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Results of DPE Pilot Test and SPH Removal
Former BP Station #11109
4280 Foothill Blvd, Oakland, California
ACEH Case #RO0000426

ENVIRONMENT

"I declare that to the best of my knowledge at the present time, that the information and/or recommendations contained in the attached document are true and correct."

Date:
June 28, 2013

Submitted by:

ARCADIS U.S., Inc

Hollis E. Phillips, PG
Project Manager

Contact:
Hollis E. Phillips

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415.432-6903

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Our ref:
GP09BPNA.C112

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ENVIRONMENT

Dilan Roe, P.E.
Hazardous Materials Specialist
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject:
Results of DPE Pilot Test and SPH Removal
Former BP Station #11109
4280 Foothill Blvd, Oakland, California
ACEH Case #RO0000426

Date:
June 28, 2013

Contact:
Hollis Phillips

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Our ref:
GP09BPNA.C106

Dear Ms. Roe:

ARCADIS U.S., Inc. (ARCADIS) has prepared this letter to provide a summary of field activities at the Former BP Station #11109 located at 4280 Foothill Boulevard, in Oakland, California (Site; Figure 1). In accordance with the ACEH approved *Feasibility Study and Corrective Action Plan* (FS/CAP; ARCADIS 2011) and the subsequent *Revised Proposed Pilot Study Activities* letter (ARCADIS 2012a) ARCADIS implemented and continuously operated a mobile dual-phase extraction (DPE) and treatment system at the Site from July 17 to July 30, 2012. During a baseline groundwater sampling event in the first quarter 2012, prior to system startup, separate phase hydrocarbons (SPH) were detected in site wells MW-5, MW-10, and MW-12 (Figure 2). Following the implementation of the DPE pilot test, SPH thicknesses increased from baseline conditions; therefore, ARCADIS conducted three SPH bail-down events in addition to SPH removal within the scope of routine monitoring following the DPE pilot test to remove SPH to the extent practicable and characterize residual drainable SPH as discussed in the letter submitted on October 11, 2012 (ARCADIS 2012b).

Permitting Activities

Prior to initiating the DPE pilot test, ARCADIS obtained a permit to operate a mobile vapor treatment system as required by the Bay Area Air Quality Management District (BAAQMD) for any operation spanning longer than 5-days. An application was submitted to amend the permit conditions of an existing permit for a mobile DPE unit (BAAQMD plant number 16254) held by Mako Industries (Mako), whom ARCADIS subcontracted to perform the DPE event. Following a 30-day public notification period, approval of the application was received and permit to operate (no. 24162)

was issued on June 27, 2012. The BAAQMD permit to operate and conditions are included as **Attachment A**.

DPE Pilot Test Summary

On July 16, 2012, Mako mobilized a trailer-mounted DPE unit to the Site with ARCADIS to initiate field activities. Following review of health and safety procedures and site setup, ARCADIS conducted baseline depth-to-water (DTW) readings at all pilot test monitoring wells on-site and identified SPH in wells MW-5 (0.125 feet), MW-10 (0.75 feet), and MW-12 (1.5 feet). All measureable SPH was removed from on-site wells prior to system startup and placed in a 55-gallon drum for subsequent disposal. Field notes and site visit reports detailing product bailing and DPE operations during the July 2012 pilot test are included as **Attachment B**.

Following system setup and initial bailing activities, startup and testing of the DPE system was initiated at 3 pm on July16 at MW-5 and MW-12 to confirm system operation prior to full-scale operation. The system was fully operational three hours later following troubleshooting and replacement of various system components detailed in the site visit reports. Prior to full system startup on July 16 all site wells were measured with an oil-water interface probe to evaluate potential recharge of SPH following the previous day's bailing event; field notes indicate no SPH was observed. Continuous full-scale system operation was initiated at 7:30 am on July 17, extracting from monitoring wells MW-5, MW-10, MW-11, and MW-12. During DPE activities, air and water were extracted from the selected wells using a 1.5-inch diameter stinger and directed to a water knockout tank. Separated soil vapors were abated by a thermal oxidizer prior to discharge to the atmosphere as approved by BAAQMD and extracted groundwater was transferred to an on-site holding tank pending analysis and off-site disposal. Approximately 7,200 gallons of water at an average flow rate of 0.4 gallons per minute (gpm) were extracted during the course of the DPE event, as shown in **Table 1**.

Extraction was conducted 24 hours a day, 7 days a week from July 17 through July 30, 2012. Pressure, air velocity, and total volatile organic compounds (VOC) measurements were collected every two hours at the oxidizer inlet and at the extraction wellheads to evaluate mass removal rates over the course of the event. Removal rates from individual wells, the cumulative mass removal rate, and calculated mass removal rates as measured at the oxidizer inlet are summarized in **Table 2**. The cumulative mass removal rate, obtained by summing all the individual estimates from each extraction well, was typically an order of magnitude below the rate calculated by parameters measured at the oxidizer inlet. Field parameters such as vacuum and air velocity are typically more variable prior to the knockout tank due to higher concentrations of water vapor that can affect instrumentation; therefore,

mass removal rates determined at the oxidizer inlet following the knockout tank are considered more representative of actual operating conditions. Complete mass removal rate calculations are provided in **Attachment C**.

Results included in **Table 2** indicate that mass removal rates measured at the oxidizer inlet varied from 3.1 to 44.9 pounds of VOCs removed per day (lb/day). Daily average mass removal rates increased steadily over the first nine days of operation, reaching a maximum daily average extraction rate of 33.3 lb/day on July 25, and subsequently decreased over the remainder of the event, as shown on **Figure 3**. Maximum mass removal rates at individual wells were as follows: 2 lb/day at MW-5, 2.1 lb/day at MW-10, 1.4 lb/day at MW-11, and 21 lb/day at MW-12. As shown on **Figure 4**, the highest fraction of cumulative mass removal was typically observed at MW-10 and MW-12. Mass removal rates observed at MW-11 followed similar trends discussed previously for cumulative mass removal rates. Mass removal rates at MW-5 following startup decreased, and measurable mass removal was not observed after the fifth day of operation. Cumulative mass removal rates indicate that approximately 240 pounds of total VOCs were removed over the course of the DPE event.

The radius of influence (ROI) of the DPE system at the Site was measured by monitoring induced vacuum and DTW at selected response wells (MW-3 and MW-7) surrounding the extraction locations at periodic intervals during the test. Field data, included in **Table 3,** indicate that vacuum response was observed at monitoring well MW-3, but was not observed at MW-7. It should be noted that the screen at MW-7 was submerged for the entire duration of the test. However, DTW measurements at both monitoring locations increased over the course of the event indicating both wells were within the hydraulic ROI of the DPE system. DTW measurements increased by approximately eight feet at MW-3 from 11.96 ft below top of riser (bTOR) to 19.16 bTOR and by approximately two feet at MW-7 from 13.04 bTOR to 14.95 bTOR. Monitoring well MW-7 is constructed with a slotted PVC screen from 19.5 to 35 ft below ground surface (bgs) (riser pipe extends approximately 1.5 feet above ground surface). This indicates that though DTW response is observed at MW-7, DPE operations did not depress the water table below the top of the screened interval, which is required to observe a vacuum response at the wellhead. Overall, field data collected at response wells throughout the event indicate that DPE operations were effective at depressing the water table in the vicinity of both wells. Monitoring well MW-3 and MW-7 are 29 and 55 feet away from the closest extraction location (MW-12), respectively, suggesting that at an ROI between 29-55 feet was obtained.

Review of mass removal rates and response well data collected during the DPE field event suggest that operations effectively reduced the water table to expose submerged source mass and remove approximately 240 pounds of VOCs. Decreasing mass removal rates at the end of the field event indicate that the duration

of the event was sufficient to observe mass reduction at the extraction locations to the extent practicable utilizing DPE.

SPH Bail-down activities

During the third quarter 2012 semiannual monitoring event, thicknesses of SPH were observed to have increased from baseline levels collected in the first quarter 2012 prior to the DPE field event., ARCADIS proposed to conduct SPH bail-down activities monthly for three consecutive months to remove SPH to the extent practicable and characterize residual drainable SPH (ARCADIS 2012b). SPH bail-down activities were conducted in November 2012, December 2012, and January 2013. Field notes from bailing activities during SPH events and routine groundwater monitoring events are included as **Attachment C**, and the data are summarized in **Table 4**.

The SPH bailing events consisted of measuring initial thickness, removing SPH/water from the well using a disposable bailer until no measurable thickness was remaining, and measuring the final thickness of SPH immediately after bailing and again before leaving the site to determine if recharge occurred. Bailing was conducted at locations MW-5, MW-10, and MW-12, where both SPH and sheen have historically been observed. A summary of results from bailing activities is presented below:

- During the third quarter sampling event (September 13, 2012) approximately six weeks after the conclusion of DPE operations, the initial product thickness measured at the specified monitoring wells were 1.21 feet (MW-5), 0.01 feet (MW-10), and 1.30 feet (MW-12). Following product removal at each location, recharge was observed at monitoring wells MW-5 and MW-12 with measurable product thicknesses of 0.12 and 0.21 feet, respectively.

- During the first bailing event, conducted on November 7, 2012, SPH was observed at thicknesses of 0.17 feet and 0.21 feet at MW-5 and MW-12, respectively, indicating recharge at both locations over a two month period. Recharge of measurable SPH was not observed at MW-10. SPH recharge of 0.01 feet was observed at both locations prior to departure.

- During the second bailing event, conducted on December 5, 2012, SPH was observed at thicknesses of 0.02 feet and 0.08 feet at MW-5 and MW-12, respectively, indicating recharge of 0.04 feet of SPH at MW-12 and no recharge at MW-5 over a one month period. Recharge of SPH from post-bailing conditions was not observed upon departure. SPH was not detected at MW-10 in the second bailing event.

- During the third bailing event, conducted on January 9, 2013, SPH was observed at thicknesses of 0.01 feet and 0.06 feet at MW-5 and MW-12, respectively, indicating recharge of 0.02 feet of SPH at MW-12 and no recharge at MW-5 over a one month period. Similar to the second bailing event, recharge of SPH from post-bailing conditions was not observed upon departure. SPH was not detected at MW-10.

- During the first quarter 2013 sampling event, conducted on March 20, 2013, SPH was observed at thicknesses of 0.02 feet, 0.01 feet, and 0.04 feet at MW-5, MW-10, and MW-12, respectively, indicating recharge of 0.01 feet of SPH at all locations over a two month period. Similar to the second and third bailing events, recharge of SPH from post-bailing conditions was not observed upon departure.

All SPH removed during field activities was placed in 55-gallon drum temporarily staged on-site. Approximately 15 gallons of LNAPL/water mixture was removed during bailing events and semiannual sampling activities. Following completion of the third bailing event, the drum containing the SPH/water mixture was properly disposed offsite, and a new drum was mobilized to the Site to support bailing within the scope of routine groundwater sampling.

Baseline and departure readings from each bailing event indicate that the rate of SPH recharge at all monitoring wells decreased with each successive event. The decreasing rate of recharge and the reduced SPH thicknesses from baseline values collected following the DPE operations indicate that drainable SPH has been removed to the extent practicable. Additionally, seasonal variations in the water table did not result in significant changes in SPH thicknesses, indicating that the presence and mobility of residual SPH is not limited by water table fluctuations. Post-bailing DTW and DTP measurements collected during the three bailing events indicate that complete removal of minimal thicknesses of SPH (0.01-0.02 feet) is not possible utilizing hand-bailing methods. On May 7, 2013, ARCADIS deployed absorbent socks in monitoring wells MW-5, MW-10, and MW-12 to remove the residual SPH at each location.

Conclusions

Results from the DPE pilot test indicate that DPE effectively lowered the water table and propagated a vacuum within the subsurface, accessing submerged source mass and effectively removing it. During the two week DPE event, a total of approximately 240 pounds of source mass were removed from four extraction locations. Decreasing mass removal rates during the last 5 days of system operation indicate that the duration of the event was sufficient to observe mass reduction at the extraction

locations to the extent practicable utilizing a DPE system. Monitoring of SPH thicknesses following DPE activities and during subsequent bail-down activities at several monitoring locations indicate that drainable SPH at MW-5, MW-10, and MW-12 has been removed to the extent practicable. Effective removal of additional SPH is not feasible using hand-bailing methods.

As discussed in our meeting on March 26, 2013, ARCADIS will complete the Alameda County Environmental Health checklist detailing the current conditions of the site in relation to the low threat closure policy and a site conceptual model to evaluate the path forward.

If you have any questions or comments regarding the contents of this letter, please contact Hollis Phillips of ARCADIS at 415.432.6903 or by e-mail at Hollis.Phillips@arcadis-us.com.

Sincerely,
ARCADIS

Hollis Phillips P.G.
Project Manager

Attachments

Table 1	Cumulative Water Removed
Table 2	Mass Removal Rates
Table 3	Response Well Data
Table 4	SPH Bail-down data
Figure 1	Site Location Map
Figure 2	Site Plan
Figure 3	Mass Removal Rate Versus Time
Figure 4	Normalized Mass Removal Rates
Attachment A	BAAQMD Permit No. 24162
Attachment B	Field Forms – DPE Pilot Test
Attachment C	Mass Removal Calculations
Attachment D	Field Forms – SPH Bail-down

References:

ARCADIS U.S., Inc. (ARCADIS), 2011. *Feasibility Study and Corrective Action Plan, Former British Petroleum Service Station No.11109, 4280 Foothill Boulevard Oakland, California, ACEH Case #RO0000426*. January 14.

ARCADIS. 2012. *Revised Proposed Pilot Study Activities, Former British Petroleum Service Station No.11109, 4280 Foothill Boulevard Oakland, California, ACEH Case #RO0000426*. February 28.

ARCADIS. 2012. *Proposed Additional Remedial Activities, Former BP Service Station No. 11109, 4280 Foothill Boulevard, Oakland, California, ACEH Case #RO0000426*. October.

TABLES

Table 1
Cumulative Water Removed
Results of DPE Test and LNAPL Removal
Former BP Station No. 11109
4280 Foothill Blvd., Oakland, California

Date	Time	Totalizer	Flow Rate (gpm)	Cumulative Volume (gal)	Notes
7/16/2012	1500	249,713	---	---	Baseline
7/17/2012	730	249,792	---	79	
7/17/2012	800	249,880	2.9	167	
7/17/2012	850	249,972	1.8	259	
7/17/2012	1130	250,055	0.5	342	
7/17/2012	1445	250,140	0.4	427	
7/17/2012	1630	250,220	0.8	507	
7/17/2012	1830	250,300	0.7	587	
7/17/2012	2030	250,380	0.7	667	
7/17/2012	2230	250,380	0.0	667	
7/18/2012	0030	250,460	0.7	747	
7/18/2012	0230	250,550	0.8	837	
7/18/2012	0430	250,550	0.0	837	
7/18/2012	0620	250,636	0.7	923	
7/18/2012	748	250,718	0.7	1,005	
7/18/2012	1041	250,797	0.7	1,084	
7/18/2012	1320	250,870	0.6	1,157	
7/19/2012	0330	251,190	2.7	1,477	
7/19/2012	0630	251,273	0.7	1,560	
7/19/2012	0830	251,352	0.7	1,639	
7/19/2012	1030	251,352	0.0	1,639	
7/19/2012	1230	251,430	0.7	1,717	
7/19/2012	1430	251,430	0.0	1,717	
7/19/2012	1630	251,510	0.7	1,797	
7/19/2012	1830	251,600	0.8	1,887	
7/19/2012	2030	251,600	0.0	1,887	
7/19/2012	2230	251,600	0.0	1,887	
7/20/2012	0030	251,600	0.0	1,887	
7/20/2012	0230	251,680	0.7	1,967	
7/20/2012	0430	251,760	0.7	2,047	
7/20/2012	0630	251,770	0.1	2,057	
7/20/2012	0830	251,842	0.6	2,129	
7/20/2012	1030	251,922	0.7	2,209	
7/20/2012	1230	251,922	0.0	2,209	
7/20/2012	1430	252,003	0.7	2,290	
7/20/2012	1630	252,003	0.0	2,290	
7/20/2012	1830	252,081	0.7	2,368	
7/20/2012	2030	252,160	0.7	2,447	
7/20/2012	2230	252,160	0.0	2,447	
7/21/2012	0030	252,240	0.7	2,527	
7/21/2012	0230	252,240	0.0	2,527	
7/21/2012	0430	252,320	0.7	2,607	
7/21/2012	0630	252,320	0.0	2,607	

Table 1
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Results of DPE Test and LNAPL Removal
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4280 Foothill Blvd., Oakland, California

Date	Time	Totalizer	Flow Rate (gpm)	Cumulative Volume (gal)	Notes
7/21/2012	0830	252,400	0.7	2,687	tank emptied
7/21/2012	1030	252,488	0.7	2,775	
7/21/2012	1230	252,488	0.0	2,775	
7/21/2012	1430	252,562	0.6	2,849	
7/21/2012	1630	252,646	0.7	2,933	
7/21/2012	1830	252,640	-0.1	2,927	
7/21/2012	2030	252,720	0.7	3,007	
7/21/2012	2230	252,800	0.7	3,087	
7/22/2012	0030	252,800	0.0	3,087	
7/22/2012	0230	252,880	0.7	3,167	
7/22/2012	0430	252,880	0.0	3,167	
7/22/2012	0630	252,961	0.7	3,248	
7/22/2012	0830	253,041	0.7	3,328	
7/22/2012	1030	253,041	0.0	3,328	
7/22/2012	1230	253,121	0.7	3,408	
7/22/2012	1430	253,121	0.0	3,408	
7/22/2012	1630	253,201	0.7	3,488	
7/22/2012	1830	253,280	0.7	3,567	
7/22/2012	2030	253,280	0.0	3,567	
7/22/2012	2230	253,360	0.7	3,647	
7/23/2012	0030	253,360	0.0	3,647	
7/23/2012	0230	253,440	0.7	3,727	
7/23/2012	0430	253,440	0.0	3,727	
7/23/2012	0630	253,520	0.7	3,807	
7/23/2012	0830	253,520	0.0	3,807	
7/23/2012	1030	253,609	0.7	3,896	
7/23/2012	1230	253,688	0.7	3,975	
7/23/2012	1430	253,688	0.0	3,975	
7/23/2012	1630	253,760	0.6	4,047	
7/23/2012	1830	253,840	0.7	4,127	
7/23/2012	2030	253,840	0.0	4,127	
7/23/2012	2230	253,910	0.6	4,197	
7/24/2012	0030	253,910	0.0	4,197	
7/24/2012	0230	253,990	0.7	4,277	
7/24/2012	0430	254,070	0.7	4,277	
7/24/2012	0630	254,079	0.1	4,357	
7/24/2012	0830	254,158	0.7	4,366	
7/24/2012	1030	254,158	0.0	4,445	
7/24/2012	1230	254,238	0.7	4,445	
7/24/2012	1430	254,310	0.6	4,525	
7/24/2012	1630	254,310	0.0	4,597	
7/24/2012	1830	254,380	0.6	4,597	
7/24/2012	2030	254,380	0.0	4,667	

Table 1
Cumulative Water Removed
Results of DPE Test and LNAPL Removal
Former BP Station No. 11109
4280 Foothill Blvd., Oakland, California

Date	Time	Totalizer	Flow Rate (gpm)	Cumulative Volume (gal)	Notes
7/24/2012	2230	254,420	0.3	4,667	
7/25/2012	0030	254,420	0.0	4,707	
7/25/2012	0230	254,540	1.0	4,707	
7/25/2012	0430	254,620	0.7	4,827	
7/25/2012	0630	254,620	0.0	4,907	
7/25/2012	0830	254,708	0.7	4,907	
7/25/2012	1030	254,708	0.0	4,995	
7/25/2012	1230	254,785	0.6	4,995	
7/25/2012	1430	254,785	0.0	5,072	
7/25/2012	1630	254,850	0.5	5,072	
7/25/2012	1830	254,930	0.7	5,137	
7/25/2012	2030	254,930	0.0	5,217	
7/25/2012	2230	255,010	0.7	5,217	
7/26/2012	0030	255,010	0.0	5,297	
7/26/2012	0230	255,090	0.7	5,297	
7/26/2012	0430	255,090	0.0	5,377	
7/26/2012	0630	255,162	0.6	5,377	
7/26/2012	0830	255,162	0.0	5,449	
7/26/2012	1030	255,249	0.7	5,449	
7/26/2012	1230	255,326	0.6	5,536	
7/26/2012	1430	255,326	0.0	5,613	
7/26/2012	1630	255,390	0.5	5,613	
7/26/2012	1830	255,390	0.0	5,677	
7/26/2012	2030	255,470	0.7	5,677	
7/26/2012	2230	255,470	0.0	5,757	
7/27/2012	0030	255,550	0.7	5,757	
7/27/2012	0230	255,550	0.0	5,837	
7/27/2012	0430	255,630	0.7	5,837	
7/27/2012	0630	255,626	0.0	5,917	
7/27/2012	0830	255,703	0.6	5,913	tank emptied
7/27/2012	1030	255,781	0.7	5,990	
7/27/2012	1230	255,781	0.0	6,068	
7/27/2012	1430	255,860	0.7	6,068	
7/27/2012	1630	255,860	0.0	6,147	
7/27/2012	1830	255,940	0.7	6,147	
7/27/2012	2030	255,940	0.0	6,227	
7/27/2012	2230	256,020	0.7	6,227	
7/28/2012	0030	256,020	0.0	6,307	
7/28/2012	0230	256,020	0.0	6,307	
7/28/2012	0430	256,090	0.6	6,307	
7/28/2012	0630	256,090	0.0	6,377	
7/28/2012	0830	256,170	0.7	6,377	
7/28/2012	1030	256,170	0.0	6,457	

Table 1
Cumulative Water Removed
Results of DPE Test and LNAPL Removal
Former BP Station No. 11109
4280 Foothill Blvd., Oakland, California

Date	Time	Totalizer	Flow Rate (gpm)	Cumulative Volume (gal)	Notes
7/28/2012	1230	256,250	0.7	6,457	
7/28/2012	1430	256,250	0.0	6,537	
7/28/2012	1630	256,250	0.0	6,537	
7/28/2012	1830	256,320	0.6	6,537	
7/28/2012	2030	256,320	0.0	6,607	
7/28/2012	2230	256,400	0.7	6,607	
7/29/2012	0030	256,400	0.0	6,687	
7/29/2012	0230	256,480	0.7	6,687	
7/29/2012	0430	256,480	0.0	6,767	
7/29/2012	0630	256,550	0.6	6,767	
7/29/2012	0830	256,556	0.1	6,837	
7/29/2012	1030	256,633	0.6	6,843	
7/29/2012	1230	256,633	0.0	6,920	
7/29/2012	1430	256,633	0.0	6,920	
7/29/2012	1630	256,710	0.6	6,920	
7/29/2012	1830	256,710	0.0	6,997	
7/29/2012	2030	256,790	0.7	6,997	
7/29/2012	2230	256,820	0.3	7,077	
7/30/2012	0030	256,820	0.0	7,107	
7/30/2012	0230	256,900	0.7	7,107	
7/30/2012	0430	256,900	0.0	7,187	
7/30/2012	0630	256,970	0.6	7,187	

Notes:

gal gallons

gpm gallons per minute

Table 2
Mass Removal Rates
Results of DPE Test and LNAPL Removal
Former BP Station No. 11109
4280 Foothill Blvd., Oakland, California

		Extraction Well Readings										System Readings				Cumulative Mass Removed (lbs)
		MW-5		MW-10		MW-11		MW-12		Sum of Wells		Blower Inlet	Dilution Line	Oxidizer Inlet		
Date	Time	Flow Rate (SCFM)	Mass Removal (lbs/day)	Flow Rate (SCFM)	Mass Removal (lbs/day)	Flow Rate (SCFM)	Mass Removal (lbs/day)	Flow Rate (SCFM)	Mass Removal (lbs/day)	Flow Rate (SCFM)	Mass Removal (lbs/day)	Flow Rate (SCFM)	Flow Rate (SCFM)	Flow Rate (SCFM)	Mass Removal (lbs/day)	
7/17/2012	11:00	46.6	2.0	2.0	0.1	18.3	1.3	14.0	0.4	80.9	3.8	1.2	---	77	10.9	0.0
7/17/2012	13:00	45.8	1.5	11.1	0.9	20.0	1.4	8.2	0.3	85.2	4.1	2.2	2.2	76	10.6	0.9
7/17/2012	14:30	2.9	0.1	8.7	0.7	0.7	0.1	4.4	0.1	16.6	1.0	1.6	1.6	98	17.4	2.1
7/17/2012	16:30	1.6	0.0	7.3	0.5	1.0	0.1	2.5	0.2	12.5	0.8	1.9	2.5	93	15.9	3.4
7/17/2012	18:30	0.6	0.0	2.4	0.2	0.6	0.1	3.1	0.1	6.7	0.4	1.6	2.4	99	17.8	4.9
7/17/2012	20:30	0.5	0.0	17.2	1.2	0.5	0.1	1.2	0.1	19.5	1.3	2.2	2.2	112	22.8	6.5
7/17/2012	22:30	0.1	0.0	2.1	0.1	0.6	0.0	1.2	0.0	3.9	0.2	2.3	2.2	109	21.6	8.4
7/18/2012	00:30	0.1	0.0	2.1	0.2	0.6	0.0	0.9	0.0	3.7	0.3	2.2	2.3	112	23.0	10.3
7/18/2012	02:30	0.4	0.0	1.8	0.1	1.2	0.1	0.0	0.0	3.4	0.2	2.2	1.9	111	22.4	12.1
7/18/2012	04:30	2.8	0.3	3.1	0.2	6.4	0.4	5.0	0.1	17.3	0.9	2.2	2.0	99	17.9	13.8
7/18/2012	06:20	2.9	0.3	1.1	0.1	3.8	0.2	2.2	0.1	10.0	0.6	2.2	2.0	63	7.3	14.9
7/18/2012	08:25	2.4	0.2	1.3	0.1	4.1	0.3	2.6	0.1	10.5	0.7	2.2	2.0	66	8.0	15.5
7/18/2012	10:20	2.6	0.2	2.0	0.2	3.5	0.2	4.1	0.1	12.2	0.8	2.3	1.9	67	8.1	16.2
7/18/2012	12:31	2.6	0.1	2.2	0.2	4.8	0.2	4.9	0.2	14.5	0.8	2.3	2.0	63	7.3	16.8
7/18/2012	13:20	1.4	0.1	2.8	0.1	2.1	0.2	4.1	0.1	10.5	0.5	2.4	2.0	62	7.1	17.4
7/19/2012	12:30	1.4	0.1	1.0	0.1	1.7	0.1	5.8	0.2	9.9	0.5	3.0	1.0	65	7.8	18.0
7/19/2012	14:30	1.8	0.0	2.7	0.2	2.6	0.2	5.6	0.2	12.8	0.7	3.0	2.2	67	8.1	18.7
7/19/2012	16:30	2.2	0.1	4.0	0.3	1.9	0.1	5.4	0.2	13.6	0.8	3.0	1.5	65	7.8	19.4
7/19/2012	18:30	2.4	0.1	4.1	0.4	2.3	0.2	4.1	0.2	12.9	0.8	2.9	1.9	66	8.0	20.0
7/19/2012	20:30	2.5	0.0	3.1	0.3	2.7	0.3	3.8	0.2	12.0	0.8	3.2	1.6	67	8.2	20.7
7/19/2012	22:30	1.5	0.1	2.7	0.2	3.7	0.4	4.0	0.2	11.9	0.8	2.7	1.3	59	6.4	21.3
7/20/2012	00:30	1.2	0.0	2.4	0.2	3.1	0.3	2.1	0.1	8.8	0.6	3.3	1.4	67	8.1	21.9
7/20/2012	02:30	1.5	0.0	2.7	0.3	3.9	0.4	2.4	0.1	10.6	0.8	3.3	1.3	67	8.1	22.6
7/20/2012	04:30	1.3	0.0	2.7	0.3	1.8	0.2	1.8	0.1	7.6	0.6	3.4	1.3	67	8.3	23.3
7/20/2012	06:30	1.4	0.0	4.1	0.4	3.8	0.4	2.0	0.2	11.3	1.0	2.5	1.4	68	8.4	24.0
7/20/2012	08:30	1.8	0.1	4.7	0.5	3.5	0.5	2.1	0.2	12.2	1.2	3.0	1.4	67	8.1	24.7
7/20/2012	10:30	1.8	0.1	4.8	0.6	3.5	0.5	2.3	0.2	12.3	1.4	2.4	1.5	70	8.9	25.4
7/20/2012	12:30	1.7	0.1	5.5	0.8	3.5	0.6	2.1	0.2	12.9	1.6	2.4	1.6	73	9.8	26.2
7/20/2012	14:30	1.7	0.1	5.3	0.8	3.2	0.5	2.3	0.2	12.4	1.6	2.5	1.6	81	11.9	27.1
7/20/2012	16:30	1.7	0.0	5.2	0.7	3.4	0.7	2.4	0.2	12.7	1.7	2.4	1.5	89	14.5	28.2
7/20/2012	18:30	1.1	0.2	2.7	0.4	1.7	0.3	2.4	0.2	7.9	1.1	5.0	1.4	107	21.0	29.6
7/20/2012	20:30	1.2	0.1	2.2	0.4	2.7	0.5	1.9	0.2	8.0	1.2	3.8	1.0	116	24.7	31.6
7/20/2012	22:30	1.3	0.1	2.3	0.4	2.5	0.5	2.3	0.2	8.5	1.2	4.0	1.5	124	28.1	33.8
7/21/2012	00:30	1.5	0.1	3.0	0.5	1.4	0.2	1.8	0.2	7.6	1.0	4.0	1.9	125	28.4	36.1
7/21/2012	02:30	0.9	0.0	2.2	0.4	1.8	0.4	2.3	0.2	7.3	1.0	4.4	1.5	119	26.0	38.4
7/21/2012	04:30	1.6	0.0	2.2	0.4	2.1	0.5	2.7	0.2	8.6	1.1	4.6	1.6	135	33.3	40.8
7/21/2012	06:30	1.4	0.0	2.1	0.3	2.2	0.4	2.4	0.2	8.2	0.9	4.5	1.5	113	23.4	43.2
7/21/2012	08:30	1.4	0.0	2.3	0.4	2.2	0.4	2.5	0.2	8.4	1.0	4.5	1.7	90	14.7	44.8
7/21/2012	10:30	1.4	0.0	2.2	0.3	2.2	0.4	2.4	0.2	8.2	0.8	4.4	1.7	87	13.7	46.0
7/21/2012	12:30	1.4	0.0	2.2	0.3	2.1	0.3	2.5	0.2	8.2	0.9	4.5	1.7	94	16.1	47.2
7/21/2012	14:30	1.3	0.0	2.3	0.4	2.1	0.3	2.6	0.2	8.3	0.9	4.4	1.6	85	13.3	48.5
7/21/2012	16:30	1.5	0.0	5.0	0.8	2.1	0.4	2.6	0.3	11.2	1.4	4.5	1.6	99	17.8	49.7
7/21/2012	18:30	1.4	0.0	2.2	0.1	1.6	0.1	2.2	0.2	7.4	0.3	4.6	1.6	91	15.1	51.1

Table 2
Mass Removal Rates
Results of DPE Test and LNAPL Removal
Former BP Station No. 11109
4280 Foothill Blvd., Oakland, California

