

AP - 116

Q3 2013 GWMR

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Animas Environmental Services, LLC

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970-403-3024

December 20, 2013

Glenn von Gonten
Edward Hansen
New Mexico Oil Conservation Division
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

**RE: 3rd Quarter 2013 Remedial Progress Report
Thriftway Refinery (NMOCD AP-116)
626 County Road 5500, Bloomfield, New Mexico**

Dear Mr. von Gonten and Mr. Hansen:

Animas Environmental Services, LLC (AES) has prepared this 3rd Quarter 2013 Remedial Progress Report detailing site activities during the third quarter of 2013 on behalf of Thriftway Company (Thriftway) for the Thriftway Refinery, located at 626 County Road 5500, Bloomfield, San Juan County, New Mexico, in accordance with New Mexico Oil Conservation Division (NMOCD) and New Mexico Environment Department (NMED) Ground Water Quality Bureau (GWQB) regulations.

The 3rd Quarter 2013 Remedial Progress Report details groundwater monitoring and gauging activities, multi-phase extraction (MPE) remediation system operations, and phytoremediation activities conducted at the site between July and September 2013. A General Site Plan is included as Figure 1.

1.0 Groundwater Monitoring and Gauging in Monitor Wells

BioTech conducted groundwater monitoring and gauging of the monitor wells at the site on August 5 through 14, 2013. Based on the current sampling plan, monitoring and gauging events are scheduled during the first and third quarters of 2013, with groundwater sampling scheduled during the second and fourth quarters. The information below, taken from the Interim Groundwater Sampling Plan submitted to NMOCD on January 25, 2010, lists wells that were gauged during the August 2013 event.

2013 (Year 4) 3rd Quarter Monitor Well Gauging List

Well Name	Gauging Only	Gauging and Sampling
TW-1 through TW-22	X	*
TW-24 through TW-26	X	*
TW-28 through TW-47	X	*
TW-49 through TW-54	X	*
MW-5, MW-7, MW-20, MW-21	X	*
* No analytical samples collected during quarterly gauging events in the first or third quarters of Years 2 through 4.		

1.1 Measurement of Groundwater Elevations

Depth to groundwater in each of the selected wells was measured with an electronic water level indicator, which has an accuracy of 0.01 feet. Depth to groundwater measurements were recorded on Water Sample Collection Forms.

1.2 Measurement of Free Product

Each of the wells previously known to contain light non-aqueous phase liquid (LNAPL, or "free product") was measured with an electronic interface probe, and the depths to the top of product and the oil/water interface were recorded on a groundwater measurement form. Free product was measured in August 2013 in 20 wells, including TW-12, TW-13, TW-14, TW-19 through TW-22, TW-24, TW-25, TW-26, TW-28, TW-29, TW-32, TW-33, TW-35, TW-36, TW-38, TW-40, TW-44, and TW-50.

In monitor wells containing free product, corrected groundwater elevations (H_c) were determined using the following formula:

$$H_c = H_m + (H_o * (\rho_o / \rho_w))$$

where:

H_m is the measured elevation of the hydrocarbon-water interface (ft)

H_o is the thickness of the hydrocarbon layer (ft)

ρ_o is the hydrocarbon density of diesel, assumed to be 0.827 (g/ml) (API, 1986)

ρ_w is the water density, assumed to be 1.0 (g/mL)

2.0 Groundwater Monitoring Results

2.1 *Hydraulic Gradient Data*

2.1.1 **Hydraulic Gradient**

Using surveyed top of casing (TOC) elevations and the recorded groundwater depths, AES determined specific groundwater elevations, relative to sea level, for each well measured. Groundwater elevations across the site in August 2013 ranged from 5,423.52 feet above mean sea level (AMSL) in MW-5 to 5,440.10 feet AMSL in TW-1. Groundwater elevations decreased across the site by an average of 0.4 feet since the last sampling event in May 2013. Groundwater gradient was calculated between TW-1 and MW-5 with a magnitude of 0.008 ft/ft to the northwest for August 2013. The groundwater flow direction has remained stable, in a northwesterly direction, and is consistent with historical site data.

Table 1 includes depth to groundwater measurements and final water table elevations. Groundwater elevation contours for August 2013 are included on Figure 2.

2.2 *Free Product*

Free product was measured in 20 monitor wells, and measured LNAPL thicknesses ranged from 0.05 feet (TW-24) to 2.55 feet (TW-20). Overall, free product thicknesses increased in most of the wells by an average of about 0.4 feet since the May 2013 sampling event and is directly correlated with groundwater elevation decreases across the site. Free product was observed for the first time in TW-50 (0.14 feet). Free product thickness contours for August 2013 are presented in Figure 3, and Graph 1 presents free product thicknesses over time in the eastern portion of the product plume (TW-13, TW-14, TW-19, and TW-22, respectively).

3.0 Measurement of Groundwater and Free Product in MPE Wells

BioTech personnel measured depth to groundwater in the MPE wells (Phases 1 through 5) on August 14, 2013. Depth to water ranged from 9.29 feet below TOC in MPE-80 to 24.45 feet below TOC in MPE-26. During the August 2013 event, free product thickness ranged from 0.02 feet in MPE-7 and MPE-25 up to 1.88 feet in MPE-73. Overall, free product thicknesses in MPE wells generally increased an average of approximately 0.4 feet from the May 2013 sampling event. Free product was observed for the first time in MPE-7

(0.02 feet), MPE-24 (0.15 feet), and MPE-25 (0.02 feet). MPE well data is included in Table 2.

4.0 MPE Remediation System Operations

The MPE remediation system was initially brought online in March 2010 and consists of an RSI internal combustion engine (ICE) unit with two engines (Engine #1 and Engine #2) to extract soil vapors and free product from the MPE extractions wells. The MPE remediation system (Engine #2) was brought back online on May 11, 2012, and was in operation from May through November 2012, when it was taken off-line for the winter season. During the week of March 6, 2013, Engine #2 was re-installed at the site. The unit is currently operating within Phase 5 MPE wells. A total of approximately **29,125 lbs** of petroleum hydrocarbons have been mechanically removed from the site since system startup on March 10, 2010.

BioTech personnel routinely inspect the system and record performance data. During O&M visits, BioTech personnel perform routine maintenance on the MPE remediation unit. Maintenance includes checking fluid levels, checking and replacing air filters, changing spark plugs, changing oil, flushing the radiator, and inspecting the catox unit.

In Engine #2, well vacuums for the reporting period from June through September 2013 typically ranged between 30 and 239 in-H₂O during MPE operations, with total process flow typically ranging between 20 and 127 scfm. Well flow dilution air is estimated to be approximately 10 percent at each well (as needed to lift product).

4.1 System Operations

Based on system operations for June through September 2013, the following estimated remedial summary is presented:

MPE Remediation System Summary, Thriftway Refinery

Parameters	Engine #1 Reporting Period (6/3/13—9/30/13)	Engine #2 Reporting Period (6/3/13—9/30/13)	Total Cumulative to Date
Estimated Petroleum Hydrocarbons Removed (lbs)*	NA	3,120.81	29,124.90
Equivalent Gallons Gasoline Removed (gal)*	NA	503.32	4,697.89
Total Cubic Feet Processed (scf)	NA	5,292,019	26,291,174

*from soil vapors only

MPE Remediation System Run Time Summary, Thriftway Refinery

Month	Engine #1 Run Time (hrs)	Engine #1 Percent Run Time	Engine #2 Run Time (hrs)	Engine #2 Percent Run Time
June through September 2013	NA	NA**	832	28%

**Engine #1 is currently undergoing an engine rebuild.

The MPE Remediation System reported numerous periods of shut-down due to mechanical issues during June, July, and September. MPE Remediation System run time in August was estimated to be 59 percent. An electronic copy of the RSI Operational Report is included in the Appendix.

Due to freezing nighttime temperatures, the unit was shut down on November 5, 2013. The unit will be reinstalled at the site during Spring 2014, once overnight lows remain consistently above freezing.

5.0 Phytoremediation Project

Drip irrigation within the phytoremediation project area was re-activated on April 29, 2013, and continued to operate during the months of May through early September. Plans for additional plantings are underway for Spring 2014, which will include additional plantings of hybrid poplar and four wing salt bush near and around Phase 3 MPE wells.

The 2013 plantings were postponed due to scheduling conflicts with NMSU. An updated review of the Poplar Phytoremediation Project prepared by NMSU is included in the appendix.

6.0 Summary and Conclusions

BioTech Remediation completed groundwater monitoring and gauging at the site in August 2013. Groundwater elevations in August 2013 decreased by an average of 0.4 feet since May 2013 and are consistent with historical seasonal fluctuations. The groundwater gradient was calculated to be approximately 0.008 ft/ft in a northwest direction across the site, which is also consistent with historical site data.

In August 2013, free product was observed and measured in 20 monitor wells, including TW-12, TW-13, TW-14, TW-19 through TW-22, TW-24, TW-25, TW-26, TW-28, TW-29, TW-32, TW-33, TW-35, TW-36, TW-38, TW-40, TW-44, and TW-50. Measured thicknesses ranged from 0.05 feet (TW-24) to 2.55 feet (TW-20). In August 2013, free product was also observed in 46 remediation wells, with the greatest thickness measured in MPE-73 (1.88 feet). Note that overall, measured free product thicknesses on both site monitor and remediation wells increased by an average of about 0.4 feet in most wells and is directly correlated with the a decrease in groundwater elevations across the site..

For MPE operations, Engine #2 operated throughout most of the reporting period from June through September. It is estimated that a total of **29,125** lbs of petroleum hydrocarbons have been mechanically removed from the site since system startup on March 10, 2010.

7.0 Recommendations and Scheduled Site Activities

The following items were scheduled during the 4th Quarter of 2013:

1. In accordance with the conditions of the Interim Groundwater Sampling Plan approval by NMOCD, the annual groundwater and NAPL monitoring and sampling event was conducted in December 2013.
2. Phytoremediation irrigation was discontinued until spring 2014.
3. The MPE remediation system was placed in pulse mode through the winter months and will be re-activated in spring 2014.

If you have any questions regarding this report or scheduled site activities, please do not hesitate to contact Deborah Watson or Ross Kennemer at (505) 564-2281.

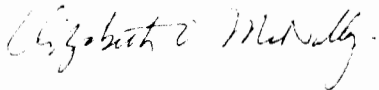
Sincerely,



Landrea Cupps
Environmental Scientist



Deborah Watson, P.G.
Project Manager



Elizabeth McNally, P.E.
New Mexico Registration #15799

Attachments:

Tables

- Table 1. Summary of Groundwater Measurements and Water Quality Data
- Table 2. Summary of Groundwater and Free Product Measurements for MPE Wells

Figures

- Figure 1. General Site Plan
- Figure 2. Groundwater Elevations, August 2013
- Figure 3. Free Product Thickness Contours, August 2013

Graphs

- Graph 1. Selected Wells with Free Product Over Time

Appendix Depth to Groundwater Measurement Forms
RSI Operational Data Report
Poplar Phytoremediation Project on an Abandoned Oil Refinery Site in
Northwestern New Mexico

cc: *via email at robertgmoss@me.com*
Robert Moss
Thriftway Company
501 Airport Drive
Farmington, NM 87401

C:\Users\emcnally.AES\Dropbox\2013 Projects\Thriftway\810 Thriftway Refinery, Bloomfield
NM\Reports\NMOCD 3rd Qtr 2013 Remedial Progress Rpt 122013.docx

TABLE 1

SUMMARY OF RECENT GROUNDWATER MEASUREMENTS AND WATER QUALITY DATA
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)	Corrected GW Elev. (ft)	pH	Conductivity (mS)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	Purge Volume (gallons)
TW-1	29-Feb-12	5471.58		30.96		5440.62	NM	NM	NM	NM	NM	NM
TW-1	11-May-12	5471.58		30.81		5440.77	NM	NM	NM	NM	NM	NM
TW-1	08-Aug-12	5471.58		31.28		5440.30	NM	NM	NM	NM	NM	NM
TW-1	02-Nov-12	5471.58		31.39		5440.19	NM	NM	NM	NM	NM	NM
TW-1	05-Feb-13	5471.58		31.24		5440.34	NM	NM	NM	NM	NM	NM
TW-1	07-May-13	5471.58		31.00		5440.58	NM	NM	NM	NM	NM	NM
TW-1	05-Aug-13	5471.58		31.48		5440.10	NM	NM	NM	NM	NM	NM
TW-2	29-Feb-12	5469.31		29.19		5440.12	NM	NM	NM	NM	NM	NM
TW-2	11-May-12	5469.31		29.04		5440.27	NM	NM	NM	NM	NM	NM
TW-2	08-Aug-12	5469.31		29.49		5439.82	NM	NM	NM	NM	NM	NM
TW-2	02-Nov-12	5469.31		29.61		5439.70	NM	NM	NM	NM	NM	NM
TW-2	05-Feb-13	5469.31		29.45		5439.86	NM	NM	NM	NM	NM	NM
TW-2	07-May-13	5469.31		29.22		5440.09	NM	NM	NM	NM	NM	NM
TW-2	05-Aug-13	5469.31		29.68		5439.63	NM	NM	NM	NM	NM	NM
TW-3	29-Feb-12	5468.14		28.2		5439.94	NM	NM	NM	NM	NM	NM
TW-3	11-May-12	5468.14		28.07		5440.07	NM	NM	NM	NM	NM	NM
TW-3	08-Aug-12	5468.14		28.34		5439.80	NM	NM	NM	NM	NM	NM
TW-3	02-Nov-12	5468.14		NM		NOT MEASURED - ROOT GROWTH AT 28'						
TW-3	05-Feb-13	5468.14		NM		NOT MEASURED - ROOT GROWTH AT 28'						
TW-3	07-May-13	5468.14		28.23		5439.91	NM	NM	NM	NM	NM	NM
TW-3	05-Aug-13	5468.14		NM		NOT MEASURED - ROOT GROWTH AT 28'						
TW-4	29-Feb-12	5458.72		19.32		5439.40	NM	NM	NM	NM	NM	NM
TW-4	11-May-12	5458.72		19.17		5439.55	NM	NM	NM	NM	NM	NM
TW-4	08-Aug-12	5458.72		19.66		5439.06	NM	NM	NM	NM	NM	NM

