8/2/05
Project No.: 098179.305
Sampler Name: ~~David R. Paine~~ Dustin Tibbets
Location: Eureka, CA
Sample Type: Ground water
Well #: MW-5
Weather
Hydrocarbon Thickness/Depth (feet): N/A
Key Needed: YES Dolphin

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
14.46	-	6.84	=	7.62	x	0.163	=	1.24X3: 3.73

	Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
1	1332	6.81						0 gal.	
1/2	1335		20	286				0.25 gal.	
	1345			~~273~~	273	64.2	5.91	1.25 gal.	
	1350	No Flow			428	62.9	5.83	2.50 gal.	
	1355	thru cell			514	63.1	5.86	3.75 gal	
	1410	sample Time							

Purge Method: Hand Bail
Total Volume Removed: 3.75 (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-5	1 liter Amber	None	STL	TPHD
MW-5	3-40ml VOA's	YES HCL	STL	TPHG

Well Condition:

Remarks:
Recharged to 6.14 at sampling Time (1410)

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Water Sampling Data Sheet

Project Name:	COP Eureka #0201	Date/Time:	8/2/05
Project No.:	098179.305	Sampler Name:	~~David R. Paine~~ Dustin Tibbetts
Location:	Eureka, CA	Sample Type:	Ground water
Well #:	MW-7	Weather	Over Cast
Hydrocarbon Thickness/Depth (feet):		Key Needed:	YES Dolphin

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
15.50	-	6.09	=	9.41	x	0.653	=	6.14 x 3 = 18.43

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
1055							0 gal.	
1110				258	61.5	6.56	7.0 gal	
1115				254	62.1	6.64	10.0 gal	empty
1125				245	62.1	6.68	12.25 gal	empty
	Sample	Time						

Purge Method: Hand Bail

Total Volume Removed: 12.25 (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-7	3 - 40 ml VOA's	YES HCL	STL	TPHG
MW-7	1 liter Amber	None	STL	TPHD

Well Condition: Good

Remarks:

Recharged to 11.51 at sampling time (1135)

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Water Sampling Data Sheet

Project Name:	COP Eureka #0201	Date/Time:	
Project No.:	098179.305	Sampler Name:	David R. Paine
Location:	Eureka, CA	Sample Type:	Ground water
Well #:	MW-15	Weather	
Hydrocarbon Thickness/Depth (feet):	NA	Key Needed:	YES Dolphin

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
14.10	-	4.87	=	9.23	x	0.163	=	1.50 x 3 = 4.50

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
0918							0	start
0926				707	62.3°	6.87	1.5 gal.	
0930				699	61.8°	6.97	3 gal.	
0934				692	61.2°	7.03	4.5 gal	
0939				690	62.2°	7.01	6 gal.	
	Sample	Time						

Purge Method: Hand Bail

Total Volume Removed: 6 (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-15	3 - 40ml VOA's	YES HCL	STL	TPHG/BTEX/MTBE

Well Condition: Good

Remarks: Recharged to 6.70 at sampling time - 950

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Water Sampling Data Sheet

Project Name:	COP Eureka #0201	Date/Time:	
Project No.:	098179.305	Sampler Name:	David R. Paine
Location:	Eureka, CA	Sample Type:	Ground water
Well #:	MW-16	Weather	
Hydrocarbon Thickness/Depth (feet):		Key Needed:	YES Dolphin

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
13.80	-		=		x	0.163	=	

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
	Sample	Time						

Free Product

Purge Method: Hand Bail

Total Volume Removed: _____ (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-16	3 - 40ml VOA's	YES HCL	STL	TPHG / BTEX / MTBE
MW-16	1 liter Amber	None	STL	TPHD

Well Condition: Poor, all 3 flanges are stripped out

Remarks:

Recharged to at sampling time

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Water Sampling Data Sheet

Project Name:	COP Eureka #0201	Date/Time:	8/2/05
Project No.:	098179.305	Sampler Name:	~~David R. Paine~~ → Dustin Ibbetts
Location:	Eureka, CA	Sample Type:	Ground water
Well #:	MW-17	Weather	Partly Cloudy
Hydrocarbon Thickness/Depth (feet):		Key Needed:	No

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
14.10	-	7.27	=	6.83	x	0.163	=	1.11x3=3.34

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
1525							0	
1528				1394	65.8°	6.68	1.25 gal.	
1532				2402	64.7°	6.62	2.5 gal.	
1534				2560	64.7°	6.48	3.5 gal.	
1540				2556	64.9°	6.46	4.75 gal.	
1542				2609	64.8°	6.39	5.75 gal.	
	sample Time							

Purge Method: Hand Bail

Total Volume Removed: 5.75 (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-17	1 liter Amber	None	STL	TPHD
MW-17	3-40 ml VOA's	YES HCL	STL	TPHG/BTEX/MTBE

Well Condition: Poor. all 3 flanges are stripped out.

Remarks:

Recharged to 8.10 at sampling Time - 1550

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Water Sampling Data Sheet

Project Name:	COP Eureka #0201	Date/Time:	
Project No.:	098179.305	Sampler Name:	David R. Paine
Location:	Eureka, CA	Sample Type:	Ground water
Well #:	MW-26	Weather	
Hydrocarbon Thickness/Depth (feet):		Key Needed:	YES Dolphin

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
13.50	-	6.70	=	6.80	x	0.653	=	4.44 x 3 = 13.32

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
1010							0	start
1021							13.75 gal	stop
	Sample	Time						

Purge Method: Hand Bail

Total Volume Removed: 13.75 (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-26	3-40ml VOA's	YES HCL	STL	TPHG / BTEX / MTBE
MW-26	1 liter Amber	None	STL	TPHD

Well Condition: Good

Remarks:

Recharged to 6.88 at sampling time - 1030

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Water Sampling Data Sheet

Project Name:	COP Eureka #0201	Date/Time:	
Project No.:	098179.305	Sampler Name:	David R. Paine
Location:	Eureka, CA	Sample Type:	Ground water
Well #:	MW-27	Weather	
Hydrocarbon Thickness/Depth (feet):		Key Needed:	YES Dolphin

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
14.35	-		=		x	0.653	=	

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
	Free	Product						
	Sample	Time						

Purge Method: Hand Bail

Total Volume Removed: _____ (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-27	3-40ml VOA's	YES HCL	STL	TPHG / BTEX / MTBE
MW-27	1 liter Amber	None	STL	TPHD

Well Condition:

Remarks:

Recharged to at sampling time

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Water Sampling Data Sheet

Project Name:	COP Eureka #0201	Date/Time:	
Project No.:	098179.305	Sampler Name:	David R. Paine
Location:	Eureka, CA	Sample Type:	Ground water
Well #:	MW-28	Weather	
Hydrocarbon Thickness/Depth (feet):		Key Needed:	YES

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
13.97	-		=		x	0.653	=	

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
	Sample	Time						

Free Product

Purge Method: Hand Bail

Total Volume Removed: _____ (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-28	3-40ml VOA's	YES HCL	STL	TPHG / BTEX / MTBE
MW-28	1 liter Amber	None	STL	TPHD

Well Condition: Poor, 2 stripped out flanges

Remarks:

Recharged to at sampling time

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Water Sampling Data Sheet

Project Name:	COP Eureka #0201	Date/Time:	8/2/05
Project No.:	098179.305	Sampler Name:	~~David R. Paine~~ Dustin Tibbets
Location:	Eureka, CA	Sample Type:	Ground water
Well #:	MW-29	Weather	Over Cast
Hydrocarbon Thickness/Depth (feet):	NA	Key Needed:	YES Dolphin

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
50.09	-	8.78	=	41.31	x	0.163	=	6.73x3=20.20

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
							0	
0948				+3999	58.7°	7.10	6.75 gal.	
0958				+3999	58.7°	7.04	13.5 gal.	
				+3999	58.6°	7.13	20.25 gal.	
	Sample	Time						

Purge Method: Hand Bail

Total Volume Removed: 20.25 (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-29	3-40ml VOA's	YES HCL	STL	TPHG/BTEX/MTBE
MW-29	3-40ml VOA's	YES HCL	STL	HVOC
MW-29	1 liter Amber	None	STL	TPHD

Well Condition: Poor, 3 stripped out flanges

Remarks:

Recharged to 8.02 at sampling time - 1020

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Water Sampling Data Sheet

Project Name:	COP Eureka #0201	Date/Time:	8/2/05
Project No.:	098179.305	Sampler Name:	~~David R. Paine~~ Dustin Tibbets
Location:	Eureka, CA	Sample Type:	Ground water
Well #:	MW-30	Weather	Over Cast
Hydrocarbon Thickness/Depth (feet):	NA	Key Needed:	YES Dolphin

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
8.22	-	4.0	=	4.22	x	0.163	=	.69 x 3 = 2.06

Time	6.72 DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
1/05 1349	1.03	—	—	—	-	—	0 gal.	
2 1435	↓	110	226	—	—	—	0.25 gal.	
1442	↓			442	69.4	6.41	0.75 gal.	
1448	No Flow			470	68.4	6.55	1.00 gal	empty
1454	thru cell			463	67.8	6.60	~1.10 gal	empty
1505	Sample	Time						