		Extraction Well Readings										System Readings				Cumulative Mass Removed (lbs)
		MW-5		MW-10		MW-11		MW-12		Sum of Wells		Blower Inlet	Dilution Line	Oxidizer Inlet		
Date	Time	Flow Rate (SCFM)	Mass Removal (lbs/day)	Flow Rate (SCFM)	Mass Removal (lbs/day)	Flow Rate (SCFM)	Mass Removal (lbs/day)	Flow Rate (SCFM)	Mass Removal (lbs/day)	Flow Rate (SCFM)	Mass Removal (lbs/day)	Flow Rate (SCFM)	Flow Rate (SCFM)	Flow Rate (SCFM)	Mass Removal (lbs/day)	
7/21/2012	20:30	1.3	0.0	2.8	0.1	1.8	0.0	2.2	0.2	8.2	0.3	4.6	1.6	124	28.0	52.9
7/21/2012	22:30	1.4	0.0	2.7	0.0	2.0	0.0	2.2	0.3	8.3	0.3	4.7	1.6	134	32.9	55.4
7/22/2012	00:30	1.3	0.0	2.8	0.0	2.1	0.0	2.2	0.3	8.3	0.3	4.6	1.6	142	36.8	58.4
7/22/2012	02:30	1.4	0.0	2.8	0.0	2.1	0.0	2.1	0.3	8.5	0.3	4.6	1.6	129	30.4	61.2
7/22/2012	04:30	1.4	0.0	2.3	0.0	2.2	0.0	2.2	0.3	8.1	0.4	4.5	1.6	132	31.8	63.7
7/22/2012	06:30	1.4	0.0	2.2	0.4	2.1	0.5	2.1	0.2	7.8	1.1	4.6	1.6	129	30.4	66.3
7/22/2012	08:30	1.5	0.0	2.3	0.5	2.1	0.5	2.1	0.3	8.0	1.2	4.7	1.6	120	26.4	68.7
7/22/2012	10:30	1.5	0.0	2.3	0.4	2.1	0.5	2.1	0.3	8.1	1.2	4.6	1.7	119	26.1	70.9
7/22/2012	12:30	1.4	0.0	2.3	0.4	2.1	0.6	2.1	0.3	7.9	1.3	4.5	1.7	116	24.6	73.0
7/22/2012	14:30	1.5	0.0	2.3	0.4	2.0	0.5	2.1	0.3	7.8	1.2	4.5	1.7	118	25.3	75.1
7/22/2012	16:30	1.5	0.0	2.2	0.4	2.0	0.5	2.1	0.3	7.8	1.2	4.5	1.6	113	23.1	77.1
7/22/2012	18:30	1.4	0.0	2.2	0.2	2.1	0.2	2.0	0.3	7.7	0.6	4.4	1.6	135	33.1	79.4
7/22/2012	20:30	1.5	0.0	2.2	0.1	2.1	0.1	1.9	0.3	7.8	0.4	4.4	1.6	151	41.5	82.6
7/22/2012	22:30	1.4	0.0	2.2	0.1	2.0	0.6	2.0	0.3	7.6	0.9	4.5	1.6	148	40.2	86.0
7/23/2012	00:30	0.6	0.0	2.8	0.4	2.4	0.1	2.5	0.4	8.3	0.8	4.6	1.6	150	40.9	89.3
7/23/2012	02:30	0.6	0.0	2.3	0.4	2.5	0.5	2.5	0.3	7.9	1.2	4.5	1.6	139	35.1	92.5
7/23/2012	04:30	1.2	0.0	2.8	0.4	2.6	0.5	2.4	0.3	8.9	1.2	4.6	2.0	140	36.0	95.5
7/23/2012	06:30	1.7	0.0	2.8	0.5	2.5	0.7	2.4	0.3	9.5	1.5	5.5	1.8	142	36.8	98.5
7/23/2012	08:30	1.8	0.0	2.5	0.5	2.3	0.3	2.2	0.3	8.9	1.1	5.4	2.1	118	25.4	101.1
7/23/2012	10:30	2.1	0.0	3.0	0.6	2.2	0.3	2.2	0.3	9.5	1.1	5.3	2.3	119	26.1	103.2
7/23/2012	12:30	1.9	0.0	2.9	0.6	2.5	0.3	2.4	0.3	9.8	1.2	5.1	2.1	115	24.2	105.3
7/23/2012	14:30	1.7	0.0	2.9	0.6	2.5	0.3	2.4	0.3	9.5	1.2	5.1	1.4	110	21.9	107.3
7/23/2012	16:30	1.8	0.0	3.0	0.6	2.8	0.4	3.5	0.5	11.1	1.5	9.0	2.3	149	40.4	109.9
7/23/2012	18:30	2.9	0.0	3.1	0.6	2.7	0.3	3.0	0.5	11.7	1.3	9.5	2.3	128	29.8	112.8
7/23/2012	20:30	2.2	0.0	3.3	0.4	3.3	0.3	3.4	0.5	12.3	1.3	9.2	2.2	136	33.6	115.4
7/23/2012	22:30	0.7	0.0	3.2	0.6	3.2	0.4	3.5	0.6	10.6	1.6	9.4	2.2	129	30.2	118.1
7/24/2012	00:30	0.7	0.0	3.2	0.4	3.4	0.4	3.6	0.6	10.9	1.4	10.0	2.3	131	31.4	120.7
7/24/2012	02:30	0.8	0.0	3.4	0.4	3.5	0.4	3.7	0.6	11.3	1.5	10.1	2.3	134	32.9	123.3
7/24/2012	04:30	0.7	0.0	3.3	0.4	3.3	0.5	3.5	0.6	10.8	1.5	10.0	2.3	136	33.6	126.1
7/24/2012	06:30	2.1	0.0	4.3	0.8	4.1	0.4	4.2	0.7	14.7	1.9	9.5	2.0	138	34.7	129.0
7/24/2012	08:30	2.0	0.0	4.0	0.9	4.2	0.4	4.4	0.7	14.7	2.1	9.3	1.9	138	35.0	131.9
7/24/2012	10:30	2.1	0.0	3.7	0.8	4.3	0.5	4.5	0.7	14.5	2.0	9.2	2.0	125	28.5	134.5
7/24/2012	12:30	2.6	0.0	3.9	0.8	4.5	0.5	4.4	0.7	15.4	1.9	9.0	1.9	119	25.7	136.8
7/24/2012	14:30	2.7	0.0	4.2	0.9	4.7	0.5	4.5	0.8	16.1	2.1	9.8	1.9	115	24.1	138.8
7/24/2012	16:30	3.4	0.0	4.1	0.7	3.9	0.4	4.1	0.7	15.5	1.8	11.7	2.4	121	26.8	141.0
7/24/2012	18:30	3.6	0.0	3.9	0.6	3.8	0.4	4.1	0.7	15.4	1.7	11.1	2.2	134	32.9	143.5
7/24/2012	20:30	3.7	0.0	3.7	0.6	3.9	0.4	3.5	0.6	14.8	1.6	11.3	2.1	151	41.8	146.6
7/24/2012	22:30	3.8	0.0	3.9	0.7	3.7	0.4	3.9	0.7	15.3	1.7	11.4	2.1	153	42.9	150.1
7/25/2012	00:30	3.9	0.0	3.9	0.7	3.9	0.7	3.8	0.7	15.4	2.0	11.5	2.1	149	40.6	153.6
7/25/2012	02:30	4.0	0.0	4.0	0.7	3.7	0.4	4.0	0.7	15.7	1.8	11.3	2.0	151	41.4	157.0
7/25/2012	04:30	3.8	0.0	3.9	0.8	3.9	0.3	4.0	0.7	15.6	1.8	11.5	2.1	150	41.2	160.4
7/25/2012	06:30	3.9	0.0	4.1	0.9	3.9	0.3	3.8	0.7	15.7	1.9	10.7	2.1	154	43.1	164.0
7/25/2012	08:30	4.4	0.0	4.0	0.8	4.1	0.5	3.9	0.7	16.5	2.0	11.0	2.1	157	44.9	167.6

Table 2
Mass Removal Rates
Results of DPE Test and LNAPL Removal
Former BP Station No. 11109
4280 Foothill Blvd., Oakland, California

		Extraction Well Readings										System Readings				Cumulative Mass Removed (lbs)
		MW-5		MW-10		MW-11		MW-12		Sum of Wells		Blower Inlet	Dilution Line	Oxidizer Inlet		
Date	Time	Flow Rate (SCFM)	Mass Removal (lbs/day)	Flow Rate (SCFM)	Mass Removal (lbs/day)	Flow Rate (SCFM)	Mass Removal (lbs/day)	Flow Rate (SCFM)	Mass Removal (lbs/day)	Flow Rate (SCFM)	Mass Removal (lbs/day)	Flow Rate (SCFM)	Flow Rate (SCFM)	Flow Rate (SCFM)	Mass Removal (lbs/day)	
7/25/2012	10:30	4.7	0.0	4.1	0.9	3.9	0.4	3.9	0.7	16.6	1.9	10.9	2.1	121	26.7	170.6
7/25/2012	12:30	4.7	0.0	4.0	0.9	3.8	0.7	3.7	0.6	16.3	2.2	12.6	2.1	135	33.0	173.1
7/25/2012	14:30	4.9	0.0	4.3	0.8	4.2	0.7	3.6	0.6	17.0	2.1	12.7	2.1	127	29.3	175.7
7/25/2012	16:30	4.2	0.0	5.0	0.9	4.8	0.7	4.3	0.8	18.4	2.3	12.5	2.1	120	26.2	178.0
7/25/2012	18:30	4.0	0.0	5.2	0.9	5.3	0.4	5.1	0.9	19.6	2.2	14.4	2.1	113	23.2	180.1
7/25/2012	20:30	4.3	0.0	4.9	0.9	5.4	0.3	5.0	0.9	19.7	2.2	14.6	2.0	121	26.9	182.2
7/25/2012	22:30	4.3	0.0	5.0	0.9	5.3	0.4	4.9	0.9	19.4	2.3	16.2	2.0	112	22.7	184.2
7/26/2012	00:30	4.2	0.0	4.9	1.0	5.4	0.4	5.1	1.0	19.6	2.3	15.8	2.0	110	22.1	186.1
7/26/2012	02:30	4.1	0.0	4.8	1.0	5.2	0.3	4.9	0.9	18.8	2.3	15.9	1.9	95	16.6	187.7
7/26/2012	04:30	4.3	0.0	5.0	1.0	5.2	0.3	5.2	1.0	19.7	2.3	14.3	1.9	100	18.4	189.2
7/26/2012	06:30	4.9	0.0	5.4	0.9	6.9	0.4	4.9	0.9	22.0	2.3	16.6	1.9	114	23.6	190.9
7/26/2012	08:30	5.1	0.0	5.5	1.1	6.8	0.4	4.9	0.9	22.4	2.5	16.6	2.0	109	21.7	192.8
7/26/2012	10:30	4.9	0.0	5.4	1.0	6.9	0.5	5.1	1.0	22.3	2.5	16.7	2.0	100	18.4	194.5
7/26/2012	12:30	5.2	0.0	5.4	1.0	7.0	0.4	5.4	1.1	23.0	2.5	16.9	2.0	96	16.9	195.9
7/26/2012	14:30	5.1	0.0	5.5	1.0	7.1	0.4	5.5	1.1	23.3	2.6	16.9	2.0	99	17.9	197.4
7/26/2012	16:30	4.5	0.0	5.4	1.1	6.8	0.3	5.1	1.1	21.7	2.6	21.3	1.2	92	15.4	198.8
7/26/2012	18:30	4.4	0.0	5.4	1.1	7.0	0.4	5.4	1.2	22.3	2.6	20.1	1.1	89	14.6	200.0
7/26/2012	20:30	5.2	0.0	6.2	1.5	7.1	0.2	5.7	1.3	24.2	3.1	22.3	1.1	101	18.5	201.4
7/26/2012	22:30	5.3	0.0	6.4	1.7	7.2	0.3	5.5	1.4	24.3	3.4	21.6	1.1	94	16.1	202.8
7/27/2012	00:30	5.1	0.0	6.1	1.4	6.9	0.3	5.6	1.3	23.7	3.0	21.2	1.1	105	20.3	204.4
7/27/2012	02:30	5.2	0.0	6.3	1.5	7.1	0.2	5.7	1.3	24.3	3.0	21.6	1.1	100	18.2	206.0
7/27/2012	04:30	3.8	0.0	6.4	1.3	7.0	0.3	5.8	1.3	23.0	2.9	20.9	1.1	84	12.8	207.2
7/27/2012	06:30	5.6	0.0	6.7	0.3	7.1	0.1	8.0	2.0	27.4	2.5	20.6	1.2	96	16.7	208.5
7/27/2012	08:30	5.9	0.0	7.2	1.8	7.0	0.3	8.0	1.9	28.2	4.0	20.8	1.2	95	16.3	209.9
7/27/2012	10:30	6.1	0.0	7.4	1.8	7.0	0.3	7.9	1.7	28.4	3.8	20.5	1.1	88	14.0	211.1
7/27/2012	12:30	6.5	0.0	7.7	1.8	6.8	0.3	7.6	1.8	28.6	3.9	20.3	1.1	85	13.0	212.2
7/27/2012	14:30	8.1	0.0	8.0	1.7	7.9	0.3	9.0	2.1	32.9	4.1	29.2	2.3	96	16.7	213.5
7/27/2012	16:30	7.3	0.0	7.5	1.7	8.5	0.2	9.5	2.4	32.7	4.2	31.0	3.0	95	16.5	214.9
7/27/2012	18:30	7.6	0.0	7.7	1.7	8.1	0.1	9.8	2.4	33.2	4.3	31.5	3.2	80	11.8	216.0
7/27/2012	20:30	8.3	0.0	8.0	2.1	8.5	0.2	9.3	2.5	34.2	4.8	30.7	2.4	80	11.8	217.0
7/27/2012	22:30	8.2	0.0	7.9	2.1	8.4	0.3	9.5	2.5	34.0	4.9	29.9	2.5	80	11.8	218.0
7/28/2012	00:30	8.5	0.0	8.1	2.1	8.2	0.3	9.4	2.5	34.1	4.9	31.0	2.5	80	11.6	219.0
7/28/2012	02:30	8.5	0.0	7.8	2.0	7.2	0.2	80.0	21.0	103.6	23.2	31.2	2.5	76	10.5	219.9
7/28/2012	04:30	1.9	0.0	7.7	1.9	7.1	0.2	7.8	2.0	24.6	4.1	30.3	3.1	77	10.9	220.8
7/28/2012	06:30	1.9	0.0	7.6	1.8	8.6	0.2	9.5	2.4	27.6	4.4	32.8	2.9	73	9.7	221.7
7/28/2012	08:30	8.0	0.0	7.8	1.7	8.5	0.2	8.5	1.9	32.7	3.9	34.1	2.8	70	9.1	222.4
7/28/2012	10:30	8.5	0.0	7.4	1.4	9.0	0.1	9.1	1.9	34.0	3.5	35.3	2.7	69	8.6	223.2
7/28/2012	12:30	8.9	0.0	9.1	1.9	8.8	0.1	9.4	2.1	36.3	4.2	35.9	3.2	65	7.8	223.9
7/28/2012	14:30	8.3	0.0	9.4	1.9	9.3	0.1	9.5	2.2	36.4	4.3	35.6	3.3	63	7.2	224.5
7/28/2012	16:30	7.2	0.0	8.0	1.5	8.4	0.1	8.9	2.2	32.5	3.9	38.5	2.9	64	7.5	225.1
7/28/2012	18:30	7.8	0.0	8.4	1.8	9.6	0.1	9.6	2.4	35.4	4.4	46.4	3.1	76	10.5	225.8
7/28/2012	20:30	8.7	0.0	8.3	1.9	10.3	0.1	10.5	2.7	37.8	4.8	39.8	2.9	73	9.7	226.7
7/28/2012	22:30	4.2	0.0	7.8	1.8	10.1	0.1	10.7	2.7	32.8	4.6	39.3	2.8	71	9.2	227.5

Table 2
Mass Removal Rates
Results of DPE Test and LNAPL Removal
Former BP Station No. 11109
4280 Foothill Blvd., Oakland, California

		Extraction Well Readings										System Readings				Cumulative Mass Removed (lbs)
		MW-5		MW-10		MW-11		MW-12		Sum of Wells		Blower Inlet	Dilution Line	Oxidizer Inlet		
Date	Time	Flow Rate (SCFM)	Mass Removal (lbs/day)	Flow Rate (SCFM)	Mass Removal (lbs/day)	Flow Rate (SCFM)	Mass Removal (lbs/day)	Flow Rate (SCFM)	Mass Removal (lbs/day)	Flow Rate (SCFM)	Mass Removal (lbs/day)	Flow Rate (SCFM)	Flow Rate (SCFM)	Flow Rate (SCFM)	Mass Removal (lbs/day)	
7/29/2012	00:30	4.8	0.0	8.2	1.9	10.9	0.1	10.3	2.7	34.2	4.7	43.0	2.7	70	8.8	228.2
7/29/2012	02:30	4.9	0.0	8.3	1.9	10.3	0.1	10.5	2.6	34.0	4.7	41.3	2.6	70	9.0	229.0
7/29/2012	04:30	4.2	0.0	8.2	1.9	10.1	0.1	10.6	2.7	33.1	4.7	43.5	2.6	70	9.0	229.7
7/29/2012	06:30	4.6	0.0	8.6	2.0	10.6	0.1	10.3	2.5	33.9	4.7	42.8	2.8	70	9.0	230.5
7/29/2012	08:30	4.7	0.0	7.7	1.7	10.7	0.1	8.7	2.3	31.7	4.2	39.1	0.0	42	3.2	231.0
7/29/2012	10:30	4.0	0.0	7.9	1.5	10.4	0.1	8.5	2.1	30.8	3.7	39.1	0.0	65	7.8	231.4
7/29/2012	12:30	4.4	0.0	7.8	1.4	10.1	0.2	8.7	2.1	31.1	3.6	38.0	0.0	67	8.2	232.1
7/29/2012	14:30	0.0	0.0	7.9	1.4	10.0	0.2	8.7	2.1	26.6	3.7	39.9	0.0	93	15.8	233.1
7/29/2012	16:30	4.5	0.0	7.8	1.3	10.4	0.1	8.4	2.0	31.2	3.4	41.9	0.0	95	16.5	234.5
7/29/2012	18:30	4.4	0.0	8.0	1.3	10.1	0.1	8.5	1.9	30.9	3.3	40.5	0.0	42	3.1	235.3
7/29/2012	20:30	3.8	0.0	8.5	1.6	9.8	0.1	8.1	1.5	30.3	3.2	43.4	0.0	53	5.2	235.6
7/29/2012	22:30	3.7	0.0	8.1	1.4	10.6	0.1	9.0	1.8	31.4	3.3	41.3	0.0	47	4.1	236.0
7/30/2012	00:30	3.3	0.0	7.8	1.4	10.7	0.1	8.5	1.5	30.3	3.0	44.2	0.0	56	5.8	236.4
7/30/2012	02:30	4.1	0.0	8.3	1.4	10.1	0.1	9.2	1.6	31.7	3.1	46.2	0.0	56	5.6	236.9
7/30/2012	04:30	4.9	0.0	9.8	1.8	10.4	0.1	8.7	2.2	33.9	4.1	45.1	0.0	52	4.9	237.3
7/30/2012	06:30	5.3	0.0	8.9	1.6	10.8	0.1	9.6	2.3	34.5	4.1	45.5	0.0	56	5.8	237.8

Notes:

---	not measured
ACFM	actual cubic feet per minute
in	inches
in Hg	inches of mercury
in H_2O	inches of water
ft^2	square feet
ft/min	feet per minute
lbs/day	pounds per day
ppm_v	parts per million by volume
SCFM	standard cubic feet per minute
**	assumed 2 hour intervals between readings

Flow and Emission Equations

ACFM (ft^3/min) = Velocity (ft/min) X Flow Area (ft^2)

$$SCFM_{25C} = ACFM \times \left(\frac{P_{abs}+P_g}{P_{abs}}\right)\left(\frac{537}{460+T}\right)$$

Mass Removal (lb/day) = SCFM (ft^3/min) x VOCs (ppmv) x 6.23x10-8 [(lb/ft^3)/(ppmv)] x 1440 (min/day)

where:

P_{abs} = *Atmospheric Pressure at Sea Level (1 atm = 406.8 in H_2O)*

P_g = *Guage/Line Pressure - equivalent to zero if atmospheric discharge*

T = *Airstream Temperature, degrees Farenheit (^oF)*

Table 3
Reponse Well Data
Results of DPE Test and LNAPL Removal
Former BP Station No. 11109
4280 Foothill Blvd., Oakland, California

Location ID:		MW-3		MW-7		
Date	Time	Vacuum (in H_2O)	DTW (ft bTOR)	Vacuum (in H_2O)	DTW (ft bTOR)	Notes
7/16/2012	1445	0.00	11.96	0.00	13.04	Baseline
7/17/2012	1100	0.00	12.89	0.00	13.55	
7/17/2012	1300	0.00	13.07	0.00	13.67	
7/17/2012	1430	0.00	13.46	0.00	13.75	
7/17/2012	1630	0.13	13.95	0.00	13.86	
7/17/2012	1830	0.00	14.23	0.00	13.87	
7/17/2012	2030	0.00	14.66	0.00	13.92	
7/17/2012	2230	0.15	14.94	0.00	13.98	
7/18/2012	0030	0.00	15.21	0.00	14.3	
7/18/2012	0230	0.00	15.45	0.00	14.07	
7/18/2012	0430	0.00	15.67	0.00	14.09	
7/18/2012	0620	0.00	15.85	0.00	14.1	
7/18/2012	0825	0.00	16.03	0.00	14.07	
7/18/2012	1020	0.00	16.29	0.00	14.16	
7/18/2012	1231	0.00	16.48	0.00	14.21	
7/18/2012	1320	0.00	16.58	0.00	14.25	
7/19/2012	1230	0.14	17.77	0.00	14.48	
7/19/2012	1430	0.59	17.87	0.00	14.54	
7/19/2012	1630	0.79	17.93	0.00	14.53	
7/19/2012	1830	0.75	17.98	0.00	14.48	
7/19/2012	2030	0.78	18.03	0.00	14.46	
7/19/2012	2230	0.67	18.06	0.00	14.46	
7/20/2012	0030	0.47	18.06	0.00	14.49	
7/20/2012	0230	0.37	18.1	0.00	14.5	
7/20/2012	0430	0.10	18.18	0.00	14.51	
7/20/2012	0630	0.00	18.21	0.00	14.51	
7/20/2012	0830	0.00	18.27	0.00	14.57	
7/20/2012	1030	0.00	18.31	0.00	14.57	
7/20/2012	1230	0.00	18.31	0.00	14.6	
7/20/2012	1430	0.00	18.36	0.00	14.65	
7/20/2012	1630	0.00	18.39	0.00	14.66	
7/20/2012	1830	0.49	18.48	0.00	14.6	
7/20/2012	2030	0.64	18.52	0.00	14.56	
7/20/2012	2230	0.49	18.53	0.00	14.55	
7/21/2012	0030	0.55	18.55	0.00	14.56	
7/21/2012	0230	0.10	18.53	0.00	14.57	
7/21/2012	0430	0.21	18.56	0.00	14.58	
7/21/2012	0630	0.00	18.58	0.00	14.58	
7/21/2012	0830	0.00	18.58	0.00	14.58	
7/21/2012	1030	0.00	18.58	0.00	14.58	
7/21/2012	1230	0.00	18.58	0.00	14.58	
7/21/2012	1430	0.00	18.58	0.00	14.59	
7/21/2012	1630	0.00	18.56	0.00	14.65	

Table 3
Reponse Well Data
Results of DPE Test and LNAPL Removal
Former BP Station No. 11109
4280 Foothill Blvd., Oakland, California

Location ID:		MW-3		MW-7		
Date	Time	Vacuum (in H_2O)	DTW (ft bTOR)	Vacuum (in H_2O)	DTW (ft bTOR)	Notes
7/21/2012	1830	-0.45	18.6	0.00	14.56	
7/21/2012	2030	0.19	18.6	0.00	14.56	
7/21/2012	2230	0.45	18.6	0.00	14.56	
7/22/2012	0030	0.30	18.6	0.00	14.58	
7/22/2012	0230	0.05	18.56	0.00	14.59	
7/22/2012	0430	0.13	18.6	0.00	14.6	
7/22/2012	0630	0.00	18.58	0.00	14.59	
7/22/2012	0830	0.00	18.58	0.00	14.61	
7/22/2012	1030	0.00	18.6	0.00	14.61	
7/22/2012	1230	0.00	18.6	0.00	14.63	
7/22/2012	1430	0.00	18.64	0.00	14.63	
7/22/2012	1630	0.00	18.69	0.00	14.76	
7/22/2012	1830	0.53	18.75	0.00	14.7	
7/22/2012	2030	0.55	18.78	0.00	14.65	
7/22/2012	2230	0.48	18.79	0.00	14.64	
7/23/2012	0030	0.20	18.77	0.00	14.65	
7/23/2012	0230	0.21	18.8	0.00	14.66	
7/23/2012	0430	0.29	18.82	0.00	14.66	
7/23/2012	0630	0.00	18.78	0.00	14.66	
7/23/2012	0830	0.00	18.76	0.00	14.66	
7/23/2012	1030	0.44	18.71	0.00	14.7	
7/23/2012	1230	0.41	18.68	0.00	14.74	
7/23/2012	1430	0.48	18.72	0.00	14.79	
7/23/2012	1630	0.15	18.75	0.00	14.8	
7/23/2012	1830	0.29	18.77	0.00	14.8	
7/23/2012	2030	0.37	18.81	0.00	14.76	
7/23/2012	2230	0.39	18.81	0.00	14.78	
7/24/2012	0030	0.29	18.82	0.00	14.8	
7/24/2012	0230	0.29	18.83	0.00	14.82	
7/24/2012	0430	0.29	18.85	0.00	14.82	
7/24/2012	0630	0.27	18.81	0.00	14.85	
7/24/2012	0830	0.26	18.88	0.00	14.86	
7/24/2012	1030	0.27	18.91	0.00	14.86	
7/24/2012	1230	0.21	18.92	0.00	14.88	
7/24/2012	1430	0.25	18.98	0.00	14.88	
7/24/2012	1630	0.21	19.01	0.00	14.9	
7/24/2012	1830	0.40	19.04	0.00	14.91	
7/24/2012	2030	0.58	19.07	0.00	14.87	
7/24/2012	2230	0.42	19.07	0.00	14.86	
7/25/2012	0030	0.31	19.05	0.00	14.87	
7/25/2012	0230	0.25	19.07	0.00	14.88	
7/25/2012	0430	0.12	19.09	0.00	14.89	
7/25/2012	0630	0.14	19.09	0.00	14.89	

Table 3
Reponse Well Data
Results of DPE Test and LNAPL Removal
Former BP Station No. 11109
4280 Foothill Blvd., Oakland, California

Location ID:		MW-3		MW-7		
Date	Time	Vacuum (in H_2O)	DTW (ft bTOR)	Vacuum (in H_2O)	DTW (ft bTOR)	Notes
7/25/2012	0830	0.19	19.1	0.00	14.9	
7/25/2012	1030	0.18	19.1	0.00	14.9	
7/25/2012	1230	0.00	19.1	0.00	14.92	manometer broke, replaced with magnehelic
7/25/2012	1430	0.00	19.12	0.00	14.93	
7/25/2012	1630	0.00	19.12	0.00	14.95	
7/25/2012	1830	0.00	19.15	0.00	14.94	
7/25/2012	2030	0.00	19.16	0.00	14.86	
7/25/2012	2230	0.14	19.13	0.00	14.87	
7/26/2012	0030	0.14	19.12	0.00	14.88	
7/26/2012	0230	0.14	19.13	0.00	14.88	
7/26/2012	0430	0.14	19.12	0.00	14.88	
7/26/2012	0630	0.00	19.12	0.00	14.88	
7/26/2012	0830	0.00	19.12	0.00	14.88	
7/26/2012	1030	0.00	19.12	0.00	14.88	
7/26/2012	1230	0.00	19.12	0.00	14.88	
7/26/2012	1430	0.00	19.12	0.00	14.88	
7/26/2012	1630	0.01	19.12	0.00	14.92	
7/26/2012	1830	0.01	19.12	0.00	14.92	
7/26/2012	2030	0.02	19.12	0.00	14.85	
7/26/2012	2230	0.15	19.12	0.00	14.86	
7/27/2012	0030	0.01	19.16	0.00	14.87	
7/27/2012	0230	0.15	19.1	0.00	14.88	
7/27/2012	0430	0.05	19.09	0.00	14.86	
7/27/2012	0630	0.00	19.09	0.00	14.86	
7/27/2012	0830	0.00	19.07	0.00	14.86	
7/27/2012	1030	0.00	19.07	0.00	14.86	
7/27/2012	1230	1.50	19.04	0.00	14.86	
7/27/2012	1430	0.16	19.06	0.00	14.89	
7/27/2012	1630	0.10	19.06	0.00	14.92	
7/27/2012	1830	0.14	19.06	0.00	14.86	
7/27/2012	2030	0.31	19.06	0.00	14.82	
7/27/2012	2230	0.22	19.03	0.00	14.82	
7/28/2012	0030	0.19	19.01	0.00	14.82	
7/28/2012	0230	0.06	19.01	0.00	14.82	
7/28/2012	0430	0.13	18.98	0.00	14.82	
7/28/2012	0630	0.02	18.98	0.00	14.82	
7/28/2012	0830	0.14	18.95	0.00	14.81	
7/28/2012	1030	0.33	18.92	0.00	14.81	
7/28/2012	1230	0.76	18.88	0.00	14.81	
7/28/2012	1430	0.71	18.88	0.00	14.81	
7/28/2012	1630	0.39	18.9	0.00	14.84	
7/28/2012	1830	0.09	18.92	0.00	14.84	

Table 3
Reponse Well Data
Results of DPE Test and LNAPL Removal
Former BP Station No. 11109
4280 Foothill Blvd., Oakland, California

Location ID:		MW-3		MW-7		
Date	Time	Vacuum (in H_2O)	DTW (ft bTOR)	Vacuum (in H_2O)	DTW (ft bTOR)	Notes
7/28/2012	2030	0.24	18.89	0.00	14.83	
7/28/2012	2230	0.10	18.9	0.00	14.84	
7/29/2012	0030	0.15	18.88	0.00	14.82	
7/29/2012	0230	0.25	18.99	0.00	14.86	
7/29/2012	0430	0.09	18.88	0.00	14.83	
7/29/2012	0630	0.08	18.82	0.00	14.83	
7/29/2012	0830	0.08	18.77	0.00	14.83	
7/29/2012	1030	0.09	18.76	0.00	14.75	
7/29/2012	1230	1.01	18.68	0.00	14.75	
7/29/2012	1430	0.72	18.72	0.00	14.79	

Notes:

DTP	depth to product
DTW	depth to water
ft bTOR	feet below top of riser; DTW measured from top of temporary riser pipe (~1.5 feet above top of well casing)
in H_2O	inches of water

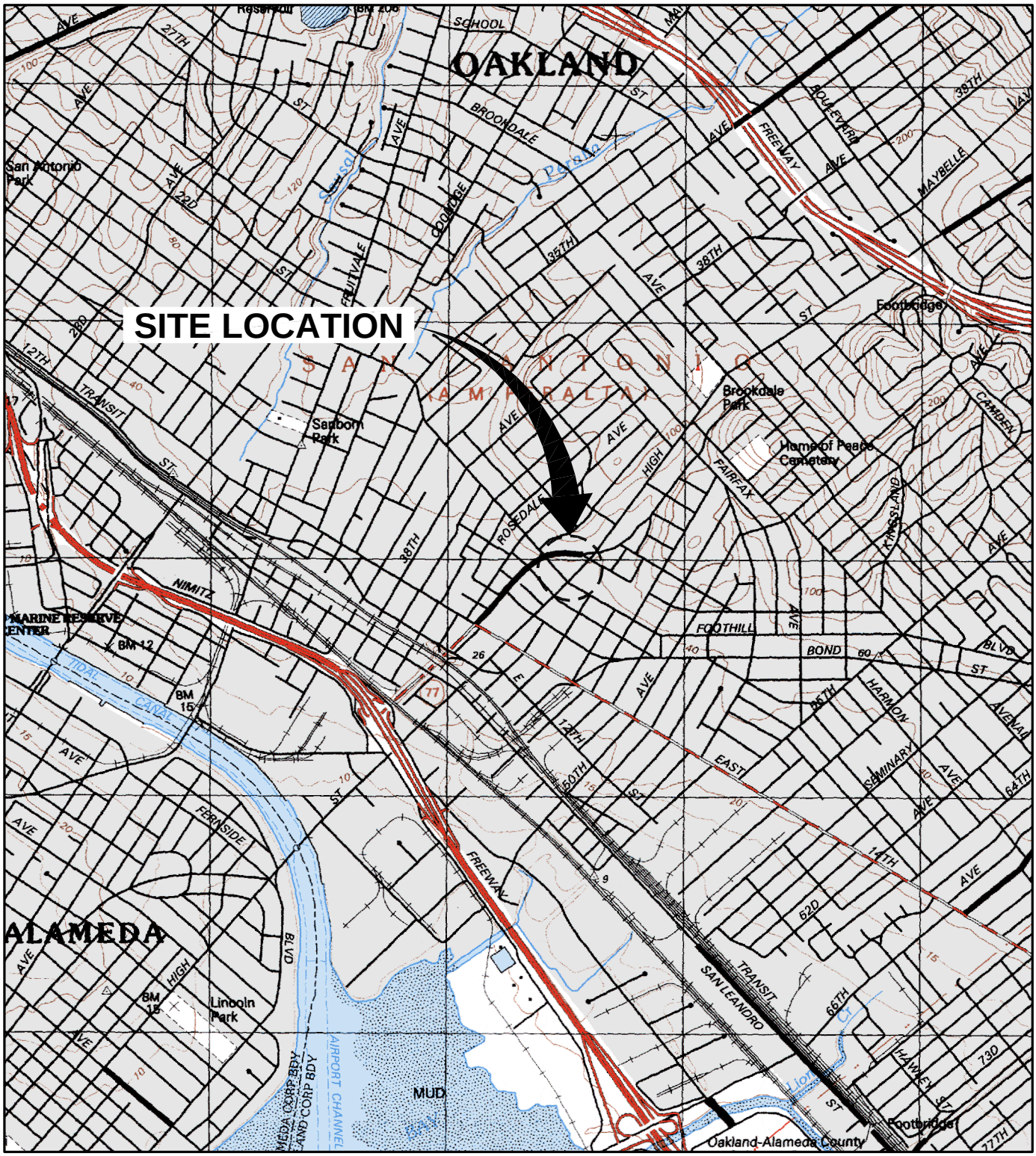
Table 4
SPH Bail-down Data
Results of DPE Test and LNAPL Removal
Former BP Station No. 11109
4280 Foothill Blvd., Oakland, California

		MW-5				MW-10				MW-12			
Date	Phase	DTP (ft bTOC)	DTW (ft bTOC)	Product Thickness (feet)	Product Removed (gal)	DTP (ft bTOC)	DTW (ft bTOC)	Product Thickness (feet)	Product Removed (gal)	DTP (ft bTOC)	DTW (ft bTOC)	Product Thickness (feet)	Product Removed (gal)
9/13/2012	pre-bailing	10.20	11.41	1.21	0.72	10.72	10.73	0.01	0.01	10.42	11.72	1.30	0.72
	post-bailing	--	--	0.12	--	--	--	--	--	--	--	0.21	--
11/7/2012	pre-bailing	10.13	10.30	0.17	2.50*	--	9.87	--	--	10.04	10.56	0.52	3.50*
	post-bailing	11.53	11.54	0.01		--	9.87	--		11.43	11.46	0.03	
	departure	10.07	10.09	0.02		--	9.87	--		10.66	10.70	0.04	
12/5/2012	pre-bailing	7.18	7.20	0.02	1.00*	--	6.95	--	--	7.92	8.00	0.08	1.00*
	post-bailing	7.95	7.97	0.02		--	7.23	--		8.55	8.59	0.04	
	departure	7.34	7.35	0.01		--	7.27	--		8.14	8.18	0.04	
1/9/2013	pre-bailing	8.03	8.04	0.01	0.50*	--	7.71	--	--	8.46	8.52	0.06	1.50*
	post-bailing	8.76	8.77	0.01		--	--	--		9.55	9.58	0.03	
	departure	8.09	8.10	0.01		--	--	--		8.89	8.92	0.03	
3/20/2013	pre-bailing	9.71	9.73	0.02	0.53*	9.47	9.48	0.01	0.26*	10.09	10.13	0.04	0.53*
	post-bailing	10	10.01	0.01		--	9.69	--		10.71	10.73	0.02	
	departure	9.91	9.92	0.01		--	9.68	--		10.36	10.38	0.02	

Notes:

DTP	depth to product
DTW	depth to water
ft bTOC	measured from top of temporary riser pipe (~1 foot above top of well casing)
gal	gallons
--	not available/ not applicable
*	free product/water mixture

FIGURES



REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. QUAD.,OAKLAND WEST, CA., 1993, AND SAN LEANDRO, 1993, REVISED 1996.