TABLE 1
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Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)	Corrected GW Elev. (ft)	pH	Conductivity (mS)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	Purge Volume (gallons)
TW-4	02-Nov-12	5458.72		19.77		5438.95	NM	NM	NM	NM	NM	NM
TW-4	05-Feb-13	5458.72		19.55		5439.17	NM	NM	NM	NM	NM	NM
TW-4	07-May-13	5458.72		19.33		5439.39	NM	NM	NM	NM	NM	NM
TW-4	05-Aug-13	5458.72		19.84		5438.88	NM	NM	NM	NM	NM	NM
TW-5	29-Feb-12	5465.18		25.77		5439.41	NM	NM	NM	NM	NM	NM
TW-5	11-May-12	5465.18		25.61		5439.57	NM	NM	NM	NM	NM	NM
TW-5	08-Aug-12	5465.18		26.05		5439.13	NM	NM	NM	NM	NM	NM
TW-5	02-Nov-12	5465.18		26.17		5439.01	NM	NM	NM	NM	NM	NM
TW-5	05-Feb-13	5465.18		26.00		5439.18	NM	NM	NM	NM	NM	NM
TW-5	07-May-13	5465.18		25.78		5439.40	NM	NM	NM	NM	NM	NM
TW-5	05-Aug-13	5465.18		26.23		5438.95	NM	NM	NM	NM	NM	NM
TW-6	29-Feb-12	5463.57		24.94		5438.63	NM	NM	NM	NM	NM	NM
TW-6	11-May-12	5463.57		24.81		5438.76	NM	NM	NM	NM	NM	NM
TW-6	08-Aug-12	5463.57		25.23		5438.34	NM	NM	NM	NM	NM	NM
TW-6	02-Nov-12	5463.57		25.35		5438.22	NM	NM	NM	NM	NM	NM
TW-6	05-Feb-13	5463.57		25.19		5438.38	NM	NM	NM	NM	NM	NM
TW-6	07-May-13	5463.57		24.98		5438.59	NM	NM	NM	NM	NM	NM
TW-6	05-Aug-13	5463.57		29.42		5434.15	NM	NM	NM	NM	NM	NM
TW-7	29-Feb-12	5461.17		22.41		5438.76	NM	NM	NM	NM	NM	NM
TW-7	17-May-12	5461.17		22.28		5438.89	7.23	2.517	0.44	17.05	-24.5	NM
TW-7	08-Aug-12	5461.17		22.69		5438.48	NM	NM	NM	NM	NM	NM
TW-7	02-Nov-12	5461.17		22.83		5438.34	7.74	2.811	0.57	14.31	-53.2	2.0
TW-7	05-Feb-13	5461.17		22.64		5438.53	NM	NM	NM	NM	NM	NM
TW-7	09-May-13	5461.17		22.46		5438.71	7.31	1.860	0.54	16.12	-28.4	3.0

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Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)	Corrected GW Elev. (ft)	pH	Conductivity (mS)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	Purge Volume (gallons)
TW-7	05-Aug-13	5461.17		22.88		5438.29	NM	NM	NM	NM	NM	NM
TW-8	19-Feb-12	5458.29		19.83		5438.46	NM	NM	NM	NM	NM	NM
TW-8	17-May-12	5458.29		19.75		5438.54	7.19	2.791	0.09	14.53	-21.6	NM
TW-8	08-Aug-12	5458.29		20.23		5438.06	NM	NM	NM	NM	NM	NM
TW-8	02-Nov-12	5458.29		20.30		5437.99	7.83	3.298	1.00	14.47	-58.9	3.6
TW-8	05-Feb-13	5458.29		20.02		5438.27	NM	NM	NM	NM	NM	NM
TW-8	09-May-13	5458.29		19.84		5438.45	7.13	1.633	0.31	14.07	-18.6	3.0
TW-8	05-Aug-13	5458.29		20.42		5437.87	NM	NM	NM	NM	NM	NM
TW-9	29-Feb-12	5450.61		12.28		5438.33	NM	NM	NM	NM	NM	NM
TW-9	11-May-12	5450.61		12.27		5438.34	NM	NM	NM	NM	NM	NM
TW-9	08-Aug-12	5450.61		12.85		5437.76	NM	NM	NM	NM	NM	NM
TW-9	02-Nov-12	5450.61		12.82		5437.79	NM	NM	NM	NM	NM	NM
TW-9	05-Feb-13	5450.61		12.43		5438.18	NM	NM	NM	NM	NM	NM
TW-9	07-May-13	5450.61		12.33		5438.28	NM	NM	NM	NM	NM	NM
TW-9	05-Aug-13	5450.61		13.04		5437.57	NM	NM	NM	NM	NM	NM
TW-10	29-Feb-12	5450.16		12.49		5437.67	NM	NM	NM	NM	NM	NM
TW-10	11-May-12	5450.16		12.48		5437.68	NM	NM	NM	NM	NM	NM
TW-10	08-Aug-12	5450.16		13.04		5437.12	NM	NM	NM	NM	NM	NM
TW-10	02-Nov-12	5450.16		12.96		5437.20	NM	NM	NM	NM	NM	NM
TW-10	05-Feb-13	5450.16		12.60		5437.56	NM	NM	NM	NM	NM	NM
TW-10	07-May-13	5450.16		12.53		5437.63	NM	NM	NM	NM	NM	NM
TW-10	05-Aug-13	5450.16		13.20		5436.96	NM	NM	NM	NM	NM	NM
TW-11	29-Feb-12	5456.31		18.25		5438.06	NM	NM	NM	NM	NM	NM

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Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)	Corrected GW Elev. (ft)	pH	Conductivity (mS)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	Purge Volume (gallons)
TW-11	11-May-12	5456.31		18.18		5438.13	NM	NM	NM	NM	NM	NM
TW-11	08-Aug-12	5456.31		18.56		5437.75	NM	NM	NM	NM	NM	NM
TW-11	02-Nov-12	5456.31		18.68		5437.63	NM	NM	NM	NM	NM	NM
TW-11	05-Feb-13	5456.31		18.46		5437.85	NM	NM	NM	NM	NM	NM
TW-11	07-May-13	5456.31		18.32		5437.99	NM	NM	NM	NM	NM	NM
TW-11	05-Aug-13	5456.31		18.75		5437.56	NM	NM	NM	NM	NM	NM
TW-12	28-Feb-12	5460.44		22.57		5437.87	NM	NM	NM	NM	NM	NM
TW-12	11-May-12	5460.44	22.46	22.53	0.07	5437.97	NM	NM	NM	NM	NM	NM
TW-12	08-Aug-12	5460.44	22.83	23.11	0.28	5437.56	NM	NM	NM	NM	NM	NM
TW-12	12-Nov-12	5460.44	22.95	23.00	0.05	5437.48	NM	NM	NM	NM	NM	NM
TW-12	05-Feb-13	5460.44	22.76	22.94	0.18	5437.65	NM	NM	NM	NM	NM	NM
TW-12	07-May-13	5460.44	22.61	22.75	0.14	5437.81	NM	NM	NM	NM	NM	NM
TW-12	05-Aug-13	5460.44	22.96	23.33	0.37	5437.42	NM	NM	NM	NM	NM	NM
TW-13	29-Feb-12	5458.17	20.79	21.70	0.91	5437.22	Not Sampled - NAPL Present					
TW-13	11-May-12	5458.17	20.70	21.60	0.90	5437.31	Not Sampled - NAPL Present					
TW-13	08-Aug-12	5458.17	21.05	22.25	1.20	5436.91	NM	NM	NM	NM	NM	NM
TW-13	12-Nov-12	5458.17	21.05	22.35	1.30	5436.90	NM	NM	NM	NM	NM	NM
TW-13	05-Feb-13	5458.17	20.91	22.02	1.11	5437.07	NM	NM	NM	NM	NM	NM
TW-13	07-May-13	5458.17	20.80	21.75	0.95	5437.21	NM	NM	NM	NM	NM	NM
TW-13	05-Aug-13	5458.17	21.20	22.43	1.23	5436.76	NM	NM	NM	NM	NM	NM
TW-14	29-Feb-12	5454.24	17.21	17.52	0.31	5436.98	NM	NM	NM	NM	NM	NM
TW-14	11-May-12	5454.24	17.16	17.27	0.11	5437.06	NM	NM	NM	NM	NM	NM
TW-14	08-Aug-12	5454.24	17.30	18.52	1.22	5436.73	NM	NM	NM	NM	NM	NM
TW-14	12-Nov-12	5454.24	17.42	18.81	1.39	5436.58	NM	NM	NM	NM	NM	NM

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Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)	Corrected GW Elev. (ft)	pH	Conductivity (mS)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	Purge Volume (gallons)
TW-14	05-Feb-13	5454.24	17.28	18.15	0.87	5436.81	NM	NM	NM	NM	NM	NM
TW-14	07-May-13	5454.24	17.22	17.70	0.48	5436.94	NM	NM	NM	NM	NM	NM
TW-14	05-Aug-13	5454.24	17.42	18.85	1.43	5436.57	NM	NM	NM	NM	NM	NM
TW-15	29-Feb-12	5450.44		13.19		5437.25	NM	NM	NM	NM	NM	NM
TW-15	17-May-12	5450.44		13.20		5437.24	7.32	3.593	0.85	14.09	-29.0	NM
TW-15	08-Aug-12	5450.44		13.70		5436.74	NM	NM	NM	NM	NM	NM
TW-15	02-Nov-12	5450.44		13.61		5436.83	NM	NM	NM	NM	NM	NM
TW-15	05-Feb-13	5450.44		13.34		5437.10	NM	NM	NM	NM	NM	NM
TW-15	09-May-13	5450.44		13.28		5437.16	7.34	1.938	0.49	13.31	-30.3	3.0
TW-15	05-Aug-13	5450.44		13.86		5436.58	NM	NM	NM	NM	NM	NM
TW-16	29-Feb-12	5448.45		11.44		5437.01	NM	NM	NM	NM	NM	NM
TW-16	11-May-12	5448.45		11.54		5436.91	NM	NM	NM	NM	NM	NM
TW-16	08-Aug-12	5448.45										
TW-16	02-Nov-12	5448.45										
TW-16	05-Feb-13	5448.45										
TW-16	07-May-13	5448.45										
TW-16	05-Aug-13	5448.45										
TW-17	29-Feb-12	5446.24		10.06		5436.18	NM	NM	NM	NM	NM	NM
TW-17	11-May-12	5446.24		10.13		5436.11	NM	NM	NM	NM	NM	NM
TW-17	08-Aug-12	5446.24		10.58		5435.66	NM	NM	NM	NM	NM	NM
TW-17	02-Nov-12	5446.24		14.42		5431.82	NM	NM	NM	NM	NM	NM
TW-17	05-Feb-13	5446.24		10.10		5436.14	NM	NM	NM	NM	NM	NM
TW-17	07-May-13	5446.24		10.15		5436.09	NM	NM	NM	NM	NM	NM
TW-17	05-Aug-13	5446.24		10.71		5435.53	NM	NM	NM	NM	NM	NM

TABLE 1
SUMMARY OF RECENT GROUNDWATER MEASUREMENTS AND WATER QUALITY DATA
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)	Corrected GW Elev. (ft)	pH	Conductivity (mS)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	Purge Volume (gallons)
TW-18	29-Feb-12	5452.73		16.48		5436.25	7.25	NM	NM	NM		NM
TW-18	17-May-12	5452.73		16.41		5436.32	7.29	4.157	0.79	16.25	-27.7	NM
TW-18	08-Aug-12	5452.73		16.78		5435.95	NM	NM	NM	NM		NM
TW-18	02-Nov-12	5452.73		16.87		5435.86	7.91	4.440	1.10	16.37	-62.2	3.0
TW-18	05-Feb-13	5452.73		16.65		5436.08	NM	NM	NM	NM		NM
TW-18	07-May-13	5452.73		16.58		5436.15	NM	NM	NM	NM		NM
TW-18	05-Aug-13	5452.73		16.95		5435.78	NM	NM	NM	NM		NM
TW-19	29-Feb-12	5458.49	17.74	18.11	0.37	5440.69		Not Sampled - NAPL Present				
TW-19	11-May-12	5458.49	17.70	17.84	0.14	5440.77		Not Sampled - NAPL Present				
TW-19	08-Aug-12	5458.49	17.93	18.57	0.64	5440.45	NM	NM	NM	NM		NM
TW-19	14-Nov-12	5458.49	17.91	18.95	1.04	5440.40	NM	NM	NM	NM		NM
TW-19	06-Feb-13	5458.49	17.86	18.43	0.57	5440.53	NM	NM	NM	NM		NM
TW-19	07-May-13	5458.49	17.85	18.34	0.49	5440.56	NM	NM	NM	NM		NM
TW-19	05-Aug-13	5458.49	18.03	18.96	0.93	5440.30	NM	NM	NM	NM		NM
TW-20	29-Feb-12	5453.74	17.55	19.02	1.47	5435.94		Not Sampled - NAPL Present				
TW-20	11-May-12	5453.74	17.47	18.88	1.41	5436.03		Not Sampled - NAPL Present				
TW-20	08-Aug-12	5453.74	17.95	18.32	0.37	5435.73	NM	NM	NM	NM		NM
TW-20	14-Nov-12	5453.74	17.73	18.90	1.17	5435.81	NM	NM	NM	NM		NM
TW-20	06-Feb-13	5453.74	17.62	19.51	1.89	5435.79	NM	NM	NM	NM		NM
TW-20	07-May-13	5453.74	17.57	19.12	1.55	5435.90	NM	NM	NM	NM		NM
TW-20	05-Aug-13	5453.74	17.91	20.46	2.55	5435.39	NM	NM	NM	NM		NM
TW-21	29-Feb-12	5451.85						TW damaged by demolition work				
TW-21	14-May-12	5451.85						TW damaged by demolition work				