Purge Method: Hand Bail

Total Volume Removed: ~1.10 (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-30	3-40ml VOA's	YES HCl	STL	HVOC

Well Condition: Good

Remarks:

Recharged to 7.37' at sampling time (1505)

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Water Sampling Data Sheet

Project Name:	COP Eureka #0201	Date/Time:	8/2/05
Project No.:	098179.305	Sampler Name:	~~David R. Paine~~ Dustin Tibbets
Location:	Eureka, CA	Sample Type:	Ground water
Well #:	MW-31	Weather	
Hydrocarbon Thickness/Depth (feet):	NA	Key Needed:	YES Dolphin

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
8.30	-	3.41	=	4.89	x	0.163	=	.80 X 3 = 2.38

Time	4.42 DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
1341	1.06						0 gal.	
1348	↓	75	258				.25 gal.	
1352				1163	67.2°	6.79	1 gal.	
1357	No Flow			1037	67°	6.80	1.75 gal.	
1400	Hand cell			946	67.3°	6.89	2.5 gal.	
	Sample Time							

Purge Method: Hand Bail

Total Volume Removed: 2.5 (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-31	1 liter Amber	None	STL	TPHD
MW-31	3-40ml VOA's	YES HCL	STL	HVOC

Well Condition:

Remarks:

Recharged to 3.61 at sampling Time 1415

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Water Sampling Data Sheet

Project Name:	COP Eureka #0201	Date/Time:	8/2/05
Project No.:	098179.305	Sampler Name:	~~David R. Palmer~~ Dustin Tibbetts
Location:	Eureka, CA	Sample Type:	Ground water
Well #:	MW-32	Weather	
Hydrocarbon Thickness/Depth (feet):	NA	Key Needed:	YES Dolphin

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
8.35	-	3.31	=	5.04	x	0.163	=	.82 X 3 = 2.46

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
1436	1.29						0 gal	
1444	↓	100	211				.25 gal.	
1446				765	65.4°	6.74	1 gal.	
1450	No Flow			1017	64.2°	6.84	1.75 gal.	
1456	than cell			926	63.2°	6.96	2 gal.	empty
	sample Time							

Purge Method: Hand Bail

Total Volume Removed: 2 (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-32	1 liter Amber	None	STL	TPHD
MW-32	3 - 40ml VOA's	YES HCL	STL	TPHG / MTBE
MW-32	3 - 40ml VOA's	YES HCL	STL	HVOC

Well Condition:

Remarks: Recharged to 7.00 at sampling Time 1510

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Water Sampling Data Sheet

Project Name: COP Eureka #0201
Date/Time: 8/3/05
Project No.: 098179.305
Sampler Name: ~~David R. Paine~~ DCT ADM
Location: Eureka, CA
Sample Type: Ground water
Well #: EW-1
Weather: Sun
Hydrocarbon Thickness/Depth (feet):
Key Needed: No

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
	-		=		x		=	

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
	sample Time							

Purge Method: Hand Bail
Total Volume Removed: (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
EW-1	1 liter Amber	None	STL	TPHD
EW-1	3 - 40 ml VOA's	YES HCL	STL	TPHG/ BTEX/ MTBE

Well Condition:

Remarks:
Recharged to at sampling Time 1150

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Water Sampling Data Sheet

Project Name:	COP Eureka #0201	Date/Time:	8-3-05
Project No.:	098179.305	Sampler Name:	~~David R. Paine~~ DCT ADM
Location:	Eureka, CA	Sample Type:	Ground water
Well #:	EW-3	Weather	SUN
Hydrocarbon Thickness/Depth (feet):		Key Needed:	No

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
	-		=		x		=	

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
	sample Time							

Purge Method: Hand Bail

Total Volume Removed: _____ (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
EW-3	1 liter Amber	None	STL	TPHD
EW-3	3 - 40 ml VOA's	YES HCL	STL	TPHG/BTEX/MTBE

Well Condition:

Remarks:

Recharged to at sampling Time 1520

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Water Sampling Data Sheet

Project Name:	COP Eureka #0201	Date/Time:	8-3-05
Project No.:	098179.305	Sampler Name:	~~David R. Paine~~ DCT ADM
Location:	Eureka, CA	Sample Type:	Ground water
Well #:	EW-2	Weather	Sun
Hydrocarbon Thickness/Depth (feet):		Key Needed:	No

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
	-		=		x		=	

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
	sample Time							

Purge Method: Hand Bail

Total Volume Removed: _____ (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
EW-2	1 liter Amber	None	STL	TPHD
EW-2	3-40 ml VOA's	YES HCL	STL	TPHG/BTEX/MTBE

Well Condition:

Remarks:

Recharged to at sampling Time ~~1425~~ 1555

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Water Sampling Data Sheet

Project Name:	COP Eureka #0201	Date/Time:	8-3-05
Project No.:	098179.305	Sampler Name:	~~David R. Paine~~ DCT ADM
Location:	Eureka, CA	Sample Type:	Ground water
Well #:	EW-4	Weather	SUN
Hydrocarbon Thickness/Depth (feet):		Key Needed:	No

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
	-		=		x		=	

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
	sample Time							

Purge Method: Hand Bail

Total Volume Removed: _____ (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
EW-4	1 liter Amber	None	STL	TPHD
EW-4	3-40 ml VOA's	YES HCL	STL	TPHG/BTEX/MTBE

Well Condition:

Remarks:

Recharged to at sampling Time 1550

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Water Sampling Data Sheet

Project Name:	COP Eureka #0201	Date/Time:	8-3-05
Project No.:	098179.305	Sampler Name:	~~David R. Paine~~ DCT ADM
Location:	Eureka, CA	Sample Type:	Ground water
Well #:	EW-5	Weather	Sun
Hydrocarbon Thickness/Depth (feet):		Key Needed:	No

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
	-		=		x		=	

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
	sample Time							

Purge Method: Hand Bail

Total Volume Removed: _____ (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
EW-5	1 liter Amber	None	STL	TPHD
EW-5	3-40 ml VOA's	YES HCL	STL	TPHG/BTEX/MTBE

Well Condition:

Remarks:

Recharged to at sampling Time 1540

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Water Sampling Data Sheet

Project Name:	COP Eureka #0201	Date/Time:	8-3-05
Project No.:	098179.305	Sampler Name:	~~David R. Paine~~ DCT ADM
Location:	Eureka, CA	Sample Type:	Ground water
Well #:	EW-6	Weather	SUN
Hydrocarbon Thickness/Depth (feet):		Key Needed:	No

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
	-		=		x		=	

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
	sample Time							

Purge Method: Hand Bail

Total Volume Removed: _____ (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
EW-6	1 liter Amber	None	STL	TPHD
EW-6	3 - 40 ml VOA's	YES HCL	STL	TPHG/BTEX/MTBE

Well Condition:

Remarks:

Recharged to at sampling Time 1510

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Water Sampling Data Sheet

Project Name: COP Eureka #0201
Date/Time: 8-3-05
Project No.: 098179.305
Sampler Name: ~~David R. Paine~~ ADM
Location: Eureka, CA
Sample Type: Ground water
Well #: EW-7
Weather: SUN
Hydrocarbon Thickness/Depth (feet):
Key Needed: No

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
	-		=		x		=	

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
	sample Time							

Purge Method: Hand Bail
Total Volume Removed: (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
EW-7	1 liter Amber	None	STL	TPHD
EW-7	3-40 ml VOA's	YES HCL	STL	TPHG/BTEX/MTBE

Well Condition:

Remarks:

Recharged to at sampling Time 1505

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Water Sampling Data Sheet

Project Name:	COP Eureka #0201	Date/Time:	8-3-05
Project No.:	098179.305	Sampler Name:	~~David R. Paine~~ DCT Adm
Location:	Eureka, CA	Sample Type:	Ground water
Well #:	EW-8	Weather	Sun
Hydrocarbon Thickness/Depth (feet):		Key Needed:	No

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
	-		=		x		=	

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
	sample Time							

Purge Method: Hand Bail

Total Volume Removed: _____ (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
EW-8	1 liter Amber	None	STL	TPHD
EW-8	3-40 ml VOA's	YES HCL	STL	TPHG/BTEX/MTBE

Well Condition:

Remarks:

Recharged to at sampling Time 1410

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Water Sampling Data Sheet

Project Name: COP Eureka #0201
Date/Time: 8-3-05
Project No.: 098179.305
Sampler Name: ~~David R. Paine~~ DCT ADM
Location: Eureka, CA
Sample Type: Ground water
Well #: EW-9
Weather: SUN
Hydrocarbon Thickness/Depth (feet):
Key Needed: No

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
	-		=		x		=	

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
	sample Time							

Purge Method: Hand Bail

Total Volume Removed: _____ (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
EW-9	1 liter Amber	None	STL	TPHD
EW-9	3-40 ml VOA's	YES HCL	STL	TPHG/BTEX/MTBE

Well Condition:

Remarks:

Recharged to at sampling Time 1405

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Water Sampling Data Sheet

Project Name:	COP Eureka #0201	Date/Time:	8-3-05
Project No.:	098179.305	Sampler Name:	~~David R. Paine~~ DCT ADM
Location:	Eureka, CA	Sample Type:	Ground water
Well #:	EW-10	Weather	SUN
Hydrocarbon Thickness/Depth (feet):		Key Needed:	No