0 2000' 4000'

Approximate Scale: 1 in. = 2000 ft.

FORMER BP STATION #11109
4280 FOOTHILL BOULEVARD
OAKLAND, CALIFORNIA

SITE LOCATION MAP

ARCADIS

FIGURE
1

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS LD:--- PIC:--- PM: H. PHILLIPS TM: B. McKENNA LYR:(Opt)ON=*;OFF=*REF*
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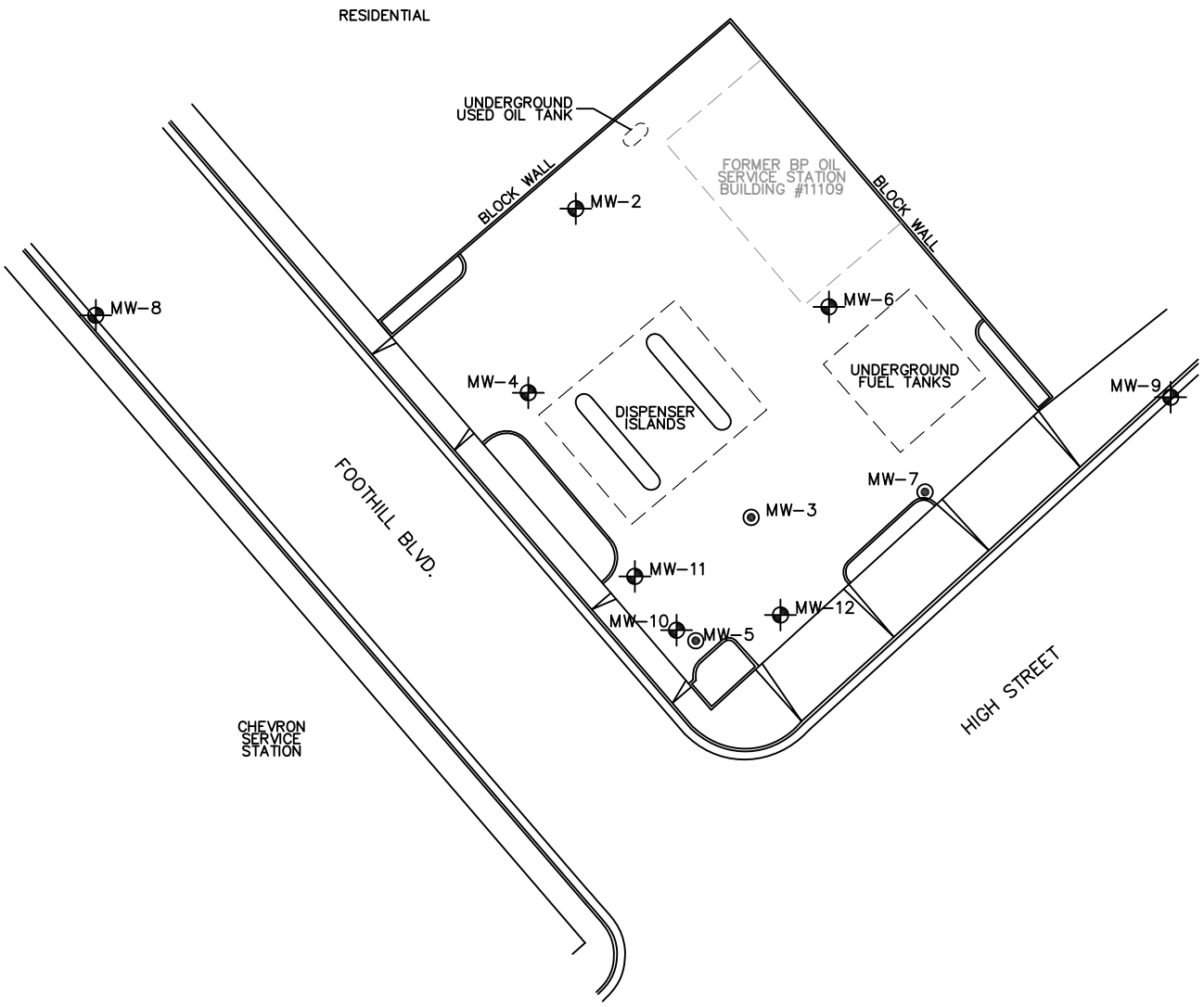
XREFS: IMAGES: PROJECTNAME: ---
GP09BX01.tif
GP09BX03.tiff



0 50' 100'

GRAPHIC SCALE

LEGEND

MONITORING WELL

RECOVERY WELL

NOTE: BASE MAP PROVIDED BY BROADBENT & ASSOCIATES, INC., DATED 10/26/2009, REFERENCE NO. 06-88-646, AT A SCALE OF 1"=40'.

FORMER BP STATION #11109
4280 FOOTHILL BOULEVARD
OAKLAND, CALIFORNIA

SITE PLAN

ARCADIS

FIGURE
2

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS LD:--- PIC:--- PM: H. PHILLIPS TM: B. McKENNA LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\Petaluma\ACT\GP09BPNAC106\E0000\GP09BPNAC106-2.dwg LAYOUT: 2 SAVED: 11/19/2009 9:08 PM ACADVER: 17.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 11/20/2009 8:42 AM BY: HARRIS, JESSICA
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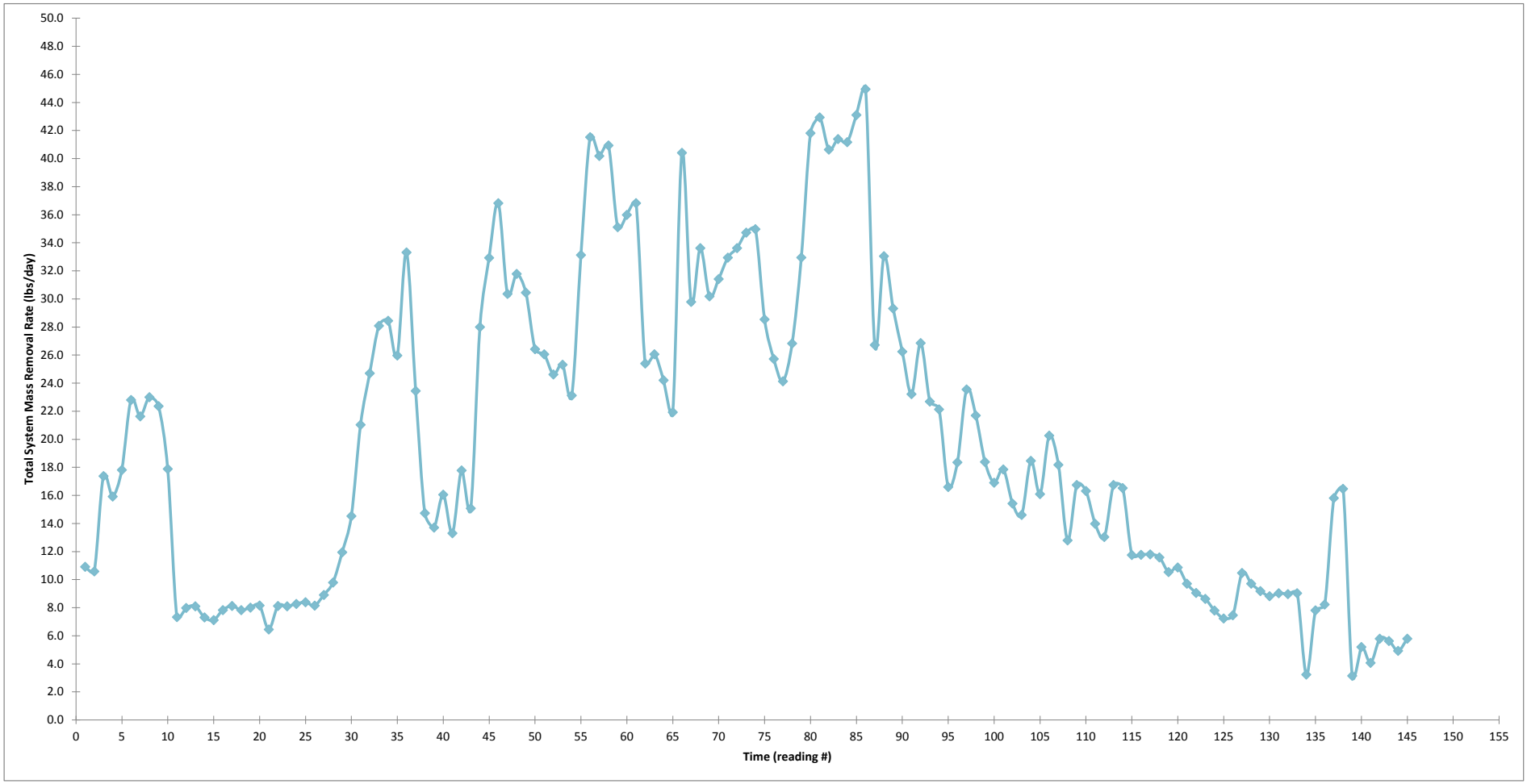
GP09BPNAC106-X01
GP09BPNAC106-X02

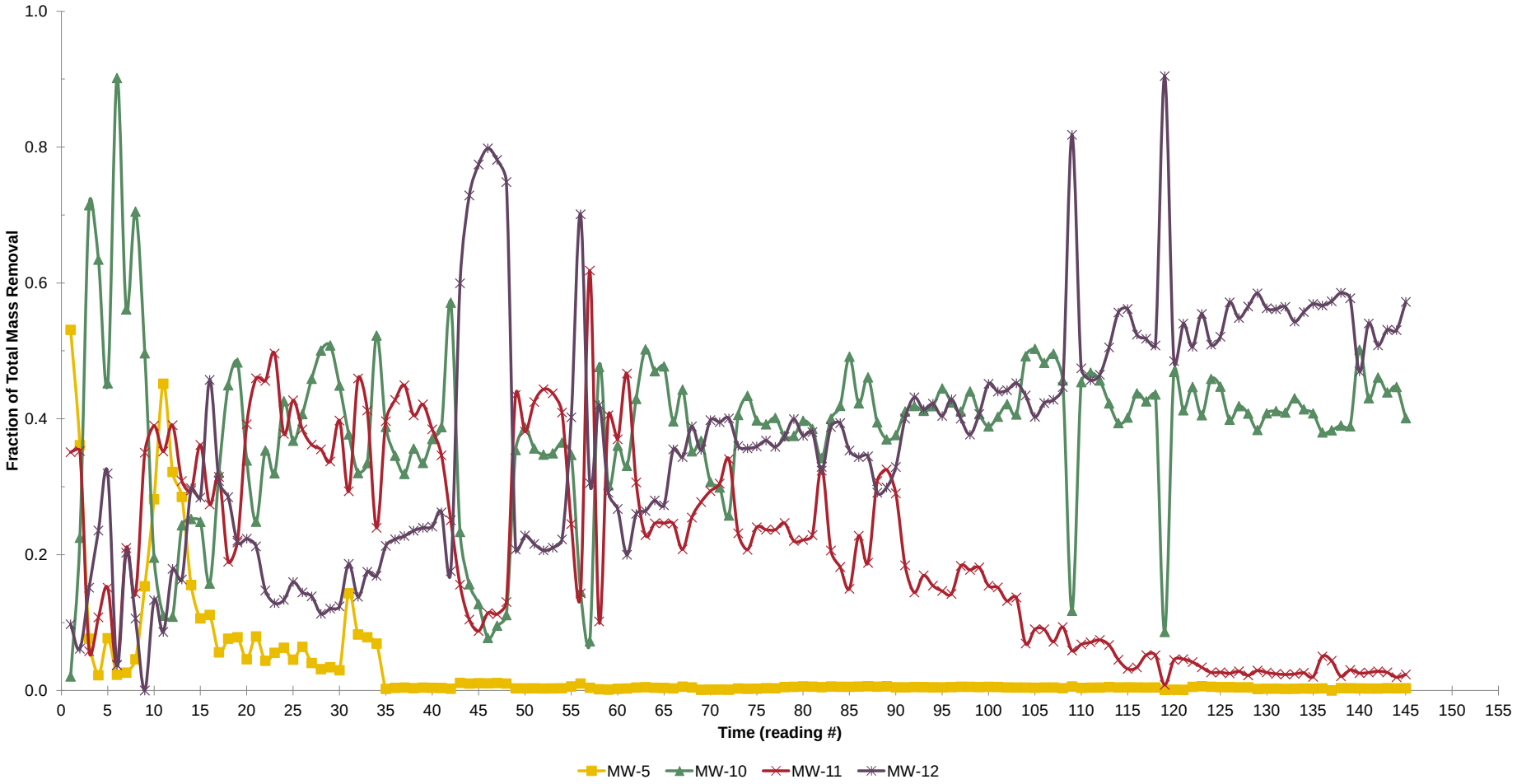


FORMER BP STATION #11109
4280 FOOTHILL BOULEVARD
OAKLAND, CALIFORNIA

MASS REMOVAL RATE VERSUS TIME

ARCADIS
Infrastructure · Water · Environment · Buildings

FIGURE
3



FORMER BP STATION #11109
4280 FOOTHILL BOULEVARD
OAKLAND, CALIFORNIA

NORMALIZED MASS REMOVAL RATES

ARCADIS
Infrastructure · Water · Environment · Buildings

FIGURE
4

ATTACHMENTS

Attachment A –
BAAQMD PERMIT TO OPERATE
#24162

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT
SINCE 1955

ALAMEDA COUNTY
Tom Bates
Scott Haggerty
Jennifer Hosterman
Nate Miley
(Secretary)

CONTRA COSTA COUNTY
John Gioia
(Chairperson)
David Hudson
Mary Piepho
Mark Ross

MARIN COUNTY
Katie Rice

NAPA COUNTY
Brad Wagenknecht

SAN FRANCISCO COUNTY
John Avalos
Edwin M. Lee
Eric Mar

SAN MATEO COUNTY
Carole Groom
Carol Klatt

SANTA CLARA COUNTY
Susan Garner
Ash Kalra
(Vice-Chairperson)
Liz Kniss
Ken Yeager

SOLANO COUNTY
James Spering

SONOMA COUNTY
Susan Gorin
Shirlee Zane

Jack P. Broadbent
EXECUTIVE OFFICER/APCO

June 27, 2012

Mako Industries
831 N K Street
Livermore, CA 94550

Attention: Brendan Coyne

Application Number: 24162
Plant Number: 16254
Equipment Location: *same as above*

Dear Applicant:

SUBJECT: CHANGE OF PERMIT CONDITIONS

This letter is to advise you that your application for changes in permit conditions for the following equipment has been approved:

S-1 Portable Soil Vapor Extraction System

Operation of this equipment will be subject to permit condition no. 21701 which is attached. If you have any questions regarding this matter, please call **Flora W Chan, Air Quality Engineer II at (415) 749-4630.**

Very truly yours

Jim Karas
Director of Engineering

by _____
Air Quality Engineering Manager

JHL:FWC
Attachment: Permit Condition no. 21701

Spare the Air

The Air District is a Certified Green Business
Printed using soy-based inks on 100% post-consumer recycled content paper

1. The operator of this source shall notify the District at least 3 days prior to start-up of operation at any new location. The notification shall include:
   a. Application Number (10330, 24162) & Plant Number (16254).
   b. Street address, including zip code, for the location where the equipment will be operated.
   c. The name and telephone number of a contact person where the equipment will be operated.
   d. The date of initial start-up and estimated duration of operations at that location.
   e. The distance from the source to the outer boundary of the nearest K-12 school, or indication that the distance is greater than 1500 feet.

   In the event that the start-up is delayed less than 5 days, the operator may provide telephone notice of said change to the assigned Plant Engineer in the Permit Services Division. If the start-up is delayed more than 5 days, written notification must be resubmitted.
2. This equipment shall not remain at any single location for a period in excess of 12 consecutive months, following the date of initial operation except as allowed under Section 2-1-220.10. If this portable equipment remains at any fixed location for more than 12 months, the portable permit will automatically revert to a conventional permanent location permit and will lose its portability. [basis: Reg. 2-1-220.2]
3. This portable equipment, S-1, shall operate at all times in conformance with the eligibility requirements set forth in Regulation 2-1-220 for portable equipment.
4. This equipment is not to be operated within 1000 feet of the outer boundary of any K-12 school. Such operation will require the submittal of an application for a revised permit to operate so that the applicable requirements of the California Health and Safety Code Section 42301.6 may be met. These notification requirements have been satisfied for operation at 4280 Foothill Boulevard in Oakland. [basis: Reg 2-1-220.4]
5. This equipment shall be used exclusively for the removal of non-chlorinated volatile organic compounds associated with petroleum products from extracted soil vapor. This shall be demonstrated by onsite sampling required in condition 10 below. [basis: Health Risk Management Policy]
6. Precursor Organic Compound (POC) emissions from Source S-1 shall be abated by Abatement device A-1, Dual-mode Thermal/Catalytic oxidizer, during all periods of operation. Soil vapor flow rate shall not exceed 400 scfm. [basis: Reg. 8-47-301.1,2]
7. The POC abatement efficiency of abatement device A-1

shall be maintained at a minimum of 98.5% by weight for inlet POC concentrations greater than or equal to 2000 ppmv (measured as C6). For inlet concentrations below 2000 ppmv and greater than or equal to 200 ppmv, a minimum abatement efficiency of 97% shall be maintained. For inlet concentrations below 200 ppmv, a minimum abatement efficiency of 90% shall be maintained. The minimum abatement efficiency shall be waived if outlet POC concentrations are shown to be less than 10 ppmv (measured as C6). In no event shall benzene emissions to the atmosphere exceed 0.250 pounds per day. Annual emissions of benzene shall not exceed 6.70 pounds per year. [basis: BACT; HRMP]

8. The minimum operating temperature of A-1 during Catalytic mode shall not be less than 600 degrees Fahrenheit. The minimum operating temperature of A-1 during Thermal mode shall not be less than 1400 degrees Fahrenheit.
9. To determine compliance with Condition Number 8, the thermal/catalytic oxidizer shall be equipped with continuous measuring and temperature recording instrumentation. The temperature data collected from the temperature recorder shall be maintained in a file which shall be available for District inspection for a period of at least 2 years following the date on which such data are recorded.
10. To determine compliance with Condition 7, within 24 hours after start-up of the thermal or catalytic oxidizer at any new location, the operator of this source shall:
    a. Analyze the inlet gas to determine the vapor flow rate and concentration of POC present.
    b. Analyze exhaust gas to determine the flow rate, and the concentration of benzene and POC present.
    c. Calculate the benzene emission rate in pounds per day based on the exhaust gas analysis and the operating exhaust flow rate. The soil vapor flow rate shall be decreased, if necessary, to demonstrate compliance with Condition 7.
    d. Calculate the POC abatement efficiency based on the inlet and outlet gas sampling analysis. For the purpose of determining compliance with condition 7, the POC concentration shall be reported as hexane.
    e. Submit to the District's Permit Services Division the test results and emission calculations within one month from the testing date. Samples shall be analyzed according to modified EPA test methods 8015 and 8021 or their equivalent to determine the concentrations of POC and benzene.

11. Within 30 days from the completion of each treatment operation at a given location, the operator of this source shall provide the assigned Plant Engineer in the Permit Services Division with a summary showing the following information:
    a. The dates and total number of days that the equipment was at that location and the dates, and total number of days that the equipment was operated at that location.
    b. A summary of the abatement efficiency and benzene emission rate as determined and reported in the start-up sampling report required by condition 10e above.
    c. The results of any additionally performed emission test, analysis, or monitoring result logged in for the day of operation they were taken.
    d. The total throughput of contaminated soil vapor processed by S-1 at that location (indicated in cubic feet).
    e. The total emissions of benzene at that location based on the sampling results required by conditions 10 above (indicated in pounds).

    [basis: Reg. 1-523]
12. Within 30 days after the end of every calendar year, the operator of this source shall provide the assigned Plant Engineer in the Permit Services Division a year end summary showing the following information:
    a. The location(s) at which the equipment was operated including the dates operated at each location.
    b. The total throughput of contaminated soil vapor for the previous four quarters (indicated in cubic feet).
    c. The total benzene emissions for the previous four quarters (indicated in pounds).[basis: Reg. 1-523]
13. The operator shall maintain a file containing all measurements, records and other data that are required to be collected pursuant to the various provisions of this conditional Permit to Operate. All measurements, records and data required to be maintained by the operator shall be retained for at least two years following the date the data is recorded.
    [basis: Reg. 1-523]
14. Any non-compliance with these conditions shall be reported to the Compliance and Enforcement Division at the time that it is first discovered. The submittal shall detail the corrective action taken and shall include the data showing the exceedance as well as the time of occurrence.

End of Conditions

Attachment B –
DPE Field Notes

Site Visit Report

ARCADIS Project Number:	Dates of Site Visit:
GP09BPNA.C106.K0000	**07- 16 -12**
ARCADIS Project Name:	**Location of Project:**
Former BP Station #11109	**Oakland, California**
ARCADIS Personnel Present:	**Other Persons Present:**
Arpen Shah	Jerry (Mako

Purpose of Site Visit:
DPE Pilot Test

Date & Time:	Activities:
0845	Arrive Onsite Mako & Fencing already here
0900	H&S w/ Mako. Review site plan & setup. Discuss traffic hazards & night work.
0930	Propane Tank Delivery
1015	Propane & Fencing delivery trucks offsite
1015	Baker Tank delivery
1100	Baker offsite Site Setup AS to pickup parts & equipment, barricades
	AS Returns
1330	Bail FP from wells, MW-12=1.5", MW-5=0.125", MW-10=0.75", MW-11=0
1430	Baseline Readings: MW-3 = 0.00 in H_2O, DTW=11.96 MW-7 = 0.00 in H_2O, DTW=13.04 Start Totalizer: 249713
1500	System Startup Trouble Shoot Operational issues
1600	UV sensor malfunction, can't operate, new sensor being sent Continue to troubleshoot. Updat HEP
1730	Rob Larsen (Mako) onsite Test UV sensor, replace regulator, replace oxidizer control box.
1800	System operational. Test w/ 2 wells (MW-12 & MW-5) with stinger set at 30 ft bTOC. Seems to work fine

Weather: Cloudy & Cool

Signature & Date:

Eqpt Billing Log to Accounting
Date: Initials:

2-4" Bailers
2-2" Bailers

Site Visit Report

Date & Time:	Activities:
0710	System Shutdown, Cleanup Site
0730	Ambassador Security Onsite, Discuss Scope of Work.
0745	AS & Mako offsite.

Site Visit Report

ARCADIS Project Number:	Dates of Site Visit:
GP09BPNA.C106.K0000	**07- 17 -12**
ARCADIS Project Name:	**Location of Project:**
Former BP Station #11109	**Oakland, California**
ARCADIS Personnel Present:	**Other Persons Present:**
Arpen Shah	Rob Larsen (Mako)

Purpose of Site Visit:
DPE Pilot Test

Date & Time:	Activities:
0700	Arrive on-site
	H&S Tailgate
	Check wells for Product Recharge - None
0730	System Startup @ MW-12
0800	Dewatering MW-12, MW-5, MW-10
0820	Dewatering MW-11.
0900	Discussion w/ SB regarding Head values on well casing
	Decide to drill holes on stinger ~3 ft from bottom
0940	MW-5, MW-10, MW-11 appear to be working
	MW-12 continues to dead, install holes higher up stinger
0950	AS to Home Depot for parts for dilution line.
1040	AS Returns, System operating steady
	Install Dilution Measurement line.
1100	Round of Readings.
1200	Sample Oxidizer inlet Air, PID = 1274 (DPE-1)
	Extracted GW (DPE-1)
1245	Confirmed w/ Jim Hess to not wear hard hats & for
	security guard to use restroom.
1300	Round of Readings.
1415	JERRY ARRIVED ON SITE
1520	ROB LEAVING SITE
1430	Round of Readings
1630	Round of readings
1730	-Reset MW-5 - Thought I could get more water

Weather:	Signature & Date:
	Eqpt Billing Log to Accounting Date: Initials:

Site Visit Report

Date & Time:	Activities:
7/17/12 1830	- higer vaccum. Vacuum, Stinger at 28 - Casing 17. Water seems to be moving faster through it. Might be in competition with MW10 Since they are so close.
1830	Round of readings
1830	Pump turned on 250220 start
2020	- Geogge on site. 250300 end
2030	Round of readings MW5 - 27 btg - Stinger 11 btg casing
2230	Round of Readings
0030	Round of Readings
0230	Round of Readings
0430	Round of Readings

Site Visit Report

ARCADIS Project Number:	Dates of Site Visit:
GP09BPNA.C106.K0000	07- 18 -12
ARCADIS Project Name:	Location of Project:
Former BP Station #11109	**Oakland, California**
ARCADIS Personnel Present:	Other Persons Present:
Arpen Shaw	
Purpose of Site Visit:	
DPE Pilot Test	

Date & Time:	Activities:
7/18 0445	ROB ARRIVED ON SITE, GEORGE LEFT
0515	PUMP NOT WORKING, CLEAN/REPAIR PUMP
0530	CALIBRATED P.I.D.
0600	TONY ARRIVED
1300	Jerry Arrived onsite
1320	round of readings. With Arpens new ideas.
	Temp before oxidizer 128° F
1530	Round of readings
1730	Round of readings
1930	Round of readings
2050	George arrived = Jerry leaves
2130	Round of readings
2330	ROUND OF READINGS
0130	ROUND OF READINGS
0330	ROUND OF READINGS
0415	ROB ARRIVES GEORGE LEAVES
0530	ROUND OF READINGS

Weather:	Signature & Date:
	Eqpt Billing Log to Accounting Date: Initials:

Site Visit Report

ARCADIS Project Number:	Dates of Site Visit:
GP09BPNA.C106.K0000	**07- 19 -12**
ARCADIS Project Name:	**Location of Project:**
Former BP Station #11109	**Oakland, California**
ARCADIS Personnel Present:	**Other Persons Present:**
Arpen Shaw	
Purpose of Site Visit:	
DPE Pilot Test	

Date & Time:	Activities:
7/19 0445	Rob ARRIVES, GEORGE LEAVES.
0630	Round of Readings. 0730 AS onsite
0830	Round of Readings
	MW-7: 55' from MW-12, 2 ft riser pipe
	MW-3: 29' from MW-12, 20" riser pipe.
0900	AS offsite
1030	Round of Readings
11:05	JERRY ARRIVES, JERRY NOTICES GRAFFITI ON FENCE.
11:15	Rob LEAVES.
1230	Round of readings
	- There is no more water coming out of MW-11. Which explains the Stinger and well casing vacuum being the same. The L/R went up .5" Hg. Will adjust back to 26.5
	MW-11 Started producing water.
1430	Round of Readings
1630	Round of Readings
1830	Round of Readings
2030	Round of Readings.
2045	George Arrives
2230	Round of readings
0030	Round of readings
0230	Round of Readings
0430	Round of Readings

Weather:	Signature & Date:
	Eqpt Billing Log to Accounting Date: Initials:

Site Visit Report

Date & Time:	Activities:
0500	GEORGE LEACH, ROB ARRIVES

Site Visit Report

ARCADIS Project Number:	Dates of Site Visit:
GP09BPNA.C106.K0000	**07- 20 -12**
ARCADIS Project Name:	**Location of Project:**
Former BP Station #11109	**Oakland, California**
ARCADIS Personnel Present:	**Other Persons Present:**
Arpen Shaw	