TABLE 1

SUMMARY OF RECENT GROUNDWATER MEASUREMENTS AND WATER QUALITY DATA
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)	Corrected GW Elev. (ft)	pH	Conductivity (mS)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	Purge Volume (gallons)
TW-21	08-Aug-12	5451.85	16.78	17.60	0.82	5434.93	NM	NM	NM	NM	NM	NM
TW-21	14-Nov-12	5451.85	16.77	17.84	1.07	5434.89	NM	NM	NM	NM	NM	NM
TW-21	06-Feb-13	5451.85	16.70	17.47	0.77	5435.02	NM	NM	NM	NM	NM	NM
TW-21	14-May-13	5451.85	16.71	17.05	0.34	5435.08	NM	NM	NM	NM	NM	NM
TW-21	12-Aug-13	5451.85	16.90	18.00	1.10	5434.76	NM	NM	NM	NM	NM	NM
TW-22	29-Feb-12	5450.19	14.96	15.30	0.34	5435.17	Not Sampled - NAPL Present					
TW-22	14-May-12	5450.19	14.87	15.12	0.25	5435.28	Not Sampled - NAPL Present					
TW-22	08-Aug-12	5450.19	15.10	15.70	0.60	5434.99	Not Sampled - NAPL Present					
TW-22	14-Nov-12	5450.19	15.20	15.85	0.65	5434.88	Not Sampled - NAPL Present					
TW-22	06-Feb-13	5450.19	15.12	15.36	0.24	5435.03	NM	NM	NM	NM	NM	NM
TW-22	14-May-13	5450.19	15.12	15.35	0.23	5435.03	NM	NM	NM	NM	NM	NM
TW-22	12-Aug-13	5450.19	15.30	16.15	0.85	5434.74	NM	NM	NM	NM	NM	NM
TW-23	29-Feb-12	5443.64		9.01		5434.63	NM	NM	NM	NM	NM	NM
TW-23	14-May-12	5443.64	Not Measured - Root Growth at 9.0'									
TW-23	08-Aug-12	5443.64	Not Measured - Root Growth at 9.0'									
TW-23	14-Nov-12	5443.64	Not Measured - Root Growth at 9.0'									
TW-23	06-Feb-13	5443.64	Not Measured - Root Growth at 9.0'									
TW-23	14-May-13	5443.64	Not Measured - Root Growth at 9.0'									
TW-23	12-Aug-13	5443.64	Not Measured - Root Growth at 9.0'									
TW-24	29-Feb-12	5444.79	11.08	11.10	0.02	5433.71	Not Sampled - NAPL Present					
TW-24	14-May-12	5444.79		11.07		5433.72	NM	NM	NM	NM	NM	NM
TW-24	08-Aug-12	5444.79	11.34	11.44	0.10	5433.43	NM	NM	NM	NM	NM	NM
TW-24	14-Nov-12	5444.79	11.37	11.47	0.10	5433.40	NM	NM	NM	NM	NM	NM
TW-24	06-Feb-13	5444.79		11.15		5433.64	NM	NM	NM	NM	NM	NM

TABLE 1
SUMMARY OF RECENT GROUNDWATER MEASUREMENTS AND WATER QUALITY DATA
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)	Corrected GW Elev. (ft)	pH	Conductivity (mS)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	Purge Volume (gallons)
TW-24	14-May-13	5444.79	11.23	11.25	0.02	5433.56	NM	NM	NM	NM	NM	NM
TW-24	12-Aug-13	5444.79	13.51	13.56	0.05	5431.27	NM	NM	NM	NM	NM	NM
TW-25	29-Feb-12	5448.80	14.25	14.71	0.46	5434.47	Not Sampled - NAPL Present					
TW-25	14-May-12	5448.80	14.16	14.45	0.29	5434.59	Not Sampled - NAPL Present					
TW-25	08-Aug-12	5448.80	14.35	15.15	0.80	5434.31	NM	NM	NM	NM	NM	NM
TW-25	14-Nov-12	5448.80	14.43	15.31	0.88	5434.22	NM	NM	NM	NM	NM	NM
TW-25	06-Feb-13	5448.80	14.36	14.87	0.51	5434.35	NM	NM	NM	NM	NM	NM
TW-25	14-May-13	5448.80	14.36	14.77	0.41	5434.37	NM	NM	NM	NM	NM	NM
TW-25	12-Aug-13	5448.80	14.58	15.57	0.99	5434.05	NM	NM	NM	NM	NM	NM
TW-26	29-Feb-12	5450.34	15.94	16.85	0.91	5434.24	Not Sampled - NAPL Present					
TW-26	14-May-12	5450.34	15.86	16.64	0.78	5434.35	Not Sampled - NAPL Present					
TW-26	08-Aug-12	5450.34	16.02	17.42	1.40	5434.08	NM	NM	NM	NM	NM	NM
TW-26	14-Nov-12	5450.34	16.12	17.62	1.50	5433.96	NM	NM	NM	NM	NM	NM
TW-26	06-Feb-13	5450.34	16.07	17.18	1.11	5434.08	NM	NM	NM	NM	NM	NM
TW-26	14-May-13	5450.34	16.01	16.93	0.92	5434.17	NM	NM	NM	NM	NM	NM
TW-26	12-Aug-13	5450.34	16.21	17.75	1.54	5433.86	NM	NM	NM	NM	NM	NM
TW-28	29-Feb-12	5449.24	15.33	16.46	1.13	5433.71	Not Sampled - NAPL Present					
TW-28	14-May-12	5449.24	15.26	16.19	0.93	5433.82	Not Sampled - NAPL Present					
TW-28	08-Aug-12	5449.24	15.39	16.81	1.42	5433.60	NM	NM	NM	NM	NM	NM
TW-28	14-Nov-12	5449.24	15.50	17.06	1.56	5433.47	NM	NM	NM	NM	NM	NM
TW-28	06-Feb-13	5449.24	15.45	16.74	1.29	5433.57	NM	NM	NM	NM	NM	NM
TW-28	14-May-13	5449.24	15.40	16.53	1.13	5433.64	NM	NM	NM	NM	NM	NM
TW-28	12-Aug-13	5449.24	15.56	17.16	1.60	5433.40	NM	NM	NM	NM	NM	NM

TABLE 1

SUMMARY OF RECENT GROUNDWATER MEASUREMENTS AND WATER QUALITY DATA
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)	Corrected GW Elev. (ft)	pH	Conductivity (mS)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	Purge Volume (gallons)
TW-29	29-Feb-12	5441.87	9.37	9.78	0.41	5432.43			Not Sampled - NAPL Present			
TW-29	14-May-12	5441.87	9.23	9.42	0.19	5432.61			Not Sampled - NAPL Present			
TW-29	08-Aug-12	5441.87	9.40	10.30	0.90	5432.31	NM	NM	NM	NM	NM	NM
TW-29	14-Nov-12	5441.87	9.51	10.50	0.99	5432.19	NM	NM	NM	NM	NM	NM
TW-29	06-Feb-13	5441.87	9.38	9.71	0.33	5432.43	NM	NM	NM	NM	NM	NM
TW-29	14-May-13	5441.87	9.44	9.90	0.46	5432.35	NM	NM	NM	NM	NM	NM
TW-29	12-Aug-13	5441.87	9.61	10.64	1.03	5432.08	NM	NM	NM	NM	NM	NM
TW-30	28-Feb-12	5437.93		6.18		5431.75	NM	NM	NM	NM	NM	NM
TW-30	14-May-12	5437.93		5.96		5431.97	NM	NM	NM	NM	NM	NM
TW-30	08-Aug-12	5437.93		6.40		5431.53	NM	NM	NM	NM	NM	NM
TW-30	09-Nov-12	5437.93		6.48		5431.45	7.70	5.352	0.48	11.64	-50.5	5.5
TW-30	06-Feb-13	5437.93		6.23		5431.70	NM	NM	NM	NM	NM	NM
TW-30	14-May-13	5437.93		6.35		5431.58	NM	NM	NM	NM	NM	NM
TW-30	12-Aug-13	5437.93		6.64		5431.29	NM	NM	NM	NM	NM	NM
TW-31	28-Feb-12	5438.54		7.11		5431.43	NM	NM	NM	NM	NM	NM
TW-31	14-May-12	5438.54		6.76		5431.78	NM	NM	NM	NM	NM	NM
TW-31	08-Aug-12	5438.54		7.18		5431.36	NM	NM	NM	NM	NM	NM
TW-31	09-Nov-12	5438.54		7.36		5431.18	7.64	4.072	0.23	14.46	-47.7	3.0
TW-31	06-Feb-13	5438.54		7.17		5431.37	NM	NM	NM	NM	NM	NM
TW-31	14-May-13	5438.54		7.26		5431.28	NM	NM	NM	NM	NM	NM
TW-31	12-Aug-13	5438.54		7.50		5431.04	NM	NM	NM	NM	NM	NM
TW-32	29-Feb-12	5441.61	9.27	10.72	1.45	5432.09			Not Sampled - NAPL Present			
TW-32	14-May-12	5441.61	9.13	10.47	1.34	5432.25			Not Sampled - NAPL Present			
TW-32	10-Aug-12	5441.61	9.34	10.79	1.45	5432.02	NM	NM	NM	NM	NM	NM
TW-32	06-Feb-13	5441.61	9.36	10.72	1.36	5432.01	NM	NM	NM	NM	NM	NM

TABLE 1
SUMMARY OF RECENT GROUNDWATER MEASUREMENTS AND WATER QUALITY DATA
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)	Corrected GW Elev. (ft)	pH	Conductivity (mS)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	Purge Volume (gallons)
TW-32	14-May-13	5441.61	9.38	10.65	1.27	5432.01	NM	NM	NM	NM	NM	NM
TW-32	12-Aug-13	5441.61	9.59	10.56	0.97	5431.85	NM	NM	NM	NM	NM	NM
TW-33	29-Feb-12	5445.85	13.10	13.15	0.05	5432.74	Not Sampled - NAPL Present					
TW-33	14-May-12	5445.85	12.93	12.98	0.05	5432.91	Not Sampled - NAPL Present					
TW-33	08-Aug-12	5445.85	13.10	13.40	0.30	5432.70	NM	NM	NM	NM	NM	NM
TW-33	09-Nov-12	5445.85	13.22	13.50	0.28	5432.58	NM	NM	NM	NM	NM	NM
TW-33	06-Feb-13	5445.85	13.14	13.39	0.25	5432.67	NM	NM	NM	NM	NM	NM
TW-33	14-May-13	5445.85	13.00	13.52	0.52	5432.76	NM	NM	NM	NM	NM	NM
TW-33	12-Aug-13	5445.85	13.19	14.08	0.89	5432.51	NM	NM	NM	NM	NM	NM
TW-34	29-Feb-12	5455.80		19.91		5435.89	NM	NM	NM	NM	NM	NM
TW-34	22-May-12	5455.80		19.99		5435.81	NM	NM	NM	NM	NM	NM
TW-34	10-Aug-12	5455.80		20.55		5435.25	NM	NM	NM	NM	NM	NM
TW-34	09-Nov-12	5455.80		20.38		5435.42	NM	NM	NM	NM	NM	NM
TW-34	06-Feb-13	5455.80		20.18		5435.62	NM	NM	NM	NM	NM	NM
TW-34	14-May-13	5455.80		20.09		5435.71	NM	NM	NM	NM	NM	NM
TW-34	12-Aug-13	5455.80		20.75		5435.05	NM	NM	NM	NM	NM	NM
TW-35	29-Feb-12	5449.14		15.28		5433.86	NM	NM	NM	NM	NM	NM
TW-35	22-May-12	5449.14		15.51		5433.63	NM	NM	NM	NM	NM	NM
TW-35	10-Aug-12	5449.14	15.35	15.98	0.63	5433.68	NM	NM	NM	NM	NM	NM
TW-35	09-Nov-12	5449.14	15.45	16.01	0.56	5433.59	NM	NM	NM	NM	NM	NM
TW-35	06-Feb-13	5449.14	15.34	16.02	0.68	5433.68	NM	NM	NM	NM	NM	NM
TW-35	14-May-13	5449.14	15.20	16.10	0.90	5433.78	NM	NM	NM	NM	NM	NM
TW-35	12-Aug-13	5449.14	15.39	16.89	1.50		NM	NM	NM	NM	NM	NM

TABLE 1

SUMMARY OF RECENT GROUNDWATER MEASUREMENTS AND WATER QUALITY DATA

Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)	Corrected GW Elev. (ft)	pH	Conductivity (mS)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	Purge Volume (gallons)
TW-36	29-Feb-12	5441.91	13.14	13.22	0.08	5428.76	Not Sampled - NAPL Present					
TW-36	22-May-12	5441.91	13.13	13.30	0.17	5428.75	Not Sampled - NAPL Present					
TW-36	10-Aug-12	5441.91	13.32	13.72	0.40	5428.52	NM	NM	NM	NM	NM	NM
TW-36	09-Nov-12	5441.91	13.34	13.74	0.40	5428.50	NM	NM	NM	NM	NM	NM
TW-36	06-Feb-13	5441.91	13.23	13.40	0.17	5428.65	NM	NM	NM	NM	NM	NM
TW-36	14-May-13	5441.91	13.12	13.25	0.13	5428.77	NM	NM	NM	NM	NM	NM
TW-36	12-Aug-13	5441.91	13.46	13.93	0.47	5428.37	NM	NM	NM	NM	NM	NM
TW-37	28-Feb-12	5439.59		10.67		5428.92	NM	NM	NM	NM	NM	NM
TW-37	17-May-12	5439.59		10.59		5429.00	7.26	3.124	0.95	16.40	-25.8	NM
TW-37	10-Aug-12	5439.59		10.80		5428.79	NM	NM	NM	NM	NM	NM
TW-37	09-Nov-12	5439.59		10.90		5428.69	7.60	3.374	0.13	16.17	-45.4	3.0
TW-37	06-Feb-13	5439.59		10.80		5428.79	NM	NM	NM	NM	NM	NM
TW-37	09-May-13	5439.59		10.66		5428.93	7.30	2.489	0.15	13.84	-28.3	3.0
TW-37	12-Aug-13	5439.59		11.00		5428.59	NM	NM	NM	NM	NM	NM
TW-38	29-Feb-12	5442.11	11.58	11.60	0.02	5430.53	NM	NM	NM	NM	NM	NM
TW-38	14-May-12	5442.11		11.56		5430.55	NM	NM	NM	NM	NM	NM
TW-38	10-Aug-12	5442.11	11.64	11.78	0.14	5430.45	NM	NM	NM	NM	NM	NM
TW-38	09-Nov-12	5442.11	11.77	11.97	0.20	5430.31	NM	NM	NM	NM	NM	NM
TW-38	06-Feb-13	5442.11	11.69	11.75	0.06	5430.41	NM	NM	NM	NM	NM	NM
TW-38	14-May-13	5442.11	11.61	11.65	0.04	5430.49	NM	NM	NM	NM	NM	NM
TW-38	12-Aug-13	5442.11	11.81	12.05	0.24	5430.26	NM	NM	NM	NM	NM	NM
TW-39	28-Feb-12	5438.43		7.87		5430.56	NM	NM	NM	NM	NM	NM
TW-39	14-May-12	5438.43		7.30		5431.13	7.17	3.934	0.56	17.39	-20.7	NM
TW-39	10-Aug-12	5438.43		7.91		5430.52	NM	NM	NM	NM	NM	NM