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
	-		=		x		=	

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
	sample Time							

Purge Method: Hand Bail

Total Volume Removed: _____ (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
EW-10	1 liter Amber	None	STL	TPHD
EW-10	3-40 ml VOA's	YES HCL	STL	TPHG/BTEX/MTBE

Well Condition:

Remarks:

Recharged to at sampling Time 1355

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Water Sampling Data Sheet

Project Name:	COP Eureka #0201	Date/Time:	8-3-05 / 1
Project No.:	099179.305	Sampler Name:	~~David R. Paine~~ DCT ADM
Location:	Eureka, CA	Sample Type:	Ground water
Well #:	EW-11	Weather	sunny
Hydrocarbon Thickness/Depth (feet):		Key Needed:	No

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
	-		=		x		=	

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
	sample Time							

Purge Method: Hand Bail

Total Volume Removed: _____ (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
EW-11	1 liter Amber	None	STL	TPHD
EW-11	3-40 ml VOA's	YES HCL	STL	TPHG/BTEX/MTBE

Well Condition:

Remarks:

Recharged to at sampling Time 1350

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Water Sampling Data Sheet

Project Name:	COP Eureka #0201	Date/Time:	8-3-05
Project No.:	098179.305	Sampler Name:	~~David R. Paine~~ DCT ADM
Location:	Eureka, CA	Sample Type:	Ground water
Well #:	EW-12	Weather	Sun
Hydrocarbon Thickness/Depth (feet):		Key Needed:	No

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
	-		=		x		=	

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
	sample Time							

Purge Method: Hand Bail

Total Volume Removed: _____ (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
EW-12	1 liter Amber	None	STL	TPHD
EW-12	3-40 ml VOA's	YES HCL	STL	TPHG/BTEX/MTBE

Well Condition:

Remarks:

Recharged to at sampling Time 1420

ConocoPhillips Chain Of Custody Record

STL-San Francisco
1220 Quarry Lane
Pleasanton, CA 94566
(925) 484-1919 (925) 484-1096 fax

ConocoPhillips Site Manager:

INVOICE REMITTANCE ADDRESS: CONOCOPHILLIPS
Attn: Dee Hutchinson
3611 South Harbor, Suite 200
Santa Ana, CA. 92704

ConocoPhillips Work Order Number: 0926 SEC 001

ConocoPhillips Cost Object: WNO, 0926, EV

DATE: 8/4/05

PAGE: 1 of 3

SAMPLING COMPANY: SHN

Valid Value ID:

CONOCOPHILLIPS SITE NUMBER: COP Eureka #0201

GLOBAL ID NO.:

ADDRESS: 812 W. Wabash Ave Eureka CA

SITE ADDRESS (Street and City): 1200 Railroad Ave. Eureka CA

Thomas Kosel

PROJECT CONTACT (Hardcopy or PDF Report to): Roland Rueber

EDF DELIVERABLE TO (RP or Designee):

PHONE NO.:

E-MAIL:

LAB USE ONLY

TELEPHONE: (707) 441-8855 FAX: (707) 441-8877

E-MAIL: RRUEBER@SHN-ENGR.com

SAMPLER NAME(S) (Print): Dustin Tibbets

CONSULTANT PROJECT NUMBER: 098179.305

TURNAROUND TIME (CALENDAR DAYS): ☑ 14 DAYS ☐ 7 DAYS ☐ 72 HOURS ☐ 48 HOURS ☐ 24 HOURS ☐ LESS THAN 24 HOURS

SPECIAL INSTRUCTIONS OR NOTES:

CHECK BOX IF EDD IS NEEDED ☐

* Field Point name only required if different from Sample ID

REQUESTED ANALYSES

FIELD NOTES: Container/Preservative or PID Readings or Laboratory Notes

LAB USE ONLY	Sample Identification/Field Point Name*	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	8015m - TPHd Extractable	8260B - TPHg/BTEX/MtBE	8260B - TPHg / BTEX / 8 Oxygenates	8260B - TPHg / BTEX / 8 oyxgenates + methanol (8015M)	8260B - Full Scan VOCs (does not include oxygenates)	8270C - Semi-Volatiles	8015M / 8021B - TPHg/BTEX/MtBE	Lead ☐Total ☐STLC ☐TCLP	TPHg 8015 M	HVOC w/cis 1,2DCE	8260B	TPHg/MTBE • 8015 B	TEMPERATURE ON RECEIPT C°
	MW-29	8/2/05	1020	GW	7	X						X			X	X		
	MW-7		1135		4	X								X				
	MW-4		1140		5	X								X	X			
	MW-5		1410		4	X								X				
	MW-31		1415		4	X									X	X		
	MW-30		1505		3										X	X		
	MW-32		1510		4	X											X	
	MW-17		1550		5	X						X			X	X		
	MW-3		1610		4	X						X						

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
[signature]			
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

ConocoPhillips Chain Of Custody Record

STL-San Francisco
1220 Quarry Lane
Pleasanton, CA 94566
(925) 484-1919 (925) 484-1096 fax

ConocoPhillips Site Manager:

INVOICE REMITTANCE ADDRESS: CONOCOPHILLIPS
Attn: Dee Hutchinson
3611 South Harbor, Suite 200
Santa Ana, CA. 92704

ConocoPhillips Work Order Number: 0926 SEC 001
ConocoPhillips Cost Object: WNO, 0926, EV

DATE: 8/4/05
PAGE: 2 of 3

SAMPLING COMPANY: SHN
Valid Value ID:
CONOCOPHILLIPS SITE NUMBER: COP Eureka #0201
GLOBAL ID NO.:
ADDRESS: 812 W. Wabash Ave. Eureka CA
SITE ADDRESS (Street and City): 1200 Railroad Ave. Eureka CA
PROJECT CONTACT (Hardcopy or PDF Report to): Roland Rueber
Thomas Kosel
EDF DELIVERABLE TO (RP or Designee):
PHONE NO.:
E-MAIL:
LAB USE ONLY
TELEPHONE: (707) 441-8855
FAX: (707) 441-8877
E-MAIL: RRUEBER@SHN-ENGR.com
SAMPLER NAME(S) (Print): Dustin Tibbets
CONSULTANT PROJECT NUMBER: 098179.305

TURNAROUND TIME (CALENDAR DAYS): ☑ 14 DAYS ☐ 7 DAYS ☐ 72 HOURS ☐ 48 HOURS ☐ 24 HOURS ☐ LESS THAN 24 HOURS

SPECIAL INSTRUCTIONS OR NOTES:

CHECK BOX IF EDD IS NEEDED ☐

* Field Point name only required if different from Sample ID

REQUESTED ANALYSES

FIELD NOTES: Container/Preservative or PID Readings or Laboratory Notes

LAB USE ONLY	Sample Identification/Field Point Name*	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	8015m - TPHd Extractable	8260B - TPHg/BTEX/MtBE	8260B - TPHg / BTEX / 8 Oxygenates	8260B - TPHg / BTEX / 8 oxygenates + methanol (8015M)	8260B - Full Scan VOCs (does not include oxygenates)	8270C - Semi-Volatiles	8015M / 8021B - TPHg/BTEX/MtBE	Lead ☐Total ☐STLC ☐TCLP	TPHg 8015 M		HVOC w/cis 1,2DCE 8260B										FIELD NOTES / TEMPERATURE ON RECEIPT C°
	MW-15	8/3/05	0950	GW	4							X														
	MW-26		1050			X						X														
	EW-1		1350			X						X														
	EW-11		1350			X						X														
	EW-10		1355			X						X														
	EW-9		1405			X						X														
	EW-8		1410			X						X														
	EW-12		1420			X						X														
	EW-7		1505			X						X														
	EW-6		1510			X						X														

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Dustin Tibbets			
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

ConocoPhillips Chain Of Custody Record

STL-San Francisco
1220 Quarry Lane
Pleasanton, CA 94566
(925) 484-1919 (925) 484-1096 fax

ConocoPhillips Site Manager:

INVOICE REMITTANCE ADDRESS: CONOCOPHILLIPS
Attn: Dee Hutchinson
3611 South Harbor, Suite 200
Santa Ana, CA. 92704

ConocoPhillips Work Order Number: 0926 SEC 001

ConocoPhillips Cost Object: WNO, 0926, EV

DATE: 9

PAGE: ____ of ____

SAMPLING COMPANY: SHN

Valid Value ID:

CONOCOPHILLIPS SITE NUMBER: COP Eureka #0201

GLOBAL ID NO.:

ADDRESS: 812 W. Wabash Ave Eureka CA

SITE ADDRESS (Street and City): 1200 Railroad Ave. Eureka CA

Thomas Kosel

PROJECT CONTACT (Hardcopy or PDF Report to): Roland Rueber

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PHONE NO.:

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LAB USE ONLY

TELEPHONE: (707) 441-8855 FAX: (707) 441-8877

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SAMPLER NAME(S) (Print): Dustin Tibbets