Purpose of Site Visit:
DPE Pilot Test

Date & Time:	Activities:
7/20/12 0500	GEORGE LEAVES. ROB ARRIVES
0600	TONY ARRIVES ROB LEAVES
1730	George arrives
1800	Tony leaves
1830	Round of readings
2030	Round of readings
2230	Round of readings
7-21-12 0030	Round of readings
0230	Round of Readings
0430	Round of Readings
0600	Tony arrives - George leaves
0630	Round of READINGS
0730	TRUCK SHOWS UP TO PUMP WATER OUT OF BAKER TANK
0830	TRUCK LEAVES WITH WATER FROM TANK
	Round of READINGS
1030	Round of READINGS
1230	Round of READINGS
1430	Round of READINGS
1630	Round of READINGS
1740	George arrives - Tony leaves
1830	Round of Readings
2030	Round of Readings
2230	Rounds of Readings
7/22 0030	Round of Readings

Weather:	Signature & Date:
	Eqpt Billing Log to Accounting Date: Initials:

Site Visit Report

Date & Time:	Activities:
7-22 0230	Round of Readings
0430	Round of Readings

ARCADIS

Site Visit Report

ARCADIS Project Number:	Dates of Site Visit:
GP09BPNA.C106.K0000	**07-22-12**
ARCADIS Project Name:	**Location of Project:**
Former BP Station #11109	**Oakland, California**
ARCADIS Personnel Present:	**Other Persons Present:**
Arpen Shaw	
Purpose of Site Visit:	
DPE Pilot Test	

Date & Time:	Activities:
0600	GEORGE LEAVES TONY ARRIVES
0630	Round of READINGS
0830	Round of READINGS
1030	Round of READINGS
1230	Round of READINGS
1430	Round of READINGS
1630	Round of READINGS
1800	George arrives - Tony Leaves
1830	Round of Readings
2030	Round of Readings
2230	Round of Readings
7/23 0030	Round of Readings
0230	Round of Readings
0430	Round of Readings
0600	Tony arrives - George leaves

Weather:	Signature & Date:
	Eqpt Billing Log to Accounting Date: Initials:

Site Visit Report

ARCADIS Project Number:	Dates of Site Visit:
GP09BPNA.C106.K0000	**07-23-12**
ARCADIS Project Name:	**Location of Project:**
Former BP Station #11109	**Oakland, California**
ARCADIS Personnel Present:	**Other Persons Present:**
Arpen Shaw	
Purpose of Site Visit:	
DPE Pilot Test	

Date & Time:	Activities:
0600	Tony arrives George leaves
0630	Round of Readings
0830	Round of Readings
0900	Propane arrives for fill up
1000	Collect Air Sample DPE-2, PID: 2440 ppm.
1030	Round of Readings
1230	Round of Readings
1430	Round of Readings
1600	Jerry Arrives, Tony leaves
1630	Round of Readings
2200	George arrives - Jerry leaves

Weather:	Signature & Date:
	Eqpt Billing Log to Accounting Date: Initials:

Site Visit Report

ARCADIS Project Number:	Dates of Site Visit:
GP09BPNA.C106.K0000	**07-24-12**
ARCADIS Project Name:	**Location of Project:**
Former BP Station #11109	**Oakland, California**
ARCADIS Personnel Present:	**Other Persons Present:**
Arpen Shaw	
Purpose of Site Visit:	
DPE Pilot Test	

Date & Time:	Activities:
0445	Tony arrives
0500	Shorter Lasers
0630	Round of Readings
0830	Round of Readings
1030	Round of Readings
1230	Round of Readings
1430	Jerry arrives - Round of readings - Tony leaves
1630	Round of readings
1830	Round of readings
2030	Round of readings
2145	George arrives - Jerry leaves
2230	Round of Readings
0030	Round of Readings
0230	Round of Readings
0430	Round of Readings
0500	Tony arrives - George leaves

Weather:	Signature & Date:
	Eqpt Billing Log to Accounting Date: Initials:

Site Visit Report

ARCADIS Project Number:	Dates of Site Visit:
GP09BPNA.C106.K0000	**07-25-12**
ARCADIS Project Name:	**Location of Project:**
Former BP Station #11109	**Oakland, California**
ARCADIS Personnel Present:	**Other Persons Present:**
Arpen Shaw	
Purpose of Site Visit:	
DPE Pilot Test	

Date & Time:	Activities:
0445	Tony ARRIVES
0500	GEORGE LEAVES
0630	Round of READINGS
0830	Round of READINGS
1030	Round of READINGS
1230	Round of READINGS
1430	Tony leaves, Jerry Arrives, Rando f Reading
1630	Round of readings
1830	Round of readings
2200	George arrives - Jerry leaves
2230	Round of readings
0030	Round of readings
0230	Round of readings
0430	Round of readings
0500	Tony arrives - George leaves

Weather:	Signature & Date:
	Eqpt Billing Log to Accounting Date: Initials:

Site Visit Report

ARCADIS Project Number:	Dates of Site Visit:
GP09BPNA.C106.K0000	**07- 26 -12**
ARCADIS Project Name:	**Location of Project:**
Former BP Station #11109	**Oakland, California**
ARCADIS Personnel Present:	**Other Persons Present:**
Arpen Shaw	
Purpose of Site Visit:	
DPE Pilot Test	

Date & Time:	Activities:
0445	Tony Arrives
0500	George Leaves
0630	Round of Readings
0830	Round of Readings
1030	Round of Readings
1230	Round of Readings
1400	Jerry arrives - Tony leaves
1430	Round of Readings
1630	Round of Readings
2200	George arrives - Jerry leaves
2230	Round of Readings
0030	Round of Readings
0230	Round of Readings
0430	Round of Readings
0445	Tony arrives
0500	George Leaves

Weather:	Signature & Date:
	Eqpt Billing Log to Accounting Date: Initials:

Site Visit Report

ARCADIS Project Number:	Dates of Site Visit:
GP09BPNA.C106.K0000	**07-27-12**
ARCADIS Project Name:	**Location of Project:**
Former BP Station #11109	**Oakland, California**
ARCADIS Personnel Present:	**Other Persons Present:**
Arpen Shaw	
Purpose of Site Visit:	
DPE Pilot Test	

Date & Time:	Activities:
0445	Tony ARRIVES
0500	GEORGE LEAVES
0630	Round of Readings
0830	Round of Readings
0845	WATER REMOVAL TRUCK ARRIVES
0930	WATER TANKER LEAVES - 3900 GALS.
1030	Round of Readings
1230	Round of Readings
1230 -	Mike arrives, Jerry arrives, & Tony & Jerry shaw him the ropes
1430	Round of readings
1630	Round of readings
1830	Round of readings Propane @ 75%
2030	Round of readings Propane @ 71% read at 9PM
2215	George shows up - Jerry leaves
2230	Round of Readings
0030	Round of readings. Propane @ 65%
0230	Round of readings - propane 63%
0430	Round of readings - propane @ 60%
0630	Round of readings - propane @ 58%
0815	Jerry arrives - George leaves

Weather:	Signature & Date:
	Eqpt Billing Log to Accounting Date: Initials:

Site Visit Report

ARCADIS Project Number:	Dates of Site Visit:
GP09BPNA.C106.K0000	07- 28 -12
ARCADIS Project Name:	**Location of Project:**
Former BP Station #11109	Oakland, California
ARCADIS Personnel Present:	**Other Persons Present:**
Arpen Shaw	
Purpose of Site Visit:	
DPE Pilot Test	

Date & Time:	Activities:		
7/28/12 0830	Round of Readings	Propane	55%
1030	Round of Readings	Propane	53%
1230	Round of Readings	Propane	53%
1430	Round of Readings	Propane	51%
1630	Round of Readings	Propane	48%
1830	Round of Readings	Propane	45%
2000	Jerry leaves, Mike arrives		
2030	Round of Readings	Propane	42%
2230	ROUND OF READINGS	Propane	40%
7/29 0030	Round of READINGS	Propane	37%
0230	Round of READINGS	PROPANE	35%
0430	Round of Readings	Propane	32%
0630	Round of Readings	PROPANE	30%
0800	ROB ARRIVES	MIKE LEAVES	
0830	R of R		
0930	R of R		
12:30	R of R		22%
14:30	R of R		18%
16:30	R of R		16%
18:30	R of R		14%
20:00	MIKE ARRIVES — ROB LEAVES		
20:30	R of R		12%
22:30	Round of Readings		10%

Weather:	Signature & Date:
	Eqpt Billing Log to Accounting Date: Initials:

Site Visit Report

ARCADIS Project Number:	Dates of Site Visit:
GP09BPNA.C106.K0000	**07-30-12**
ARCADIS Project Name:	**Location of Project:**
Former BP Station #11109	**Oakland, California**
ARCADIS Personnel Present:	**Other Persons Present:**
Arpen Shaw	
Purpose of Site Visit:	
DPE Pilot Test	

Date & Time:	Activities:	
7/30/2012 0030	Round of Readings	7.59.0
02:30	R of R.	590
04:30	Round of Readings	590
06:30	Round of READINGS	290 ±
08:00	JERRY ARRIVES - START SITE CLEAN-UP	
	PUTTING EQUIPMENT AWAY	
08:45	SYSTEM TURNED OFF.	

Field Sample DPE-3 collected at 0030 on 7/30/12 from oxidizer inlet. PID reading of 1145ppm

Weather:	Signature & Date:
	Eqpt Billing Log to Accounting Date: Initials:

DPE Pilot Test Field Data Forms

Supplemental Pilot Test Information (mark all that apply)

Yes	No	Is an AS pilot test being conducted concurrently?
Yes	No	Are baseline geochemistry data being collected?
Yes	No	Are air samples being collected?

TOTAL VOC EMISSION RATE (E):

E (lb/min) = SCFM (ft^3/min) x VOCs (ppmv) x 6.23x10-8 [(lb/ft^3)/(ppmv)]

E (lb/day) = SCFM (ft^3/min) x VOCs (ppmv) x 6.23x10-8 [(lb/ft^3)/(ppmv)] x 1440 (min/day)

Flow and Emission Equations

$$ACFM\ (ft^3/min) = Velocity\ (ft/min)\ X\ Flow\ Area\ (ft^2)$$

$$SCFM_{25C} = ACFM \times \left(\frac{P_{abs}+P_g}{P_{abs}}\right)\left(\frac{537}{460+T}\right)$$

where:

P_{abs} = *Atmospheric Pressure at Sea Level (1 atm = 406.8 in H_2O)*

P_g = *Guage/Line Pressure - equivalent to zero if atmospheric discharge*

T = *Airstream Temperature, degrees Farenheit (° F)*

Extraction Well Information

Extraction Well ID:	MW-5	MW-10	MW-11	MW-12	
Well Diameter:	4 in	4	4	4	inches
Water Level (static):					ft bTOC (before test)
Screen Dpth (top):		7	7	7	ft bTOC
Screen Dpth (bot):		30	30	30	ft bTOC
Well Depth:		30	30	30	ft bTOC

Monitoring Well Information

Monitoring Well ID:	MW-3	MW-7	
Well Diameter:	4	6	inches
Water Level (static):	11.96	13.04	ft bTOC (before test) w/ riser pipe (2 ft @ MW-7) (20" @ MW-3
Screen Dpth (top):			ft bTOC
Screen Dpth (bot):			ft bTOC
Well Depth:			ft bTOC
Distance From MW-12:	29	55	feet

Site Name/Location:

11109
4280 Foothill Blvd

Field Team:

Aspen Shah
Jerry L (Mako)
Rob Larsen (Mako)
Tony (Mako)

Site Elevation: _____ ft aMSL

P_{atm}: _____ in H_2O

CROSS SECTIONAL FLOW AREAS

Pipe Diam (inches)	Flow Area (in^2)	Flow Area (ft^2)
0.25	0.0491	0.0003
0.50	0.1963	0.0014
0.75	0.4418	0.0031
1.0	0.785	0.005
2.0	3.142	0.022
3.0	7.069	0.049
4.0	12.566	0.087
5.0	19.635	0.136

CONVERSION FACTORS

volume: 1 gal = 0.1337 ft^3
1 gal = 3.785 L

pressure: 1 atm = 14.7psi
1 atm = 29.921 in Hg
1 atm = 33.9 ft H2O
1 atm = 406.8 in H2O
1 in Hg = 13.6 in H2O

mass: 1 lb = 454 g
1 lb = 0.454 Kg
1 gal (H2O) = 8.34 lbs

power: 1 hp = 550 ft-lb/sec
1 hp = 0.746 kW

time: 1 day = 1440 min
1 day = 8640 sec
1 yr = 525600 min

temp: °F = 32° + [(9/5) x °C]

DPE Pilot Test Field Data Forms-~~Monitoring Wells~~ System

Staff: Jerry / AS   Site: 1109   Date: 7/16/12

Date: 7/17
Start Time: 0730

Time (hh:mm)	Blower ~~System~~ Inlet — Vacuum, P_g (in Hg)	Velocity (ft/min)	~~PID (ppmv)~~	Dilution Line — Vacuum, P_g (in Hg)	Velocity (ft/min)	~~PID (ppmv)~~	Oxidizer Inlet Line — Pressure, P_g (in H_2O)	Velocity (ft/min)	PID (ppmv)	Oxidizer ~~Blower~~ Outlet (Vent Stack) — ~~Vacuum, P_g (in Hg)~~	~~Velocity (ft/min)~~	PID (ppmv)
Pipe Flow Diam (in):	3			2			3			NA		
Pipe Flow Area (ft²):	.049			.022			.049					
1100	26	186		26.5	0		0.14	176	1594			2 ppm
1300	25	270		26.5	880		0.25	195	1550			0 PPM
1430	25	200		26.5	640		0.19	340	1986			0 PPM
1630	25	230		26.5	970		0.14	410	1901			0.0
1830	25	245		26.5	930		0.16	500	2011			0.0
2030	25	275		26.5	880		0.14	485	2275			0.0

Cumulative Liquid Volumes (gal)

Time	Water (gal)	Totalizer ~~LNAPL~~	
7/16 1500	0	249713	Baseline
7/17 0730	79	249792	Baseline
0800		249886	
0850		249972	
1130		250055	
1445		250140	
1630		250220	
1830		250300	
2030		250380	

Total Operational Runtime: ______

Notes:

DPE Pilot Test Field Data Forms-Extraction Wells

Staff: Jerry (Mike) Site: 11109
Date: 7/16/12

Extraction Wellheads

Date: 7/17
Start Time: 0730

	MW-5	MW-10	MW-11	MW-12
Pipe Flow Diam (in):	3	3	3	3
Pipe Flow Area (ft²):	.049	.049	.049	.049

Field Measurements

Day	Time (hh:mm)	MW-5 Casing Vacuum, P_g (in Hg)	MW-5 Stinger Vacuum, P_g (in Hg)	MW-5 Velocity (ft/min)	MW-5 PID (ppmv)	MW-5 Stinger Depth (ft)	MW-10 Casing Vacuum, P_g (in Hg)	MW-10 Stinger Vacuum, P_g (in Hg)	MW-10 Velocity (ft/min)	MW-10 PID (ppmv)	MW-10 Stinger Depth (ft)	MW-11 Casing Vacuum, P_g (in Hg)	MW-11 Stinger Vacuum, P_g (in Hg)	MW-11 Velocity (ft/min)	MW-11 PID (ppmv)	MW-11 Stinger Depth (ft)	MW-12 Casing Vacuum, P_g (in Hg)	MW-12 Stinger Vacuum, P_g (in Hg)	MW-12 Velocity (ft/min)	MW-12 PID (ppmv)	MW-12 Stinger Depth (ft)
17	1100	9	20	2850	480	29	22	22	150	445	29	21.5	23	1600	857	29	19.5	21	950	294	29
	1300	8	20	2800	360	"	19	22	850	923	"	22	22	1530	804	"	19	20	500	343	"
	1430	9	22	220	290	"	23	24	885	900	"	22	26	100	968	"	21	21	300	375	"
	1630	9	26	250	125	"	22	23	640	786	"	22	26	159	940	"	18	22	190	860	"
	1830	12	27	128	482	"	22	20	145	750	"	21.5	26	88	1033	"	18	22	240	400	"
	2030	11	27.5	134	629	"	21.5	20	1050	780	"	21.5	25	60	1136	"	19	26	190	449	"
	2230	9	27	14	23 ~~1288~~	"	22	20	127	700	"	21	25	70	950	"	19	26	181	444	"
18	0030	8	27	26	1390	"	22	20	130	1280	"	21	25	75	900	"	19	28	260	481	"
	0230	9	28	120	975	"	22.5	20	113	670	"	22	26	128	750	"	20	30+	179	420	"
	0430	9	18	141	1040	"	22.5	20	191	640	"	22	24	975	625	"	20	19	280	270	"
	0620	11	18.5	156	1020	"	23	26	173	645	"	22	26	575	620	"	22	24	224	260	"
	0825	9	20	149	1022	"	22.5	25	181	639	"	22	25	581	738	"	20	23	228	531	"
	1020	9	21	176	922	"	22	23	177	1006	"	22	23	308	733	"	20	21	276	337	"
	1231	10	22	196	534	"	22	23	192	1013	"	22	23	~~534~~ 421	539	"	20	21	334	534	"
	1320	9	25	177	410	"	21	22	216	491	"	22	23	185	954	"	21	22	312	389	"
	1530	10	26	205	376	"	22	26	400	917	"	21.5	25	220	1003	"	20	23.5	400	354	"
	1730	10	25.5	380	105	"	22	25	375	625	"	21.5	26	290	970	"	20.5	23.5	350	381	"
	1930	10	25	740	482	"	22	24	1600	670	"	21.5	25	540	800	"	20	23.5	1000	400	"
	2130	10	25	145	362	"	22	23	140	895	"	22	26	120	1230	"	20	23	186	363	"
	2330	10	25	143	402	"	22	24	198	1060	"	22	25	279	790	"	20	30	228	379	"
19	0130	10	25	166	257	"	22	24	180	1058	"	22	25	386	832	"	21	30+	272	363	"
	0330	10	25	176	285	"	22	24	185	1180	"	22	25	350	820	"	20.5	30+	201	400	"
	0630	10	25	169	220	"	22	24	194	824	"	22	25	358	845	"	19	24	301	386	"
	0830	10	25	150	516	"	22	26	200	800	"	23	26	270	834	"	22	24	800	392	"
	1030	9	25	151	340	"	22	26	159	812	"	23	26	284	861	"	22	24	587	389	"

- Bad Gage on Stinger

DPE Pilot Test Field Data Forms-Extraction Wells

Staff: Lecy / Bob Site: 11109
Date: 7/19/12

Extraction Wellheads

Date: 7/19/12 Start Time: 1230	MW-5 Pipe Flow Diam (in): 3 Pipe Flow Area (ft²): 0.049					MW-10 Pipe Flow Diam (in): 3 Pipe Flow Area (ft²): .049				MW-11 Pipe Flow Diam (in): 3 Pipe Flow Area (ft²): .049				MW-12 Pipe Flow Diam (in): 3 Pipe Flow Area (ft²): .049			
	Field Measurements					Field Measurements				Field Measurements				Field Measurements			
Time (hh:mm)	Vacuum, P_g (in H2O)	Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft)	Vacuum, P_g (in H2O)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft)	Vacuum, P_g (in H2O)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft)	Vacuum, P_g (in H2O)	Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft)
1230	11	25	170	441	29	23	200	884	29	27	350	879	29	22	24.5	650	431	29
1430	11	25	225	250	"	21.5	325	990	"	22	400	985	"	21	24	575	448	"
1630	11	25	195	287	"	22	410	938	"	22.5	295	825	"	22	24.5	600	443	"
1830	11	25	290	278	"	22	420	985	"	22.5	350	810	"	21.5	25	498	450	"
2030	11	25	300	158	"	22.5	378	922	"	22.5	409	1233	"	21	26	575	500	"
2230	11	25	180	489	"	22	414	830	"	22	453	1122	"	21.5	24	404	484	"
7/20 0030	11	25	143	258	"	22.5	369	1007	"	22	473	1014	"	21.5	25	256	484	"
0230	11	25	186	323	"	22.5	420	1030	"	22.5	481	1116	"	22	25	289	482	"
0430	11	25	159	320	"	23	416	1035	"	23	367	1388	"	21.5	25	218	495	"
0630	11	25	172	376	"	22	360	1089	"	26	382	1326	"	21	25	249	912	"
0830	11	24	181	472	"	22	412	1126	"	22	361	1416	"	22	24	217	885	"
1030	11	24	179	359	"	22	419	1489	"	22	354	1622	"	22	24	231	952	"
1230	11	24	175	326	"	22	482	1612	"	22	361	1781	"	22	24	241	970	"
1430	11	24	171	366	"	22	461	1727	"	22	321	1921	"	22	24	237	930	"
1630	11	24	174	321	"	22	451	1599	"	22	349	2134	"	22	24	243	956	"
1830	11	25	129	1634	"	22	329	1688	"	21.5	265	2038	"	21	24	244	938	"
2030	11	25	144	918	"	23	340	1886	"	22	336	2191	"	21	25	228	970	"
2230	11	25	159	802	"	22.5	354	1922	"	22	307	2183	"	21	24	237	999	"
7/21 0030	11	25	183	517	"	22.5	369	1940	"	22	208	1972	"	21	24	180	1071	"
0230	11	25	116	1110	"	22.5	343	1909	"	22	282	2372	"	21	24	230	1014	"
0430	11	25	198	1775	"	22.5	334	1912	"	22.5	261	2420	"	21	24	271	1012	"
0630	11	25	174	1142	"	22.5	327	1427	"	22.5	274	1920	"	21	24	242	917	"
0830	11	25	172	485	"	22.5	349	1818	"	22.5	264	2187	"	21	24	259	1079	"
1030	11	25	170	251	"	22.5	331	1448	"	22.5	269	1792	"	21	24	248	921	"
1230	11	25	160	241	"	22.5	342	1657	"	22.5	262	1797	"	21	24	252	977	"

DPE Pilot Test Field Data Forms-Extraction Wells

Staff: Tony Site: 11109

Date: 7-21-12

Extraction Wellheads

Date: 7-21-12 / Start Time: 1430	MW-5 Pipe Flow Diam (in): 3" Pipe Flow Area (ft²): .049					MW-10 Pipe Flow Diam (in): 3" Pipe Flow Area (ft²): .049				MW-11 Pipe Flow Diam (in): 3" Pipe Flow Area (ft²): .049				MW-12 Pipe Flow Diam (in): 3" Pipe Flow Area (ft²): .049			
	Field Measurements					*Field Measurements*				*Field Measurements*				*Field Measurements*			
Time (hh:mm)	Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft)	Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft)	Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft)	Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft)
7/21 1430	11	25	165	162	29	22.5	21	346	1792	29	22.5	25	259	1710	29	21	24	261	1071	29
1630	11	25	182	424	"	22.5	21	342	1818	"	22.5	25	251	1957	"	21	24	267	1075	"
1830	10.5	25	170	162	"	23	26	336	380	"	21.5	26	247	345	"	21	25	269	975	"
2030	11	25	163	125	"	23	25	340	213	"	22	25.5	251	214	"	21	25	272	1240	"
2230	11	25	168	104	"	23	25	333	173	"	22	25	240	165	"	21	25	270	1298	"
7/22 0030	11	25	161	132	"	23	25	339	101	"	22	25	252	200	"	21	25	263	1342	"
0230	11	25	170	198	"	23	25	345	124	"	22	25	260	194	"	21	25	259	1352	"
0430	11	25	174	157	"	22.5	26	348	197	"	22.5	25	267	241	"	21	25	272	1359	"
0630	11	25	172	127	"	22.5	26	341	2026	"	22.5	25	259	2622	"	21	25	252	1287	"
0830	11	25	178	287	"	22.5	26	349	2255	"	22.5	25	262	2364	"	21	25	261	1421	"
1030	11	25	185	274	"	22.5	26	350	2054	"	22.5	25	261	2671	"	21	25	259	1367	"
1230	11	25	173	251	"	22.5	26	352	2110	"	22.5	25	255	2978	"	21	25	262	1348	"
1430	11	25	179	212	"	22.5	26	349	2095	"	22.5	25	242	3028	"	21	25	256	1376	"
1630	11	25	183	191	"	22.5	26	339	2179	"	22.5	25	247	2682	"	21	25	251	1435	"

DPE Pilot Test Field Data Forms-Extraction Wells

Staff:_____ Site: 11109

Date: 7-22-12

Extraction Wellheads

Date: 7-22-12 / Start Time: 1630	MW-5 Pipe Flow Diam (in): 3" Pipe Flow Area (ft²): .049					MW-10 Pipe Flow Diam (in): 3" Pipe Flow Area (ft²): .049					MW-11 Pipe Flow Diam (in): 3" Pipe Flow Area (ft²): .049					MW-12 Pipe Flow Diam (in): 3" Pipe Flow Area (ft²): .049				
	Field Measurements					*Field Measurements*					*Field Measurements*					*Field Measurements*				
Time (hh:mm)	Vacuum, P_g (in Hg)		Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft)	Vacuum, P_g (in Hg)		Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft)	Vacuum, P_g (in Hg)		Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft)	Vacuum, P_g (in Hg)		Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft)
1630	11	25	183	191	29	22.5	26	339	2179	29	22.5	25	[illegible] 247	2682	29	21	25	251	1435	29
1830	11	25	176	175	"	22.5	26	332	1120	"	22.5	25	253	831	"	21	25	243	1420	"
2030	11	25	180	196	"	22.5	26	341	272	"	22.5	25	260	280	"	21	25	238	1500	"
2230	11	25	172	240	"	22.5	26	330	344	"	22.5	25	249	3113	"	21	25	247	1550	"
7-23 0030	13	28	185	234	"	23	25	346	1571	"	21	25	240	403	"	21	24	252	1586	"
0230	13	28	190	255	"	24	26	350	1745	"	22	25	251	2175	"	21	24	258	1521	"
0430	12	26	182	241	"	24	25	337	1782	"	21	25	262	1960	"	21	24	241	1540	"
0630	12	24	178	159	"	24	25	341	2022	"	21	25	256	3167	"	21	24	246	1411	"
0830	11	23	161	710	"	24	25	309	2070	"	21	25	239	1591	"	21	24	223	1448	"
1030	10	22	159	360	"	23	24	307	2062	"	20	24	227	1270	"	21	24	219	1521	"
1230	10	22	147	272	"	23	24	297	2212	"	20	24	218	1352	"	20	23	212	1581	"
1430	10	22	131	233	"	23	24	291	2166	"	20	24	220	1268	"	20	23	210	1470	"
1630	12	24	180	130	"	22	24	305	2162	"	21	24	290	1409	"	21	24	358	1650	"
1830	13	23	250	165	"	23	24	320	2069	"	21	24	275	1130	"	20	24	310	1657	"
2030	13	23	195	922	"	22	24	340	1500	"	21	24	290	1090	"	21	23	295	1686	"
2230	13	28	208	243	"	22	24	330	1972	"	21	24	280	1504	"	19	23	306	1756	"
7-24 0030	13	28	220	183	"	22	24	328	1526	"	21	24	293	1400	"	19	23	316	1760	"
0230	13	28	235	182	"	22	24	342	1450	"	21	24	303	1430	"	19	23	320	1756	"
0430	13	28	215	544	"	22	24	335	1281	"	21	24	285	1706	"	19	23	308	1857	"
0630	11	24	218	285	"	21	23	376	1957	"	20	23	311	1181	"	19	22	323	1769	"
0830	11	24	207	267	"	21	23	349	2541	"	20	23	322	1151	"	19	22	339	1981	"
1030	11	24	210	179	"	21	23	322	2360	"	20	23	331	1214	"	19	22	341	1762	"
1230	10	23	227	353	"	20	23	341	2179	"	20	23	344	1142	"	19	22	335	1822	"
1430	10	23	235	290	"	21	23	370	2250	"	20	23	358	1200	"	19	22	340	1915	"
1630	13.5	21	230	386	"	22	23	355	1812	"	21	23	340	1244	"	19	23	360	1780	"

DPE Pilot Test Field Data Forms-Extraction Wells

Staff:_____ Site: 11109

Date: 7-24-12

Extraction Wellheads

Date: 7-24-12	MW-5 5					MW-10 10					MW-11 11					MW-12 12				
Start Time: 1830	Pipe Flow Diam (in): 3"					Pipe Flow Diam (in): 3"					Pipe Flow Diam (in): 3"					Pipe Flow Diam (in): 3"				
	Pipe Flow Area (ft²): .049					Pipe Flow Area (ft²): .049					Pipe Flow Area (ft²): .049					Pipe Flow Area (ft²): .049				
	Field Measurements					Field Measurements					Field Measurements					Field Measurements				
Time (hh:mm)	Vacuum, P_g (in Hg)		Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft)	Vacuum, P_g (in Hg)		Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft)	Vacuum, P_g (in Hg)		Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft)	Vacuum, P_g (in Hg)		Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft)
1830	13.5	21	243	450	29	22	23	342	1814	29	21	23	335	1088	29	19	23	354	1868	29
2030	13.5	21	250	388	11	22	23	325	1900	11	21	23	340	1014	11	19	23	305	1912	11
2230	13.5	21	256	323	11	22	23	337	1933	11	21	23	327	1183	11	19	23	340	1892	11
1/25 0030	13.5	21	262	440	11	22	23	340	1994	11	21	23	338	1930	11	19	23	334	1920	11
0230	13.5	21	270	507	11	22	23	349	1970	11	21	23	325	1090	11	19	23	350	1905	11
0430	13.5	21	258	495	11	22	23	341	2150	11	21	23	342	930	11	19	23	347	1985	11
0630	12	21	262	124	4	21	23	361	2464	4	21	23	341	795	4	19	23	373	1920	4
0830	12	20	271	224	4	21	23	349	2368	4	21	23	359	1240	4	19	23	342	1964	4
1030	12	20	285	241	4	21	23	355	2452	4	21	23	344	1032	4	19	23	339	1920	4
1230	12	20	290	429	4	21	23	352	2396	4	21	23	351	1990	11	19	23	327	1903	4
1430	12	20	299	450	11	21.5	23	378	1989	11	21	23	365	1812	11	18	23	315	1929	11
1630	13.5	21	285	694	11	21.5	22	385	1930	11	21	23	370	1550	11	18	23	331	1964	11
1830	13.5	21	272	450	11	21.5	22	396	1983	11	20.5	22	358	875	11	18	22	348	1955	11
2030	13.5	21	290	377	11	21	22	378	2045	11	21	23	370	640	11	17	21	340	2083	11
2230	13.5	21	293	425	11	21	22	380	2106	11	21	23	357	820	11	17	21	332	2154	11
26 0030	13.5	21	287	227	11	21	22	372	2203	11	21	23	368	730	11	17	21	343	2142	11
0230	13.5	21	276	256	11	21	22	363	2370	11	21	23	350	720	11	17	21	330	2106	11
0430	13.5	21	295	105	11	21	22	380	2150	11	21	23	355	686	11	17	21	350	2098	11
0630	11.5	19	271	578	4	20	22	412	1948	4	20	22	421	681	4	17	20	297	2106	4
0830	11.5	19	285	596	4	20	22	418	2217	4	20	22	418	712	4	17	20	301	2098	4
1030	11.5	19	270	678	4	20	22	409	2127	4	20	22	423	733	4	17	20	313	2225	4
1230	11.5	19	291	606	4	20	22	411	2034	4	20	22	428	620	4	17	20	327	2275	4
1430	11.5	19	285	655	11	20	22	420	2115	11	20	22	435	615	11	17	20	338	2295	11
1630	13	21	305	1019	4	21	22	410	2253	11	20	21.5	415	557	11	17	20	310	2500	4
1830	13	21	300	316	11	21	22	415	2200	11	20	21.5	428	375	11	17	20	330	2464	11