TABLE 1
SUMMARY OF RECENT GROUNDWATER MEASUREMENTS AND WATER QUALITY DATA
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)	Corrected GW Elev. (ft)	pH	Conductivity (mS)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	Purge Volume (gallons)
TW-39	09-Nov-12	5438.43		8.16		5430.27	7.52	3.510	0.07	15.11	-40.6	3.0
TW-39	06-Feb-13	5438.43		7.93		5430.50	NM	NM	NM	NM	NM	NM
TW-39	14-May-13	5438.43		8.24		5430.19	NM	NM	NM	NM	NM	NM
TW-39	12-Aug-13	5438.43		8.15		5430.28	NM	NM	NM	NM	NM	NM
TW-40	29-Feb-12	5437.50	7.86	8.33	0.47	5429.56			Not Sampled - NAPL Present			
TW-40	14-May-12	5437.50	7.27	7.55	0.28	5430.18			Not Sampled - NAPL Present			
TW-40	10-Aug-12	5437.50	7.82	7.89	0.07	5429.67	NM	NM	NM	NM	NM	NM
TW-40	09-Nov-12	5437.50	8.24	8.38	0.14	5429.24	NM	NM	NM	NM	NM	NM
TW-40	06-Feb-13	5437.50	7.97	8.00	0.03	5429.52	NM	NM	NM	NM	NM	NM
TW-40	14-May-13	5437.50	7.83	7.85	0.02	5429.67	NM	NM	NM	NM	NM	NM
TW-40	12-Aug-13	5437.50	8.27	8.52	0.25	5429.19	NM	NM	NM	NM	NM	NM
TW-41	28-Feb-12	5434.77		6.06		5428.71	NM	NM	NM	NM	NM	NM
TW-41	21-May-12	5434.77		5.85		5428.92	7.08	4.146	0.26	16.69	-15.6	NM
TW-41	10-Aug-12	5434.77		5.67		5429.10	NM	NM	NM	NM	NM	NM
TW-41	09-Nov-12	5434.77		6.34		5428.43	7.40	3.985	0.15	14.72	-34.1	3.0
TW-41	06-Feb-13	5434.77		6.20		5428.57	NM	NM	NM	NM	NM	NM
TW-41	10-May-13	5434.77		5.85		5428.92	7.10	3.648	0.72	13.78	-17.0	3.0
TW-41	12-Aug-13	5434.77		6.11		5428.66	NM	NM	NM	NM	NM	NM
TW-42	28-Feb-12	5433.76		6.14		5427.62	NM	NM	NM	NM	NM	NM
TW-42	21-May-12	5433.76		7.01		5426.75	7.18	4.835	0.19	14.92	-21.0	NM
TW-42	10-Aug-12	5433.76		5.79		5427.97	NM	NM	NM	NM	NM	NM
TW-42	09-Nov-12	5433.76		6.26		5427.50	7.55	3.735	1.10	8.63	-41.9	3.0
TW-42	06-Feb-13	5433.76		6.25		5427.51	NM	NM	NM	NM	NM	NM
TW-42	10-May-13	5433.76		5.76		5428.00	6.67	4.015	2.23	15.23	40.3	3.0

TABLE 1

SUMMARY OF RECENT GROUNDWATER MEASUREMENTS AND WATER QUALITY DATA

Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)	Corrected GW Elev. (ft)	pH	Conductivity (mS)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	Purge Volume (gallons)
TW-42	12-Aug-13	5433.76		5.93		5427.83	NM	NM	NM	NM	NM	NM
TW-43	28-Feb-12	5440.42		12.27		5428.15	NM	NM	NM	NM	NM	NM
TW-43	21-May-12	5440.42		12.26		5428.16	7.11	4.350	0.88	15.95	-17.1	NM
TW-43	10-Aug-12	5440.42		12.48		5427.94	NM	NM	NM	NM	NM	NM
TW-43	09-Nov-12	5440.42		12.50		5427.92	7.36	4.010	1.50	12.73	-31.1	3.0
TW-43	06-Feb-13	5440.42		12.39		5428.03	NM	NM	NM	NM	NM	NM
TW-43	13-May-13	5440.42		12.24		5428.18	6.86	5.920	1.69	14.88	33.5	3.0
TW-43	12-Aug-13	5440.42		12.66		5427.76	NM	NM	NM	NM	NM	NM
TW-44	29-Feb-12	5444.08	14.96	16.17	1.21	5428.91	Not Sampled - NAPL Present					
TW-44	14-May-12	5444.08	14.98	16.10	1.12	5428.91	Not Sampled - NAPL Present					
TW-44	10-Aug-12	5444.08	15.10	16.48	1.38	5428.74	NM	NM	NM	NM	NM	NM
TW-44	12-Nov-12	5444.08	15.15	16.59	1.44	5428.68	NM	NM	NM	NM	NM	NM
TW-44	06-Feb-13	5444.08	15.07	16.31	1.24	5428.80	NM	NM	NM	NM	NM	NM
TW-44	14-May-13	5444.08	14.96	16.04	1.08	5428.93	NM	NM	NM	NM	NM	NM
TW-44	12-Aug-13	5444.08	15.28	16.53	1.25	5428.58	NM	NM	NM	NM	NM	NM
TW-45	29-Feb-12	TBS		7.02			NM	NM	NM	NM	NM	NM
TW-45	21-May-12	TBS		7.08			7.18	5.029	1.88	15.13	-21.1	NM
TW-45	10-Aug-12	TBS		7.30			NM	NM	NM	NM	NM	NM
TW-45	12-Nov-12	TBS		7.28			7.43	3.867	1.30	12.48	-35.2	3.0
TW-45	11-Feb-13	TBS		7.11			NM	NM	NM	NM	NM	NM
TW-45	13-May-13	TBS		6.95			7.08	6.765	1.13	15.23	17.6	3.0
TW-45	13-Aug-13	TBS		7.44			NM	NM	NM	NM	NM	NM
TW-46	29-Feb-12	TBS		7.36			NM	NM	NM	NM	NM	NM

TABLE 1
SUMMARY OF RECENT GROUNDWATER MEASUREMENTS AND WATER QUALITY DATA
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)	Corrected GW Elev. (ft)	pH	Conductivity (mS)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	Purge Volume (gallons)
TW-46	21-May-12	TBS		7.37			7.14	4.727	0.60	15.22	-18.7	NM
TW-46	10-Aug-12	TBS		7.52			NM	NM	NM	NM	NM	NM
TW-46	12-Nov-12	TBS		7.56			7.59	4.095	0.79	13.71	-44.7	3.0
TW-46	11-Feb-13	TBS		7.45			NM	NM	NM	NM	NM	NM
TW-46	14-May-13	TBS		7.26			NM	NM	NM	NM	NM	NM
TW-46	13-Aug-13	TBS		7.68			NM	NM	NM	NM	NM	NM
TW-47	29-Feb-12	TBS		6.72			NM	NM	NM	NM	NM	NM
TW-47	22-May-12	TBS		7.84			NM	NM	NM	NM	NM	NM
TW-47	13-Aug-12	TBS		7.15			NM	NM	NM	NM	NM	NM
TW-47	12-Nov-12	TBS		7.05			7.50	8.861	1.23	14.15	-39.7	3.0
TW-47	11-Feb-13	TBS		6.88			NM	NM	NM	NM	NM	NM
TW-47	14-May-13	TBS		7.85			NM	NM	NM	NM	NM	NM
TW-47	13-Aug-13	TBS		7.23			NM	NM	NM	NM	NM	NM
TW-48	28-Feb-12	TBS		7.28			NM	NM	NM	NM	NM	NM
TW-48	22-May-12	TBS		7.08			NM	NM	NM	NM	NM	NM
TW-48	13-Aug-12	TBS	Not Measured - Root Growth at 7.0'									
TW-48	12-Nov-12	TBS	Not Measured - Root Growth at 7.0'									
TW-48	11-Feb-13	TBS	Not Measured - Root Growth at 7.0'									
TW-48	14-May-13	TBS	Not Measured - Root Growth at 7.0'									
TW-48	13-Aug-13	TBS	Not Measured - Root Growth at 7.0'									
TW-49	29-Feb-12	TBS		6.11			NM	NM	NM	NM	NM	NM
TW-49	22-May-12	TBS		6.10			7.08	6.360	1.35	14.30	-15.6	NM
TW-49	13-Aug-12	TBS		6.49			NM	NM	NM	NM	NM	NM
TW-49	12-Nov-12	TBS		6.41			7.28	7.350	2.72	10.35	-26.6	3.0

TABLE 1
SUMMARY OF RECENT GROUNDWATER MEASUREMENTS AND WATER QUALITY DATA
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)	Corrected GW Elev. (ft)	pH	Conductivity (mS)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	Purge Volume (gallons)
TW-49	11-Feb-13	TBS		6.25			NM	NM	NM	NM	NM	NM
TW-49	14-May-13	TBS		6.33			NM	NM	NM	NM	NM	NM
TW-49	13-Aug-13	TBS		6.70			NM	NM	NM	NM	NM	NM
TW-50	28-Feb-12	TBS		7.98			NM	NM	NM	NM	NM	NM
TW-50	22-May-12	TBS		7.58			7.15	5.354	0.45	16.25	-19.7	NM
TW-50	13-Aug-12	TBS		7.94			NM	NM	NM	NM	NM	NM
TW-50	12-Nov-12	TBS		8.28			7.56	4.756	1.59	11.69	-42.5	3.0
TW-50	11-Feb-13	TBS		8.06			NM	NM	NM	NM	NM	NM
TW-50	14-May-13	TBS		8.12			NM	NM	NM	NM	NM	NM
TW-50	13-Aug-13	TBS	8.28	8.42	0.14		NM	NM	NM	NM	NM	NM
TW-51	13-Aug-12	TBS		7.26			NM	NM	NM	NM	NM	NM
TW-51	12-Nov-12	TBS		7.22			7.31	5.519	0.34	13.70	-28.8	3.0
TW-51	11-Feb-13	TBS		7.08			NM	NM	NM	NM	NM	NM
TW-51	14-May-13	TBS		6.92			NM	NM	NM	NM	NM	NM
TW-51	13-Aug-13	TBS		7.37			NM	NM	NM	NM	NM	NM
TW-52	12-Nov-12	TBS		7.72			7.70	5.338	5.66	12.03	-50.3	2.0
TW-52	11-Feb-13	TBS		7.52			NM	NM	NM	NM	NM	NM
TW-52	13-May-13	TBS		7.33			7.20	8.553	0.81	14.93	4.8	1.0
TW-52	13-Aug-13	TBS		7.93			NM	NM	NM	NM	NM	NM
TW-53	11-Feb-13	TBS		7.24			NM	NM	NM	NM	NM	NM
TW-53	13-May-13	TBS		7.05			7.39	9.674	0.89	15.30	9.1	3.0
TW-53	13-Aug-13	TBS		7.64			NM	NM	NM	NM	NM	NM

TABLE 1
SUMMARY OF RECENT GROUNDWATER MEASUREMENTS AND WATER QUALITY DATA
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)	Corrected GW Elev. (ft)	pH	Conductivity (mS)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	Purge Volume (gallons)
TW-54	11-Feb-13	TBS		7.66			NM	NM	NM	NM	NM	NM
TW-54	13-May-13	TBS		7.50			7.39	7.696	0.68	14.27	2.4	3.0
TW-54	13-Aug-13	TBS		8.88			NM	NM	NM	NM	NM	NM
MW-5	28-Feb-12	5428.97		5.09		5423.88	NM	NM	NM	NM	NM	NM
MW-5	22-May-12	5428.97		5.13		5423.84	NM	NM	NM	NM	NM	NM
MW-5	13-Aug-12	5428.97		5.24		5423.73	NM	NM	NM	NM	NM	NM
MW-5	12-Nov-12	5428.97		DRY			NM	NM	NM	NM	NM	NM
MW-5	11-Feb-13	5428.97		5.19		5423.78	NM	NM	NM	NM	NM	NM
MW-5	14-May-13	5428.97		DRY			NM	NM	NM	NM	NM	NM
MW-5	13-Aug-13	5428.97		5.45		5423.52	NM	NM	NM	NM	NM	NM
MW-7	28-Feb-12	5435.28		8.69		5426.59	NM	NM	NM	NM	NM	NM
MW-7	22-May-12	5435.28		8.08		5427.20	NM	NM	NM	NM	NM	NM
MW-7	13-Aug-12	5435.28		8.84		5426.44	NM	NM	NM	NM	NM	NM
MW-7	12-Nov-12	5435.28		9.09		5426.19	7.39	4.585	1.20	13.05	-33.4	3.0
MW-7	11-Feb-13	5435.28		8.88		5426.40	NM	NM	NM	NM	NM	NM
MW-7	13-May-13	5435.28		8.76		5426.52	6.92	6.802	0.90	15.50	7.2	3.0
MW-7	13-Aug-13	5435.28		9.24		5426.04	NM	NM	NM	NM	NM	NM
MW-20	29-Feb-12	5430.45		5.99		5424.46	NM	NM	NM	NM	NM	NM
MW-20	21-May-12	5430.45		6.04		5424.41	7.09	4.748	0.38	14.15	-15.8	NM
MW-20	13-Aug-12	5430.45		6.13		5424.32	NM	NM	NM	NM	NM	NM
MW-20	12-Nov-12	5430.45		6.19		5424.26	7.33	4.164	0.39	12.81	-29.5	3.0
MW-20	11-Feb-13	5430.45		6.09		5424.36	NM	NM	NM	NM	NM	NM
MW-20	13-May-13	5430.45		5.90		5424.55	7.13	6.598	0.41	13.97	-14.4	3.0
MW-20	13-Aug-13	5430.45		6.31		5424.14	NM	NM	NM	NM	NM	NM