CONSULTANT PROJECT NUMBER: 098179.305

TURNAROUND TIME (CALENDAR DAYS): ☑ 14 DAYS ☐ 7 DAYS ☐ 72 HOURS ☐ 48 HOURS ☐ 24 HOURS ☐ LESS THAN 24 HOURS

SPECIAL INSTRUCTIONS OR NOTES:

CHECK BOX IF EDD IS NEEDED ☐

* Field Point name only required if different from Sample ID

REQUESTED ANALYSES

LAB USE ONLY	Sample Identification/Field Point Name*	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	8015m - TPHd Extractable	8260B - TPHg/BTEX/MtBE	8260B - TPHg / BTEX / 8 Oxygenates	8260B - TPHg / BTEX / 8 oyxgenates + methanol (8015M)	8260B - Full Scan VOCs (does not include oxygenates)	8270C - Semi-Volatiles	8015M / 8021B - TPHg/BTEX/MtBE	Lead ☐Total ☐STLC ☐TCLP	TPHG 8015 M		HVOC w/cis 1,2DCE	8260B									FIELD NOTES: Container/Preservative or PID Readings or Laboratory Notes	TEMPERATURE ON RECEIPT C°
	EW-3	7/3/05	1520	GW	4	X						X															
	EW-5	↓	1540	↓	↓	X						X															
	EW-4	↓	1550	↓	↓	X						X															
	EW-2	↓	1555	↓	↓	X						X															

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Dustin Tibbets			
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

9/29/03 Revision

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812 W. Wabash • Eureka, CA 95501-2138 • 707/441-8855 • FAX: 707/441-8877 • shninfo@shn-engr.com

DAILY FIELD REPORT

Job No. 098179.305
Page of

Project Name	Client/Owner: Conocophillips	Daily Field Report Sequence No
General Location Of Work: Cop. Eureka	Owner/Client Representative	Date: 8/4/05 — Day Of Week: Thur.
General Contractor: Eureka CA	Grading Contractor	Project Engineer: Mike Foget
Type Of Work: O&M	Grading Contractor, Superintendent, Or Foreman	Supervisor
Source & Description Of Fill Material	Weather: Over Cast	Technician: Dustin Tibbets
	Key Persons Contacted (Civil Engr, Architect, Developer, Etc)	

Describe Equipment Used For Hauling, Spreading, Watering, Conditioning, & Compacting

1035 On site set up.
1040 Taking Vapor readings
1200 Off site for lunch
1310 Back on site
1500 GTCO2 stop working, can not finish. clean and loaded up.
1515 off site

Copy given to:

Reported By: Dustin Tibbets

COP-Eureka
098179.305
Semi-Annual Groundwater and Vadose Zone Monitoring

Semi-Annual Groundwater and Vadose Zone Monitoring COP-Eureka						
Well	DO (mg/L)	DCO_2 (mg/L)	Eh (mV)	O_2 (%)	CO_2 (%)	VOC (ppm)
MW-4				19.5	1.8	280
MW-5				14.0	2.6	340
MW-9						
MW-10				20.7	0.0	120
MW-11				20.8	0.0	120
MW-12				could not get slip on cap off		
MW-19				15.0	8.6	400
MW-20				18.4	3.7	600
MW-26						
MW-27				14.5	5.1	46 LEL
MW-28				0.8	19.6	4980
MW-30			20.4 →	~~0.2~~	0.2	120
MW-31				17.0	2.1	240
MW-32				5.0	10.2	4480
MW-33				17.9	2.6	620
MW-34				6.0	11.0	640
EW-1						
EW-2						
EW-3						
EW-4						
EW-5						
EW-6						
EW-7						
EW-8						
EW-9						
EW-10						
EW-11						
EW-12						

GTCO2 stop working, could not finnish.

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DAILY FIELD REPORT

Job No. 098179.305
Page of

Project Name	Client/Owner: Conocophillips	Daily Field Report Sequence No
General Location Of Work: Cop. Eureka	Owner/Client Representative	Date: 8/5/05 — Day Of Week: Fri.
General Contractor: Eureka CA	Grading Contractor	Project Engineer: Mike Foget
Type Of Work: O&M	Grading Contractor, Superintendent, Or Foreman	Supervisor
Source & Description Of Fill Material	Weather: Over Cast	Technician: Dustin Tibbets
	Key Persons Contacted (Civil Engr, Architect, Developer, Etc)	

Describe Equipment Used For Hauling, Spreading, Watering, Conditioning, & Compacting

0936 On site.
0945 Taking reading on the West Biovent system.
0952 Taking reading from the NPE system.
1033 Taking reading from the East Biovent system.
1047 Clean and loaded up.
1055 Off site.

Copy given to:

Reported By: Dustin Tibbets

G:\FORMS\DAILY FIELD REPORT.doc

COP - Eureka
Western Biovent/Biosparge System Monitoring Sheet
098179.304

Date: 8/5/05 Time: 0946
Performed By: DCT Weather: Over Cast

Hour Meter: _____ hours

BS-1 thru 10	Initial	Final
Valve Position (% open)		

BS-11 thru 18	Initial	Final
Valve Position (% open)		

Trench #1	Initial	Final
Valve Position (% open)	100	0

Trench #2	Initial	Final
Valve Position (% open)	0	100

Manifold Readings	Initial	Final
Temperature (°F)	95°	92°
Pressure (psig)	1.35	.75
Flow Rate (scfm)	72	75

Comments: _____

COP - Eureka
DPE System Monitoring Sheet
098179.304

Date: 8/5/05 Time: 0952
Performed By: DCT Weather: Over Cast

Extraction Well	Extraction Line	Manifold Readings				Well Head Readings			
		Ball Valve Position (% open)	Line Vacuum (in Hg)	Flow Type (see notes)	OV Conc. (ppm)	Line Vacuum (in Hg)	Depth to Extraction Unit (ft)	Throttle Valve (turns open)	Bleed Valve (% open)
EW-1	H_2O/Air	100	16	C					
	FP								
EW-2	H_2O/Air								
	FP								
EW-3	H_2O/Air								
	FP								
EW-4	H_2O/Air								
	FP								
EW-5	H_2O/Air								
	FP								
EW-6	H_2O/Air								
	FP								
EW-7	H_2O/Air	100	14	C					
	FP								
EW-8	H_2O/Air	100	24	C					
	FP								
EW-9	H_2O/Air								
	FP								
EW-10	H_2O/Air	100	27.5	C					
	FP								
EW-11	H_2O/Air								
	FP								
EW-12	H_2O/Air								
	FP								

NOTES:
in-Hg = Inches of Mercury
in-Hg = 13.6 in-H_2O
1 ft^3 = 7.48 gallons
FP = Free Product
Flow Types: B = Bubble, S = Slug, C = Churn, R = Ripple, A = Annular

OVA Calibrated with _____
OVA Type _____

COP - Eureka
DPE System Monitoring Sheet
098179.304

Date: 8/5/05 Time: 0952

Manifold

Manifold H_2O meter	N/A	gal	Manifold vacuum	18	in-Hg
Manifold H_2O flow rate		gpm	Manifold temp	58°	°F

Liquid Ring Pump (LRP)

LRP hr meter	12525.61	hr	LRP oil color	Dark Honey	
LRP oil filter	3	psi	LRP oil level	50	
LRP vacuum	20.5	in-Hg	LRP temp	179°	°F
Throttle Valve	●	turns closed	Dilution air valve	0	turns open
Recirculation valve		turns open			

Water Knock-out Pot

H_2O Discharge Counter	257387	counts
Discharge pressure	5	psi
Inlet vacuum	18 ~~N/A~~	in-Hg
Sediment Filter Δ P	N/A	in-H_2O

Free Product Tank

	Initial	Final
Depth to FP (ft)		
Depth to H_2O (ft)		
Main valve (4")	4 turns open	

Vapor Destruction Unit

Preheat temp (high)	1459	°F	Hour meter	13027.20	hours
Preheat temp (low)	1420	°F	OVA well field	13	ppm
Preheat SP temp	1425	°F	OVA pre-burner		ppm
Exhaust temp (high)	1467	°F	OVA post-burner	4	ppm
Exhaust temp (low)	1429	°F	Blower Valve		% open
Exhaust temp SP	1550	°F	Mode	Burner or Catalytic	

Chart Recorder

Flow	60-80	in-H_2O	Date Storage	46	% full
LEL	N/A	%			

Propane Supply

Primary pressure	6.5	psi	Operating pressure	10	in-H_2O
Secondary pressure	>1	psi	Supply tank level	77	%

Air Stripper

Vacuum	4	in-H_2O	OVA AS-Eff		ppm
Air Flow	N/A	in-H_2O	OVA Carbon-Mid		ppm
			OVA Carbon-Eff		ppm

Comments:

COP - Eureka
Eastern Biovent/Biosparge System Monitoring Sheet
098179.304

Date: 8/5/05 Time:
Performed By: DCT Weather: Over Cast

Hour Meter: 46250 7/8 hours

Trench #1A	Initial	Final
Valve Position (% open)		
Flow Rate (fpm)		

Trench #1B	Initial	Final
Valve Position (% open)	100	100
Flow Rate (fpm)	12630	12630

Trench #2	Initial	Final
Valve Position (% open)		
Flow Rate (fpm)		