DPE Pilot Test Field Data Forms-Extraction Wells

Staff:_____ Site: 11109

Date: 7/26/12

Extraction Wellheads

Date: 7-26-12 / Start Time:	MW-5 Pipe Flow Diam (in): 3" Pipe Flow Area (ft²): .049					MW-10 Pipe Flow Diam (in): 3" Pipe Flow Area (ft²): .049					MW-11 Pipe Flow Diam (in): 3" Pipe Flow Area (ft²): .049					MW-12 Pipe Flow Diam (in): 3" Pipe Flow Area (ft²): .049				
	Field Measurements					Field Measurements					Field Measurements					Field Measurements				
Time (hh:mm)	C Vacuum, P_g (in Hg)	S Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft)	C Vacuum, P_g (in Hg)	S Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft)	C Vacuum, P_g (in Hg)	S Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft)	C Vacuum, P_g (in Hg)	S Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft)
2030	10	29	315	825	29	20	21	420	2728	29	20	21	435	333	29	16.5	20	350	2600	29
2230	10	20	323	906	"	20	21	433	2976	"	20	21	437	475	"	16.5	20	338	2748	"
7/27 0030	10	20	310	481	"	20	21	417	2618	"	20	21	420	437	"	16.5	20	343	2513	"
0230	10	20	318	828	"	20	21	427	2659	"	20	21	433	342	"	16.5	20	350	2521	"
0430	10	20	230	823	"	20	21	437	2265	"	20	21	429	425	"	16.5	20	356	2448	"
0630	9	19	312	665	"	19	20	412	482	"	19	20	433	238	"	17	20	489	2832	"
0830	9	19	327	684	"	19	20	441	2727	"	19	20	429	427	"	17	20	491	2606	"
1030	9	19	341	635	"	19	20	451	2665	"	19	20	438	424	"	17	20	481	2440	"
1230	9	19	362	905	"	19	20	472	2580	"	19	20	413	483	"	17	20	462	2695	"
1430	12	17	380	819	"	19	20	489	2407	"	19.5	19.5	400	389	"	15	18	458	2559	"
1630	12	18	372	862	"	19	20	458	2488	"	19.5	19.5	432	253	"	16	18	482	2785	"
1830	12	17	358	370	"	19	20	473	2468	"	19.5	19.5	410	188	"	16	18	498	2730	"
2030	12	17	392	209	"	19	20	489	2932	"	19.5	19.5	434	214	"	16	18	475	3012	"
2230	12	17	386	755	"	19	20	481	2943	"	19.5	19.5	427	338	"	16	18	485	2959	"
7/28 0030	12	17	398	952	"	19	20	492	2939	"	19.5	19.5	417	344	"	16	18	480	2926	"
0230	12	17	400	815	"	19	20	478	2854	"	19.5	19.5	443	296	"	16	18	488	2927	"
0430	12	27	392	365	"	18.5	20	472	2789	"	19	19	436	289	"	15	20	479	2842	"
0630	12	27	385	454	"	18.5	20	466	2659	"	19	19	440	263	"	15	20	482	2805	"
0830	12	16	343	528	"	18.5	20	478	2453	"	18.5	18.5	432	212	"	16.5	18	431	2568	"
1030	12	16	372	599	"	18.5	20	452	2138	"	18.5	18.5	458	148	"	16.5	18	463	2379	"
1230	12	16	389	275	"	18	18	465	2355	"	18.5	18.5	450	141	"	16.5	18	478	2543	"
1430	12	16	362	259	"	18	18	478	2294	"	18.5	18.5	473	139	"	16.5	18	482	2649	"
1630	11.5	16	315	281	"	18	18	405	2160	"	18.5	18.5	428	129	"	14	18	453	2768	"
1830	12	18	398	172	"	17	18	428	2428	"	18.5	18.5	490	143	"	17	18	487	2795	"
2030	11.5	17	410	162	"	17	17.5	442	2606		18.5	18.5	485	165	"	13	17	492	2872	"

DPE Pilot Test Field Data Forms-Extraction Wells

Staff:_____ Site: 11109

Date: 7-29-12

Extraction Wellheads

Date: 7-29-12 / 7-30-12	MW-5					MW-10					MW-11					MW-12				
Start Time: 22:30	Pipe Flow Diam (in): 3					Pipe Flow Diam (in): 3					Pipe Flow Diam (in): 3					Pipe Flow Diam (in): 3				
	Pipe Flow Area (ft²): .049					Pipe Flow Area (ft²): .049					Pipe Flow Area (ft²): .049					Pipe Flow Area (ft²): .049				
	Field Measurements					Field Measurements					Field Measurements					Field Measurements				
Time (hh:mm)	C Vacuum, P_g (in Hg)	S Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft)	C Vacuum, P_g (in Hg)	S Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft)	C Vacuum, P_g (in Hg)	S Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft)	C Vacuum, P_g (in Hg)	S Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft)
22:30	11.5	16	183	102	29	17.5	19	436	2517	29	18	19	475	150	29	13	17	501	2825	29
00:30	12	15	~~182~~ 195	103	11	17.5	19	458	2614	11	18	19	501	129	11	13	17	486	2874	11
02:30	12	15	201	102	11	17.5	19	463	2582	11	18	19	482	125	11	13	17	494	2796	11
04:30	12	15	172	101	11	17.5	19	458	2626	11	18	19	474	124	11	13	17	496	2832	11
06:30	12	15	186	101	11	17.5	19	476	2618	11	18	19	496	120	11	13	17	482	2762	11
08:30	11	15.5	197	48	11	18.0	19.5	448	2488	11	18	21	501	113	11	13	17	410	2955	11
10:30	11	16.5	179	137	11	18.0	19.5	461	2131	11	18	21	488	80	11	13	17	401	2760	11
12:30	11	16.5	201	560	11	18.0	19.5	454	1970	11	16	21	477	200	11	13	17	409	2635	11
14:30	11	16.5	~~200~~	939	11	18.0	19.5	460	1980	11	18	21	468	180		13	17	409	2690	11
16:30	11	16.5	205	303	11	18.0	19.5	452	1880	11	18	21	491	75	11	13	17	397	2594	11
18:30	11	16.5	197	216	11	18.0	19.5	464	1820	11	18	21	474	112	11	13	17	401	2525	11
20:30	11	19	210	1488	11	18	19	475	2042	11	17	18	463	91.4	11	13	17	382	2031	11
22:30	11	19	206	145	11	18	19	452	1962	11	17	18	498	92.6	11	13	17	421	2238	11
30 00:30	11	19	186	140	11	18	19	432	2010	11	17	18	501	90.2	11	13	17	401	2020	11
02:30	10	18	210	132		17	19	463	1812	11	17	18	475	90.6	11	13	17	432	1988	11
04:30	10	15	201	283	11	17	18	501	2052	11	18	18	488	65.1	11	12	17	410	2748	11
06:30	10	13.5	196	468	11	17	18	452	2062	11	12.5	12.5	506	100.0	11	12	17	450	2728	11

DPE Pilot Test Field Data Forms-~~Monitoring Wells~~ System

Staff: Jerry / AS   Site: 11/09
Date: 7/16/12

Date: 7/17
Start Time: 0730 ~~1500~~

	~~System~~ Blower Inlet			Dilution Line			Oxidizer Inlet Line			~~Blower~~ Oxidizer Outlet (Vent Stack)		
	Pipe Flow Diam (in): 3			Pipe Flow Diam (in): 2			~~Pipe Flow Diam (in):~~ 3			Pipe Flow Diam (in): NA		
	Pipe Flow Area (ft²): .049			Pipe Flow Area (ft²): .022			Pipe Flow Area (ft²): .049			Pipe Flow Area (ft²):		
	Field Measurements			Field Measurements			Field Measurements			Field Measurements		
Time (hh:mm)	Vacuum, P_g (in Hg)	Velocity (ft/min)	~~PID (ppmv)~~	Vacuum, P_g (in Hg)	Velocity (ft/min)	~~PID (ppmv)~~	~~Vacuum~~ Pressure, P_g (in H_2O)	Velocity (ft/min)	PID (ppmv)	~~Vacuum, P_g (in Hg)~~	~~Velocity (ft/min)~~	PID (ppmv)
7/17 1100	26	186		26.5	~~100~~ 0		0.14	176	1594			2 ppm
1300	25	270		26.5	880		0.25	195	1550			0 PPM
1430	25	200		26.5	640		0.19	340	1986			0 PPM
1630	25	230		26.5	970		0.14	410	1901			0.0
1830	25	245		26.5	930		0.16	500	2011			0.0
2030	25	275		26.5	880		0.14	485	2275			0.0
2230	25	280		26.5	850		0.13	400	2216			0.0
7/18 0030	25	270		26.5	900		0.14	455	2285			0.0
0230	25	270		26.5	750		0.10	350	2253			0.0
0430	25	265		26.5	785		0.13	230	2015			0.0
0620	25	275		26.5	785		0.15	360	1290			0.0
0742	ENTRAINMENT PUMP STARTED						Pumped 82 gal					0.0
0825	25	275		26.5	780		0.15	355	1342			0.0
1020	25	280		26.5	757		0.15	361	1356			0.0
1041	PUMPED WATER 79 GALS.											0.0
1231	25	279		26.5	780		0.15	357	1288			0.0
1320	25	295		26.5	772		0.15	362	1271			0.0
1530	25	285		26.5	795		0.16	460	1359			0.0
1730	25	280		26.5	790		0.16	400	1348			0.0
1930	24.5	330		26.5	770		0.16	470	1338			0.0
2130	24.5	300		26.5	745		0.14	400	1275			0.0
2330	24.5	310		26.5	760		0.14	402	1320			0.0
7/19 0130	24.5	295		26.5	750		0.15	415	1240			0.0

Total Operational Runtime: ______

Notes:

Cumulative Liquid Volumes (gal)

Time	Water (gal)	~~LNAPL~~ Totalizer	
7/16 1500	0	249713	Baseline
7/17 0730	79	249792	Baseline
0800		249886	
0850		249972	
1130		250055	
1445		250140	
1630		250220	
1830		250300	
2030		250380	
2230		250380	
7/18 0030		250460	
0230		250550	
0430		250550	
0620		250636	
0748		250718	*
1041		250797	*
1320		250870	
1530		250870	
1730		250950	
1930		250950	
2130		251030	
2330		251110	
0130		251110	

DPE Pilot Test Field Data Forms-Monitoring Wells

Staff: Jerry/Rob Site: 1109 Date: 7/19/12

Date: 7/19/12	Blower 70°F System Inlet			Dilution Line			128°F Oxidizer Oxidizer Inlet Line			Blower Outlet (Vent Stack)		
Start Time: 0336	Pipe Flow Diam (in): 3			Pipe Flow Diam (in): 2			Pipe Flow Diam (in):			Pipe Flow Diam (in):		
	Pipe Flow Area (ft²):			Pipe Flow Area (ft²):			Pipe Flow Area (ft²):			Pipe Flow Area (ft²):		
	Field Measurements			Field Measurements			Pressure Field Measurements			Field Measurements		
Time (hh:mm)	Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)	Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)	~~Vacuum, P_g~~ H_2O (in Hg)	Velocity (ft/min)	PID (ppmv)	Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)
0330	24.5	305		26.5	790		0.14	425	1300			0.00
0630	24.5	147		26.5	785		.15	340	1315			0.00
0830	25	390		26.5	550		0.18	350	1292			0.00
1030	25	350		26.5	525		.21	386	1308			0.00
1230	25	370	27	26.5	475		.13	380	1333			0.00
1430	24.5	334		26.5	880		.16	480	1358			0.00
1630	25	369		26.5	600		.12	460	1333			0.00
1830	25	358		26.5	755		.13	495	1348			0.00
2030	24.5	359		26.5	630		.11	405	1361			0.00
2230	25	330		26.5	525		0.12	340	1210			0.00
7/20 0030	24.5	368		26.5	550		0.10	355	1358		2.6→	[illegible]
0230	24.5	364		26.5	520		0.10	358	1356			[illegible] 2.5
0430	24.5	380		26.5	520		0.12	356	1370			0.00
0630	26.	382		26.5	540		0.15	351	1380			0.00
0830	25.	362		26.5	535		0.15	359	1360			0.00
1030	26	374		26.5	580		0.15	354	1422			0.00
1230	26	371		26.	560		0.15	352	1491			0.00
1430	26	381		26.	545		0.15	356	1647			0.00
1630	26	374		26	530		0.15	361	1816			0.00
1830	24	505		26	470		0.17	420	2185			0.00
2030	24.5	426		26.5	406		0.14	411	2368			0.00
2230	24	405		26	520		0.14	369	2525			0.00
7/21 0030	24	411		26	650		0.16	435	2541			0.00

Total Operational Runtime: _____

	Cumulative Liquid Volumes (gal)	
	Water	LNAPL
0330		251190
0630		251273
0830		251352
1030		251352
1230		251430
1430		251430
1630		251510
1830		251600
2030		251600
2230		251600
0030		251680
0230		251760
0430		251770
0630		251842
0830		251922
1030		251922
1230		252003
1430		252003
1630		252081
1830		252160
2030		252160
2230		252240
0030		252240

Notes:

DPE Pilot Test Field Data Forms-Monitoring Wells

Staff:_____ Site:_____

Date:_____

Date: 7-21-12 / Start Time:	Blower ~~System~~ Inlet Pipe Flow Diam (in): 3 Pipe Flow Area (ft^2): *Field Measurements*			Dilution Line Pipe Flow Diam (in): 2 Pipe Flow Area (ft^2): *Field Measurements*			Oxidizer Inlet Line Pipe Flow Diam (in): 3 Pipe Flow Area (ft^2): *Pressure Field Measurements*			Oxidizer ~~Blower~~ Outlet (Vent Stack) Pipe Flow Diam (in): Pipe Flow Area (ft^2): *Field Measurements*		
Time (hh:mm)	Vacuum, P_g (in Hg)	Velocity (ft/min)	~~PID~~ (ppmv)	Vacuum, P_g (in Hg)	Velocity (ft/min)	~~PID~~ (ppmv)	~~Vacuum, P_g (in Hg)~~ H20	Velocity (ft/min)	PID (ppmv)	Vacuum, P_g (in Hg)	~~Velocity~~ (ft/min)	PID (ppmv)
0230	24	450		26	500		0.13	430	2428			0.00
0430	24	464		26	540		0.14	414	2750			0.00
0630	24	457		26	520		0.15	422	2307			0.00
0830	24	459		26	520		0.15	426	1829			0.00
1030	24	452		26	520		0.15	417	1764			0.00
1230	24	457		26	520		0.15	422	1909			0.00
1430	24	451		26	515		0.15	418	1738			0.00
1630	24	456		26	510		0.15	427	2009			0.00
1830	24	464		26	557		0.17	435	1850			0.00
2030	24	473		26	546		0.14	449	2521			0.00
2230	24	477		26	558		0.15	444	2734			0.00
7/22 0030	24	468		26	562		0.18	433	2891			0.00
0230	24	470		26	554		0.19	435	2625			0.00
0430	24	463		26	559		0.17	438	2686			0.00
0630	24	472		26	560		0.15	441	2629			0.00
0830	24	479		26	550		0.15	440	2449			0.00
1030	24	468		26	575		0.15	437	2432			0.00
1230	24	462		26	570		0.15	441	2364			0.00
1430	24	459		26	570		0.15	439	2397			0.00
1630	24	461		26	565		0.15	444	2291			0.00

Cumulative Liquid Volumes (gal)		
	Water	LNAPL
0230		252320
0430		252320
0630		252400
0830		252488
1030		252488
1230		252562
1430		252562
1630		252645
1830		252640
2030		252720
2230		252800
0030		252800
0230		252880
0430		252880
0630		252961
0830		253041
1030		253041
1230		253121
1430		253121
1630		253201

Total Operational Runtime:_____

Notes:

DPE Pilot Test Field Data Forms-Monitoring Wells

Staff: _____ Site: 11189

Date: 7-22-12

Date: 7-22-12	System Inlet			Dilution Line			Oxidizer Inlet Line			~~Blower~~ Oxidizer Outlet (Vent Stack)		
Start Time: 1630	Pipe Flow Diam (in): 3			Pipe Flow Diam (in): 2			Pipe Flow Diam (in): 3			Pipe Flow Diam (in): 3		
	Pipe Flow Area (ft²): .049			Pipe Flow Area (ft²): .049			Pipe Flow Area (ft²): .049			Pipe Flow Area (ft²): .049		
	Field Measurements			Field Measurements			~~Pressure~~ Field Measurements			Field Measurements		
Time (hh:mm)	Vacuum, P_g (in Hg)	Velocity (ft/min)	~~PID~~ (ppmv)	Vacuum, P_g (in Hg)	Velocity (ft/min)	~~PID~~ (ppmv)	~~Vacuum, P_g~~ (in Hg)	Velocity (ft/min)	PID (ppmv)	~~Vacuum, P_g~~ (in Hg)	~~Velocity~~ (ft/min)	PID (ppmv)
1630	24	461		22	565		0.15	441	2291			0.00
1830	24	453		26	557		0.21	438	2742			0.00
2030	24	451		26	563		0.21	430	3070			0.00
2230	24	460		26	560		0.21	440	3020			0.00
23 0030	24	465		26	563		0.24	437	3048			0.00
0230	24	461		26	561		0.21	432	2823			0.00
0430	~~23~~ 24	~~464~~ 464		26	550		~~0.21~~ .21	428	2858			0.00
0630	23	481		25	499		0.21	431	2891			0.00
0830	22.5	437		25	472		0.18	409	2401			0.00
1030	22.5	431		24	461		0.18	401	2432			0.00
1230	22.5	418		23	421		0.16	387	2344			0.00
1430	22.5	416		23	414		0.15	361	2231			0.00
1630	23.5	850		25.5	580		.35	408	3028			0.00
1830	22.5	775		24.5	580		.26	~~60~~	2600			0.00
2030	22.5	750		24.5	550		.32	635	2762			0.00
2230	22.5	770		24.5	560		0.31	550	2617			0.00
24 0030	22	765		24.5	570		0.31	585	2670			0.00
0230	22	772		24.5	585		0.31	592	2734			0.00
0430	22	763		24.5	572		0.32	588	2767			0.00
0630	22	726		24.5	489		0.32	562	2807			0.00
0830	22	713		24.5	481		0.32	559	2817			0.00
1030	22	701		24.5	490		0.32	555	2545			0.00
1230	22	691		24.5	481		0.32	571	2446			0.00

	Cumulative Liquid Volumes (gal)	
	Water	LNAPL
1630		253201
1830		253280
2030		253280
2230		253360
0030		253360
0230		253440
0430		253440
0630		253520
0830		253520
1030		253609
1230		253688
1430		253688
1630		253760
1830		253840
2030		253840
2230		253910
0030		253910
0230		253990
0430		254070
0630		254079
0830		254158
1030		254158
1230		254238

Total Operational Runtime: _____

Notes:

DPE Pilot Test Field Data Forms-Monitoring Wells

OXIDIZER

Staff: _____ Site: 1709

Date: 7-24-12

Date: 7-24-12	System Inlet ~~S~~			Dilution Line ~~D~~			Oxidizer Inlet Line ~~SVE~~			~~Blower~~ Outlet (Vent Stack)		
Start Time: 1430	Pipe Flow Diam (in): 3			Pipe Flow Diam (in): 2			Pipe Flow Diam (in): 3			Pipe Flow Diam (in):		
	Pipe Flow Area (ft^2): .049			Pipe Flow Area (ft^2): .049			Pipe Flow Area (ft^2): .049			Pipe Flow Area (ft^2):		
	Field Measurements			Field Measurements			pressure Field Measurements			Field Measurements		
Time (hh:mm)	Vacuum, P_g (in Hg)	Velocity (ft/min)	~~PID~~ (ppmv)	Vacuum, P_g (in Hg)	Velocity (ft/min)	~~PID~~ (ppmv)	~~Vacuum~~, P_g (H_2O)	Velocity (ft/min)	PID (ppmv)	Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)
1430	22	750		24.5	475		0.32	560	2340			0.00
1630	22	890		24	545		0.39	750	2467			0.00
1830	22	850		24	500		0.40	655	2734			0.00
2030	22	860		24	487		0.36	615	3080			0.00
2230	22	870		24	490		0.37	630	3121			0.00
'25 0030	22	878		24	476		0.49	645	3036			0.00
0230	22	863		24	460		0.47	640	3064			0.00
0430	22	880		24	472		0.43	656	3056			0.00
0630	22	821		24	479		0.44	680	3127			0.00
0830	22	842		24	491		0.42	659	3193			0.00
1030	22	835		24	489		0.42	650	2462			0.00
1230	21	854		24	492		0.41	647	2738			0.00
1430	21	860		24	475		0.42	675	2579			0.00
1630	21	850		24	487		0.41	669	2440			0.00
1830	21	879		24	485		0.40	690	2295			0.00
2030	21	990		24	450		0.49	650	2468			0.00
2230	21	1100		24	452		0.64	655	2268			0.00
'26 0030	21	1070		24	447		0.64	668	2240			0.00
0230	21	1083		24	435		0.64	640	1940			0.00
0430	21	970		24	442		0.64	638	2040			0.00
0630	20	1012		23	372		0.55	672	2311			0.00
0830	20	1015		23	398		0.55	682	2210			0.00
1030	20	1022		23	388		0.55	677	2042			0.00

Total Operational Runtime: _____

Cumulative Liquid Volumes (gal)		
	Water	LNAPL
1430		254310
1630		254310
1830		254380
2030		254380
2230		254470
0030		254470
0230		254540
0430		254620
0630		254620
0830		254708
1030		254708
1230		254785
1430		254785
1630		254850
1830		254930
2030		254930
2230		255010
0030		255010
0230		255090
0430		255090
0630		255162
0830		255162
1030		255249

Notes:

DPE Pilot Test Field Data Forms-Monitoring Wells

OXYDIZER

Staff: _____ Site: MW09

Date: 7-25-12

Date: 7-25	System Inlet			Dilution Line			Oxidizer Inlet Line			Blower Outlet (Vent Stack)			Cumulative Liquid Volumes (gal)	
Start Time: 1230	Pipe Flow Diam (in): 3			Pipe Flow Diam (in): 2			Pipe Flow Diam (in): 3			Pipe Flow Diam (in):				
	Pipe Flow Area (ft²): .049			Pipe Flow Area (ft²): .049			Pipe Flow Area (ft²): .049			Pipe Flow Area (ft²):				
	Field Measurements			Field Measurements			Pressure Field Measurements			Field Measurements				
Time (hh:mm)	Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)	Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)	Vacuum, P_g (in H2O)	Velocity (ft/min)	PID (ppmv)	Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)	Water	LNAPL
1230	20	1031		23	391		6.55	671	1958			GCD		255326
1430	20	1032		23	395		0.55	686	2012			0.00		255326
1630	20.5	1370		22	200		0.62	980	1870			0.00		255390
1830	20.5	1290		22	190		0.63	1000	1820			0.00		255390
2030	20	1360		22	195		0.66	890	2046			0.00		255470
2230	20	1320		22	187		0.71	980	1910			0.00		255470
7/27 0030	20	1295		22	193		0.74	920	2143			0.00		255550
0230	20	1300		22	185		0.74	933	2030			0.00		255550
0430	20	1280		22	197		0.78	940	1703			0.00		255630
0630	20	1256		20	162		0.80	1080	1948			0.00		255626
0830	20	1271		20	161		0.80	1042	1923			0.00		258703
1030	20	1253		20	148		0.80	1064	1780			0.00		255781
1230	20	1241		20	156		0.80	1059	1719			0.00		255781
1430	19	1620		20.5	330		0.81	1288	1948			0.0		255860
1630	18.5	1650		20.5	440		0.87	1420	1935			0.0		255860
1830	18.5	1673		20.5	460		0.89	1509	1632			0.0		255940
2030	18.5	1630		20	325		0.89	1470	1633			0.0		255940
2230	18.5	1590		20	340		0.92	1210	1635			0.00		256020
7/28 0030	18.5	1650		20	346		0.94	1225	1620			0.00		256020
0230	18.5	1660		20	340		0.98	1238	1545			0.00		256020
0430	18.5	1610		20	428		0.98	1340	1569			0.00		256090
0630	18.0	1670		20	394		1.06	1370	1483			0.00		256090

Total Operational Runtime: _____

Notes:

DPE Pilot Test Field Data Forms-Monitoring Wells

Staff: _____ Site: 11109

Date: 7-28-12

Date: 7-28-12	System Inlet			Dilution Line			Oxidizer Inlet Line			Blower Outlet (Vent Stack)				Cumulative Liquid Volumes (gal)	
Start Time: 0830	Pipe Flow Diam (in): 3			Pipe Flow Diam (in): 3			Pipe Flow Diam (in): 3			Pipe Flow Diam (in): 3					
	Pipe Flow Area (ft²): .049			Pipe Flow Area (ft²): .049			Pipe Flow Area (ft²): .049			Pipe Flow Area (ft²): .049					
	Field Measurements			Field Measurements			Field Measurements			Field Measurements					
Time (hh:mm)	Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)	Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)	Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)	Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)		Water	LNAPL
0830	18.0	1735		20	384	[illegible]	.98	1510	1432			0.00			256170
1030	18	1800		19.5	350	[illegible]	1.00	1600	1398			0.00	0830		256170
1230	18	1830		19.5	425	1329	1.03	1550	1329			0.00	1030		256250
1430	18	1815		19.5	438		1.04	1650	1280			0.00	1230		256250
1630	17.5	1880		19	365		1.07	1680	1300			0.00	1430		256250
1830	16.5	2100		18	356		1.26	1720	1540			0.00	1630		256320
2030	17.0	1870		18	337		1.13	1540	1483			0.00	1830		256320
2230	17.5	1920		19	345		1.16	1550	1442			0.00	2030		256400
0030	17.0	2020		19	341		1.20	1636	1413			0.00	2230		256400
02:30	17	1940		19	320		1.18	1582	1430			0.4	0030		256480
04:30	17	2045		19	330		1.17	1563	1425			0.00	02:30		256480
06:30	17	2010		19	345		1.19	1672	1430			0.00	04:30		256480
08:30	17.5	1910		20	—	Closed	1.09	1730	856			0.00	06:30		256556
10:30	17.5	1910		19.5	—		1.09	1750	1330			0.00	08:30		256556
12:30	17.5	1860		19.5	—		1.09	1950	1365			0.00	10:30		256633
14:30	17.5	1950		19.5	—		1.18	2080	1842			0.00	12:30		256633
16:30	17.5	2050		19.5	—		1.20	2050	1931			0.00	14:30		256710
18:30	17.5	1980		19.5	—		1.12	1990	844			0.00	16:30		256710
20:30	17.5	2120		19	—	—	1.14	1875	1085			0.00	18:30		256780
22:30	17.5	2020		18.5	—	—	1.10	1362	960			0.00	2030		256820
00:30	17	2080		18.5	—	—	1.14	1486	1145			0.00	2250		256820
02:30	17	2170		18.5	—	—	1.14	2120	1129			0.00	0030		256900
04:30	17	2120		18.5	—	—	1.24	1790	1056			0.00	02:30		256900

Total Operational Runtime: _____

Notes: → L/R Pump Running at 18" Hg at Inlet. Closed Dilution Line. Vacuum went up to 19.5

→ 18:30 Calibrated PID after readings, checked out okay.

DPE Pilot Test Field Data Forms-Monitoring Wells

Staff: _____ Site: 1185

Date: 7-30-12

Date: 7-30-12 / Start Time:	System Inlet Pipe Flow Diam (in): 3 Pipe Flow Area (ft^2): .049 *Field Measurements*			Dilution Line Pipe Flow Diam (in): 3 Pipe Flow Area (ft^2): .049 *Field Measurements*			Oxidizer Inlet Line Pipe Flow Diam (in): 3 Pipe Flow Area (ft^2): .049 *Field Measurements*			Blower Outlet (Vent Stack) Pipe Flow Diam (in): 3 Pipe Flow Area (ft^2): .049 *Field Measurements*		
Time (hh:mm)	Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)	Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)	Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)	Vacuum, P_g (in Hg)	Velocity (ft/min)	PID (ppmv)
06:30	17	2140	—	18.5	—	—	1.22	1290	1145	—	—	0

Cumulative Liquid Volumes (gal)	
Water	LNAPL
	256970

06:30

Total Operational Runtime: _____

Notes:

DPE Pilot Test Field Data Forms-Monitoring Wells

Staff: AS/Jacky Site: 11109

Date: 7/14/12

Date: 7/14

Start Time: 0700 1500

bTOC = w/ riser pipe

ROI Monitoring Well Measurements

Time (hh:mm)	MW-3 Vacuum (in H_2O)	MW-3 DTW (ft bTOC)	MW-7 Vacuum (in H_2O)	MW-7 DTW (ft bTOC)	MW-___ Vacuum (in H_2O)	MW-___ DTW (ft bTOC)	MW-___ Vacuum (in H_2O)	MW-___ DTW (ft bTOC)	MW-___ Vacuum (in H_2O)	MW-___ DTW (ft bTOC)	MW-___ Vacuum (in H_2O)	MW-___ DTW (ft bTOC)	MW-___ Vacuum (in H_2O)	MW-___ DTW (ft bTOC)
7/16 1445	0.00	11.96	0.00	13.04										
17 1100	0.00	12.89	0.00	13.55										
1300	0.00	13.07	0.00	13.67										
1430	0.00	13.46	0.00	13.75										
1630	0.13	13.95	0.00	13.86										
1830	0.00	14.23	0.00	13.87										
2030	0.00	14.66	0.00	13.92										
2230	0.15	14.94	0.00	13.98										
1/18 0030	0.00	15.21	0.00	14.30										
0230	0.00	15.45	0.00	14.07										
0430	0.00	15.67	0.00	14.09										
0620	0.00	15.85	0.00	14.10										
0825	0.00	16.03	0.00	14.07										
1020	0.00	16.29	0.00	14.16										
1231	0.00	16.48	0.00	14.21										
1320	0.00	16.58	0.00	14.25										
1530	0.00	16.79	0.00	14.30										
1730	0.00	16.95	0.00	14.38										
1930	0.06	17.04	0.00	14.25										
2130	1.15	17.22	0.00	14.28										
2330	0.88	17.32	0.00	14.30										
1/19 0130	0.82	17.40	0.00	14.32										
0330	0.86	17.45	0.00	14.34					(mw)					
0630	0.0	17.55	.00	14.36	VALVE	LEFT	OPEN	FOR	VAC	READING.				
0830	0.50	17.64	0.00	14.38										
1030	0.63	17.70	0	14.38										
1230	0.14	17.77	0.0	14.48										
1430	0.59	17.87	0.0	14.54										

DPE Pilot Test Field Data Forms-Monitoring Wells

Staff: Jerry Site: 11109

Date: 7/19/12

Date: 7/19

Start Time: 1630

ROI Monitoring Well Measurements

Time (hh:mm)	MW-3 Vacuum (in H_2O)	MW-3 DTW (ft bTOC)	MW-7 Vacuum (in H_2O)	MW-7 DTW (ft bTOC)	MW-___ Vacuum (in H_2O)	MW-___ DTW (ft bTOC)	MW-___ Vacuum (in H_2O)	MW-___ DTW (ft bTOC)	MW-___ Vacuum (in H_2O)	MW-___ DTW (ft bTOC)	MW-___ Vacuum (in H_2O)	MW-___ DTW (ft bTOC)	MW-___ Vacuum (in H_2O)	MW-___ DTW (ft bTOC)
1630	.79	17.93	0.0	14.53										
1830	.75	17.98	0.0	14.48										
2030	.78	18.03	0.0	14.46										
2230	0.67	18.06	0.0	14.46										
7/20 0030	0.47	18.06	0.00	14.49										
0230	0.37	18.10	0.00	14.50										
0430	.10	18.18	0.00	14.51										
0630	0.00	18.21	0.00	14.51										
0830	0.00	18.27	0.00	14.57										
1030	0.00	18.31	0.00	14.57										
1230	0.00	18.31	0.00	14.60										
1430	0.00	18.36	0.00	14.65										
1630	0.00	18.39	0.00	14.66										
1830	0.49	18.48	0.00	14.60										
2030	0.64	18.52	0.00	14.56										
2230	0.49	18.53	0.00	14.55										
7/21 0030	0.55	18.55	0.00	14.56										
0230	0.10	18.53	0.00	14.57										
0430	0.21	18.56	0.00	14.58										
0620	0.00	18.58	0.00	14.58										
0830	0.00	18.58	0.00	14.58										
1030	0.00	18.58	0.00	14.58										
1230	0.00	18.58	0.00	14.58										
1430	0.00	18.58	0.00	14.59										
1630	0.00	18.56	0.00	14.65										
1830	-0.45	18.60	0.00	14.65										
2030	0.19	18.60	0.00	14.56										
2230	0.45	18.60	0.00	14.56										