TABLE 1

SUMMARY OF RECENT GROUNDWATER MEASUREMENTS AND WATER QUALITY DATA

Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)	Corrected GW Elev. (ft)	pH	Conductivity (mS)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	Purge Volume (gallons)
MW-21	29-Feb-12	5428.62		3.52		5425.1	NM	NM	NM	NM	NM	NM
MW-21	21-May-12	5428.62		3.50		5425.12	7.21	6.073	0.99	15.48	-23.1	NM
MW-21	13-Aug-12	5428.62		3.88		5424.74	NM	NM	NM	NM	NM	NM
MW-21	12-Nov-12	5428.62		3.86		5424.76	7.27	4.794	1.02	12.85	-26.3	3.0
MW-21	11-Feb-13	5428.62		3.69		5424.93	NM	NM	NM	NM	NM	NM
MW-21	13-May-13	5428.62		3.62		5425.00	7.22	7.792	1.33	15.19	2.1	3.0
MW-21	13-Aug-13	5428.62		4.06		5424.56	NM	NM	NM	NM	NM	NM

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)
Phase 1 Wells					
MPE-1	03-Mar-10	TBD		23.63	
MPE-1	10-May-10	TBD		23.46	
MPE-1	17-Aug-10	TBD		23.65	
MPE-1	11-Nov-10	TBD		23.82	
MPE-1	25-Feb-11	TBD		23.63	
MPE-1	20-May-11	TBD		23.63	
MPE-1	25-Aug-11	TBD		24.01	
MPE-1	10-Nov-11	TBD		24.04	
MPE-1	29-Feb-12	TBD		23.87	
MPE-1	25-May-12	TBD		23.78	
MPE-1	13-Aug-12	TBD		24.15	
MPE-1	19-Nov-12	TBD		24.24	
MPE-1	13-Feb-13	TBD		24.06	
MPE-1	14-May-13	TBD		23.92	
MPE-1	14-Aug-13	TBD		24.34	
MPE-2	03-Mar-10	TBD	21.51	21.54	0.03
MPE-2	18-May-10	TBD		21.29	
MPE-2	17-Aug-10	TBD	21.61	21.62	0.01
MPE-2	11-Nov-10	TBD	21.69	21.78	0.09
MPE-2	25-Feb-11	TBD		21.61	
MPE-2	20-May-11	TBD		21.46	
MPE-2	25-Aug-11	TBD		21.91	
MPE-2	10-Nov-11	TBD	21.94	22.03	0.09
MPE-2	29-Feb-12	TBD	21.77	21.86	0.09
MPE-2	25-May-12	TBD	21.65	21.82	0.17
MPE-2	13-Aug-12	TBD	22.00	22.31	0.31
MPE-2	19-Nov-12	TBD	22.09	22.35	0.26
MPE-2	13-Feb-13	TBD	21.90	22.15	0.25
MPE-2	14-May-13	TBD	21.78	22.00	0.22
MPE-2	14-Aug-13	TBD	22.17	22.53	0.36
MPE-3	03-Mar-10	TBD		20.79	
MPE-3	10-May-10	TBD		20.63	
MPE-3	17-Aug-10	TBD		20.83	
MPE-3	11-Nov-10	TBD		21.01	
MPE-3	25-Feb-11	TBD		20.89	
MPE-3	20-May-11	TBD		20.81	

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

<i>Well ID</i>	<i>Date</i>	<i>T.O.C. (ft amsl)</i>	<i>Depth to Product (ft)</i>	<i>Depth to Water (ft)</i>	<i>NAPL Thickness (ft)</i>
MPE-3	25-Aug-11	TBD		21.22	
MPE-3	10-Nov-11	TBD		21.23	
MPE-3	29-Feb-12	TBD		21.03	
MPE-3	25-May-12	TBD		20.97	
MPE-3	13-Aug-12	TBD		21.34	
MPE-3	19-Nov-12	TBD		21.43	
MPE-3	13-Feb-13	TBD		21.22	
MPE-3	14-May-13	TBD		21.10	
MPE-3	14-Aug-13	TBD		21.52	
MPE-4	03-Mar-10	TBD		19.95	
MPE-4	10-May-10	TBD		19.80	
MPE-4	17-Aug-10	TBD		20.01	
MPE-4	11-Nov-10	TBD		20.20	
MPE-4	25-Feb-11	TBD		20.07	
MPE-4	20-May-11	TBD		19.97	
MPE-4	25-Aug-11	TBD		20.47	
MPE-4	10-Nov-11	TBD		20.43	
MPE-4	29-Feb-12	TBD		20.27	
MPE-4	25-May-12	TBD		20.14	
MPE-4	13-Aug-12	TBD		20.53	
MPE-4	19-Nov-12	TBD		20.61	
MPE-4	13-Feb-13	TBD		20.40	
MPE-4	14-May-13	TBD		20.28	
MPE-4	14-Aug-13	TBD		20.71	
MPE-5	03-Mar-10	TBD	19.30	19.41	0.11
MPE-5	18-May-10	TBD		19.00	
MPE-5	17-Aug-10	TBD	19.32	19.50	0.18
MPE-5	11-Nov-10	TBD	19.54	19.69	0.15
MPE-5	25-Feb-11	TBD	19.42	19.45	0.03
MPE-5	20-May-11	TBD	19.33	19.34	0.01
MPE-5	25-Aug-11	TBD	19.72	19.92	0.20
MPE-5	10-Nov-11	TBD	19.74	19.92	0.18
MPE-5	29-Feb-12	TBD	19.59	19.64	0.05
MPE-5	25-May-12	TBD	19.47	19.63	0.16
MPE-5	13-Aug-12	TBD	19.79	20.20	0.41
MPE-5	19-Nov-12	TBD	19.84	20.45	0.61
MPE-5	13-Feb-13	TBD	19.69	20.01	0.32

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)
MPE-5	14-May-13	TBD	19.59	19.81	0.22
MPE-5	14-Aug-13	TBD	19.92	20.63	0.71
MPE-6	03-Mar-10	TBD		19.66	
MPE-6	10-May-10	TBD		NM	
MPE-6	17-Aug-10	TBD		19.70	
MPE-6	11-Nov-10	TBD		19.91	
MPE-6	01-Mar-11	TBD		19.69	
MPE-6	20-May-11	TBD		19.64	
MPE-6	25-Aug-11	TBD		20.07	
MPE-6	10-Nov-11	TBD	20.09	20.10	0.01
MPE-6	29-Feb-12	TBD		19.87	
MPE-6	25-May-12	TBD	19.83	19.84	0.01
MPE-6	13-Aug-12	TBD	20.20	20.22	0.02
MPE-6	19-Nov-12	TBD	20.28	20.30	0.02
MPE-6	13-Feb-13	TBD	20.08	20.11	0.03
MPE-6	14-May-13	TBD	19.94	20.08	0.14
MPE-6	14-Aug-13	TBD	20.34	20.60	0.26
MPE-7	03-Mar-10	TBD		20.46	
MPE-7	10-May-10	TBD		NM	
MPE-7	17-Aug-10	TBD		20.49	
MPE-7	11-Nov-10	TBD		20.68	
MPE-7	01-Mar-11	TBD		20.54	
MPE-7	20-May-11	TBD		20.49	
MPE-7	25-Aug-11	TBD		20.88	
MPE-7	10-Nov-11	TBD		20.89	
MPE-7	29-Feb-12	TBD		20.73	
MPE-7	21-May-12	TBD		20.66	
MPE-7	13-Aug-12	TBD		20.99	
MPE-7	19-Nov-12	TBD		21.08	
MPE-7	13-Feb-13	TBD		20.89	
MPE-7	14-May-13	TBD		20.76	
MPE-7	14-Aug-13	TBD	21.18	21.20	0.02
MPE-8	03-Mar-10	TBD		21.74	
MPE-8	10-May-10	TBD		21.60	
MPE-8	17-Aug-10	TBD		21.81	
MPE-8	11-Nov-10	TBD		21.98	

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)
MPE-8	01-Mar-11	TBD		21.95	
MPE-8	20-May-11	TBD		21.78	
MPE-8	25-Aug-11	TBD		22.32	
MPE-8	10-Nov-11	TBD		22.19	
MPE-8	29-Feb-12	TBD		22.00	
MPE-8	21-May-12	TBD		21.96	
MPE-8	13-Aug-12	TBD		22.30	
MPE-8	19-Nov-12	TBD		22.37	
MPE-8	13-Feb-13	TBD		22.20	
MPE-8	14-May-13	TBD		22.06	
MPE-8	14-Aug-13	TBD		22.48	
MPE-9	03-Mar-10	TBD		23.44	
MPE-9	10-May-10	TBD		23.29	
MPE-9	17-Aug-10	TBD		23.51	
MPE-9	11-Nov-10	TBD		23.66	
MPE-9	01-Mar-11	TBD		23.49	
MPE-9	20-May-11	TBD		23.43	
MPE-9	25-Aug-11	TBD		23.87	
MPE-9	10-Nov-11	TBD		23.97	
MPE-9	29-Feb-12	TBD		23.68	
MPE-9	21-May-12	TBD		23.66	
MPE-9	13-Aug-12	TBD		24.00	
MPE-9	19-Nov-12	TBD		24.06	
MPE-9	13-Feb-13	TBD		23.89	
MPE-9	14-May-13	TBD		23.76	
MPE-9	14-Aug-13	TBD		24.18	
MPE-10	03-Mar-10	TBD		23.28	
MPE-10	10-May-10	TBD		23.10	
MPE-10	17-Aug-10	TBD		23.34	
MPE-10	11-Nov-10	TBD		23.46	
MPE-10	01-Mar-11	TBD		23.38	
MPE-10	20-May-11	TBD		23.31	
MPE-10	25-Aug-11	TBD		23.71	
MPE-10	10-Nov-11	TBD		23.67	
MPE-10	29-Feb-12	TBD		23.53	
MPE-10	21-May-12	TBD		23.47	
MPE-10	13-Aug-12	TBD		23.82	

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)
MPE-10	19-Nov-12	TBD		23.86	
MPE-10	13-Feb-13	TBD		23.69	
MPE-10	14-May-13	TBD		23.55	
MPE-10	14-Aug-13	TBD		23.99	
MPE-11	03-Mar-10	TBD		21.83	
MPE-11	10-May-10	TBD		21.68	
MPE-11	17-Aug-10	TBD	NM-Roots in Well		
MPE-11	11-Nov-10	TBD	NM-Roots in Well		
MPE-11	01-Mar-11	TBD	NM-Roots in Well		
MPE-11	20-May-11	TBD	NM-Roots in Well		
MPE-11	25-Aug-11	TBD		21.65	
MPE-11	10-Nov-11	TBD		21.66	
MPE-11	29-Feb-12	TBD		21.61	
MPE-11	21-May-12	TBD	NM-Roots in Well		
MPE-11	13-Aug-12	TBD	NM-Root Growth at 21.6'		
MPE-11	19-Nov-12	TBD	NM-Roots in Well		
MPE-11	13-Feb-13	TBD	NM-Root Growth at 21.6'		
MPE-11	14-May-13	TBD	Dry		
MPE-11	14-Aug-13	TBD	NM-Root Growth at 21.6'		
MPE-12	03-Mar-10	TBD		22.34	
MPE-12	10-May-10	TBD		22.20	
MPE-12	17-Aug-10	TBD		22.45	
MPE-12	11-Nov-10	TBD	NM-Roots in Well		
MPE-12	01-Mar-11	TBD	NM-Roots in Well		
MPE-12	20-May-11	TBD	NM-Roots in Well		
MPE-12	25-Aug-11	TBD		22.79	
MPE-12	10-Nov-11	TBD		22.83	
MPE-12	29-Feb-12	TBD		22.59	
MPE-12	21-May-12	TBD		22.57	
MPE-12	13-Aug-12	TBD	NM-Root Growth at 22.7'		
MPE-12	19-Nov-12	TBD	NM-Roots in Well		
MPE-12	13-Feb-13	TBD	NM-Root Growth at 22.5'		
MPE-12	14-May-13	TBD	Dry		
MPE-12	14-Aug-13	TBD	NM-Root Growth at 22.5'		
MPE-13	03-Mar-10	TBD		22.70	
MPE-13	10-May-10	TBD		22.57	

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)
MPE-13	17-Aug-10	TBD	22.78	22.82	0.04
MPE-13	11-Nov-10	TBD	22.90	22.96	0.06
MPE-13	01-Mar-11	TBD		22.82	
MPE-13	20-May-11	TBD		22.73	
MPE-13	25-Aug-11	TBD	23.12	23.24	0.12
MPE-13	10-Nov-11	TBD	23.11	23.18	0.07
MPE-13	29-Feb-12	TBD	22.97	22.99	0.02
MPE-13	21-May-12	TBD	22.91	22.97	0.06
MPE-13	13-Aug-12	TBD	23.22	23.45	0.23
MPE-13	19-Nov-12	TBD		23.23	
MPE-13	13-Feb-13	TBD	23.10	23.26	0.16
MPE-13	14-May-13	TBD	23.00	23.03	0.03
MPE-13	14-Aug-13	TBD	23.33	23.93	0.60
MPE-14	03-Mar-10	TBD		21.80	
MPE-14	10-May-10	TBD		21.65	
MPE-14	17-Aug-10	TBD	21.84	21.85	0.01
MPE-14	11-Nov-10	TBD		22.00	
MPE-14	01-Mar-11	TBD		21.86	
MPE-14	20-May-11	TBD		21.90	
MPE-14	25-Aug-11	TBD		22.23	
MPE-14	10-Nov-11	TBD	22.20	22.34	0.14
MPE-14	29-Feb-12	TBD		22.05	
MPE-14	21-May-12	TBD		22.01	
MPE-14	13-Aug-12	TBD	22.30	22.55	0.25
MPE-14	19-Nov-12	TBD	23.25	23.66	0.41
MPE-14	13-Feb-13	TBD	22.22	22.26	0.04
MPE-14	14-May-13	TBD		22.14	
MPE-14	14-Aug-13	TBD	22.50	22.63	0.13
MPE-16	03-Mar-10	TBD		19.92	
MPE-16	10-May-10	TBD		19.78	
MPE-16	17-Aug-10	TBD		19.96	
MPE-16	11-Nov-10	TBD		20.14	
MPE-16	01-Mar-11	TBD		20.21	
MPE-16	20-May-11	TBD		19.97	
MPE-16	25-Aug-11	TBD		20.34	
MPE-16	10-Nov-11	TBD		20.35	
MPE-16	29-Feb-12	TBD		20.19	