Manifold Readings	Initial	Final
Temperature (°F)	118.9°	118.9°
Pressure (psig)	1.75	1.75

Comments:

22

COP - Eureka
DPE System Monitoring Sheet
098179.304

Date: 12th Aug '05 Time: 11:30
Performed By: C. Fisher Weather: Sunny

Extraction Well	Extraction Line	Manifold Readings				Well Head Readings			
		Ball Valve Position (% open)	Line Vacuum (in Hg)	Flow Type (see notes)	OV Conc. (ppm)	Line Vacuum (in Hg)	Depth to Extraction Unit (ft)	Throttle Valve (turns open)	Bleed Valve (% open)
EW-1	H_2O/Air	100	20	C					
	FP								
EW-2	H_2O/Air								
	FP								
EW-3	H_2O/Air								
	FP								
EW-4	H_2O/Air								
	FP								
EW-5	H_2O/Air								
	FP								
EW-6	H_2O/Air								
	FP								
EW-7	H_2O/Air	100	21	C					
	FP								
EW-8	H_2O/Air	100	19	C					
	FP								
EW-9	H_2O/Air	100	20	C					
	FP								
EW-10	H_2O/Air								
	FP								
EW-11	H_2O/Air								
	FP								
EW-12	H_2O/Air	100	21	C					
	FP							1 turn open	

NOTES:
in-Hg = Inches of Mercury
in-Hg = 13.6 in-H_2O
1 ft^3 = 7.48 gallons
FP = Free Product
Flow Types: B = Bubble, S = Slug, C = Churn, R = Ripple, A = Annular

OVA Calibrated with _____
OVA Type _____

COP - Eureka
DPE System Monitoring Sheet
098179.304

Date: 8-12-05 Time: 1100

Manifold

Manifold H_2O meter	N/A	gal	Manifold vacuum	21	in-Hg
Manifold H_2O flow rate	N/A	gpm	Manifold temp	58	°F

Liquid Ring Pump (LRP)

LRP hr meter	12,694	hr	LRP oil color	dark tan	
LRP oil filter	2 3/4	psi	LRP oil level	30% low	
LRP vacuum	20	in-Hg	LRP temp	180	°F
Throttle Valve	0	turns closed	Dilution air valve	0	turns open
Recirculation valve	0	turns open			

Water Knock-out Pot

H_2O Discharge Counter	262,021	counts
Discharge pressure	~~20 Hg~~ 4	psi
Inlet vacuum	19	in-Hg
Sediment Filter Δ P	N/A	in-H_2O

Free Product Tank

	Initial	Final
Depth to FP (ft)		
Depth to H_2O (ft)		
Main valve (4")		turns open

Vapor Destruction Unit

Preheat temp (high)	1450	°F	Hour meter	13,196	hours
Preheat temp (low)	1419	°F	OVA well field		ppm
Preheat SP temp	1425	°F	OVA pre-burner		ppm
Exhaust temp (high)	1460	°F	OVA post-burner		ppm
Exhaust temp (low)	1420	°F	Blower Valve	50	% open
Exhaust temp SP	1550	°F	Mode	Burner or Catalytic	

Chart Recorder

Flow	6-8	in-H_2O	Date Storage	58	% full
LEL	60?	%			

Propane Supply

Primary pressure	6 1/2	psi	Operating pressure	2/10	in-H_2O
Secondary pressure	>1	psi	Supply tank level	55	%

Air Stripper

Vacuum	7	in-H_2O	OVA AS-Eff		ppm
Air Flow	N/A	in-H_2O	OVA Carbon-Mid		ppm
			OVA Carbon-Eff		ppm

Comments: EW-12 brought On-Line

COP - Eureka
Western Biovent/Biosparge System Monitoring Sheet
098179.304

Date: 8-12-05 Time: 1130
Performed By: C. Fisher Weather: Overcast

Hour Meter: 7,648 hours

BS-1 thru 10	Initial	Final
Valve Position (% open)	0	100

BS-11 thru 18	Initial	Final
Valve Position (% open)	0	0

Trench #1	Initial	Final
Valve Position (% open)	0	0

Trench #2	Initial	Final
Valve Position (% open)	100	0

Manifold Readings	Initial	Final
Temperature (°F)	—	90
Pressure (psig)	—	6.75
Flow Rate (scfm)	—	50

Comments: - Air Filter ~50% → replace ~1-2 mths

COP - Eureka
Eastern Biovent/Biosparge System Monitoring Sheet
098179.304

Date: 8-12-05 Time: 1045
Performed By: A. Melody Weather: overcast

Hour Meter: 46919.0 hours

Trench #1A	Initial	Final
Valve Position (% open)	0	—
Flow Rate (fpm)	—	—

Trench #1B	Initial	Final
Valve Position (% open)	100	100
Flow Rate (fpm)	11,966	11,966

Trench #2	Initial	Final
Valve Position (% open)	0	—
Flow Rate (fpm)	—	—

Manifold Readings	Initial	Final
Temperature (^{o}F)	119.1	119.1
Pressure (psig)	~1.70	~1.75

Comments:

HAZARDOUS MATERIALS SITE OPERATIONS
DAILY RECORD & SITE SAFETY MEETING RECORD
SHN CONSULTING ENGINEERS & GEOLOGISTS

JOB NAME		ACTIVITY				JOB #		
COP-Eureka		Weekly O&M				098179.305		
Company/ Agency	Name	Operation/ Function	Signature	Time In	Time Out	Date	29CFR1910.120(e) 40hr Y/N	24hr Y/N
SHN	Aaron Melody	geologist	[signature]	1015	1230	8-12-05	Y	
SHN	C. Fisher	Engr	[signature]	1015	1230	8-12-05	Y	
SHN	R. Rueda	NONE/OBS	[signature]	1015	1030	8-12-05	Y	
SHN	R Quine	Engr	[signature]	1045	1145	8-12-05	Y	

SHN CONSULTING ENGINEERS & GEOLOGISTS, INC.
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DAILY FIELD REPORT

Job No. 098179.305
Page of

Project Name	Client/Owner: Conocophillips	Daily Field Report Sequence No
General Location Of Work: Cop. Eureka	Owner/Client Representative	Date: 8/19/05 — Day Of Week: Fri.
General Contractor: Eureka CA	Grading Contractor	Project Engineer: Mike Foget
Type Of Work: O&M	Grading Contractor, Superintendent, Or Foreman	Supervisor
Source & Description Of Fill Material	Weather: Over Cast	Technician: Dustin Tibbets
	Key Persons Contacted (Civil Engr, Architect, Developer, Etc)	

Describe Equipment Used For Hauling, Spreading, Watering, Conditioning, & Compacting

0938 On site. DPE system shut down.
0942 Taking reading on the West Bioventt system.
1002 Taking reading on the East Bioventt system.
1056 Started DPE system back up.
1127 Taking readings on the DPE system.
1210 Shut system off loaded up.
1215 Off site.

1450 Back on site Change out oil in DPE system
1412 Started system back up
1433 Off site

Copy given to:

Reported By: Dustin Tibbets

COP - Eureka
Western Biovent/Biosparge System Monitoring Sheet
098179.304

Date: 8/19/05 Time: 0942
Performed By: DCT Weather: Over Cast

Hour Meter: _____ hours

BS-1 thru 10	Initial	Final
Valve Position (% open)	100	

BS-11 thru 18	Initial	Final
Valve Position (% open)		

Trench #1	Initial	Final
Valve Position (% open)		

Trench #2	Initial	Final
Valve Position (% open)		

Manifold Readings	Initial	Final
Temperature (°F)	160°	165° and going up
Pressure (psig)	7	8.5
Flow Rate (scfm)	48	40

Comments:

COP - Eureka
Eastern Biovent/Biosparge System Monitoring Sheet
098179.304

Date: 8/19/05 Time: 1002
Performed By: DCT Weather: Over Cast

Hour Meter: 47086 3/10 hours

Trench #1A	Initial	Final
Valve Position (% open)		
Flow Rate (fpm)		

Trench #1B	Initial	Final
Valve Position (% open)	100	100
Flow Rate (fpm)	12620	12620

Trench #2	Initial	Final
Valve Position (% open)		
Flow Rate (fpm)		

Manifold Readings	Initial	Final
Temperature (°F)	119.3°	119.3°
Pressure (psig)	1.75	1.75

Comments:

COP - Eureka
DPE System Monitoring Sheet
098179.304

Date: 8/19/05 Time: 1127
Performed By: DCT Weather: Over Cast

Extraction Well	Extraction Line	Manifold Readings				Well Head Readings			
		Ball Valve Position (% open)	Line Vacuum (in Hg)	Flow Type (see notes)	OV Conc. (ppm)	Line Vacuum (in Hg)	Depth to Extraction Unit (ft)	Throttle Valve (turns open)	Bleed Valve (% open)
EW-1	H_2O/Air	100	15	C					
	FP								
EW-2	H_2O/Air								
	FP								
EW-3	H_2O/Air								
	FP								
EW-4	H_2O/Air								
	FP								
EW-5	H_2O/Air								
	FP								
EW-6	H_2O/Air								
	FP								
EW-7	H_2O/Air	100	13	C					
	FP								
EW-8	H_2O/Air								
	FP								
EW-9	H_2O/Air								
	FP								
EW-10	H_2O/Air	100	28	C					
	FP								
EW-11	H_2O/Air								
	FP								
EW-12	H_2O/Air	100	25	C					
	FP								