DPE Pilot Test Field Data Forms-Monitoring Wells

Staff: MM09 Site: _____

Date: _____

Date:	
Start Time:	

ROI Monitoring Well Measurements

	MW-3		MW-7		MW-___		MW-___		MW-___		MW-___		MW-___	
Time (hh:mm)	Vacuum (in H_2O)	DTW (ft bTOC)	Vacuum (in H_2O)	DTW (ft bTOC)	Vacuum (in H_2O)	DTW (ft bTOC)	Vacuum (in H_2O)	DTW (ft bTOC)	Vacuum (in H_2O)	DTW (ft bTOC)	Vacuum (in H_2O)	DTW (ft bTOC)	Vacuum (in H_2O)	DTW (ft bTOC)
1/22 0030	0.30	18.60	0.00	14.58										
0230	0.05	18.56	0.00	14.59										
0430	0.13	18.60	0.00	14.60										
0630	0.00	18.58	0.00	14.59										
0830	0.00	18.58	0.00	14.61										
1030	0.00	18.62	0.00	14.61										
1230	0.00	18.60	0.00	14.63										
1430	0.00	18.64	0.00	14.63										
1630	0.00	18.59	0.00	14.71										

DPE Pilot Test Field Data Forms-Monitoring Wells

Staff:_____ Site: 1109

Date: 7-22-12

Date: 7-22-12

Start Time: 1630

ROI Monitoring Well Measurements

Time (hh:mm)	MW-3		MW-7		MW-___		MW-___		MW-___		MW-___		MW-___	
	Vacuum (in H_2O)	DTW (ft bTOC)	Vacuum (in H_2O)	DTW (ft bTOC)	Vacuum (in H_2O)	DTW (ft bTOC)	Vacuum (in H_2O)	DTW (ft bTOC)	Vacuum (in H_2O)	DTW (ft bTOC)	Vacuum (in H_2O)	DTW (ft bTOC)	Vacuum (in H_2O)	DTW (ft bTOC)
1630	0.60	18.69	0.00	14.76										
1830	0.53	18.75	0.00	14.70										
2030	0.55	18.78	0.00	14.65										
2230	0.48	18.79	0.00	14.64										
23 0030	0.20	18.77	0.00	14.65										
0230	.21	18.80	0.00	14.66										
0430	.29	18.82	0.00	14.66										
0630	0.00	18.78	0.00	14.66										
0830	0.00	18.71	0.00	14.66										
1030	0.44	18.71	0.00	14.70										
1230	0.41	18.68	0.00	14.74										
1430	0.48	18.72	0.00	14.79										
1630	0.15	18.75	0.00	14.80										
1830	0.29	18.77	0.00	14.80										
2030	0.37	18.81	0.00	14.76										
2230	0.39	18.81	0.00	14.78										
24 0030	0.29	18.82	0.00	14.80										
0230	0.29	18.83	0.00	14.82										
0430	0.29	18.85	0.00	14.82										
0630	0.27	18.81	0.00	14.85										
0830	0.26	18.88	0.00	14.86										
1030	0.27	18.91	0.00	14.86										
1230	0.21	18.92	0.00	14.88										
1430	0.25	18.98	0.00	14.88										
1630	0.21	19.01	0.00	14.90										
1830	0.40	19.04	0.00	14.91										
2030	0.58	19.07		14.87										
2230	0.42	19.07	0.00	14.86										

DPE Pilot Test Field Data Forms-Monitoring Wells

Staff:_____ Site: 11109

Date: 7-25-12

Date: 7/25

Start Time: 0030

ROI Monitoring Well Measurements

Time (hh:mm)	MW-3		MW-7		MW-___		MW-___		MW-___		MW-___		MW-___	
	Vacuum (in H_2O)	DTW (ft bTOC)	Vacuum (in H_2O)	DTW (ft bTOC)	Vacuum (in H_2O)	DTW (ft bTOC)	Vacuum (in H_2O)	DTW (ft bTOC)	Vacuum (in H_2O)	DTW (ft bTOC)	Vacuum (in H_2O)	DTW (ft bTOC)	Vacuum (in H_2O)	DTW (ft bTOC)
25 0030	0.31	19.05	0.00	14.87										
0230	0.25	19.07	0.00	14.88										
0430	0.12	19.09	0.00	14.89										
0630	0.14	19.09	0.00	14.89										
0830	0.19	19.10	0.00	14.90										
1030	0.18	19.10	0.00	14.90										
1230	0.00	19.10	0.00	14.92										
1430	0.00	19.12	0.00	14.93										
1630	0.00	19.12	0.00	14.95										
1830	0.00	19.15	0.00	14.94										
2030	0.00	19.16	0.00	14.86										
2230	0.14	19.13	0.00	14.87										
0030	0.14	19.12	0.00	14.88										
0230	0.14	19.13	0.00	14.88										
0430	0.14	19.12	0.00	14.88										
0630	0.00	19.12	0.00	14.89										
0830	0.00	19.12	0.00	14.89										
1030	0.02	19.12	0.00	14.88										
1230	0.00	19.12	0.00	14.88										
1430	0.00	19.12	0.00	14.88										
1630	0.01	19.12	0.00	14.92										
1830	0.01	19.12	0.00	14.92										
2030	0.02	19.12	0.00	14.85										
2230	0.15	19.12	0.00	14.86										
27 0030	0.01	19.16	0.00	14.87										
0230	0.15	19.10	0.00	14.88										
0430	0.05	19.09	0.00	14.86										
0630	0.00	19.09	0.00	14.86										

DPE Pilot Test Field Data Forms-Monitoring Wells

Date: 7-27-12

Start Time: 0830

Staff: _____ Site: 11109

Date: 7-27-12

ROI Monitoring Well Measurements

Time (hh:mm)	MW-3		MW-7		MW-___		MW-___		MW-___		MW-___		MW-___	
	Vacuum (in H_2O)	DTW (ft bTOC)	Vacuum (in H_2O)	DTW (ft bTOC)	Vacuum (in H_2O)	DTW (ft bTOC)	Vacuum (in H_2O)	DTW (ft bTOC)	Vacuum (in H_2O)	DTW (ft bTOC)	Vacuum (in H_2O)	DTW (ft bTOC)	Vacuum (in H_2O)	DTW (ft bTOC)
0830	0.00	19.07	0.00	14.86										
1030	0.00	19.07	0.00	14.86										
1230	+.50	19.04	0.00	14.86										
1430	0.16	19.06	0.00	14.89										
1630	0.10	19.06	0.00	14.92										
1830	0.14	19.06	0.00	14.86										
2030	0.31	19.06	0.00	14.82										
2230	0.22	19.03	0.00	14.82										
28 0030	0.19	19.01	0.00	14.82										
0230	0.06	19.01	0.00	14.82										
0430	0.13	18.98	0.00	14.82										
0630	0.02	18.98	0.00	14.82										
0830	0.14	18.95	0.00	14.81										
1030	0.33	18.92	0.00	14.81										
1230	0.76	18.88	0.00	14.81										
1430	0.71	18.88	0.00	14.81										
1630	0.39	18.90	0.00	14.84										
1830	0.09	18.92	0.00	14.84										
2030	0.24	18.89	0.00	14.83										
2230	0.10	18.90	0.00	14.84										
29 0030	0.15	18.88	0.00	14.82										
0230	0.25	18.99	0.00	14.86										
0430	0.09	18.88	0.00	14.83										
0630	0.08	18.82	0.00	14.83										
0830	.08	18.77	0.00	14.87										
1030	.09	18.76	0.00	14.75										
1230	1.01	18.68	0.00	14.75										
1430	.72	18.72	0.00	14.79										

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Attachment C –
Mass Removal Calculations

Notes for Attachment C
Mass Removal Calculations
Results of DPE Test and LNAPL Removal
Former BP Station No. 11109
4280 Foothill Blvd., Oakland, California

Notes:

---	not measured
ACFM	actual cubic feet per minute
in	inches
in Hg	inches of mercury
in H_2O	inches of water
ft^2	square feet
ft/min	feet per minute
lbs/day	pounds per day
ppm_v	parts per million by volume
SCFM	standard cubic feet per minute
**	assumed 2 hour intervals between readings

Flow and Emission Equations

ACFM (ft^3/min) = Velocity (ft/min) X Flow Area (ft^2)

$$SCFM_{25C} = ACFM \left(\frac{P_{abs} + P_g}{P_{abs}}\right)\left(\frac{537}{460 + T}\right)$$

Mass Removal (lb/day) = SCFM (ft^3/min) x VOCs (ppmv) x 6.23x10-8 [(lb/ft^3)/(ppmv)] x 1440 (min/day)

where:

P_{abs} = *Atmospheric Pressure at Sea Level (1 atm = 406.8 in H_2O)*

P_g = *Guage/Line Pressure - equivalent to zero if atmospheric discharge*

T = *Airstream Temperature, degrees Farenheit (^oF)*

Attachment C
Mass Removal Calculations
Results of DPE Test and LNAPL Removal
Former BP Station No. 11109
4280 Foothill Blvd., Oakland, California

		Blower Inlet Pipe flow diam (in): 3 Pipe Flow Area (ft^2): 0.049				Dilution Line Pipe flow diam (in): 2 Pipe Flow Area (ft^2): 0.022				Oxidizer Inlet Line Pipe flow diam (in): 3 Pipe Flow Area (ft^2): 0.049					
Date	**Time**	**Vacuum (in Hg)**	**Velocity (ft/min)**	**Flow Rate (ACFM)**	**Flow Rate (SCFM)**	**Vacuum (in Hg)**	**Velocity (ft/min)**	**Flow Rate (ACFM)**	**Flow Rate (SCFM)**	**Pressure (in H_2O)**	**Velocity (ft/min)**	**PID (ppm_v)**	**Flow Rate (ACFM)**	**Flow Rate (SCFM)**	**Mass Removal (lbs/day)**
7/17/2012	1100	26	186	9.1	1.2	26.5	---	---	---	0.14	176	1574	77.3	77.3	**10.9**
7/17/2012	1300	25	270	13.3	2.2	26.5	880	19.2	2.2	0.25	195	1550	76.1	76.1	**10.6**
7/17/2012	1430	25	200	9.8	1.6	26.5	640	14.0	1.6	0.19	340	1986	97.5	97.5	**17.4**
7/17/2012	1630	25	230	11.3	1.9	26.5	970	21.2	2.5	0.14	410	1901	93.3	93.3	**15.9**
7/17/2012	1830	26	245	12.0	1.6	26.5	930	20.3	2.4	0.16	500	2011	98.7	98.8	**17.8**
7/17/2012	2030	25	275	13.5	2.2	26.5	880	19.2	2.2	0.14	485	2275	111.7	111.7	**22.8**
7/17/2012	2230	25	280	13.7	2.3	26.5	850	18.5	2.2	0.1	400	2216	108.8	108.8	**21.6**
7/18/2012	0030	25	270	13.3	2.2	26.5	900	19.6	2.3	0.1	455	2285	112.2	112.2	**23.0**
7/18/2012	0230	25	270	13.3	2.2	26.5	750	16.4	1.9	0.1	350	2253	110.6	110.6	**22.4**
7/18/2012	0430	25	265	13.0	2.2	26.5	785	17.1	2.0	0.1	230	2015	98.9	98.9	**17.9**
7/18/2012	0620	25	275	13.5	2.2	26.5	785	17.1	2.0	0.2	360	1290	63.3	63.3	**7.3**
7/18/2012	0825	25	275	13.5	2.2	26.5	780	17.0	2.0	0.2	355	1346	66.1	66.1	**8.0**
7/18/2012	1020	25	286	14.0	2.3	26.5	757	16.5	1.9	0.2	361	1356	66.6	66.6	**8.1**
7/18/2012	1231	25	279	13.7	2.3	26.5	780	17.0	2.0	0.2	357	1288	63.2	63.2	**7.3**
7/18/2012	1320	25	295	14.5	2.4	26.5	776	16.9	2.0	0.2	362	1271	62.4	62.4	**7.1**
7/19/2012	1230	25	370	18.2	3.0	27.0	475	10.4	1.0	0.1	380	1333	65.4	65.5	**7.8**
7/19/2012	1430	24.5	334	16.4	3.0	26.5	880	19.2	2.2	0.2	480	1358	66.7	66.7	**8.1**
7/19/2012	1630	25	369	18.1	3.0	26.5	600	13.1	1.5	0.1	460	1333	65.4	65.5	**7.8**
7/19/2012	1830	25	358	17.6	2.9	26.5	755	16.5	1.9	0.1	495	1348	66.2	66.2	**8.0**
7/19/2012	2030	24.5	359	17.6	3.2	26.5	630	13.7	1.6	0.0	405	1361	66.8	66.8	**8.2**
7/19/2012	2230	25	330	16.2	2.7	26.5	525	11.5	1.3	0.1	340	1210	59.4	59.4	**6.4**
7/20/2012	0030	24.5	368	18.1	3.3	26.5	550	12.0	1.4	0.1	355	1358	66.7	66.7	**8.1**
7/20/2012	0230	24.5	364	17.9	3.3	26.5	520	11.3	1.3	0.1	358	1356	66.6	66.6	**8.1**
7/20/2012	0430	24.5	380	18.7	3.4	26.5	520	11.3	1.3	0.1	356	1370	67.2	67.3	**8.3**
7/20/2012	0630	26	382	18.8	2.5	26.5	540	11.8	1.4	0.2	351	1380	67.7	67.8	**8.4**
7/20/2012	0830	25	362	17.8	3.0	26.5	535	11.7	1.4	0.2	359	1360	66.8	66.8	**8.1**
7/20/2012	1030	26	374	18.4	2.4	26.5	580	12.7	1.5	0.2	354	1422	69.8	69.8	**8.9**
7/20/2012	1230	26	371	18.2	2.4	26.0	560	12.2	1.6	0.2	352	1491	73.2	73.2	**9.8**
7/20/2012	1430	26	381	18.7	2.5	26.0	545	11.9	1.6	0.2	356	1647	80.8	80.9	**11.9**

Attachment C
Mass Removal Calculations
Results of DPE Test and LNAPL Removal
Former BP Station No. 11109
4280 Foothill Blvd., Oakland, California

		Blower Inlet Pipe flow diam (in): 3 Pipe Flow Area (ft^2): 0.049				Dilution Line Pipe flow diam (in): 2 Pipe Flow Area (ft^2): 0.022				Oxidizer Inlet Line Pipe flow diam (in): 3 Pipe Flow Area (ft^2): 0.049					
Date	**Time**	**Vacuum (in Hg)**	**Velocity (ft/min)**	**Flow Rate (ACFM)**	**Flow Rate (SCFM)**	**Vacuum (in Hg)**	**Velocity (ft/min)**	**Flow Rate (ACFM)**	**Flow Rate (SCFM)**	**Pressure (in H_2O)**	**Velocity (ft/min)**	**PID (ppm_v)**	**Flow Rate (ACFM)**	**Flow Rate (SCFM)**	**Mass Removal (lbs/day)**
7/20/2012	1630	26	374	18.4	2.4	26.0	530	11.6	1.5	0.2	361	1816	89.1	89.2	**14.5**
7/20/2012	1830	24	505	24.8	5.0	26.0	470	10.3	1.4	0.2	420	2185	107.3	107.3	**21.0**
7/20/2012	2030	24.5	426	20.9	3.8	26.5	406	8.9	1.0	0.1	411	2368	116.2	116.3	**24.7**
7/20/2012	2230	24	405	19.9	4.0	26.0	520	11.3	1.5	0.1	369	2525	123.9	124.0	**28.1**
7/21/2012	0030	24	411	20.2	4.0	26.0	650	14.2	1.9	0.2	435	2541	124.7	124.8	**28.4**
7/21/2012	0230	24	450	22.1	4.4	26.0	500	10.9	1.5	0.1	430	2428	119.2	119.2	**26.0**
7/21/2012	0430	24	464	22.8	4.6	26.0	540	11.8	1.6	0.1	414	2750	135.0	135.0	**33.3**
7/21/2012	0630	24	457	22.4	4.5	26.0	520	11.3	1.5	0.2	422	2307	113.2	113.3	**23.4**
7/21/2012	0830	24	459	22.5	4.5	26.0	570	12.4	1.7	0.2	426	1829	89.8	89.8	**14.7**
7/21/2012	1030	24	452	22.2	4.4	26.0	570	12.4	1.7	0.2	417	1764	86.6	86.6	**13.7**
7/21/2012	1230	24	457	22.4	4.5	26.0	570	12.4	1.7	0.2	422	1909	93.7	93.7	**16.1**
7/21/2012	1430	24	451	22.1	4.4	26.0	565	12.3	1.6	0.2	418	1738	85.3	85.3	**13.3**
7/21/2012	1630	24	456	22.4	4.5	26.0	560	12.2	1.6	0.2	427	2009	98.6	98.7	**17.8**
7/21/2012	1830	24	464	22.8	4.6	26.0	557	12.2	1.6	0.2	435	1850	90.8	90.8	**15.1**
7/21/2012	2030	24	473	23.2	4.6	26.0	546	11.9	1.6	0.1	449	2521	123.7	123.8	**28.0**
7/21/2012	2230	24	477	23.4	4.7	26.0	558	12.2	1.6	0.2	444	2734	134.2	134.3	**32.9**
7/22/2012	0030	24	468	23.0	4.6	26.0	562	12.3	1.6	0.2	433	2891	141.9	142.0	**36.8**
7/22/2012	0230	24	470	23.1	4.6	26.0	554	12.1	1.6	0.2	435	2625	128.9	128.9	**30.4**
7/22/2012	0430	24	463	22.7	4.5	26.0	559	12.2	1.6	0.2	438	2686	131.8	131.9	**31.8**
7/22/2012	0630	24	472	23.2	4.6	26.0	560	12.2	1.6	0.2	441	2629	129.1	129.1	**30.4**
7/22/2012	0830	24	479	23.5	4.7	26.0	550	12.0	1.6	0.2	440	2449	120.2	120.3	**26.4**
7/22/2012	1030	24	468	23.0	4.6	26.0	575	12.5	1.7	0.2	437	2432	119.4	119.4	**26.1**
7/22/2012	1230	24	462	22.7	4.5	26.0	570	12.4	1.7	0.2	441	2364	116.0	116.1	**24.6**
7/22/2012	1430	24	459	22.5	4.5	26.0	570	12.4	1.7	0.2	439	2397	117.7	117.7	**25.3**
7/22/2012	1630	24	461	22.6	4.5	26.0	565	12.3	1.6	0.2	444	2291	112.5	112.5	**23.1**
7/22/2012	1830	24	453	22.2	4.4	26.0	557	12.2	1.6	0.2	438	2742	134.6	134.7	**33.1**
7/22/2012	2030	24	451	22.1	4.4	26.0	563	12.3	1.6	0.2	430	3070	150.7	150.8	**41.5**
7/22/2012	2230	24	460	22.6	4.5	26.0	560	12.2	1.6	0.2	440	3020	148.2	148.3	**40.2**
7/23/2012	0030	24	465	22.8	4.6	26.0	563	12.3	1.6	0.2	437	3048	149.6	149.7	**40.9**

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		Blower Inlet Pipe flow diam (in): 3 Pipe Flow Area (ft^2): 0.049				Dilution Line Pipe flow diam (in): 2 Pipe Flow Area (ft^2): 0.022				Oxidizer Inlet Line Pipe flow diam (in): 3 Pipe Flow Area (ft^2): 0.049					
Date	**Time**	**Vacuum (in Hg)**	**Velocity (ft/min)**	**Flow Rate (ACFM)**	**Flow Rate (SCFM)**	**Vacuum (in Hg)**	**Velocity (ft/min)**	**Flow Rate (ACFM)**	**Flow Rate (SCFM)**	**Pressure (in H_2O)**	**Velocity (ft/min)**	**PID (ppm_v)**	**Flow Rate (ACFM)**	**Flow Rate (SCFM)**	**Mass Removal (lbs/day)**
7/23/2012	0230	24	461	22.6	4.5	26.0	561	12.2	1.6	0.2	432	2823	138.6	138.6	**35.1**
7/23/2012	0430	24	464	22.8	4.6	25.0	550	12.0	2.0	0.2	428	2858	140.3	140.4	**36.0**
7/23/2012	0630	23	481	23.6	5.5	25.0	499	10.9	1.8	0.2	431	2891	141.9	142.0	**36.8**
7/23/2012	0830	22.5	437	21.5	5.4	24.0	472	10.3	2.1	0.2	409	2401	117.9	117.9	**25.4**
7/23/2012	1030	22.5	431	21.2	5.3	23.0	461	10.1	2.3	0.2	401	2432	119.4	119.4	**26.1**
7/23/2012	1230	22.5	418	20.5	5.1	23.0	421	9.2	2.1	0.2	387	2344	115.1	115.1	**24.2**
7/23/2012	1430	22.5	416	20.4	5.1	25.5	414	9.0	1.4	0.2	361	2231	109.5	109.6	**21.9**
7/23/2012	1630	23.5	850	41.7	9.0	24.5	580	12.7	2.3	0.4	408	3028	148.6	148.8	**40.4**
7/23/2012	1830	22.5	775	38.0	9.5	24.5	580	12.7	2.3	0.3	640	2600	127.6	127.7	**29.8**
7/23/2012	2030	22.5	750	36.8	9.2	24.5	550	12.0	2.2	0.3	635	2762	135.6	135.7	**33.6**
7/23/2012	2230	22.5	770	37.8	9.4	24.5	560	12.2	2.2	0.3	550	2617	128.5	128.6	**30.2**
7/24/2012	0030	22	765	37.6	10.0	24.5	570	12.4	2.3	0.3	585	2670	131.1	131.2	**31.4**
7/24/2012	0230	22	772	37.9	10.1	24.5	585	12.8	2.3	0.3	592	2734	134.2	134.3	**32.9**
7/24/2012	0430	22	763	37.5	10.0	24.5	572	12.5	2.3	0.3	588	2762	135.6	135.7	**33.6**
7/24/2012	0630	22	726	35.6	9.5	24.5	489	10.7	2.0	0.3	562	2807	137.8	137.9	**34.7**
7/24/2012	0830	22	713	35.0	9.3	24.5	481	10.5	1.9	0.3	559	2817	138.3	138.4	**35.0**
7/24/2012	1030	22	701	34.4	9.2	24.5	490	10.7	2.0	0.3	555	2545	124.9	125.0	**28.5**
7/24/2012	1230	22	691	33.9	9.0	24.5	481	10.5	1.9	0.3	571	2416	118.6	118.7	**25.7**
7/24/2012	1430	22	750	36.8	9.8	24.5	475	10.4	1.9	0.3	560	2340	114.9	114.9	**24.1**
7/24/2012	1630	22	890	43.7	11.7	24.0	545	11.9	2.4	0.4	750	2467	121.1	121.2	**26.8**
7/24/2012	1830	22	850	41.7	11.1	24	500	10.9	2.2	0.4	655	2734	134.2	134.3	**32.9**
7/24/2012	2030	22	860	42.2	11.3	24.0	487	10.6	2.1	0.4	615	3080	151.2	151.3	**41.8**
7/24/2012	2230	22	870	42.7	11.4	24	490	10.7	2.1	0.4	630	3121	153.2	153.3	**42.9**
7/25/2012	0030	22	878	43.1	11.5	24.0	476	10.4	2.1	0.5	645	3036	149.0	149.2	**40.6**
7/25/2012	0230	22	*863*	*42.4*	*11.3*	24	460	10.0	2.0	0.5	*640*	*3064*	*150.4*	*150.6*	***41.4***
7/25/2012	0430	22	880	43.2	11.5	24.0	*472*	10.3	2.1	0.4	656	3056	150.0	150.2	**41.2**
7/25/2012	0630	22	821	40.3	10.7	24	479	10.5	2.1	0.4	680	3127	153.5	153.7	**43.1**
7/25/2012	0830	22	842	41.3	11.0	24.0	491	10.7	2.1	0.4	659	3193	156.7	156.9	**44.9**
7/25/2012	1030	22	835	41.0	10.9	24	489	10.7	2.1	0.4	650	2462	120.9	121.0	**26.7**

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Date	**Time**	**Vacuum (in Hg)**	**Velocity (ft/min)**	**Flow Rate (ACFM)**	**Flow Rate (SCFM)**	**Vacuum (in Hg)**	**Velocity (ft/min)**	**Flow Rate (ACFM)**	**Flow Rate (SCFM)**	**Pressure (in H_2O)**	**Velocity (ft/min)**	**PID (ppm_v)**	**Flow Rate (ACFM)**	**Flow Rate (SCFM)**	**Mass Removal (lbs/day)**
7/25/2012	1230	21	854	41.9	12.6	24.0	492	10.7	2.1	0.4	647	2738	134.4	134.5	**33.0**
7/25/2012	1430	21	860	42.2	12.7	24.0	475	10.4	2.1	0.4	675	2579	126.6	126.7	**29.3**
7/25/2012	1630	21	850	41.7	12.5	24.0	487	10.6	2.1	0.4	669	2440	119.8	119.9	**26.2**
7/25/2012	1830	21	979	48.1	14.4	24.0	485	10.6	2.1	0.4	690	2295	112.7	112.8	**23.2**
7/25/2012	2030	21	990	48.6	14.6	24.0	450	9.8	2.0	0.5	650	2468	121.1	121.3	**26.9**
7/25/2012	2230	21	1100	54.0	16.2	24.0	452	9.9	2.0	0.6	655	2268	111.3	111.5	**22.7**
7/26/2012	0030	21	1070	52.5	15.8	24.0	447	9.8	2.0	0.6	668	2240	110.0	110.1	**22.1**
7/26/2012	0230	21	1083	53.2	15.9	24.0	435	9.5	1.9	0.6	640	1940	95.2	95.4	**16.6**
7/26/2012	0430	21	970	47.6	14.3	24.0	442	9.6	1.9	0.6	638	2040	100.1	100.3	**18.4**
7/26/2012	0630	20	1012	49.7	16.6	23.0	372	8.1	1.9	0.6	672	2311	113.4	113.6	**23.6**
7/26/2012	0830	20	1015	49.8	16.6	23.0	398	8.7	2.0	0.6	682	2218	108.9	109.0	**21.7**
7/26/2012	1030	20	1022	50.2	16.7	23.0	388	8.5	2.0	0.6	677	2042	100.2	100.4	**18.4**
7/26/2012	1230	20	1031	50.6	16.9	23.0	391	8.5	2.0	0.6	671	1958	96.1	96.2	**16.9**
7/26/2012	1430	20	1032	50.7	16.9	23.0	395	8.6	2.0	0.6	686	2012	98.8	98.9	**17.9**
7/26/2012	1630	20.5	1370	67.2	21.3	22.0	200	4.4	1.2	0.6	980	1870	91.8	91.9	**15.4**
7/26/2012	1830	20.5	1290	63.3	20.1	22.0	190	4.1	1.1	0.6	1000	1820	89.3	89.5	**14.6**
7/26/2012	2030	20	1360	66.8	22.3	22.0	195	4.3	1.1	0.7	890	2046	100.4	100.6	**18.5**
7/26/2012	2230	20	1320	64.8	21.6	22.0	187	4.1	1.1	0.7	980	1910	93.8	93.9	**16.1**
7/27/2012	0030	20	1295	63.6	21.2	22.0	193	4.2	1.1	0.7	920	2143	105.2	105.4	**20.3**
7/27/2012	0230	20	1320	64.8	21.6	22.0	185	4.0	1.1	0.7	933	2030	99.6	99.8	**18.2**
7/27/2012	0430	20	1280	62.8	20.9	22.0	197	4.3	1.1	0.8	940	1703	83.6	83.8	**12.8**
7/27/2012	0630	20	1256	61.7	20.6	20.0	162	3.5	1.2	0.8	1080	1948	95.6	95.8	**16.7**
7/27/2012	0830	20	1271	62.4	20.8	20.0	161	3.5	1.2	0.8	1042	1923	94.4	94.6	**16.3**
7/27/2012	1030	20	1253	61.5	20.5	20.0	148	3.2	1.1	0.8	1064	1780	87.4	87.5	**14.0**
7/27/2012	1230	20	1241	60.9	20.3	20.0	156	3.4	1.1	0.8	1059	1719	84.4	84.5	**13.0**
7/27/2012	1430	19	1620	79.5	29.2	20.5	330	7.2	2.3	0.8	1288	1948	95.6	95.8	**16.7**
7/27/2012	1630	18.5	1650	81.0	31.0	20.5	440	9.6	3.0	0.9	1420	1935	95.0	95.2	**16.5**
7/27/2012	1830	18.5	1673	82.1	31.5	20.5	460	10.0	3.2	0.9	1509	1632	80.1	80.3	**11.8**
7/27/2012	2030	18.5	1630	80.0	30.7	20.0	325	7.1	2.4	0.9	1470	1633	80.2	80.3	**11.8**

Attachment C
Mass Removal Calculations
Results of DPE Test and LNAPL Removal
Former BP Station No. 11109
4280 Foothill Blvd., Oakland, California