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)
MPE-16	21-May-12	TBD		20.12	
MPE-16	13-Aug-12	TBD		20.48	
MPE-16	19-Nov-12	TBD		20.55	
MPE-16	13-Feb-13	TBD		20.36	
MPE-16	14-May-13	TBD		20.24	
MPE-16	14-Aug-13	TBD		20.65	
MPE-17	03-Mar-10	TBD		20.11	
MPE-17	10-May-10	TBD		19.98	
MPE-17	17-Aug-10	TBD		20.04	
MPE-17	11-Nov-10	TBD		20.34	
MPE-17	01-Mar-11	TBD		20.21	
MPE-17	20-May-11	TBD		20.16	
MPE-17	25-Aug-11	TBD		20.49	
MPE-17	10-Nov-11	TBD		20.54	
MPE-17	29-Feb-12	TBD		20.49	
MPE-17	23-May-12	TBD	20.34	20.36	0.02
MPE-17	13-Aug-12	TBD	20.64	20.65	0.01
MPE-17	19-Nov-12	TBD	20.73	20.74	0.01
MPE-17	13-Feb-13	TBD		20.54	
MPE-17	14-May-13	TBD	20.44	20.46	0.02
MPE-17	14-Aug-13	TBD	20.82	20.86	0.04
MPE-18	03-Mar-10	TBD		19.23	
MPE-18	10-May-10	TBD		NM	
MPE-18	17-Aug-10	TBD	19.27	19.28	0.01
MPE-18	11-Nov-10	TBD		19.34	
MPE-18	01-Mar-11	TBD		19.46	
MPE-18	20-May-11	TBD		19.35	
MPE-18	25-Aug-11	TBD		19.46	
MPE-18	10-Nov-11	TBD		19.67	
MPE-18	29-Feb-12	TBD		19.48	
MPE-18	23-May-12	TBD		19.49	
MPE-18	13-Aug-12	TBD		19.78	
MPE-18	19-Nov-12	TBD		19.86	
MPE-18	13-Feb-13	TBD		19.67	
MPE-18	14-May-13	TBD		19.56	
MPE-18	14-Aug-13	TBD		19.96	

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

<i>Well ID</i>	<i>Date</i>	<i>T.O.C. (ft amsl)</i>	<i>Depth to Product (ft)</i>	<i>Depth to Water (ft)</i>	<i>NAPL Thickness (ft)</i>
MPE-19	03-Mar-10	TBD		19.02	
MPE-19	10-May-10	TBD		18.86	
MPE-19	17-Aug-10	TBD		19.06	
MPE-19	11-Nov-10	TBD		19.25	
MPE-19	01-Mar-11	TBD		19.05	
MPE-19	20-May-11	TBD		19.02	
MPE-19	25-Aug-11	TBD		19.42	
MPE-19	10-Nov-11	TBD		19.47	
MPE-19	29-Feb-12	TBD		19.28	
MPE-19	23-May-12	TBD		19.23	
MPE-19	13-Aug-12	TBD		19.55	
MPE-19	19-Nov-12	TBD		19.62	
MPE-19	13-Feb-13	TBD		19.41	
MPE-19	14-May-13	TBD		19.31	
MPE-19	14-Aug-13	TBD		19.73	
Phase 2 Wells					
MPE-20	03-Mar-10	TBD		18.72	
MPE-20	10-May-10	TBD		18.58	
MPE-20	17-Aug-10	TBD		18.75	
MPE-20	11-Nov-10	TBD		18.96	
MPE-20	01-Mar-11	TBD		18.87	
MPE-20	20-May-11	TBD		18.79	
MPE-20	25-Aug-11	TBD		19.14	
MPE-20	10-Nov-11	TBD		19.17	
MPE-20	29-Feb-12	TBD		18.98	
MPE-20	23-May-12	TBD		18.96	
MPE-20	13-Aug-12	TBD		19.25	
MPE-20	19-Nov-12	TBD		19.34	
MPE-20	13-Feb-13	TBD		19.14	
MPE-20	14-May-13	TBD		19.09	
MPE-20	14-Aug-13	TBD		19.45	
MPE-21	03-Mar-10	TBD	19.88	19.99	0.11
MPE-21	18-May-10	TBD		19.50	
MPE-21	09-Jun-10	TBD		19.75	
MPE-21	17-Aug-10	TBD	19.90	19.91	0.01
MPE-21	11-Nov-10	TBD	20.12	20.21	0.09
MPE-21	01-Mar-11	TBD		19.99	

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)
MPE-21	20-May-11	TBD		19.93	
MPE-21	25-Aug-11	TBD	20.32	20.37	0.05
MPE-21	10-Nov-11	TBD		20.41	
MPE-21	29-Feb-12	TBD	20.13	20.42	0.29
MPE-21	23-May-12	TBD	20.08	20.45	0.37
MPE-21	13-Aug-12	TBD	20.33	20.85	0.52
MPE-21	19-Nov-12	TBD	20.28	21.55	1.27
MPE-21	13-Feb-13	TBD	20.15	21.16	1.01
MPE-21	14-May-13	TBD	20.10	21.05	0.95
MPE-21	14-Aug-13	TBD	20.36	21.75	1.39
MPE-22	03-Mar-10	TBD	20.73	20.81	0.08
MPE-22	18-May-10	TBD		NM	
MPE-22	09-Jun-10	TBD	20.4	20.90	0.50
MPE-22	16-Jun-10	TBD		20.53	
MPE-22	17-Aug-10	TBD	20.71	20.88	0.17
MPE-22	11-Nov-10	TBD	20.94	20.95	0.01
MPE-22	01-Mar-11	TBD		20.84	
MPE-22	20-May-11	TBD		20.73	
MPE-22	25-Aug-11	TBD	21.11	21.15	0.04
MPE-22	10-Nov-11	TBD		21.28	
MPE-22	29-Feb-12	TBD		20.97	
MPE-22	23-May-12	TBD		20.96	
MPE-22	13-Aug-12	TBD	21.18	21.56	0.38
MPE-22	19-Nov-12	TBD	21.22	21.84	0.62
MPE-22	13-Feb-13	TBD	21.10	21.37	0.27
MPE-22	14-May-13	TBD	21.02	21.33	0.31
MPE-22	14-Aug-13	TBD	21.26	22.20	0.94
MPE-23	03-Mar-10	TBD		21.10	
MPE-23	10-May-10	TBD		20.97	
MPE-23	17-Aug-10	TBD		21.14	
MPE-23	11-Nov-10	TBD		21.33	
MPE-23	01-Mar-11	TBD		21.29	
MPE-23	20-May-11	TBD		20.80	
MPE-23	25-Aug-11	TBD		20.33	
MPE-23	10-Nov-11	TBD		20.25	
MPE-23	29-Feb-12	TBD		20.09	
MPE-23	23-May-12	TBD		20.96	

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)
MPE-23	13-Aug-12	TBD		21.28	
MPE-23	19-Nov-12	TBD		21.41	
MPE-23	13-Feb-13	TBD		21.18	
MPE-23	14-May-13	TBD		21.09	
MPE-23	14-Aug-13	TBD		21.46	
MPE-24	03-Mar-10	TBD		22.69	
MPE-24	10-May-10	TBD		22.53	
MPE-24	17-Aug-10	TBD		22.70	
MPE-24	11-Nov-10	TBD		22.88	
MPE-24	01-Mar-11	TBD		22.78	
MPE-24	20-May-11	TBD		22.64	
MPE-24	25-Aug-11	TBD		23.09	
MPE-24	10-Nov-11	TBD		23.12	
MPE-24	29-Feb-12	TBD		22.98	
MPE-24	23-May-12	TBD		22.90	
MPE-24	13-Aug-12	TBD		23.20	
MPE-24	19-Nov-12	TBD		23.27	
MPE-24	14-May-13	TBD		23.00	
MPE-24	14-Aug-13	TBD	23.36	23.51	0.15
MPE-25	03-Mar-10	TBD		23.02	
MPE-25	10-May-10	TBD		22.87	
MPE-25	17-Aug-10	TBD		23.12	
MPE-25	11-Nov-10	TBD		23.23	
MPE-25	01-Mar-11	TBD		23.08	
MPE-25	20-May-11	TBD		22.99	
MPE-25	25-Aug-11	TBD		23.55	
MPE-25	10-Nov-11	TBD		23.54	
MPE-25	29-Feb-12	TBD		23.26	
MPE-25	23-May-12	TBD		23.23	
MPE-25	13-Aug-12	TBD		23.59	
MPE-25	19-Nov-12	TBD		23.62	
MPE-25	13-Feb-13	TBD		23.45	
MPE-25	14-May-13	TBD		23.35	
MPE-25	14-Aug-13	TBD	23.75	23.77	0.02
MPE-26	03-Mar-10	TBD	22.75	23.41	0.66
MPE-26	18-May-10	TBD	22.58	23.38	0.80

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)
MPE-26	28-May-10	TBD	22.55	23.42	0.87
MPE-26	09-Jun-10	TBD	22.56	23.73	1.17
MPE-26	17-Aug-10	TBD	22.94	23.34	0.40
MPE-26	11-Nov-10	TBD	23.04	23.59	0.55
MPE-26	03-Mar-11	TBD	22.96	23.38	0.42
MPE-26	20-May-11	TBD	22.82	22.86	0.04
MPE-26	25-Aug-11	TBD	23.29	23.99	0.70
MPE-26	10-Nov-11	TBD	23.17	24.14	0.97
MPE-26	29-Feb-12	TBD	22.89	23.95	1.06
MPE-26	23-May-12	TBD	23.00	23.28	0.28
MPE-26	13-Aug-12	TBD	23.28	24.25	0.97
MPE-26	19-Nov-12	TBD	23.22	24.29	1.07
MPE-26	13-Feb-13	TBD	23.10	24.50	1.40
MPE-26	14-May-13	TBD	23.02	23.86	0.84
MPE-26	14-Aug-13	TBD	23.42	24.45	1.03
MPE-27	03-Mar-10	TBD		21.92	
MPE-27	10-May-10	TBD		21.76	
MPE-27	17-Aug-10	TBD		22.03	
MPE-27	11-Nov-10	TBD		22.06	
MPE-27	03-Mar-11	TBD	NM-Roots in Well		
MPE-27	20-May-11	TBD	NM-Roots in Well		
MPE-27	25-Aug-11	TBD		21.42	
MPE-27	10-Nov-11	TBD		21.33	
MPE-27	29-Feb-12	TBD		22.06	
MPE-27	23-May-12	TBD		22.15	
MPE-27	13-Aug-12	TBD	NM-Root Growth at 22.2'		
MPE-27	19-Nov-12	TBD	NM-Roots in Well		
MPE-27	13-Feb-13	TBD	NM-Root Growth at 22'		
MPE-27	14-May-13	TBD	Dry		
MPE-27	14-Aug-13	TBD	NM-Root Growth at 22'		
MPE-28	03-Mar-10	TBD		21.54	
MPE-28	10-May-10	TBD		21.39	
MPE-28	17-Aug-10	TBD		21.70	
MPE-28	11-Nov-10	TBD	NM-Roots in Well		
MPE-28	03-Mar-11	TBD	NM-Roots in Well		
MPE-28	20-May-11	TBD	NM-Roots in Well		
MPE-28	25-Aug-11	TBD		22.19	

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

<i>Well ID</i>	<i>Date</i>	<i>T.O.C. (ft amsl)</i>	<i>Depth to Product (ft)</i>	<i>Depth to Water (ft)</i>	<i>NAPL Thickness (ft)</i>
MPE-28	10-Nov-11	TBD		21.93	
MPE-28	29-Feb-12	TBD		21.74	
MPE-28	23-May-12	TBD		21.84	
MPE-28	13-Aug-12	TBD		22.18	
MPE-28	19-Nov-12	TBD	NM-Roots in Well		
MPE-28	13-Feb-13	TBD	NM-Root Growth at 22'		
MPE-28	14-May-13	TBD	Dry		
MPE-28	14-Aug-13	TBD	NM-Root Growth at 22'		
MPE-29	03-Mar-10	TBD		20.54	
MPE-29	10-May-10	TBD		20.39	
MPE-29	17-Aug-10	TBD		20.73	
MPE-29	11-Nov-10	TBD		21.72	
MPE-29	03-Mar-11	TBD		21.45	
MPE-29	19-May-11	TBD		20.49	
MPE-29	25-Aug-11	TBD		21.03	
MPE-29	10-Nov-11	TBD		20.93	
MPE-29	29-Feb-12	TBD		20.87	
MPE-29	23-May-12	TBD		20.84	
MPE-29	13-Aug-12	TBD		21.11	
MPE-29	19-Nov-12	TBD	NM-Roots in Well		
MPE-29	13-Feb-13	TBD	NM-Root Growth at 21'		
MPE-29	14-May-13	TBD	Dry		
MPE-29	14-Aug-13	TBD	NM-Root Growth at 20.6'		
MPE-30	03-Mar-10	TBD		21.19	
MPE-30	10-May-10	TBD		20.03	
MPE-30	17-Aug-10	TBD		21.33	
MPE-30	12-Nov-10	TBD		21.36	
MPE-30	03-Mar-11	TBD		20.99	
MPE-30	19-May-11	TBD		21.18	
MPE-30	25-Aug-11	TBD		21.75	
MPE-30	10-Nov-11	TBD		21.68	
MPE-30	29-Feb-12	TBD		21.36	
MPE-30	23-May-12	TBD		21.46	
MPE-30	13-Aug-12	TBD	NM-Root Growth at 21.4'		
MPE-30	19-Nov-12	TBD	NM-Roots in Well		
MPE-30	13-Feb-13	TBD	NM-Root Growth at 21'		
MPE-30	14-May-13	TBD	Dry		