NOTES:
in-Hg = Inches of Mercury
in-Hg = 13.6 in-H_2O
1 ft^3 = 7.48 gallons
FP = Free Product
Flow Types: B = Bubble, S = Slug, C = Churn, R = Ripple, A = Annular

OVA Calibrated with _____
OVA Type _____

COP - Eureka
DPE System Monitoring Sheet
098179.304

Date: 8/19/05 Time: 1127

Manifold

Manifold H_2O meter	N/A	gal	Manifold vacuum	17	in-Hg
Manifold H_2O flow rate	N/A	gpm	Manifold temp	58°	°F

Liquid Ring Pump (LRP)

LRP hr meter	12790.63	hr	LRP oil color	Dark Honey	
LRP oil filter	2	psi	LRP oil level	115% Full	
LRP vacuum	20	in-Hg	LRP temp	176°	°F
Throttle Valve		turns closed	Dilution air valve	0	turns open
Recirculation valve		turns open			

Water Knock-out Pot

H_2O Discharge Counter	264879	counts
Discharge pressure	4	psi
Inlet vacuum	N/A	in-Hg
Sediment Filter Δ P	N/A	in-H_2O

Free Product Tank

	Initial	Final
Depth to FP (ft)		
Depth to H_2O (ft)		
Main valve (4")	4 turns open	

Vapor Destruction Unit

Preheat temp (high)	1463	°F	Hour meter	13292.12	hours
Preheat temp (low)	1424	°F	OVA well field	~~122~~ 125	ppm
Preheat SP temp	1425	°F	OVA pre-burner		ppm
Exhaust temp (high)	1471	°F	OVA post-burner	2	ppm
Exhaust temp (low)	1431	°F	Blower Valve		% open
Exhaust temp SP	1550	°F	Mode	Burner or Catalytic	

Chart Recorder

Flow	22-38	in-H_2O	Date Storage	69	% full
LEL	N/A	%			

Propane Supply

Primary pressure	6.5	psi	Operating pressure	10	in-H_2O
Secondary pressure	>1	psi	Supply tank level	85	%

Air Stripper

Vacuum	6	in-H_2O	OVA AS-Eff		ppm
Air Flow	N/A	in-H_2O	OVA Carbon-Mid		ppm
			OVA Carbon-Eff		ppm

Comments:

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DAILY FIELD REPORT

Job No. 098179.305

Page of

Project Name	Client/Owner: Conocophillips	Daily Field Report Sequence No
General Location Of Work: Cop. Eureka	Owner/Client Representative	Date: 8/23/05 — Day Of Week: Tue.
General Contractor: Eureka CA	Grading Contractor	Project Engineer: Mike Foget
Type Of Work: O&M	Grading Contractor, Superintendent, Or Foreman	Supervisor
Source & Description Of Fill Material	Weather: Sun	Technician: Dustin Tibbets
	Key Persons Contacted (Civil Engr, Architect, Developer, Etc)	

Describe Equipment Used For Hauling, Spreading, Watering, Conditioning, & Compacting

1518 On site to remove free Product from EW-Well:
1612 Off site

Copy given to:

Reported By: Dustin Tibbets

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DAILY FIELD REPORT

Job No. 098179.305
Page of

Project Name	Client/Owner: Conocophillips	Daily Field Report Sequence No	
General Location Of Work: Cop. Eureka	Owner/Client Representative	Date: 8/26/05	Day Of Week: Fri.
General Contractor: Eureka CA	Grading Contractor	Project Engineer: Mike Foget	
Type Of Work: O&M	Grading Contractor, Superintendent, Or Foreman	Supervisor	
Source & Description Of Fill Material	Weather: Over Cast	Technician: Dustin Tibbets	
	Key Persons Contacted (Civil Engr, Architect, Developer, Etc)		

Describe Equipment Used For Hauling, Spreading, Watering, Conditioning, & Compacting

0932 On site.
0936 Taking readings from the West bioventsystem.
0944 Taking readings from the DPE system.
1015 Took Surma sample on Exs-EFF — Exs-EFF
1025 Took Surma sample on Exs-INF — Exs-INF
1030 Took Surma sample on Car-EFF — Car-EFF
1040 Took water sample from EFF on system — Ex-EFF
1100 Took water sample from the Airstripper EFF — As-EFF
1115 Shut system off to clean Airstripper.
1120 Taking reading from the East bioventsystem.
1150 Removing free product in all EW-Wells
1210 Clean and loaded up.
1220 Off site.

Copy given to:

Reported By: Dustin Tibbets

COP - Eureka
Western Biovent/Biosparge System Monitoring Sheet
098179.304

Date: 8/26/05 Time: 0936
Performed By: DCT Weather: Over Cast

Hour Meter: _____ hours

BS-1 thru 10	Initial	Final
Valve Position (% open)	0	0

BS-11 thru 18	Initial	Final
Valve Position (% open)	100	0

Trench #1	Initial	Final
Valve Position (% open)	10	100

Trench #2	Initial	Final
Valve Position (% open)	0	0

Manifold Readings	Initial	Final
Temperature (°F)	172°	160° and dropping
Pressure (psig)	7.25	1.5
Flow Rate (scfm)	45	70

Comments:

COP - Eureka
DPE System Monitoring Sheet
098179.304

Date: 8/26/05 Time: 0944
Performed By: DCT Weather: Over Cast

Extraction Well	Extraction Line	Manifold Readings				Well Head Readings			
		Ball Valve Position (% open)	Line Vacuum (in Hg)	Flow Type (see notes)	OV Conc. (ppm)	Line Vacuum (in Hg)	Depth to Extraction Unit (ft)	Throttle Valve (turns open)	Bleed Valve (% open)
EW-1	H_2O/Air	100	15	C					
	FP								
EW-2	H_2O/Air								
	FP								
EW-3	H_2O/Air								
	FP								
EW-4	H_2O/Air								
	FP								
EW-5	H_2O/Air								
	FP								
EW-6	H_2O/Air								
	FP								
EW-7	H_2O/Air	100	12	C					
	FP								
EW-8	H_2O/Air								
	FP								
EW-9	H_2O/Air								
	FP								
EW-10	H_2O/Air	100	28	C					
	FP								
EW-11	H_2O/Air								
	FP								
EW-12	H_2O/Air	100	26	C					
	FP								

NOTES:
in-Hg = Inches of Mercury
in-Hg = 13.6 in-H_2O

1 ft^3 = 7.48 gallons
FP = Free Product

Flow Types: B = Bubble, S = Slug
C = Churn, R = Ripple
A = Annular

OVA Calibrated with _____
OVA Type _____

COP - Eureka
DPE System Monitoring Sheet
098179.304

Date: 8/26/05 Time: 0944

Manifold

Manifold H_2O meter	N/A	gal	Manifold vacuum	18	in-Hg
Manifold H_2O flow rate	N/A	gpm	Manifold temp	58°	°F

Liquid Ring Pump (LRP)

LRP hr meter	12953.44	hr	LRP oil color	Honey	
LRP oil filter	2.5	psi	LRP oil level	10% full	
LRP vacuum	21	in-Hg	LRP temp	180°	°F
Throttle Valve		turns closed	Dilution air valve	0	turns open
Recirculation valve		turns open			

Water Knock-out Pot

H_2O Discharge Counter	266617	counts
Discharge pressure	5	psi
Inlet vacuum	18	in-Hg
Sediment Filter Δ P	N/A	in-H_2O

Free Product Tank

	Initial	Final
Depth to FP (ft)		
Depth to H_2O (ft)		
Main valve (4")	4 turns open	

Vapor Destruction Unit

Preheat temp (high)	1460	°F	Hour meter	13454.88	hours
Preheat temp (low)	1425	°F	OVA well field	28	ppm
Preheat SP temp	1425	°F	OVA pre-burner		ppm
Exhaust temp (high)	1468	°F	OVA post-burner	3	ppm
Exhaust temp (low)	1432	°F	Blower Valve		% open
Exhaust temp SP	1550	°F	Mode	Burner or Catalytic	

Chart Recorder

Flow	22-38	in-H_2O	Date Storage	81	% full
LEL	N/A	%			

Propane Supply

Primary pressure	6.5	psi	Operating pressure	10	in-H_2O
Secondary pressure	>1	psi	Supply tank level	>8	%

Air Stripper

Vacuum	7	in-H_2O	OVA AS-Eff		ppm
Air Flow	N/A	in-H_2O	OVA Carbon-Mid		ppm
			OVA Carbon-Eff	2	ppm

Comments:

COP - Eureka
Eastern Biovent/Biosparge System Monitoring Sheet
098179.304

Date: 8/26/05 Time: 1120
Performed By: DCT Weather: Over Cast

Hour Meter:_____hours

Trench #1A	Initial	Final
Valve Position (% open)		
Flow Rate (fpm)		

Trench #1B	Initial	Final
Valve Position (% open)	100	100
Flow Rate (fpm)	11975	11975

Trench #2	Initial	Final
Valve Position (% open)		
Flow Rate (fpm)		