		Blower Inlet Pipe flow diam (in): 3 Pipe Flow Area (ft^2): 0.049				Dilution Line Pipe flow diam (in): 2 Pipe Flow Area (ft^2): 0.022				Oxidizer Inlet Line Pipe flow diam (in): 3 Pipe Flow Area (ft^2): 0.049					
Date	**Time**	**Vacuum (in Hg)**	**Velocity (ft/min)**	**Flow Rate (ACFM)**	**Flow Rate (SCFM)**	**Vacuum (in Hg)**	**Velocity (ft/min)**	**Flow Rate (ACFM)**	**Flow Rate (SCFM)**	**Pressure (in H_2O)**	**Velocity (ft/min)**	**PID (ppm_v)**	**Flow Rate (ACFM)**	**Flow Rate (SCFM)**	**Mass Removal (lbs/day)**
7/27/2012	2230	18.5	1590	78.0	29.9	20.0	340	7.4	2.5	0.9	1210	1635	80.3	80.4	**11.8**
7/28/2012	0030	18.5	1650	81.0	31.0	20.0	346	7.5	2.5	0.9	1225	1620	79.5	79.7	**11.6**
7/28/2012	0230	18.5	1660	81.5	31.2	20.0	340	7.4	2.5	1.0	1238	1545	75.8	76.0	**10.5**
7/28/2012	0430	18.5	1610	79.0	30.3	20.0	428	9.3	3.1	1.0	1340	1569	77.0	77.2	**10.9**
7/28/2012	0630	18	1670	82.0	32.8	20.0	394	8.6	2.9	1.1	1370	1483	72.8	73.0	**9.7**
7/28/2012	0830	18	1735	85.2	34.1	20.0	384	8.4	2.8	1.0	1510	1432	70.3	70.5	**9.1**
7/28/2012	1030	18	1800	88.4	35.3	19.5	350	7.6	2.7	1.0	1600	1398	68.6	68.8	**8.6**
7/28/2012	1230	18	1830	89.8	35.9	19.5	425	9.3	3.2	1.0	1550	1329	65.2	65.4	**7.8**
7/28/2012	1430	18	1815	89.1	35.6	19.5	438	9.6	3.3	1.0	1650	1280	62.8	63.0	**7.2**
7/28/2012	1630	17.5	1880	92.3	38.5	19.0	365	8.0	2.9	1.1	1680	1300	63.8	64.0	**7.5**
7/28/2012	1830	16.5	2100	103.1	46.4	18.0	356	7.8	3.1	1.3	1720	1540	75.6	75.8	**10.5**
7/28/2012	2030	17	1870	91.8	39.8	18.0	337	7.4	2.9	1.1	1540	1483	72.8	73.0	**9.7**
7/28/2012	2230	17.5	1920	94.2	39.3	19.0	345	7.5	2.8	1.1	1550	1442	70.8	71.0	**9.2**
7/29/2012	0030	17	2020	99.2	43.0	19.0	341	7.4	2.7	1.2	1636	1413	69.4	69.6	**8.8**
7/29/2012	0230	17	1940	95.2	41.3	19.0	320	7.0	2.6	1.2	1582	1430	70.2	70.4	**9.0**
7/29/2012	0430	17	2045	100.4	43.5	19.0	330	7.2	2.6	1.2	1563	1425	69.9	70.2	**9.0**
7/29/2012	0630	17	2010	98.7	42.8	19.0	345	7.5	2.8	1.2	1672	1430	70.2	70.4	**9.0**
7/29/2012	0830	17.5	1910	93.8	39.1	20.0	CLOSED			1.1	1730	856	42.0	42.1	**3.2**
7/29/2012	1030	17.5	1910	93.8	39.1	19.5	CLOSED			1.1	1750	1330	65.3	65.5	**7.8**
7/29/2012	1230	17.5	1860	91.3	38.0	19.5	CLOSED			1.1	1950	1365	67.0	67.2	**8.2**
7/29/2012	1430	17.5	1950	95.7	39.9	19.5	CLOSED			1.2	2080	1892	92.9	93.1	**15.8**
7/29/2012	1630	17.5	2050	100.6	41.9	19.5	CLOSED			1.2	2050	1931	94.8	95.1	**16.5**
7/29/2012	1830	17.5	1980	97.2	40.5	19.5	CLOSED			1.1	1990	844	41.4	41.5	**3.1**
7/29/2012	2030	17.5	2120	104.1	43.4	19.0	CLOSED			1.1	1875	1085	53.3	53.4	**5.2**
7/29/2012	2230	17.5	2020	99.2	41.3	18.5	CLOSED			1.1	1362	960	47.1	47.3	**4.1**
7/30/2012	0030	17	2080	102.1	44.2	18.5	CLOSED			1.1	1486	1145	56.2	56.4	**5.8**
7/30/2012	0230	17	2170	106.5	46.2	18.5	CLOSED			1.1	2120	1129	55.4	55.6	**5.6**
7/30/2012	0430	17	2120	104.1	45.1	18.5	CLOSED			1.2	1790	1056	51.8	52.0	**4.9**
7/30/2012	0630	17	2140	105.0	45.5204	18.5	CLOSED			1.22	1290	1145	56.2	56.4	**5.8**

Attachment C
Mass Removal Calculations
Results of DPE Test and LNAPL Removal
Former BP Station No. 11109
4280 Foothill Blvd., Oakland, California

		MW-5								MW-10							
		Pipe flow diam (in): 3								Pipe flow diam (in): 3							
		Pipe Flow Area (ft^2): 0.049								Pipe Flow Area (ft^2) 0.049							
Date	Time	Casing Vacuum (in Hg)	Stinger Vacuum (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft bTOC)	Flow Rate (ACFM)	Flow Rate (SCFM)	Mass Removal (lbs/day)	Casing Vacuum (in Hg)	Stinger Vacuum (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft bTOC)	Flow Rate (ACFM)	Flow Rate (SCFM)	Mass Removal (lbs/day)
7/17/2012	1100	9	20	2850	480	29	140	47	2.0	22	22	150	445	29	7.4	2.0	0.1
7/17/2012	1300	8	20	2800	360	29	137	46	1.5	19	22	850	923	29	41.7	11.1	0.9
7/17/2012	1430	9	22	220	290	29	11	3	0.1	23	24	885	900	29	43.4	8.7	0.7
7/17/2012	1630	9	26	250	125	29	12	2	0.0	22	23	640	786	29	31.4	7.3	0.5
7/17/2012	1830	12	27	128	482	29	6	1	0.0	22	20	145	750	29	7.1	2.4	0.2
7/17/2012	2030	11	27.5	134	629	29	7	1	0.0	21.5	20	1050	780	29	51.5	17.2	1.2
7/17/2012	2230	9	27	14	993	29	0.7	0.1	0.0	22	20	127	700	29	6.2	2.1	0.1
7/18/2012	0030	8	27	26	1390	29	1.3	0.1	0.0	22	20	130	1280	29	6.4	2.1	0.2
7/18/2012	0230	9	28	120	975	29	5.9	0.4	0.0	22.5	20	113	670	29	5.5	1.8	0.1
7/18/2012	0430	9	18	141	1040	29	6.9	2.8	0.3	22.5	20	191	640	29	9.4	3.1	0.2
7/18/2012	0620	11	18.5	156	1020	29	7.7	2.9	0.3	23	26	173	645	29	8.5	1.1	0.1
7/18/2012	0825	9	20	149	1022	29	7.3	2.4	0.2	22.5	25	161	639	29	7.9	1.3	0.1
7/18/2012	1020	9	21	176	922	29	8.6	2.6	0.2	22	23	177	1006	29	8.7	2.0	0.2
7/18/2012	1231	10	22	196	534	29	9.6	2.6	0.1	22	23	192	1013	29	9.4	2.2	0.2
7/18/2012	1320	9	25	177	410	29	8.7	1.4	0.1	21	22	216	491	29	10.6	2.8	0.1
7/19/2012	1230	11	25	170	441	29	8.3	1.4	0.1	23	27	200	884	29	9.8	1.0	0.1
7/19/2012	1430	11	25	225	250	29	11.0	1.8	0.0	21.5	25	325	990	29	16.0	2.7	0.2
7/19/2012	1630	11	23	195	287	29	9.6	2.2	0.1	22	24	410	938	29	20.1	4.0	0.3
7/19/2012	1830	11	25	290	278	29	14.2	2.4	0.1	22	24	420	985	29	20.6	4.1	0.4
7/19/2012	2030	11	25	300	158	29	14.7	2.5	0.0	22.5	25	378	922	29	18.6	3.1	0.3
7/19/2012	2230	11	25	180	489	29	8.8	1.5	0.1	22	26	414	830	29	20.3	2.7	0.2
7/20/2012	0030	11	25	143	258	29	7.0	1.2	0.0	22.5	26	369	1007	29	18.1	2.4	0.2
7/20/2012	0230	11	25	186	323	29	9.1	1.5	0.0	22.5	26	420	1030	29	20.6	2.7	0.3
7/20/2012	0430	11	25	159	320	29	7.8	1.3	0.0	23	26	416	1035	29	20.4	2.7	0.3
7/20/2012	0630	11	25	172	376	29	8.4	1.4	0.0	22	23	360	1038	29	17.7	4.1	0.4
7/20/2012	0830	11	24	181	472	29	8.9	1.8	0.1	22	23	412	1126	29	20.2	4.7	0.5
7/20/2012	1030	11	24	179	359	29	8.8	1.8	0.1	22	23	419	1489	29	20.6	4.8	0.6
7/20/2012	1230	11	24	175	326	29	8.6	1.7	0.1	22	23	482	1612	29	23.7	5.5	0.8
7/20/2012	1430	11	24	171	366	29	8.4	1.7	0.1	22	23	461	1727	29	22.6	5.3	0.8
7/20/2012	1630	11	24	174	321	29	8.5	1.7	0.0	22	23	451	1599	29	22.1	5.2	0.7
7/20/2012	1830	11	25	129	1634	29	6.3	1.1	0.2	22	25	329	1688	29	16.1	2.7	0.4
7/20/2012	2030	11	25	144	918	29	7.1	1.2	0.1	23	26	340	1886	29	16.7	2.2	0.4
7/20/2012	2230	11	25	159	802	29	7.8	1.3	0.1	22.5	26	354	1922	29	17.4	2.3	0.4
7/21/2012	0030	11	25	183	517	29	9.0	1.5	0.1	22.5	25	369	1940	29	18.1	3.0	0.5
7/21/2012	0230	11	25	116	1775	29	5.7	0.9	0.0	22.5	26	343	1909	29	16.8	2.2	0.4
7/21/2012	0430	11	25	198	1110	29	9.7	1.6	0.0	22.5	26	334	1912	29	16.4	2.2	0.4

Attachment C
Mass Removal Calculations
Results of DPE Test and LNAPL Removal
Former BP Station No. 11109
4280 Foothill Blvd., Oakland, California

		MW-11								MW-12							
		Pipe flow diam (in): 3								Pipe flow diam (in): 3							
		Pipe Flow Area (ft^2): 0.049								Pipe Flow Area (ft^2): 0.049							
Date	Time	Casing Vacuum (in Hg)	Stinger Vacuum (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft bTOC)	Flow Rate (ACFM)	Flow Rate (SCFM)	Mass Removal (lbs/day)	Casing Vacuum (in Hg)	Stinger Vacuum (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft bTOC)	Flow Rate (ACFM)	Flow Rate (SCFM)	Mass Removal (lbs/day)
7/17/2012	1100	21.5	23	1600	807	29	78.5	18.3	1.3	19.5	21	950	294	29	46.6	14.0	0.4
7/17/2012	1300	22	22	1530	804	29	75.1	20.0	1.4	19	20	500	343	29	24.5	8.2	0.3
7/17/2012	1430	22	26	100	968	29	4.9	0.7	0.1	21	21	300	375	29	14.7	4.4	0.1
7/17/2012	1630	22	26	159	940	29	7.8	1.0	0.1	18	22	190	860	29	9.3	2.5	0.2
7/17/2012	1830	21.5	26	88	1033	29	4.3	0.6	0.1	18	22	240	400	29	11.8	3.1	0.1
7/17/2012	2030	21.5	25	60	1136	29	2.9	0.5	0.1	19	26	190	449	29	9.3	1.2	0.1
7/17/2012	2230	21	25	70	950	29	3.4	0.6	0.0	19	26	181	444	29	8.9	1.2	0.0
7/18/2012	0030	21	25	75	900	29	3.7	0.6	0.0	19	28	260	481	29	12.8	0.9	0.0
7/18/2012	0230	22	26	178	750	29	8.7	1.2	0.1	20	30	179	420	29	8.8	0.0	0.0
7/18/2012	0430	22	26	975	625	29	47.9	6.4	0.4	20	19	280	270	29	13.7	5.0	0.1
7/18/2012	0620	22	26	575	620	29	28.2	3.8	0.2	22	24	224	260	29	11.0	2.2	0.1
7/18/2012	0825	22	25	501	738	29	24.6	4.1	0.3	20	23	228	531	29	11.2	2.6	0.1
7/18/2012	1020	22	23	308	733	29	15.1	3.5	0.2	20	21	276	337	29	13.5	4.1	0.1
7/18/2012	1231	22	23	421	539	29	20.7	4.8	0.2	20	21	334	534	29	16.4	4.9	0.2
7/18/2012	1320	22	23	185	954	29	9.1	2.1	0.2	21	22	312	389	29	15.3	4.1	0.1
7/19/2012	1230	27	27	350	879	29	17.2	1.7	0.1	22	24.5	650	431	29	31.9	5.8	0.2
7/19/2012	1430	22	26	400	985	29	19.6	2.6	0.2	21	24	575	448	29	28.2	5.6	0.2
7/19/2012	1630	22.5	26	295	825	29	14.5	1.9	0.1	22	24.5	600	443	29	29.5	5.4	0.2
7/19/2012	1830	22.5	26	350	810	29	17.2	2.3	0.2	21.5	25	498	450	29	24.4	4.1	0.2
7/19/2012	2030	22.5	26	409	1233	29	20.1	2.7	0.3	21	26	575	500	29	28.2	3.8	0.2
7/19/2012	2230	22	25	453	1122	29	22.2	3.7	0.4	21.5	24	404	484	29	19.8	4.0	0.2
7/20/2012	0030	22.5	26	473	1014	29	23.2	3.1	0.3	21.5	25	256	484	29	12.6	2.1	0.1
7/20/2012	0230	23	25	481	1116	29	23.6	3.9	0.4	22	25	289	482	29	14.2	2.4	0.1
7/20/2012	0430	26	27	367	1388	29	18.0	1.8	0.2	21.5	25	218	495	29	10.7	1.8	0.1
7/20/2012	0630	22	24	382	1326	29	18.8	3.8	0.4	21	25	249	912	29	12.2	2.0	0.2
7/20/2012	0830	22	24	361	1416	29	17.7	3.5	0.5	22	24	217	885	29	10.7	2.1	0.2
7/20/2012	1030	22	24	354	1622	29	17.4	3.5	0.5	22	24	231	952	29	11.3	2.3	0.2
7/20/2012	1230	22	24	361	1781	29	17.7	3.5	0.6	22	24	211	970	29	10.4	2.1	0.2
7/20/2012	1430	22	24	321	1921	29	15.8	3.2	0.5	22	24	237	930	29	11.6	2.3	0.2
7/20/2012	1630	22	24	349	2134	29	17.1	3.4	0.7	22	24	243	956	29	11.9	2.4	0.2
7/20/2012	1830	21.5	26	265	2038	29	13.0	1.7	0.3	21	24	244	938	29	12.0	2.4	0.2
7/20/2012	2030	22	25	336	2191	29	16.5	2.7	0.5	21	25	228	970	29	11.2	1.9	0.2
7/20/2012	2230	22	25	307	2183	29	15.1	2.5	0.5	21	24	237	999	29	11.6	2.3	0.2
7/21/2012	0030	22	26	208	1972	29	10.2	1.4	0.2	21	24	180	1071	29	8.8	1.8	0.2
7/21/2012	0230	22	26	282	2372	29	13.8	1.8	0.4	21	24	230	1041	29	11.3	2.3	0.2
7/21/2012	0430	22.5	25	261	2423	29	12.8	2.1	0.5	21	24	271	1012	29	13.3	2.7	0.2

Attachment C
Mass Removal Calculations
Results of DPE Test and LNAPL Removal
Former BP Station No. 11109
4280 Foothill Blvd., Oakland, California

		MW-5								MW-10							
		Pipe flow diam (in): 3								Pipe flow diam (in): 3							
		Pipe Flow Area (ft^2): 0.049								Pipe Flow Area (ft^2) 0.049							
Date	Time	Casing Vacuum (in Hg)	Stinger Vacuum (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft bTOC)	Flow Rate (ACFM)	Flow Rate (SCFM)	Mass Removal (lbs/day)	Casing Vacuum (in Hg)	Stinger Vacuum (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft bTOC)	Flow Rate (ACFM)	Flow Rate (SCFM)	Mass Removal (lbs/day)
7/21/2012	0630	11	25	174	1142	29	8.5	1.4	0.0	22.5	26	327	1427	29	16.1	2.1	0.3
7/21/2012	0830	11	25	172	485	29	8.4	1.4	0.0	22.5	26	349	1818	29	17.1	2.3	0.4
7/21/2012	1030	11	25	170	251	29	8.3	1.4	0.0	22.5	26	331	1448	29	16.2	2.2	0.3
7/21/2012	1230	11	25	168	241	29	8.2	1.4	0.0	22.5	26	342	1657	29	16.8	2.2	0.3
7/21/2012	1430	11	25	165	162	29	8.1	1.3	0.0	22.5	26	346	1792	29	17.0	2.3	0.4
7/21/2012	1630	11	25	182	424	29	8.9	1.5	0.0	22.5	21	342	1818	29	16.8	5.0	0.8
7/21/2012	1830	10.5	25	170	162	29	8.3	1.4	0.0	23	26	336	380	29	16.5	2.2	0.1
7/21/2012	2030	11	25	163	125	29	8.0	1.3	0.0	23	25	340	213	29	16.7	2.8	0.1
7/21/2012	2230	11	25	168	104	29	8.2	1.4	0.0	23	25	333	173	29	16.3	2.7	0.0
7/22/2012	0030	11	25	161	132	29	7.9	1.3	0.0	23	25	339	101	29	16.6	2.8	0.0
7/22/2012	0230	11	25	170	198	29	8.3	1.4	0.0	23	25	345	124	29	16.9	2.8	0.0
7/22/2012	0430	11	25	174	157	29	8.5	1.4	0.0	22.5	26	348	197	29	17.1	2.3	0.0
7/22/2012	0630	11	25	172	127	29	8.4	1.4	0.0	22.5	26	341	2026	29	16.7	2.2	0.4
7/22/2012	0830	11	25	178	257	29	8.7	1.5	0.0	22.5	26	349	2255	29	17.1	2.3	0.5
7/22/2012	1030	11	25	185	274	29	9.1	1.5	0.0	22.5	26	356	2054	29	17.5	2.3	0.4
7/22/2012	1230	11	25	173	251	29	8.5	1.4	0.0	22.5	26	352	2110	29	17.3	2.3	0.4
7/22/2012	1430	11	25	179	212	29	8.8	1.5	0.0	22.5	26	349	2095	29	17.1	2.3	0.4
7/22/2012	1630	11	25	183	191	29	9.0	1.5	0.0	22.5	26	339	2179	29	16.6	2.2	0.4
7/22/2012	1830	11	25	176	175	29	8.6	1.4	0.0	22.5	26	332	1120	29	16.3	2.2	0.2
7/22/2012	2030	11	25	180	196	29	8.8	1.5	0.0	22.5	26	341	272	29	16.7	2.2	0.1
7/22/2012	2230	11	25	172	240	29	8.4	1.4	0.0	22.5	26	330	344	29	16.2	2.2	0.1
7/23/2012	0030	11	28	185	234	29	9.1	0.6	0.0	23	25	346	1571	29	17.0	2.8	0.4
7/23/2012	0230	13	28	190	255	29	9.3	0.6	0.0	24	26	350	1745	29	17.2	2.3	0.4
7/23/2012	0430	13	26	182	241	29	8.9	1.2	0.0	24	25	337	1782	29	16.5	2.8	0.4
7/23/2012	0630	12	24	178	159	29	8.7	1.7	0.0	24	25	341	2022	29	16.7	2.8	0.5
7/23/2012	0830	11	23	161	710	29	7.9	1.8	0.0	24	25	309	2070	29	15.2	2.5	0.5
7/23/2012	1030	10	22	159	360	29	7.8	2.1	0.0	23	24	307	2062	29	15.1	3.0	0.6
7/23/2012	1230	10	22	147	272	29	7.2	1.9	0.0	23	24	297	2212	29	14.6	2.9	0.6
7/23/2012	1430	10	22	131	233	29	6.4	1.7	0.0	23	24	291	2166	29	14.3	2.9	0.6
7/23/2012	1630	12	24	180	130	29	8.8	1.8	0.0	23	24	305	2162	29	15.0	3.0	0.6
7/23/2012	1830	13	23	250	165	29	12.3	2.9	0.0	23	24	320	2069	29	15.7	3.1	0.6
7/23/2012	2030	13	23	195	922	29	9.6	2.2	0.0	22	24	340	1500	29	16.7	3.3	0.4
7/23/2012	2230	13	28	208	243	29	10.2	0.7	0.0	22	24	330	1972	29	16.2	3.2	0.6
7/24/2012	0030	13	28	220	183	29	10.8	0.7	0.0	22	24	328	1526	29	16.1	3.2	0.4
7/24/2012	0230	13	28	235	182	29	11.5	0.8	0.0	22	24	342	1450	29	16.8	3.4	0.4
7/24/2012	0430	13	28	215	544	29	10.6	0.7	0.0	22	24	335	1281	29	16.4	3.3	0.4

Attachment C
Mass Removal Calculations
Results of DPE Test and LNAPL Removal
Former BP Station No. 11109
4280 Foothill Blvd., Oakland, California

		MW-11								MW-12							
		Pipe flow diam (in): 3								Pipe flow diam (in): 3							
		Pipe Flow Area (ft^2): 0.049								Pipe Flow Area (ft^2): 0.049							
Date	Time	Casing Vacuum (in Hg)	Stinger Vacuum (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft bTOC)	Flow Rate (ACFM)	Flow Rate (SCFM)	Mass Removal (lbs/day)	Casing Vacuum (in Hg)	Stinger Vacuum (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft bTOC)	Flow Rate (ACFM)	Flow Rate (SCFM)	Mass Removal (lbs/day)
7/21/2012	0630	22.5	25	274	1920	29	13.4	2.2	0.4	21	24	242	917	29	11.9	2.4	0.2
7/21/2012	0830	22.5	25	264	2187	29	13.0	2.2	0.4	21	24	259	1079	29	12.7	2.5	0.2
7/21/2012	1030	22.5	25	269	1792	29	13.2	2.2	0.4	21	24	248	921	29	12.2	2.4	0.2
7/21/2012	1230	22.5	25	262	1797	29	12.9	2.1	0.3	21	24	252	977	29	12.4	2.5	0.2
7/21/2012	1430	22.5	25	259	1710	29	12.7	2.1	0.3	21	24	261	1071	29	12.8	2.6	0.2
7/21/2012	1630	22.5	25	251	1957	29	12.3	2.1	0.4	21	24	267	1075	29	13.1	2.6	0.3
7/21/2012	1830	21.5	26	247	345	29	12.1	1.6	0.1	21	25	269	975	29	13.2	2.2	0.2
7/21/2012	2030	22	25.5	251	214	29	12.3	1.8	0.0	21	25	272	1240	29	13.4	2.2	0.2
7/21/2012	2230	22	25	240	165	29	11.8	2.0	0.0	21	25	270	1298	29	13.3	2.2	0.3
7/22/2012	0030	22	25	252	200	29	12.4	2.1	0.0	21	25	263	1342	29	12.9	2.2	0.3
7/22/2012	0230	22	25	260	194	29	12.8	2.1	0.0	21	25	259	1352	29	12.7	2.1	0.3
7/22/2012	0430	22.5	25	267	241	29	13.1	2.2	0.0	21	25	272	1359	29	13.4	2.2	0.3
7/22/2012	0630	22.5	25	259	2622	29	12.7	2.1	0.5	21	25	252	1287	29	12.4	2.1	0.2
7/22/2012	0830	22.5	25	262	2364	29	12.9	2.1	0.5	21	25	261	1421	29	12.8	2.1	0.3
7/22/2012	1030	22.5	25	261	2671	29	12.8	2.1	0.5	21	25	259	1367	29	12.7	2.1	0.3
7/22/2012	1230	22.5	25	255	2976	29	12.5	2.1	0.6	21	25	262	1348	29	12.9	2.1	0.3
7/22/2012	1430	22.5	25	242	3028	29	11.9	2.0	0.5	21	25	256	1376	29	12.6	2.1	0.3
7/22/2012	1630	22.5	25	247	2682	29	12.1	2.0	0.5	21	25	251	1435	29	12.3	2.1	0.3
7/22/2012	1830	22.5	25	253	831	29	12.4	2.1	0.2	21	25	243	1420	29	11.9	2.0	0.3
7/22/2012	2030	22.5	25	260	280	29	12.8	2.1	0.1	21	25	238	1500	29	11.7	1.9	0.3
7/22/2012	2230	22.5	25	249	3113	29	12.2	2.0	0.6	21	25	247	1550	29	12.1	2.0	0.3
7/23/2012	0030	21	25	240	403	29	11.8	2.4	0.1	21	24	252	1586	29	12.4	2.5	0.4
7/23/2012	0230	22	25	251	2175	29	12.3	2.5	0.5	21	24	258	1521	29	12.7	2.5	0.3
7/23/2012	0430	21	25	262	1960	29	12.9	2.6	0.5	21	24	241	1540	29	11.8	2.4	0.3
7/23/2012	0630	21	25	256	3167	29	12.6	2.5	0.7	21	24	246	1411	29	12.1	2.4	0.3
7/23/2012	0830	21	25	239	1591	29	11.7	2.3	0.3	21	24	223	1448	29	10.9	2.2	0.3
7/23/2012	1030	20	24	227	1270	29	11.1	2.2	0.3	21	24	219	1521	29	10.8	2.2	0.3
7/23/2012	1230	20	24	218	1352	29	10.7	2.5	0.3	20	23	212	1581	29	10.4	2.4	0.3
7/23/2012	1430	20	24	220	1268	29	10.8	2.5	0.3	20	23	210	1470	29	10.3	2.4	0.3
7/23/2012	1630	21	24	290	1409	29	14.2	2.8	0.4	21	24	358	1650	29	17.6	3.5	0.5
7/23/2012	1830	21	24	275	1130	29	13.5	2.7	0.3	20	24	310	1657	29	15.2	3.0	0.5
7/23/2012	2030	21	24	290	1090	29	14.2	3.3	0.3	21	23	295	1636	29	14.5	3.4	0.5
7/23/2012	2230	21	24	280	1504	29	13.7	3.2	0.4	19	23	306	1756	29	15.0	3.5	0.6
7/24/2012	0030	21	24	293	1400	29	14.4	3.4	0.4	19	23	316	1760	29	15.5	3.6	0.6
7/24/2012	0230	21	24	303	1430	29	14.9	3.5	0.4	19	23	320	1756	29	15.7	3.7	0.6
7/24/2012	0430	21	24	285	1706	29	14.0	3.3	0.5	19	23	308	1857	29	15.1	3.5	0.6

Attachment C
Mass Removal Calculations
Results of DPE Test and LNAPL Removal
Former BP Station No. 11109
4280 Foothill Blvd., Oakland, California

		MW-5								MW-10							
		Pipe flow diam (in): 3								Pipe flow diam (in): 3							
		Pipe Flow Area (ft^2): 0.049								Pipe Flow Area (ft^2) 0.049							
Date	Time	Casing Vacuum (in Hg)	Stinger Vacuum (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft bTOC)	Flow Rate (ACFM)	Flow Rate (SCFM)	Mass Removal (lbs/day)	Casing Vacuum (in Hg)	Stinger Vacuum (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft bTOC)	Flow Rate (ACFM)	Flow Rate (SCFM)	Mass Removal (lbs/day)
7/24/2012	0630	11	24	218	285	29	10.7	2.1	0.0	21	23	376	1957	29	18.5	4.3	0.8
7/24/2012	0830	11	24	207	267	29	10.2	2.0	0.0	21	23	349	2541	29	17.1	4.0	0.9
7/24/2012	1030	11	24	210	179	29	10.3	2.1	0.0	21	23	322	2360	29	15.8	3.7	0.8
7/24/2012	1230	10	23	227	353	29	11.1	2.6	0.0	20	23	341	2179	29	16.7	3.9	0.8
7/24/2012	1430	10	23	235	290	29	11.5	2.7	0.0	21	23	370	2250	29	18.2	4.2	0.9
7/24/2012	1630	13.5	21	230	386	29	11.3	3.4	0.0	22	23	355	1812	29	17.4	4.1	0.7
7/24/2012	1830	13.5	21	243	450	29	11.9	3.6	0.0	22	23	342	1814	29	16.8	3.9	0.6
7/24/2012	2030	13.5	21	250	388	29	12.3	3.7	0.0	22	23	325	1900	29	16.0	3.7	0.6
7/24/2012	2230	13.5	21	256	323	29	12.6	3.8	0.0	22	23	337	1933	29	16.5	3.9	0.7
7/25/2012	0030	13.5	21	262	440	29	12.9	3.9	0.0	22	23	340	1994	29	16.7	3.9	0.7
7/25/2012	0230	13.5	21	270	507	29	13.3	4.0	0.0	22	23	349	1970	29	17.1	4.0	0.7
7/25/2012	0430	13.5	21	258	495	29	12.7	3.8	0.0	22	23	341	2150	29	16.7	3.9	0.8
7/25/2012	0630	12	21	262	124	29	12.9	3.9	0.0	21	23	361	2464	29	17.7	4.1	0.9
7/25/2012	0830	12	20	271	224	29	13.3	4.4	0.0	21	23	349	2368	29	17.1	4.0	0.8
7/25/2012	1030	12	20	285	241	29	14.0	4.7	0.0	21	23	355	2452	29	17.4	4.1	0.9
7/25/2012	1230	12	20	290	429	29	14.2	4.7	0.0	21	23	352	2396	29	17.3	4.0	0.9
7/25/2012	1430	12	20	299	450	29	14.7	4.9	0.0	21.5	23	378	1989	29	18.6	4.3	0.8
7/25/2012	1630	13.5	21	285	694	29	14.0	4.2	0.0	21.5	22	385	1930	29	18.9	5.0	0.9
7/25/2012	1830	13.5	21	272	450	29	13.4	4.0	0.0	21.5	22	396	1983	29	19.4	5.2	0.9
7/25/2012	2030	13.5	21	290	377	29	14.2	4.3	0.0	21	22	378	2045	29	18.6	4.9	0.9
7/25/2012	2230	13.5	21	293	425	29	14.4	4.3	0.0	21	22	380	2106	29	18.7	5.0	0.9
7/26/2012	0030	13.5	21	287	227	29	14.1	4.2	0.0	21	22	372	2203	29	18.3	4.9	1.0
7/26/2012	0230	13.5	21	276	256	29	13.5	4.1	0.0	21	22	363	2370	29	17.8	4.8	1.0
7/26/2012	0430	13.5	21	295	105	29	14.5	4.3	0.0	21	22	380	2150	29	18.7	5.0	1.0
7/26/2012	0630	11.5	19	271	578	29	13.3	4.9	0.0	20	22	412	1948	29	20.2	5.4	0.9
7/26/2012	0830	11.5	19	285	596	29	14.0	5.1	0.0	20	22	418	2207	29	20.5	5.5	1.1
7/26/2012	1030	11.5	19	270	678	29	13.3	4.9	0.0	20	22	409	2127	29	20.1	5.4	1.0
7/26/2012	1230	11.5	19	291	606	29	14.3	5.2	0.0	20	22	411	2034	29	20.2	5.4	1.0
7/26/2012	1430	11.5	19	285	655	29	14.0	5.1	0.0	20	22	420	2115	29	20.6	5.5	1.0
7/26/2012	1630	13	21	305	1019	29	15.0	4.5	0.0	21	22	410	2253	29	20.1	5.4	1.1
7/26/2012	1830	13	21	300	316	29	14.7	4.4	0.0	21	22	415	2200	29	20.4	5.4	1.1
7/26/2012	2030	10	20	315	825	29	15.5	5.2	0.0	20	21	420	2728	29	20.6	6.2	1.5
7/26/2012	2230	10	20	323	906	29	15.9	5.3	0.0	20	21	433	2976	29	21.3	6.4	1.7
7/27/2012	0030	10	20	310	481	29	15.2	5.1	0.0	20	21	417	2618	29	20.5	6.1	1.4
7/27/2012	0230	10	20	318	828	29	15.6	5.2	0.0	20	21	427	2659	29	21.0	6.3	1.5
7/27/2012	0430	10	20	230	823	29	11.3	3.8	0.0	20	21	437	2265	29	21.5	6.4	1.3

Attachment C
Mass Removal Calculations
Results of DPE Test and LNAPL Removal
Former BP Station No. 11109
4280 Foothill Blvd., Oakland, California