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)
MPE-30	14-Aug-13	TBD	NM-Root Growth at 21.4'		
MPE-31	03-Mar-10	TBD		22.46	
MPE-31	10-May-10	TBD		22.30	
MPE-31	17-Aug-10	TBD		22.57	
MPE-31	12-Nov-10	TBD		22.64	
MPE-31	03-Mar-11	TBD		22.45	
MPE-31	19-May-11	TBD		22.45	
MPE-31	25-Aug-11	TBD		22.95	
MPE-31	10-Nov-11	TBD		22.87	
MPE-31	29-Feb-12	TBD		22.66	
MPE-31	23-May-12	TBD		22.71	
MPE-31	13-Aug-12	TBD		23.00	
MPE-31	19-Nov-12	TBD	NM-Roots in Well		
MPE-31	21-Feb-13	TBD	NM-Root Growth at 22.6'		
MPE-31	14-May-13	TBD		22.80	
MPE-31	14-Aug-13	TBD	NM-Root Growth at 22.6'		
MPE-33	03-Mar-10	TBD		22.34	
MPE-33	10-May-10	TBD		22.19	
MPE-33	17-Aug-10	TBD		22.39	
MPE-33	12-Nov-10	TBD		22.54	
MPE-33	03-Mar-11	TBD		22.61	
MPE-33	19-May-11	TBD		22.34	
MPE-33	25-Aug-11	TBD		22.78	
MPE-33	10-Nov-11	TBD		22.78	
MPE-33	29-Feb-12	TBD	22.54	22.73	0.19
MPE-33	23-May-12	TBD	22.51	22.59	0.08
MPE-33	13-Aug-12	TBD	22.73	23.41	0.68
MPE-33	19-Nov-12	TBD	21.80	22.36	0.56
MPE-33	21-Feb-13	TBD	22.66	23.02	0.36
MPE-33	14-May-13	TBD	22.60	22.84	0.24
MPE-33	14-Aug-13	TBD	22.91	23.50	0.59
MPE-34	03-Mar-10	TBD		22.16	
MPE-34	10-May-10	TBD		22.01	
MPE-34	17-Aug-10	TBD		22.20	
MPE-34	12-Nov-10	TBD		22.37	
MPE-34	03-Mar-11	TBD		22.41	

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

<i>Well ID</i>	<i>Date</i>	<i>T.O.C. (ft amsl)</i>	<i>Depth to Product (ft)</i>	<i>Depth to Water (ft)</i>	<i>NAPL Thickness (ft)</i>
MPE-34	19-May-11	TBD		22.19	
MPE-34	25-Aug-11	TBD		22.60	
MPE-34	10-Nov-11	TBD		22.67	
MPE-34	29-Feb-12	TBD		22.44	
MPE-34	23-May-12	TBD		22.38	
MPE-34	13-Aug-12	TBD		22.66	
MPE-34	19-Nov-12	TBD	22.61	23.25	0.64
MPE-34	21-Feb-13	TBD	22.45	22.95	0.50
MPE-34	14-May-13	TBD	22.40	22.86	0.46
MPE-34	14-Aug-13	TBD	22.66	23.62	0.96
MPE-35	24-Feb-10	TBD	20.71	20.95	0.24
MPE-35	03-Mar-10	TBD	20.64	20.98	0.34
MPE-35	18-May-10	TBD	20.34	20.67	0.33
MPE-35	09-Jun-10	TBD	20.26	20.79	0.53
MPE-35	16-Jun-10	TBD		20.46	
MPE-35	17-Aug-10	TBD	NM-Attached to RSI Unit		
MPE-35	12-Nov-10	TBD	20.86	21.27	0.41
MPE-35	03-Mar-11	TBD	20.87	21.25	0.38
MPE-35	19-May-11	TBD		20.74	
MPE-35	25-Aug-11	TBD	21.05	21.59	0.54
MPE-35	10-Nov-11	TBD	21.07	21.70	0.63
MPE-35	29-Feb-12	TBD	21.00	21.09	0.09
MPE-35	23-May-12	TBD	20.88	21.12	0.24
MPE-35	13-Aug-12	TBD	21.05	21.95	0.90
MPE-35	19-Nov-12	TBD	21.13	22.00	0.87
MPE-35	21-Feb-13	TBD	21.05	21.38	0.33
MPE-35	14-May-13	TBD	21.02	21.28	0.26
MPE-35	14-Aug-13	TBD	21.22	22.19	0.97
MPE-36	03-Mar-10	TBD		19.91	
MPE-36	10-May-10	TBD		NM	
MPE-36	16-Jun-10	TBD		19.72	
MPE-36	17-Aug-10	TBD		19.94	
MPE-36	12-Nov-10	TBD		20.11	
MPE-36	03-Mar-11	TBD		19.92	
MPE-36	19-May-11	TBD		19.98	
MPE-36	25-Aug-11	TBD		20.27	
MPE-36	10-Nov-11	TBD	20.26	20.66	0.40

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)
MPE-36	29-Feb-12	TBD	20.13	20.37	0.24
MPE-36	23-May-12	TBD	20.07	20.21	0.14
MPE-36	13-Aug-12	TBD	20.32	20.72	0.40
MPE-36	19-Nov-12	TBD	20.35	20.97	0.62
MPE-36	21-Feb-13	TBD	20.23	20.53	0.30
MPE-36	14-May-13	TBD	20.22	20.40	0.18
MPE-36	14-Aug-13	TBD	20.44	21.15	0.71
MPE-37	03-Mar-10	TBD	20.11	20.67	0.56
MPE-37	18-May-10	TBD		19.98	
MPE-37	16-Jun-10	TBD		20.07	
MPE-37	17-Aug-10	TBD		20.31	
MPE-37	12-Nov-10	TBD		20.51	
MPE-37	03-Mar-11	TBD		20.33	
MPE-37	19-May-11	TBD		20.37	
MPE-37	25-Aug-11	TBD		20.33	
MPE-37	10-Nov-11	TBD	20.68	20.7	0.02
MPE-37	29-Feb-12	TBD		20.52	
MPE-37	23-May-12	TBD		20.49	
MPE-37	13-Aug-12	TBD		20.76	
MPE-37	19-Nov-12	TBD	20.84	20.88	0.04
MPE-37	21-Feb-13	TBD		20.65	
MPE-37	14-May-13	TBD		20.65	
MPE-37	14-Aug-13	TBD	20.85	21.42	0.57
MPE-38	03-Mar-10	TBD	19.80	19.83	0.03
MPE-38	18-May-10	TBD	19.49	20.40	0.91
MPE-38	09-Jun-10	TBD	19.51	20.31	0.80
MPE-38	16-Jun-10	TBD	19.61	20.30	0.69
MPE-38	17-Aug-10	TBD	NM-Attached to RSI Unit		
MPE-38	12-Nov-10	TBD	19.99	20.59	0.60
MPE-38	03-Mar-11	TBD	20.06	20.63	0.57
MPE-38	19-May-11	TBD		19.83	
MPE-38	25-Aug-11	TBD	20.18	20.26	0.08
MPE-38	10-Nov-11	TBD	20.20	20.28	0.08
MPE-38	29-Feb-12	TBD	20.03	20.05	0.02
MPE-38	23-May-12	TBD	19.96	20.05	0.09
MPE-38	13-Aug-12	TBD	20.24	20.40	0.16
MPE-38	19-Nov-12	TBD	20.34	20.40	0.06

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

<i>Well ID</i>	<i>Date</i>	<i>T.O.C. (ft amsl)</i>	<i>Depth to Product (ft)</i>	<i>Depth to Water (ft)</i>	<i>NAPL Thickness (ft)</i>
MPE-38	21-Feb-13	TBD	20.12	20.13	0.01
MPE-38	14-May-13	TBD	20.13	20.15	0.02
MPE-38	14-Aug-13	TBD	20.45	20.52	0.07
Phase 3 Wells					
MPE-39	18-Jun-10	TBD		17.29	
MPE-39	17-Aug-10	TBD		17.44	
MPE-39	12-Nov-10	TBD		17.64	
MPE-39	03-Mar-11	TBD		17.51	
MPE-39	19-May-11	TBD		17.49	
MPE-39	25-Aug-11	TBD		17.78	
MPE-39	10-Nov-11	TBD		17.83	
MPE-39	29-Feb-12	TBD		17.65	
MPE-39	23-May-12	TBD		17.63	
MPE-39	13-Aug-12	TBD		17.91	
MPE-39	19-Nov-12	TBD		17.99	
MPE-39	21-Feb-13	TBD		17.88	
MPE-39	14-May-13	TBD		17.81	
MPE-39	14-Aug-13	TBD		18.13	
MPE-40	18-Jun-10	TBD		17.46	
MPE-40	17-Aug-10	TBD		17.63	
MPE-40	12-Nov-10	TBD		17.83	
MPE-40	03-Mar-11	TBD		17.72	
MPE-40	19-May-11	TBD		17.64	
MPE-40	25-Aug-11	TBD		17.98	
MPE-40	15-Nov-11	TBD		18.06	
MPE-40	29-Feb-12	TBD		17.85	
MPE-40	23-May-12	TBD		18.50	
MPE-40	13-Aug-12	TBD		18.12	
MPE-40	19-Nov-12	TBD		18.21	
MPE-40	21-Feb-13	TBD		17.99	
MPE-40	14-May-13	TBD		18.01	
MPE-40	14-Aug-13	TBD		18.34	
MPE-41	18-Jun-10	TBD		18.14	
MPE-41	17-Aug-10	TBD	NM-Attached to RSI Unit		
MPE-41	12-Nov-10	TBD		18.51	
MPE-41	03-Mar-11	TBD		18.57	

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)
MPE-41	19-May-11	TBD		18.37	
MPE-41	25-Aug-11	TBD		18.66	
MPE-41	15-Nov-11	TBD		18.74	
MPE-41	29-Feb-12	TBD		18.52	
MPE-41	23-May-12	TBD		19.25	
MPE-41	13-Aug-12	TBD		18.78	
MPE-41	19-Nov-12	TBD		18.86	
MPE-41	21-Feb-13	TBD		18.67	
MPE-41	14-May-13	TBD		18.68	
MPE-41	14-Aug-13	TBD		19.00	
MPE-42	18-Jun-10	TBD		18.90	
MPE-42	17-Aug-10	TBD	NM-Attached to RSI Unit		
MPE-42	12-Nov-10	TBD		19.25	
MPE-42	03-Mar-11	TBD		19.30	
MPE-42	19-May-11	TBD		19.11	
MPE-42	25-Aug-11	TBD		19.48	
MPE-42	15-Nov-11	TBD		19.46	
MPE-42	29-Feb-12	TBD		19.25	
MPE-42	23-May-12	TBD		20.09	
MPE-42	13-Aug-12	TBD		19.54	
MPE-42	19-Nov-12	TBD	19.46	20.28	0.82
MPE-42	21-Feb-13	TBD	19.28	20.00	0.72
MPE-42	14-May-13	TBD	19.24	20.20	0.96
MPE-42	14-Aug-13	TBD	19.42	21.00	1.58
MPE-43	18-Jun-10	TBD		19.75	
MPE-43	17-Aug-10	TBD	NM-Attached to RSI Unit		
MPE-43	12-Nov-10	TBD		20.10	
MPE-43	03-Mar-11	TBD	NM-Attached to RSI Unit		
MPE-43	19-May-11	TBD		19.95	
MPE-43	25-Aug-11	TBD		20.25	
MPE-43	15-Nov-11	TBD		20.27	
MPE-43	29-Feb-12	TBD		20.16	
MPE-43	23-May-12	TBD	20.18	20.80	0.62
MPE-43	13-Aug-12	TBD		20.38	
MPE-43	19-Nov-12	TBD		20.47	
MPE-43	21-Feb-13	TBD		20.27	
MPE-43	14-May-13	TBD		20.28	

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)
MPE-43	14-Aug-13	TBD		20.59	
MPE-44	18-Jun-10	TBD		19.95	
MPE-44	17-Aug-10	TBD	NM-Attached to RSI Unit		
MPE-44	12-Nov-10	TBD		20.29	
MPE-44	03-Mar-11	TBD	NM-Attached to RSI Unit		
MPE-44	19-May-11	TBD	20.09	20.10	0.01
MPE-44	25-Aug-11	TBD	20.66	20.70	0.04
MPE-44	15-Nov-11	TBD	20.37	21.49	1.12
MPE-44	29-Feb-12	TBD	20.24	21.20	0.96
MPE-44	23-May-12	TBD	20.41	20.50	0.09
MPE-44	13-Aug-12	TBD	20.36	21.30	0.94
MPE-44	19-Nov-12	TBD	20.40	21.54	1.14
MPE-44	21-Feb-13	TBD	20.30	21.08	0.78
MPE-44	14-May-13	TBD	20.30	20.95	0.65
MPE-44	14-Aug-13	TBD	20.53	21.59	1.06
MPE-45	18-Jun-10	TBD		20.05	sheen
MPE-45	17-Aug-10	TBD	NM-Attached to RSI Unit		
MPE-45	12-Nov-10	TBD		20.38	
MPE-45	03-Mar-11	TBD	NM-Attached to RSI Unit		
MPE-45	19-May-11	TBD		20.22	
MPE-45	25-Aug-11	TBD	20.63	20.97	0.34
MPE-45	15-Nov-11	TBD	20.66	21.23	0.57
MPE-45	29-Feb-12	TBD	20.45	20.77	0.32
MPE-45	23-May-12	TBD		21.52	
MPE-45	13-Aug-12	TBD	20.60	21.19	0.59
MPE-45	19-Nov-12	TBD	20.63	21.41	0.78
MPE-45	21-Feb-13	TBD	20.52	20.86	0.34
MPE-45	14-May-13	TBD	20.52	20.62	0.10
MPE-45	14-Aug-13	TBD	20.70	21.80	1.10
MPE-46	18-Jun-10	TBD		21.16	
MPE-46	17-Aug-10	TBD	NM-Attached to RSI Unit		
MPE-46	12-Nov-10	TBD		21.46	
MPE-46	03-Mar-11	TBD	NM-Attached to RSI Unit		
MPE-46	19-May-11	TBD		21.28	
MPE-46	25-Aug-11	TBD		21.72	
MPE-46	15-Nov-11	TBD		21.53	