Manifold Readings	Initial	Final
Temperature (°F)	113.8°	113.8°
Pressure (psig)	1.5	1.5

Comments:

STL-San Francisco

1220 Quarry Lane

Pleasanton, CA 94566

(925) 484-1919 (925) 484-1096 fax

ConocoPhillips Chain Of Custody Record

ConocoPhillips Site Manager:

INVOICE REMITTANCE ADDRESS:

CONOCOPHILLIPS
Attn: Olivia Perez
1230 W. Washington, Suite 212
Tempe, AZ 85281

ConocoPhillips Work Order Number

ConocoPhillips Cost Object

DATE: 8/26/05

PAGE: _____ of _____

SAMPLING COMPANY: SHN

Valid Value ID:

CONOCOPHILLIPS SITE NUMBER: 0201

GLOBAL ID NO.:

ADDRESS: 812 W. Wabash Ave, Eureka CA 95501

SITE ADDRESS (Street and City): 1200 Railroad Ave Eureka CA 95501

CONOCOPHILLIPS SITE MANAGER:

PROJECT CONTACT (Hardcopy or PDF Report to): Mike Foget

TELEPHONE: (707)441-8855

FAX: (707)441-8877

E-MAIL:

EDF DELIVERABLE TO (RP or Designee):

PHONE NO.:

E-MAIL:

LAB USE ONLY

SAMPLER NAME(S) (Print):

CONSULTANT PROJECT NUMBER: 098179.304

TURNAROUND TIME (CALENDAR DAYS): ☑ 14 DAYS ☐ 7 DAYS ☐ 72 HOURS ☐ 48 HOURS ☐ 24 HOURS ☐ LESS THAN 24 HOURS

SPECIAL INSTRUCTIONS OR NOTES: CHECK BOX IF EDD IS NEEDED ☐

* Field Point name only required if different from Sample ID

REQUESTED ANALYSES

LAB USE ONLY	Sample Identification/Field Point Name*	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	8015m - TPHd Extractable	8260B - TPHg/BTEX/MtBE	8260B - TPHg / BTEX / 8 Oxygenates	8260B - TPHg / BTEX / 8 oyxgenates + methanol (8015M)	8260B - Full Scan VOCs (does not include oxygenates)	8270C - Semi-Volatiles	8015M / 8021B - TPHg/BTEX/MtBE	Lead ☐Total ☐STLC ☐TCLP	TO-14	Benzene	Vinyl Chloride	Trichloro Ethylene	Dichloro Ethylene	Methyl Chloride							FIELD NOTES: Container/Preservative or PID Readings or Laboratory Notes
	Exs EFF	8/26/05	1015	air	1									X	X	X	X	X	X							
	Exs INF	↓	1025	↓	1									↓	↓	↓	↓	↓	↓							
	Car EFF	↓	1030	↓	1									↓	↓	↓	↓	↓	↓							

TEMPERATURE ON RECEIPT C°

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Dustin Sibbets			
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

9/19/03 Revision

ConocoPhillips Chain Of Custody Record

STL-San Francisco
1220 Quarry Lane
Pleasanton, CA 94566
(925) 484-1919 (925) 484-1096 fax

ConocoPhillips Site Manager:

INVOICE REMITTANCE ADDRESS: CONOCOPHILLIPS
Attn: Olivia Perez
1230 W. Washington, Suite 212
Tempe, AZ 85281

ConocoPhillips Work Order Number:

ConocoPhillips Cost Object:

DATE: 8/26/05

PAGE: _____ of _____

SAMPLING COMPANY: SHN

Valid Value ID:

CONOCOPHILLIPS SITE NUMBER: 0201

GLOBAL ID NO.:

ADDRESS: 812 W. Wabash Ave CA 95501

SITE ADDRESS (Street and City): 1200 Railroad Ave Eureka CA 95501

CONOCOPHILLIPS SITE MANAGER:

PROJECT CONTACT (Hardcopy or PDF Report to): Mike Foget

EDF DELIVERABLE TO (RP or Designee):

PHONE NO.:

E-MAIL:

LAB USE ONLY

TELEPHONE: (707)441-8855

FAX: (707)441-8877

E-MAIL:

SAMPLER NAME(S) (Print):

CONSULTANT PROJECT NUMBER: 098179.304

TURNAROUND TIME (CALENDAR DAYS): ☑ 14 DAYS ☐ 7 DAYS ☐ 72 HOURS ☐ 48 HOURS ☐ 24 HOURS ☐ LESS THAN 24 HOURS

SPECIAL INSTRUCTIONS OR NOTES:

CHECK BOX IF EDD IS NEEDED ☐

REQUESTED ANALYSES

FIELD NOTES: Container/Preservative or PID Readings or Laboratory Notes

* Field Point name only required if different from Sample ID

LAB USE ONLY	Sample Identification/Field Point Name*	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	8015m - TPHd Extractable	8260B - TPHg/BTEX/MtBE	8260B - TPHg / BTEX / 8 Oxygenates	8260B - TPHg / BTEX / 8 oxygenates + methanol (8015M)	8260B - Full Scan VOCs (does not include oxygenates)	8270C - Semi-Volatiles	8015M / 8021B - TPHg/BTEX/MtBE	Lead ☐Total ☐STLC ☐TCLP	TPHD/MO	TEMPERATURE ON RECEIPT C°
	Ex EFF	8/26/05	1040	water	4		X							X	
	As EFF	↓	1100	↓	4		X							X	

Please return cooler, Thank you

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Dustin Silbert			
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

9/19/03 Revision

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DAILY FIELD REPORT

Job No. 098179.305

Page of

Project Name	Client/Owner: Conocophillips	Daily Field Report Sequence No	
General Location Of Work: Cop: Eureka	Owner/Client Representative	Date: 9/2/05	Day Of Week: Fri.
General Contractor: Eureka CA	Grading Contractor	Project Engineer: Mike Foget	
Type Of Work: O&M	Grading Contractor, Superintendent, Or Foreman	Supervisor	
Source & Description Of Fill Material	Weather: Over Cast	Technician: Dustin Tibbets	
	Key Persons Contacted (Civil Engr, Architect, Developer, Etc)		

Describe Equipment Used For Hauling, Spreading, Watering, Conditioning, & Compacting

0930 On site.
0935 Taking readings on the West Bioventt system.
0944 Taking readings on the DPE system.
1015 Taking readings on the East Bioventt system.
1025 Shut DPE system off to add oil.
1033 Started system back up.
1040 Clean and loaded up.
1045 Off site.

Copy given to:

Reported By: Dustin Tibbets

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COP - Eureka
Western Biovent/Biosparge System Monitoring Sheet
098179.304

Date: 9/2/05 Time: 0935
Performed By: DCT Weather: Over Cast

Hour Meter: _____ hours

BS-1 thru 10	Initial	Final
Valve Position (% open)	0	0

BS-11 thru 18	Initial	Final
Valve Position (% open)	0	0

Trench #1	Initial	Final
Valve Position (% open)	100	0

Trench #2	Initial	Final
Valve Position (% open)	0	100

Manifold Readings	Initial	Final
Temperature (°F)	96°	95°
Pressure (psig)	1.25	.75
Flow Rate (scfm)	72	75

Comments: Air filter is 50% used up.

COP - Eureka
DPE System Monitoring Sheet
098179.304

Date: 9/2/05 Time: 0944
Performed By: DCT Weather: Over Cast

Extraction Well	Extraction Line	Manifold Readings				Well Head Readings			
		Ball Valve Position (% open)	Line Vacuum (in Hg)	Flow Type (see notes)	OV Conc. (ppm)	Line Vacuum (in Hg)	Depth to Extraction Unit (ft)	Throttle Valve (turns open)	Bleed Valve (% open)
EW-1	H_2O/Air	100	16	C					
	FP								
EW-2	H_2O/Air								
	FP								
EW-3	H_2O/Air								
	FP								
EW-4	H_2O/Air								
	FP								
EW-5	H_2O/Air								
	FP								
EW-6	H_2O/Air								
	FP								
EW-7	H_2O/Air	100	12	C					
	FP								
EW-8	H_2O/Air								
	FP								
EW-9	H_2O/Air								
	FP								
EW-10	H_2O/Air	100	28	C					
	FP								
EW-11	H_2O/Air								
	FP								
EW-12	H_2O/Air	100	25	C					
	FP								

NOTES:
in-Hg = Inches of Mercury
in-Hg = 13.6 in-H_2O
1 ft^3 = 7.48 gallons
FP = Free Product
Flow Types: B = Bubble, S = Slug, C = Churn, R = Ripple, A = Annular

OVA Calibrated with _____
OVA Type _____

COP - Eureka
DPE System Monitoring Sheet
098179.304

Date: 9/2/05 Time: 0944

Manifold

Manifold H_2O meter	N/A	gal	Manifold vacuum	16.5	in-Hg
Manifold H_2O flow rate	N/A	gpm	Manifold temp	58°	°F

Liquid Ring Pump (LRP)

LRP hr meter	13120.98	hr	LRP oil color	Dark Honey	
LRP oil filter	3.20	psi	LRP oil level	100 % low	
LRP vacuum	18.5	in-Hg	LRP temp	178°	°F
Throttle Valve		turns closed	Dilution air valve		turns open
Recirculation valve		turns open			