		MW-11								MW-12							
		Pipe flow diam (in): 3								Pipe flow diam (in): 3							
		Pipe Flow Area (ft^2): 0.049								Pipe Flow Area (ft^2): 0.049							
Date	Time	Casing Vacuum (in Hg)	Stinger Vacuum (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft bTOC)	Flow Rate (ACFM)	Flow Rate (SCFM)	Mass Removal (lbs/day)	Casing Vacuum (in Hg)	Stinger Vacuum (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft bTOC)	Flow Rate (ACFM)	Flow Rate (SCFM)	Mass Removal (lbs/day)
7/24/2012	0630	20	23	311	1181	29	15.3	4.1	0.4	19	22	323	1769	29	15.9	4.2	0.7
7/24/2012	0830	20	23	322	1151	29	15.8	4.2	0.4	19	22	339	1881	29	16.6	4.4	0.7
7/24/2012	1030	20	23	331	1214	29	16.2	4.3	0.5	19	22	341	1762	29	16.7	4.5	0.7
7/24/2012	1230	20	23	344	1142	29	16.9	4.5	0.5	19	22	335	1822	29	16.4	4.4	0.7
7/24/2012	1430	20	23	358	1200	29	17.6	4.7	0.5	19	22	340	1915	29	16.7	4.5	0.8
7/24/2012	1630	21	23	340	1244	29	16.7	3.9	0.4	19	23	360	1780	29	17.7	4.1	0.7
7/24/2012	1830	21	23	335	1088	29	16.4	3.8	0.4	19	23	354	1868	29	17.4	4.1	0.7
7/24/2012	2030	21	23	340	1014	29	16.7	3.9	0.4	19	23	305	1912	29	15.0	3.5	0.6
7/24/2012	2230	21	23	327	1183	29	16.1	3.7	0.4	19	23	340	1892	29	16.7	3.9	0.7
7/25/2012	0030	21	23	338	1930	29	16.6	3.9	0.7	19	23	334	1920	29	16.4	3.8	0.7
7/25/2012	0230	21	23	325	1090	29	16.0	3.7	0.4	19	23	350	1905	29	17.2	4.0	0.7
7/25/2012	0430	21	23	342	930	29	16.8	3.9	0.3	19	23	347	1985	29	17.0	4.0	0.7
7/25/2012	0630	21	23	341	795	29	16.7	3.9	0.3	19	23	333	1920	29	16.3	3.8	0.7
7/25/2012	0830	21	23	359	1240	29	17.6	4.1	0.5	19	23	342	1964	29	16.8	3.9	0.7
7/25/2012	1030	21	23	344	1032	29	16.9	3.9	0.4	19	23	339	1920	29	16.6	3.9	0.7
7/25/2012	1230	21	23	331	1990	29	16.2	3.8	0.7	19	23	327	1903	29	16.1	3.7	0.6
7/25/2012	1430	21	23	365	1812	29	17.9	4.2	0.7	18	23	315	1929	29	15.5	3.6	0.6
7/25/2012	1630	21	23	370	1550	29	18.2	4.8	0.7	18	22	331	1964	29	16.2	4.3	0.8
7/25/2012	1830	20.5	22	358	875	29	17.6	5.3	0.4	18	21	348	1955	29	17.1	5.1	0.9
7/25/2012	2030	21	23	370	640	29	18.2	5.4	0.3	17	21	340	2083	29	16.7	5.0	0.9
7/25/2012	2230	21	23	357	820	29	17.5	5.3	0.4	17	21	332	2154	29	16.3	4.9	0.9
7/26/2012	0030	21	23	368	730	29	18.1	5.4	0.4	17	21	343	2142	29	16.8	5.1	1.0
7/26/2012	0230	21	23	350	720	29	17.2	5.2	0.3	17	21	330	2106	29	16.2	4.9	0.9
7/26/2012	0430	21	23	355	686	29	17.4	5.2	0.3	17	21	350	2098	29	17.2	5.2	1.0
7/26/2012	0630	20	22	421	681	29	20.7	6.9	0.4	17	20	297	2106	29	14.6	4.9	0.9
7/26/2012	0830	20	22	418	712	29	20.5	6.8	0.4	17	20	301	2098	29	14.8	4.9	0.9
7/26/2012	1030	20	22	423	733	29	20.8	6.9	0.5	17	20	313	2225	29	15.4	5.1	1.0
7/26/2012	1230	20	22	428	620	29	21.0	7.0	0.4	17	20	327	2375	29	16.1	5.4	1.1
7/26/2012	1430	20	22	435	615	29	21.4	7.1	0.4	17	20	338	2295	29	16.6	5.5	1.1
7/26/2012	1630	20	21.5	415	557	29	20.4	6.8	0.3	17	20	310	2500	29	15.2	5.1	1.1
7/26/2012	1830	20	21.5	428	575	29	21.0	7.0	0.4	17	20	330	2464	29	16.2	5.4	1.2
7/26/2012	2030	20	21	435	333	29	21.4	7.1	0.2	16.5	20	350	2600	29	17.2	5.7	1.3
7/26/2012	2230	20	21	437	475	29	21.5	7.2	0.3	16.6	20	338	2748	29	16.6	5.5	1.4
7/27/2012	0030	20	21	420	437	29	20.6	6.9	0.3	16.5	20	343	2513	29	16.8	5.6	1.3
7/27/2012	0230	20	21	433	342	29	21.3	7.1	0.2	16.5	20	350	2521	29	17.2	5.7	1.3
7/27/2012	0430	20	21	429	425	29	21.1	7.0	0.3	16.5	20	356	2448	29	17.5	5.8	1.3

Attachment C
Mass Removal Calculations
Results of DPE Test and LNAPL Removal
Former BP Station No. 11109
4280 Foothill Blvd., Oakland, California

		MW-5								MW-10							
		Pipe flow diam (in): 3								Pipe flow diam (in): 3							
		Pipe Flow Area (ft^2): 0.049								Pipe Flow Area (ft^2) 0.049							
Date	Time	Casing Vacuum (in Hg)	Stinger Vacuum (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft bTOC)	Flow Rate (ACFM)	Flow Rate (SCFM)	Mass Removal (lbs/day)	Casing Vacuum (in Hg)	Stinger Vacuum (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft bTOC)	Flow Rate (ACFM)	Flow Rate (SCFM)	Mass Removal (lbs/day)
7/27/2012	0630	9	19	312	665	29	15.3	5.6	0.0	19	20	412	482	29	20.2	6.7	0.3
7/27/2012	0830	9	19	327	684	29	16.1	5.9	0.0	19	20	441	2777	29	21.6	7.2	1.8
7/27/2012	1030	9	19	341	635	29	16.7	6.1	0.0	19	20	451	2665	29	22.1	7.4	1.8
7/27/2012	1230	9	19	362	905	29	17.8	6.5	0.0	19	20	472	2590	29	23.2	7.7	1.8
7/27/2012	1430	12	17	380	819	29	18.7	8.1	0.0	19	20	489	2407	29	24.0	8.0	1.7
7/27/2012	1630	12	18	372	862	29	18.3	7.3	0.0	19	20	458	2488	29	22.5	7.5	1.7
7/27/2012	1830	12	17	358	370	29	17.6	7.6	0.0	19	20	473	2468	29	23.2	7.7	1.7
7/27/2012	2030	12	17	392	209	29	19.2	8.3	0.0	19	20	489	2932	29	24.0	8.0	2.1
7/27/2012	2230	12	17	386	755	29	18.9	8.2	0.0	19	20	481	2943	29	23.6	7.9	2.1
7/28/2012	0030	12	17	398	952	29	19.5	8.5	0.0	19	20	492	2939	29	24.2	8.1	2.1
7/28/2012	0230	12	17	400	815	29	19.6	8.5	0.0	19	20	478	2854	29	23.5	7.8	2.0
7/28/2012	0430	12	27	392	365	29	19.2	1.9	0.0	18.5	20	472	2789	29	23.2	7.7	1.9
7/28/2012	0630	12	27	385	454	29	18.9	1.9	0.0	18.5	20	466	2659	29	22.9	7.6	1.8
7/28/2012	0830	12	16	348	528	29	17.1	8.0	0.0	18.5	20	478	2453	29	23.5	7.8	1.7
7/28/2012	1030	12	16	372	599	29	18.3	8.5	0.0	18.5	20	452	2138	29	22.2	7.4	1.4
7/28/2012	1230	12	16	389	275	29	19.1	8.9	0.0	18	18	465	2355	29	22.8	9.1	1.9
7/28/2012	1430	12	16	362	259	29	17.8	8.3	0.0	18	18	478	2294	29	23.5	9.4	1.9
7/28/2012	1630	11.5	16	315	281	29	15.5	7.2	0.0	18	18	405	2160	29	19.9	8.0	1.5
7/28/2012	1830	12	18	398	172	29	19.5	7.8	0.0	17	18	428	2428	29	21.0	8.4	1.8
7/28/2012	2030	11.5	17	410	162	29	20.1	8.7	0.0	17	18.5	442	2606	29	21.7	8.3	1.9
7/28/2012	2230	11.5	16	183	102	29	9.0	4.2	0.0	17.5	19	436	2517	29	21.4	7.8	1.8
7/29/2012	0030	12	15	195	103	29	9.6	4.8	0.0	17.5	19	458	2614	29	22.5	8.2	1.9
7/29/2012	0230	12	15	201	103	29	9.9	4.9	0.0	17.5	19	463	2582	29	22.7	8.3	1.9
7/29/2012	0430	12	15	172	101	29	8.4	4.2	0.0	17.5	19	458	2626	29	22.5	8.2	1.9
7/29/2012	0630	12	15	186	101	29	9.1	4.6	0.0	17.5	19	476	2618	29	23.4	8.6	2.0
7/29/2012	0830	11	15.5	197	88	29	9.7	4.7	0.0	18	19.5	448	2488	29	22.0	7.7	1.7
7/29/2012	1030	11	16.5	179	137	29	8.8	4.0	0.0	18	19.5	461	2131	29	22.6	7.9	1.5
7/29/2012	1230	11	16.5	201	560	29	9.9	4.4	0.0	18	19.5	454	1970	29	22.3	7.8	1.4
7/29/2012	1430	11	16.5		939	29	0.0	0.0	0.0	18	19.5	460	1980	29	22.6	7.9	1.4
7/29/2012	1630	11	16.5	205	303	29	10.1	4.5	0.0	18	19.5	452	1880	29	22.2	7.8	1.3
7/29/2012	1830	11	16.5	197	216	29	9.7	4.4	0.0	18	19.5	464	1820	29	22.8	8.0	1.3
7/29/2012	2030	11	19	210	148	29	10.3	3.8	0.0	18	19	475	2062	29	23.3	8.5	1.6
7/29/2012	2230	11	19	206	145	29	10.1	3.7	0.0	18	19	452	1962	29	22.2	8.1	1.4
7/30/2012	0030	11	19	186	140	29	9.1	3.3	0.0	18	19	432	2010	29	21.2	7.8	1.4
7/30/2012	0230	10	18	210	132	29	10.3	4.1	0.0	17	19	463	1812	29	22.7	8.3	1.4
7/30/2012	0430	10	15	201	283	29	9.9	4.9	0.0	17	18	501	2052	29	24.6	9.8	1.8

Attachment C
Mass Removal Calculations
Results of DPE Test and LNAPL Removal
Former BP Station No. 11109
4280 Foothill Blvd., Oakland, California

		MW-11								MW-12							
		Pipe flow diam (in): 3								Pipe flow diam (in): 3							
		Pipe Flow Area (ft^2): 0.049								Pipe Flow Area (ft^2): 0.049							
Date	Time	Casing Vacuum (in Hg)	Stinger Vacuum (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft bTOC)	Flow Rate (ACFM)	Flow Rate (SCFM)	Mass Removal (lbs/day)	Casing Vacuum (in Hg)	Stinger Vacuum (in Hg)	Velocity (ft/min)	PID (ppmv)	Stinger Depth (ft bTOC)	Flow Rate (ACFM)	Flow Rate (SCFM)	Mass Removal (lbs/day)
7/27/2012	0630	19	20	433	230	29	21.3	7.1	0.1	17	20	489	2832	29	24.0	8.0	2.0
7/27/2012	0830	19	20	429	427	29	21.1	7.0	0.3	17	20	491	2606	29	24.1	8.0	1.9
7/27/2012	1030	19	20	430	424	29	21.1	7.0	0.3	17	20	481	2440	29	23.6	7.9	1.7
7/27/2012	1230	19	20	413	483	29	20.3	6.8	0.3	17	20	462	2695	29	22.7	7.6	1.8
7/27/2012	1430	19.5	19.5	400	389	29	19.6	7.9	0.3	15	18	458	2559	29	22.5	9.0	2.1
7/27/2012	1630	19.5	19.5	432	253	29	21.2	8.5	0.2	16	18	482	2785	29	23.7	9.5	2.4
7/27/2012	1830	19.5	19.5	410	188	29	20.1	8.1	0.1	16	18	498	2730	29	24.4	9.8	2.4
7/27/2012	2030	19.5	19.5	434	214	29	21.3	8.5	0.2	16	18	475	3012	29	23.3	9.3	2.5
7/27/2012	2230	19.5	19.5	427	338	29	21.0	8.4	0.3	16	18	485	2959	29	23.8	9.5	2.5
7/28/2012	0030	19.5	19.5	417	344	29	20.5	8.2	0.3	16	18	480	2926	29	23.6	9.4	2.5
7/28/2012	0230	19.5	19.5	443	296	29	21.7	7.2	0.2	16	20	4888	2927	29	239.9	80.0	21.0
7/28/2012	0430	19	19	436	289	29	21.4	7.1	0.2	15	20	479	2842	29	23.5	7.8	2.0
7/28/2012	0630	19	19	440	263	29	21.6	8.6	0.2	15	18	482	2805	29	23.7	9.5	2.4
7/28/2012	0830	18.5	18.5	432	212	29	21.2	8.5	0.2	16.5	18	431	2568	29	21.2	8.5	1.9
7/28/2012	1030	18.5	18.5	458	148	29	22.5	9.0	0.1	16.5	18	463	2379	29	22.7	9.1	1.9
7/28/2012	1230	18.5	18.5	450	141	29	22.1	8.8	0.1	16.5	18	478	2543	29	23.5	9.4	2.1
7/28/2012	1430	18.5	18.5	473	139	29	23.2	9.3	0.1	16.5	18	482	2649	29	23.7	9.5	2.2
7/28/2012	1630	18.5	18.5	428	129	29	21.0	8.4	0.1	14	18	453	2768	29	22.2	8.9	2.2
7/28/2012	1830	18.5	18.5	490	143	29	24.1	9.6	0.1	17	18	487	2795	29	23.9	9.6	2.4
7/28/2012	2030	18.5	18.5	485	115	29	23.8	10.3	0.1	13	17	492	2872	29	24.2	10.5	2.7
7/28/2012	2230	18	19	475	150	29	23.3	10.1	0.1	13	17	501	2825	29	24.6	10.7	2.7
7/29/2012	0030	18	19	511	129	29	25.1	10.9	0.1	13	17	486	2874	29	23.9	10.3	2.7
7/29/2012	0230	18	19	482	125	29	23.7	10.3	0.1	13	17	494	2794	29	24.2	10.5	2.6
7/29/2012	0430	18	19	474	124	29	23.3	10.1	0.1	13	17	496	2832	29	24.3	10.6	2.7
7/29/2012	0630	18	19	496	120	29	24.3	10.6	0.1	13	17	482	2762	29	23.7	10.3	2.5
7/29/2012	0830	18	21	501	113	29	24.6	10.7	0.1	13	17	410	2955	29	20.1	8.7	2.3
7/29/2012	1030	18	21	488	80	29	24.0	10.4	0.1	13	17	401	2760	29	19.7	8.5	2.1
7/29/2012	1230	18	21	477	200	29	23.4	10.1	0.2	13	17	409	2635	29	20.1	8.7	2.1
7/29/2012	1430	18	21	468	180	29	23.0	10.0	0.2	13	17	409	2690	29	20.1	8.7	2.1
7/29/2012	1630	18	21	491	75	29	24.1	10.4	0.1	13	17	397	2594	29	19.5	8.4	2.0
7/29/2012	1830	18	21	474	112	29	23.3	10.1	0.1	13	17	401	2525	29	19.7	8.5	1.9
7/29/2012	2030	17	18	463	91.4	29	22.7	9.8	0.1	13	17	382	2031	29	18.8	8.1	1.5
7/29/2012	2230	17	18	498	92.6	29	24.4	10.6	0.1	13	17	421	2238	29	20.7	9.0	1.8
7/30/2012	0030	17	18	501	90.2	29	24.6	10.7	0.1	13	17	401	2020	29	19.7	8.5	1.5
7/30/2012	0230	17	18	475	90.6	29	23.3	10.1	0.1	13	17	432	1988	29	21.2	9.2	1.6
7/30/2012	0430	18	18	488	85.1	29	24.0	10.4	0.1	12	17	410	2748	29	20.1	8.7	2.2

Attachment C
Mass Removal Calculations
Results of DPE Test and LNAPL Removal
Former BP Station No. 11109
4280 Foothill Blvd., Oakland, California

		MW-5								MW-10							
		Pipe flow diam (in): 3								Pipe flow diam (in): 3							
		Pipe Flow Area (ft^2): 0.049								Pipe Flow Area (ft^2) 0.049							
Date	**Time**	**Casing Vacuum (in Hg)**	**Stinger Vacuum (in Hg)**	**Velocity (ft/min)**	**PID (ppmv)**	**Stinger Depth (ft bTOC)**	**Flow Rate (ACFM)**	**Flow Rate (SCFM)**	**Mass Removal (lbs/day)**	**Casing Vacuum (in Hg)**	**Stinger Vacuum (in Hg)**	**Velocity (ft/min)**	**PID (ppmv)**	**Stinger Depth (ft bTOC)**	**Flow Rate (ACFM)**	**Flow Rate (SCFM)**	**Mass Removal (lbs/day)**
7/30/2012	0630	10	13.5	196	468	29	9.6	5.3	0.0	17	18	452	2062	29	22.2	8.9	1.6

Attachment C
Mass Removal Calculations
Results of DPE Test and LNAPL Removal
Former BP Station No. 11109
4280 Foothill Blvd., Oakland, California

		MW-11								MW-12							
		Pipe flow diam (in): 3								Pipe flow diam (in): 3							
		Pipe Flow Area (ft^2): 0.049								Pipe Flow Area (ft^2): 0.049							
Date	**Time**	**Casing Vacuum (in Hg)**	**Stinger Vacuum (in Hg)**	**Velocity (ft/min)**	**PID (ppmv)**	**Stinger Depth (ft bTOC)**	**Flow Rate (ACFM)**	**Flow Rate (SCFM)**	**Mass Removal (lbs/day)**	**Casing Vacuum (in Hg)**	**Stinger Vacuum (in Hg)**	**Velocity (ft/min)**	**PID (ppmv)**	**Stinger Depth (ft bTOC)**	**Flow Rate (ACFM)**	**Flow Rate (SCFM)**	**Mass Removal (lbs/day)**
7/30/2012	0630	12.5	12.5	506	100	29	24.8	10.8	0.1	12	17	450	2728	29	22.1	9.6	2.3

Attachment D –
LNAPL Bail-down Field Notes

BROADBENT

DAILY REPORT

Page 1 of 1

Project: Arcadis 11109 Project No.: 09-88-646

Field Representative(s): Alex Martinez Day: Thursday Date: 9/13/12

Time Onsite: From: 0715 To: 1015 ; From: _____ To: _____ ; From: _____ To: _____

x Signed HASP x Safety Glasses x Hard Hat x Steel Toe Boots x Safety Vest

x UST Emergency System Shut-off Switches Located x Proper Gloves

x Proper Level of Barricading ___ Other PPE (describe) _____

Weather: Overcast

Equipment In Use: Bailers, interface probe

Visitors: None

TIME:	WORK DESCRIPTION:
0715	Arrived onsite / conducted safety tailgate
0725	Set up for product bailing @ MW-5/10
0920	Set up @ MW-12
	Product from wells are stored in a 55 gallon drum onsite (High St. side of the site). Approximately one quarter of the drum is filled.
1015	Completed fieldwork and offsite

Signature: Alex Martinez

Revision 1/24/2012

BROADBENT

GROUNDWATER MONITORING SITE SHEET

Project: Arcadis 11109 Project No.: 09-88-646 Date: 9/13/12

Field Representative: Alex Martinez Elevation: _____

Formation recharge rate is historically: High Low *(circle one)*

W. L. Indicator ID #: _____ Oil/Water Interface ID #: _____ *(List #s of all equip used.)*

WELL ID RECORD					WELL GAUGING RECORD					LAB ANALYSES
Well ID	Well Sampling Order	As-Built Well Diameter (inches)	As-Built Well Screen Interval (ft)	Previous Depth to Water (ft)	Time (24:00)	Depth to LNAPL (ft)	Apparent LNAPL Thickness (ft)*	Depth to Water (ft)	Well Total Depth (ft)	
MW-5					0758	10.20	1.21	11.41	32.07	*0.12 ft of product remains after bailing
MW-10					0901	10.72	0.01	10.73	29.90	
MW-12					0925	10.42	1.30	11.72	30.18	*0.21 ft of product remains after bailing

* Device used to measure LNAPL thickness: Bailer (Oil/Water Interface Meter) *(circle one)*

If bailer used, note bailer dimensions (inches): Entry Diameter _____ Chamber Diameter _____

Signature: Alex Martinez

BROADBENT

GROUNDWATER MONITORING SITE SHEET

Project: Arcadis 11109 Project No.: 09-88-696 Date: 11/7/12

Field Representative: JR Elevation: _____

Formation recharge rate is historically: High Low *(circle one)*

W. L. Indicator ID #: _____ Oil/Water Interface ID #: _____ *(List #s of all equip used.)*

WELL ID RECORD					WELL GAUGING RECORD					LAB ANALYSES
Well ID	Well Sampling Order	As-Built Well Diameter (inches)	As-Built Well Screen Interval (ft)	Previous Depth to Water (ft)	Time (24:00)	Depth to LNAPL (ft)	Apparent LNAPL Thickness (ft)*	Depth to Water (ft)	Well Total Depth (ft)	
MW-5					0940	10.13	0.17	10.30	32.07	
MW-10					0942	—	—	9.87	29.90	
MW-12					0947	10.04	0.02	10.56	30.18	
— Post-gauge —										
MW-5					1022	11.53	0.01	11.54	32.07	purged 2.5g H2O/product
MW-10					1030	-	-	9.87	29.96	sheen
MW-12					1107	11.43	0.03	11.46	30.18	purged 3.5g H2O/product
— Demob-gauge —										
MW-5					1120	10.07	0.02	10.09	32.07	
MW-10					1121	—	—	9.87	29.90	
MW-12					1124	10.66	0.04	10.70	30.18	

* Device used to measure LNAPL thickness: Bailer Oil/Water Interface Meter *(circle one)*

If bailer used, note bailer dimensions (inches): Entry Diameter _____ Chamber Diameter _____

Signature: _____

BROADBENT

DAILY REPORT

Page 1 of 1

Project: Arcadis 11109 Project No.: 09-88-646

Field Representative(s): Alex Martinez Day: Wednesday Date: 12/5/12

Time Onsite: From: 0740 To: 0945 ; From: _____ To: _____ ; From: _____ To: _____

x Signed HASP x Safety Glasses x Hard Hat x Steel Toe Boots x Safety Vest

x UST Emergency System Shut-off Switches Located x Proper Gloves

x Proper Level of Barricading ___ Other PPE (describe) _____

Weather: Rainy

Equipment In Use: Interface probe, bailers

Visitors: None

TIME:	WORK DESCRIPTION:
0740	Arrived onsite and set up for product bailing.
0945	Completed product bailing/offsite

Signature: Alex Martinez

Revision: 1/24/2012

BROADBENT

GROUNDWATER MONITORING SITE SHEET

Project: Arcadis 11109 Project No.: 09-88-646 Date: 12/5/12

Field Representative: AM Elevation: –

Formation recharge rate is historically: High Low *(circle one)*

W. L. Indicator ID #: – Oil/Water Interface ID #: – *(List #s of all equip used.)*

WELL ID RECORD					WELL GAUGING RECORD					LAB ANALYSES					
Well ID	Well Sampling Order	As-Built Well Diameter (inches)	As-Built Well Screen Interval (ft)	Previous Depth to Water (ft)	Time (24:00)	Depth to LNAPL (ft)	Apparent LNAPL Thickness (ft)*	Depth to Water (ft)	Well Total Depth (ft)						
MW-5					0832	7.18	0.02	7.20	32.07						
MW-10					0819	–	–	6.95	29.90						
MW-12					0825	7.92	0.08	8.00	30.18						
	Post Gauge				(Purge)										
MW-5					0852	7.95	0.02	7.97	32.07	Purged	1 gallon of product/H_2O				
MW-10					0911	–	–	7.23	29.90						
MW-12					0909	8.55	0.04	8.59	30.18	Purged	1 gallon of product/H_2O				
	Demob Gauge														
MW-5					0924	7.34	0.01	7.35	32.07						
MW-10					0923	–	–	7.27	29.90						
MW-12					0924	8.14	0.04	8.18	30.18						
	Wells uncapped prior to garging														

* Device used to measure LNAPL thickness: Bailer (Oil/Water Interface Meter) *(circle one)*

If bailer used, note bailer dimensions (inches): Entry Diameter _____ Chamber Diameter _____

Signature: Alex Macchi

Revision: 1/24/2012

BROADBENT

DAILY REPORT

Project: Arcadis 11109 Project No.: 09-88-646

Field Representative(s): Alex Martinez Day: Wednesday Date: 1/9/13

Time Onsite: From: 0730 To: 0915 ; From: _____ To: _____ ; From: _____ To: _____

x Signed HASP x Safety Glasses x Hard Hat x Steel Toe Boots x Safety Vest

x UST Emergency System Shut-off Switches Located x Proper Gloves

x Proper Level of Barricading ___ Other PPE (describe) _____

Weather: Partly Cloudy & cool

Equipment In Use: Interface probe, bailers

Visitors: None

TIME:	WORK DESCRIPTION:
0730	Arrived onsite. Set up around wells for product bailing.
0820	Purged 1/2 gallon of water/product from well MW-5.
0835	Purged ~1.5 gallons of water/product from well MW-12
0915	Completed fieldwork, cleaned up & offsite

Signature: Alex Martinez

BROADBENT

GROUNDWATER MONITORING SITE SHEET

Project: Arcadis 11109 Project No.: 09-88-646 Date: 1/9/13

Field Representative: AM Elevation: —

Formation recharge rate is historically: High Low *(circle one)*

W. L. Indicator ID #: _____ Oil/Water Interface ID #: _____ *(List #s of all equip used.)*

WELL ID RECORD					WELL GAUGING RECORD					LAB ANALYSES					
Well ID	Well Sampling Order	As-Built Well Diameter (inches)	As-Built Well Screen Interval (ft)	Previous Depth to Water (ft)	Time (24:00)	Depth to LNAPL (ft)	Apparent LNAPL Thickness (ft)*	Depth to Water (ft)	Well Total Depth (ft)						
MW-5					0807	8.03	0.01	~~8.04~~	32.07						
MW-10					0805	—	—	7.71	29.90						
MW-12					0802	8.46	0.06	8.52	30.18						
	Post Gauge (Purge)														
MW-5					0822	8.76	0.01	8.77	32.07						
MW-10					0823	—	—	7.76	29.90						
MW-12					0835	9.55	0.03	9.58	30.18						
	Demob Gauge														
MW-5					0854	8.09	0.01	8.10	32.07						
MW-10					0851	-	-	7.80	29.90						
MW-12					0849	8.89	0.03	8.92	30.18						
	Wells uncapped for 15 mins. prior to gauging														

* Device used to measure LNAPL thickness: Bailer (Oil/Water Interface Meter) *(circle one)*

If bailer used, note bailer dimensions (inches): Entry Diameter _____ Chamber Diameter _____

Signature: [signature]

BROADBENT

GROUNDWATER MONITORING SITE SHEET

Project: Arcadis 11109 Project No.: 09-88-646 Date: 3/20/13

Field Representative: AM Elevation: —

Formation recharge rate is historically: High Low *(circle one)*

W. L. Indicator ID #: — Oil/Water Interface ID #: — *(List #s of all equip used.)*

WELL ID RECORD					WELL GAUGING RECORD					NOTES
Well ID	Well Sampling Order	As-Built Well Diameter (inches)	As-Built Well Screen Interval (ft)	Previous Depth to Water (ft)	Time (24:00)	Depth to LNAPL (ft)	Apparent LNAPL Thickness (ft)*	Depth to Water (ft)	Well Total Depth (ft)	
MW-5					1110	9.71	0.02	9.73	32.07	Purged approx. two L of water
MW-10					1107	9.47	0.01	9.48	29.90	" " One L of water (pooled)
MW-12					1115	10.09	0.04	10.13	30.18	" " two L of water (pooled)
		Post Gauge (Purge)								
MW-5					1159	10.00	0.01	10.01		
MW-10					1156	—	—	9.69		
MW-12					1153	10.71	0.02	10.73		
		Demob Gauge								
MW-5					1205	9.91	0.01	9.92		
MW-10					1207	—	—	9.68		
MW-12					1209	10.36	0.02	10.38		
		Wells uncapped for 15 minutes prior to gauging								

* Device used to measure LNAPL thickness: Bailer Oil/Water Interface Meter *(circle one)*

If bailer used, note bailer dimensions (inches): Entry Diameter _____ Chamber Diameter _____

Signature: [signature]

BROADBENT

DAILY REPORT

Page 1 of 1

Project: Arcadis 11107 Project No.: 09-353-646

Field Representative(s): Alex Martinez Day: Tuesday Date: 5/7/13

Time Onsite: From: 1120 To: 1230; From: _____ To: _____; From: _____ To: _____

x Signed HASP x Safety Glasses x Hard Hat x Steel Toe Boots x Safety Vest

x UST Emergency System Shut-off Switches Located x Proper Gloves

x Proper Level of Barricading ___ Other PPE (describe) _____

Weather: Partly Cloudy

Equipment In Use: Soakease Socks, interface probe

Visitors: _____

TIME:	WORK DESCRIPTION:
1120	Arrived onsite
1125	Set up to place socks in three wells MW-5, 10 & 12.
1230	Completed fieldwork & offsite.

Signature: Alex Martinez

Revision: 1/24/2012

BROADBENT

GROUNDWATER MONITORING SITE SHEET

Project: Arcadis 11109 Project No.: 09-88-646 Date: 5/7/13

Field Representative: AM Elevation: -

Formation recharge rate is historically: High Low *(circle one)*

W. L. Indicator ID #: - Oil/Water Interface ID #: - *(List #s of all equip used.)*

WELL ID RECORD					WELL GAUGING RECORD					NOTES
Well ID	Well Sampling Order	As-Built Well Diameter (inches)	As-Built Well Screen Interval (ft)	Previous Depth to Water (ft)	Time (24:00)	Depth to LNAPL (ft)	Apparent LNAPL Thickness (ft)*	Depth to Water (ft)	Well Total Depth (ft)	
MW-5					1144	-	-	10.29		Very Strong HC odor & Sheen
MW-10					1140	9.80	0.01	9.79		
MW-12					1142	10.32	0.02	10.34		

* Device used to measure LNAPL thickness: Bailer Oil/Water Interface Meter *(circle one)*

If bailer used, note bailer dimensions (inches): Entry Diameter _____ Chamber Diameter _____

Signature: Alex Mackie

BROADBENT

Passive LNAPL Recovery Field Data Sheets

Site Name: Arcadis 11109 **Project No. :** 09-83-646
Site Location: Oakland, CA

Date : 5/7/13 **Technician :** Alex Martinez
Onsite Time : 1120 **Weather Conditions :** Partly Cloudy
Offsite Time : 1230 **Ambient Temperature :** ~ 65° F

Absorbent Sock Measurements Upon Arrival

Parameter	MW-5	MW-10	MW-12		
Well Diameter (inches)	4	4	4		
Sock Diameter (inches)	4	4	4		
Is the sock saturated with product? Yes or No	NA →				
If yes, length of saturation on socks (inches)	"	"	"		
Depth to LNAPL, feet below top of casing	-	9.80	10.32		
Depth to water, feet below top of casing	10.29	9.79	10.34		

No. of 55-gallon drums: 1

Drum #								
Fill Start Date	2/2013							
Is it full?	No							
If not, how full?	< 1/4							

Absorbent Sock Measurements Prior to Depature

Parameter					
Sock Replaced? Yes or No * Added	Yes*	Yes*	Yes*		
Sock Diameter (inches)	4	4	4		
Total Sock Length (feet)	3	3	3		
Sock Length Below Water* (feet)	2	2	2		
Sock Length Above Water * (feet)	1	1	1		

*Note: When installing sock, set the depth of sock such that 2/3 of it is above the water table. Store the used socks in sealed 5-gallon buckets and store them in 55-gal drum labelled hazardous waste.

Comments/Notes: Three absorbant socks added to wells MW-5, 10 & 12.

Old remediation PVC casing pump removed from well MW-5.

Signature : Alex Martinez Date : 5/7/13