Water Knock-out Pot

H_2O Discharge Counter	269345	counts
Discharge pressure	6	psi
Inlet vacuum	19	in-Hg
Sediment Filter Δ P	N/A	in-H_2O

Free Product Tank

	Initial	Final	
Depth to FP (ft)			
Depth to H_2O (ft)			
Main valve (4")	4		turns open

Vapor Destruction Unit

Preheat temp (high)	1446	°F	Hour meter	13622.41	hours
Preheat temp (low)	1417	°F	OVA well field		ppm
Preheat SP temp	1425	°F	OVA pre-burner		ppm
Exhaust temp (high)	1454	°F	OVA post-burner		ppm
Exhaust temp (low)	1428	°F	Blower Valve		% open
Exhaust temp SP	1550	°F	Mode	Burner or Catalytic	

Chart Recorder

Flow	80-90	in-H_2O	Date Storage	92	% full
LEL	N/A	%			

Propane Supply

Primary pressure	6.5	psi	Operating pressure	10	in-H_2O
Secondary pressure	>1	psi	Supply tank level	79	%

Air Stripper

Vacuum	3	in-H_2O	OVA AS-Eff		ppm
Air Flow	N/A	in-H_2O	OVA Carbon-Mid		ppm
			OVA Carbon-Eff		ppm

Comments:

COP - Eureka
Eastern Biovent/Biosparge System Monitoring Sheet
098179.304

Date: 9/2/05 Time: _____
Performed By: DCT Weather: Over Cast

Hour Meter: 47422 1/2 hours

Trench #1A	Initial	Final
Valve Position (% open)		
Flow Rate (fpm)		

Trench #1B	Initial	Final
Valve Position (% open)	100	100
Flow Rate (fpm)		

Trench #2	Initial	Final
Valve Position (% open)		
Flow Rate (fpm)		

Manifold Readings	Initial	Final
Temperature (°F)		
Pressure (psig)	1.5	1.5

Comments: _____

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DAILY FIELD REPORT

Job No. 098179.305

Page of

Project Name	Client/Owner: Conocophillips	Daily Field Report Sequence No
General Location Of Work: Cop: Eureka	Owner/Client Representative	Date: 9/9/05 — Day Of Week: Fri.
General Contractor: Eureka CA	Grading Contractor	Project Engineer: Mike Foget
Type Of Work: O&M	Grading Contractor, Superintendent, Or Foreman	Supervisor
Source & Description Of Fill Material	Weather: Over Cast	Technician: Dustin Tibbets
	Key Persons Contacted (Civil Engr, Architect, Developer, Etc)	

Describe Equipment Used For Hauling, Spreading, Watering, Conditioning, & Compacting

0914 On site.
0918 Taking reading from the West Bio vent system.
0926 Taking reading from the DPE systems.
1015 Taking readings from the East Bio vent system.
1025 Clean and loaded up.
1030 Off site

Copy given to:

Reported By: Dustin Tibbets

COP - Eureka
Western Biovent/Biosparge System Monitoring Sheet
098179.304

Date: 9/9/05 Time: 0918
Performed By: DCT Weather: Over Cast

Hour Meter: _____ hours

BS-1 thru 10	Initial	Final
Valve Position (% open)	0	100

BS-11 thru 18	Initial	Final
Valve Position (% open)	0	0

Trench #1	Initial	Final
Valve Position (% open)	0	0

Trench #2	Initial	Final
Valve Position (% open)	100	0

Manifold Readings	Initial	Final
Temperature (°F)	90°	95° and going up
Pressure (psig)	.65	6
Flow Rate (scfm)	74	53

Comments:

COP - Eureka
DPE System Monitoring Sheet
098179.304

Date: 9/9/05 Time: 0926
Performed By: DCT Weather: Over Cast

Extraction Well	Extraction Line	Manifold Readings				Well Head Readings			
		Ball Valve Position (% open)	Line Vacuum (in Hg)	Flow Type (see notes)	OV Conc. (ppm)	Line Vacuum (in Hg)	Depth to Extraction Unit (ft)	Throttle Valve (turns open)	Bleed Valve (% open)
EW-1	H_2O/Air	100	16	C					
	FP								
EW-2	H_2O/Air								
	FP								
EW-3	H_2O/Air								
	FP								
EW-4	H_2O/Air								
	FP								
EW-5	H_2O/Air								
	FP								
EW-6	H_2O/Air								
	FP								
EW-7	H_2O/Air	100	~~13~~ 12	C					
	FP								
EW-8	H_2O/Air								
	FP								
EW-9	H_2O/Air								
	FP								
EW-10	H_2O/Air	100	28	C					
	FP								
EW-11	H_2O/Air								
	FP								
EW-12	H_2O/Air	100	28	C					
	FP								

NOTES:
in-Hg = Inches of Mercury
in-Hg = 13.6 in-H_2O
1 ft^3 = 7.48 gallons
FP = Free Product
Flow Types: B = Bubble, S = Slug, C = Churn, R = Ripple, A = Annular

OVA Calibrated with _____
OVA Type _____

COP - Eureka
DPE System Monitoring Sheet
098179.304

Date: 9/9/05 Time: 0926

Manifold

Manifold H_2O meter	N/A	gal	Manifold vacuum	18	in-Hg
Manifold H_2O flow rate		gpm	Manifold temp	58°	°F

Liquid Ring Pump (LRP)

LRP hr meter	13288.60	hr	LRP oil color	Honey	
LRP oil filter	3.25	psi	LRP oil level	80% full	
LRP vacuum	20	in-Hg	LRP temp	181	°F
Throttle Valve		turns closed	Dilution air valve	0	turns open
Recirculation valve		turns open			

Water Knock-out Pot

H_2O Discharge Counter	271619	counts
Discharge pressure	6	psi
Inlet vacuum	19	in-Hg
Sediment Filter Δ P	N/A	in-H_2O

Free Product Tank

	Initial	Final
Depth to FP (ft)		
Depth to H_2O (ft)		
Main valve (4")	4 turns open	

Vapor Destruction Unit

Preheat temp (high)	1456	°F	Hour meter	13289.99	hours
Preheat temp (low)	1418	°F	OVA well field	28	ppm
Preheat SP temp	1425	°F	OVA pre-burner		ppm
Exhaust temp (high)	1464	°F	OVA post-burner	1	ppm
Exhaust temp (low)	1428	°F	Blower Valve		% open
Exhaust temp SP	1550	°F	Mode	Burner or Catalytic	

Chart Recorder

Flow	55-65	in-H_2O	Date Storage	100	% full
LEL	N/A	%			

Propane Supply

Primary pressure	6.5	psi	Operating pressure	10	in-H_2O
Secondary pressure	>1	psi	Supply tank level	78	%

Air Stripper

Vacuum	5	in-H_2O	OVA AS-Eff		ppm
Air Flow	N/A	in-H_2O	OVA Carbon-Mid		ppm
			OVA Carbon-Eff		ppm

Comments:

COP - Eureka
Eastern Biovent/Biosparge System Monitoring Sheet
098179.304

Date: 9/9/05 Time: 1015
Performed By: DCT Weather: Over Cast

Hour Meter: 45590 3/10 hours

Trench #1A	Initial	Final
Valve Position (% open)		
Flow Rate (fpm)		

Trench #1B	Initial	Final
Valve Position (% open)	100	100
Flow Rate (fpm)		

Trench #2	Initial	Final
Valve Position (% open)		
Flow Rate (fpm)		

Manifold Readings	Initial	Final
Temperature (°F)		
Pressure (psig)	1.5	1.5

Comments:

SHN CONSULTING ENGINEERS & GEOLOGISTS, INC.
812 W. Wabash • Eureka, CA 95501-2138 • 707/441-8855 • FAX: 707/441-8877 • shninfo@shn-engr.com

DAILY FIELD REPORT

Job No. 098179.305
Page of

Project Name	Client/Owner: Conocophillips	Daily Field Report Sequence No
General Location Of Work: Cop. Eureka	Owner/Client Representative	Date: 9/16/05 — Day Of Week: Fri.
General Contractor: Eureka CA	Grading Contractor	Project Engineer: Mike Foget
Type Of Work: O&M	Grading Contractor, Superintendent, Or Foreman	Supervisor
Source & Description Of Fill Material	Weather: Rain	Technician: Dustin Tibbets
	Key Persons Contacted (Civil Engr, Architect, Developer, Etc)	

Describe Equipment Used For Hauling, Spreading, Watering, Conditioning, & Compacting

1358 On site.
1400 Taking reading from the Westbiovent system.
1411 Taking reading from the DPE system.
1430 Took Suma sample from Exs-EFF — Exs-EFF
1450 Took Suma sample from Carbon EFF — Car-EFF
1505 Took Suma sample from Exs-INF — Exs-INF
1515 Took water sample from Ex-EFF — Ex-EFF
1525 Took water sample from Airstripper — As-EFF
1530 Shut DPE system off to clean Airstripper.
1541 Taking readings from the Eastbiovent system.
1600 Started system back up, removing free product from All EW-wells.

Copy given to:

Reported By: Dustin Tibbets