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)
MPE-46	29-Feb-12	TBD		21.25	
MPE-46	23-May-12	TBD	20.95	21.58	0.63
MPE-46	13-Aug-12	TBD		21.81	
MPE-46	19-Nov-12	TBD		21.82	
MPE-46	21-Feb-13	TBD		21.64	
MPE-46	14-May-13	TBD		21.58	
MPE-46	14-Aug-13	TBD		21.98	
MPE-47	18-Jun-10	TBD		20.68	
MPE-47	17-Aug-10	TBD		20.92	
MPE-47	12-Nov-10	TBD	20.87	21.28	0.41
MPE-47	03-Mar-11	TBD	20.80	21.29	0.49
MPE-47	19-May-11	TBD	20.73	20.75	0.02
MPE-47	25-Aug-11	TBD	21.13	22.25	1.12
MPE-47	15-Nov-11	TBD	21.00	21.82	0.82
MPE-47	29-Feb-12	TBD	20.93	21.19	0.26
MPE-47	23-May-12	TBD		19.24	
MPE-47	13-Aug-12	TBD	21.15	22.42	1.27
MPE-47	19-Nov-12	TBD	21.12	22.15	1.03
MPE-47	21-Feb-13	TBD	21.01	21.60	0.59
MPE-47	14-May-13	TBD	20.97	21.50	0.53
MPE-47	14-Aug-13	TBD	21.29	22.65	1.36
MPE-48	18-Jun-10	TBD		19.94	
MPE-48	17-Aug-10	TBD		20.22	
MPE-48	12-Nov-10	TBD		20.11	
MPE-48	03-Mar-11	TBD		20.16	
MPE-48	19-May-11	TBD		19.91	
MPE-48	25-Aug-11	TBD		20.55	
MPE-48	15-Nov-11	TBD		20.24	
MPE-48	29-Feb-12	TBD		20.14	
MPE-48	23-May-12	TBD		19.52	
MPE-48	13-Aug-12	TBD		20.55	
MPE-48	19-Nov-12	TBD	NM-Roots in Well		
MPE-48	21-Feb-13	TBD	NM-Root Growth at 20'		
MPE-48	14-May-13	TBD	Dry		
MPE-48	14-Aug-13	TBD	NM-Root Growth at 20'		
MPE-49	18-Jun-10	TBD		19.13	

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)
MPE-49	17-Aug-10	TBD		19.44	
MPE-49	12-Nov-10	TBD		19.32	
MPE-49	03-Mar-11	TBD		19.35	
MPE-49	25-May-11	TBD		19.08	
MPE-49	25-Aug-11	TBD		19.80	
MPE-49	15-Nov-11	TBD		19.59	
MPE-49	29-Feb-12	TBD		19.34	
MPE-49	23-May-12	TBD	20.56	20.82	0.26
MPE-49	13-Aug-12	TBD		19.98	
MPE-49	19-Nov-12	TBD	NM-Roots in Well		
MPE-49	21-Feb-13	TBD		19.49	
MPE-49	14-May-13	TBD		19.45	
MPE-49	14-Aug-13	TBD	NM-Root Growth at 20'		
MPE-50	18-Jun-10	TBD		20.24	
MPE-50	17-Aug-10	TBD	NM-Attached to RSI Unit		
MPE-50	12-Nov-10	TBD		20.49	
MPE-50	03-Mar-11	TBD	NM-Attached to RSI Unit		
MPE-50	25-May-11	TBD		20.39	
MPE-50	25-Aug-11	TBD		20.90	
MPE-50	15-Nov-11	TBD	20.65	21.02	0.37
MPE-50	29-Feb-12	TBD	20.52	20.75	0.23
MPE-50	23-May-12	TBD		21.01	
MPE-50	13-Aug-12	TBD	20.89	21.26	0.37
MPE-50	19-Nov-12	TBD	20.86	21.13	0.27
MPE-50	21-Feb-13	TBD	20.63	21.10	0.47
MPE-50	14-May-13	TBD	20.63	21.08	0.45
MPE-50	14-Aug-13	TBD	21.04	21.60	0.56
MPE-51	18-Jun-10	TBD		20.70	
MPE-51	17-Aug-10	TBD		20.68	
MPE-51	12-Nov-10	TBD		20.99	
MPE-51	03-Mar-11	TBD		21.04	
MPE-51	25-May-11	TBD		20.80	
MPE-51	25-Aug-11	TBD		21.27	
MPE-51	15-Nov-11	TBD		21.21	
MPE-51	29-Feb-12	TBD		21.05	
MPE-51	25-May-12	TBD	20.74	21.24	0.50
MPE-51	13-Aug-12	TBD		21.30	

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)
MPE-51	20-Nov-12	TBD		21.35	
MPE-51	21-Feb-13	TBD		21.17	
MPE-51	14-May-13	TBD		21.16	
MPE-51	14-Aug-13	TBD		21.48	
MPE-52	18-Jun-10	TBD		20.49	
MPE-52	17-Aug-10	TBD		20.64	
MPE-52	12-Nov-10	TBD		20.84	
MPE-52	03-Mar-11	TBD		20.70	
MPE-52	25-May-11	TBD		20.69	
MPE-52	25-Aug-11	TBD	20.97	21.23	0.26
MPE-52	15-Nov-11	TBD	20.92	21.34	0.42
MPE-52	29-Feb-12	TBD	20.73	21.13	0.40
MPE-52	25-May-12	TBD	19.49	19.93	0.44
MPE-52	13-Aug-12	TBD	21.04	21.46	0.42
MPE-52	20-Nov-12	TBD	21.08	21.62	0.54
MPE-52	21-Feb-13	TBD	20.93	21.10	0.17
MPE-52	14-May-13	TBD	20.97	21.06	0.09
MPE-52	14-Aug-13	TBD	21.15	21.91	0.76
MPE-53	18-Jun-10	TBD		19.23	
MPE-53	17-Aug-10	TBD		19.38	
MPE-53	12-Nov-10	TBD		19.55	
MPE-53	03-Mar-11	TBD		19.42	
MPE-53	25-May-11	TBD	19.29	19.74	0.45
MPE-53	25-Aug-11	TBD	19.76	20.74	0.98
MPE-53	15-Nov-11	TBD	19.65	20.75	1.10
MPE-53	29-Feb-12	TBD	19.47	20.13	0.66
MPE-53	25-May-12	TBD	19.22	19.33	0.11
MPE-53	14-Aug-12	TBD	19.70	20.53	0.83
MPE-53	20-Nov-12	TBD	19.75	20.66	0.91
MPE-53	21-Feb-13	TBD	19.62	20.18	0.56
MPE-53	14-May-13	TBD	19.68	20.06	0.38
MPE-53	14-Aug-13	TBD	19.85	20.95	1.10
MPE-54	18-Jun-10	TBD		18.85	
MPE-54	17-Aug-10	TBD		19.02	
MPE-54	12-Nov-10	TBD		19.19	
MPE-54	03-Mar-11	TBD		19.15	

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)
MPE-54	25-May-11	TBD		19.23	
MPE-54	25-Aug-11	TBD	19.38	19.88	0.50
MPE-54	15-Nov-11	TBD	19.47	20.03	0.56
MPE-54	29-Feb-12	TBD	19.26	19.35	0.09
MPE-54	25-May-12	TBD		18.71	
MPE-54	14-Aug-12	TBD	19.40	20.18	0.78
MPE-54	20-Nov-12	TBD	19.45	20.31	0.86
MPE-54	21-Feb-13	TBD	19.35	19.77	0.42
MPE-54	14-May-13	TBD	19.42	19.69	0.27
MPE-54	14-Aug-13	TBD	19.58	20.64	1.06
MPE-55	18-Jun-10	TBD		18.36	
MPE-55	17-Aug-10	TBD		18.51	
MPE-55	12-Nov-10	TBD		18.70	
MPE-55	03-Mar-11	TBD		18.61	
MPE-55	25-May-11	TBD		18.52	
MPE-55	25-Aug-11	TBD		18.86	
MPE-55	15-Nov-11	TBD		18.91	
MPE-55	29-Feb-12	TBD		18.73	
MPE-55	25-May-12	TBD		14.14	
MPE-55	14-Aug-12	TBD		19.00	
MPE-55	20-Nov-12	TBD		19.06	
MPE-55	21-Feb-13	TBD		18.87	
MPE-55	14-May-13	TBD		18.93	
MPE-55	14-Aug-13	TBD		19.22	
MPE-56	18-Jun-10	TBD		13.80	
MPE-56	17-Aug-10	TBD		13.94	
MPE-56	12-Nov-10	TBD		14.14	
MPE-56	03-Mar-11	TBD		14.21	
MPE-56	19-May-11	TBD		14.01	
MPE-56	25-Aug-11	TBD		14.28	
MPE-56	15-Nov-11	TBD		14.30	
MPE-56	29-Feb-12	TBD		14.22	
MPE-56	25-May-12	TBD		14.83	
MPE-56	14-Aug-12	TBD		14.41	
MPE-56	20-Nov-12	TBD		14.49	
MPE-56	21-Feb-13	TBD		14.29	
MPE-56	14-May-13	TBD		14.35	

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

<i>Well ID</i>	<i>Date</i>	<i>T.O.C. (ft amsl)</i>	<i>Depth to Product (ft)</i>	<i>Depth to Water (ft)</i>	<i>NAPL Thickness (ft)</i>
MPE-56	14-Aug-13	TBD		14.65	
MPE-57	18-Jun-10	TBD		--	
MPE-57	17-Aug-10	TBD		14.63	
MPE-57	12-Nov-10	TBD		14.75	
MPE-57	03-Mar-11	TBD		14.67	
MPE-57	19-May-11	TBD		14.68	
MPE-57	25-Aug-11	TBD		15.09	
MPE-57	15-Nov-11	TBD		15.00	
MPE-57	29-Feb-12	TBD		14.14	
MPE-57	25-May-12	TBD		15.08	
MPE-57	14-Aug-12	TBD		15.10	
MPE-57	20-Nov-12	TBD		15.18	
MPE-57	21-Feb-13	TBD		14.97	
MPE-57	14-May-13	TBD		15.02	
MPE-57	14-Aug-13	TBD		15.33	
Phase 4 Wells					
MPE-58	18-Jun-10	TBD		--	
MPE-58	17-Aug-10	TBD		14.86	
MPE-58	12-Nov-10	TBD		14.99	
MPE-58	03-Mar-11	TBD		15.06	
MPE-58	19-May-11	TBD		14.96	
MPE-58	25-Aug-11	TBD		15.27	
MPE-58	15-Nov-11	TBD		15.32	
MPE-58	29-Feb-12	TBD		15.09	
MPE-58	25-May-12	TBD		13.79	
MPE-58	14-Aug-12	TBD		15.34	
MPE-58	20-Nov-12	TBD		15.41	
MPE-58	21-Feb-13	TBD		15.21	
MPE-58	14-May-13	TBD		15.26	
MPE-58	14-Aug-13	TBD		15.56	
MPE-59	25-May-12	TBD		14.08	
MPE-59	14-Aug-12	TBD		14.06	
MPE-59	20-Nov-12	TBD		14.12	
MPE-59	21-Feb-13	TBD		13.93	
MPE-59	14-May-13	TBD		13.99	
MPE-59	14-Aug-13	TBD		14.28	

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

<i>Well ID</i>	<i>Date</i>	<i>T.O.C. (ft amsl)</i>	<i>Depth to Product (ft)</i>	<i>Depth to Water (ft)</i>	<i>NAPL Thickness (ft)</i>
MPE-60	25-May-12	TBD		13.88	
MPE-60	14-Aug-12	TBD		14.34	
MPE-60	20-Nov-12	TBD		14.43	
MPE-60	21-Feb-13	TBD		14.22	
MPE-60	14-May-13	TBD		14.30	
MPE-60	14-Aug-13	TBD		14.58	
MPE-61	25-May-12	TBD		14.13	
MPE-61	14-Aug-12	TBD		14.15	
MPE-61	20-Nov-12	TBD		14.25	
MPE-61	22-Feb-13	TBD		14.07	
MPE-61	14-May-13	TBD		14.14	
MPE-61	14-Aug-13	TBD		14.41	
MPE-62	25-May-12	TBD	14.86	15.36	0.50
MPE-62	14-Aug-12	TBD		14.40	
MPE-62	20-Nov-12	TBD		14.31	
MPE-62	22-Feb-13	TBD		14.13	
MPE-62	14-May-13	TBD		14.20	
MPE-62	14-Aug-13	TBD		14.49	
MPE-63	25-May-12	TBD		15.34	
MPE-63	14-Aug-12	TBD	15.09	15.93	0.84
MPE-63	20-Nov-12	TBD	15.16	16.17	1.01
MPE-63	22-Feb-13	TBD	15.03	15.70	0.67
MPE-63	14-May-13	TBD	15.12	15.74	0.62
MPE-63	14-Aug-13	TBD	15.33	16.42	1.09
MPE-64	25-May-12	TBD	15.98	16.00	0.02
MPE-64	14-Aug-12	TBD	15.54	15.55	0.01
MPE-64	20-Nov-12	TBD		15.60	
MPE-64	22-Feb-13	TBD	15.42	15.51	0.09
MPE-64	14-May-13	TBD	15.46	15.66	0.20
MPE-64	14-Aug-13	TBD	15.60	16.64	1.04
MPE-65	25-May-12	TBD		16.16	
MPE-65	14-Aug-12	TBD	16.28	16.31	0.03
MPE-65	20-Nov-12	TBD	16.28	16.54	0.26

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)
MPE-65	22-Feb-13	TBD	16.18	16.24	0.06
MPE-65	14-May-13	TBD	16.19	16.25	0.06
MPE-65	14-Aug-13	TBD	16.42	16.75	0.33
MPE-66	25-May-12	TBD	17.40	17.41	0.01
MPE-66	14-Aug-12	TBD	16.33	17.15	0.82
MPE-66	20-Nov-12	TBD	16.40	17.12	0.72
MPE-66	22-Feb-13	TBD	16.31	16.67	0.36
MPE-66	14-May-13	TBD	16.35	16.40	0.05
MPE-66	14-Aug-13	TBD	16.51	17.40	0.89
MPE-67	25-May-12	TBD		15.67	
MPE-67	14-Aug-12	TBD		17.71	
MPE-67	20-Nov-12	TBD		17.74	
MPE-67	22-Feb-13	TBD	17.60	17.65	0.05
MPE-67	14-May-13	TBD	17.48	18.08	0.60
MPE-67	14-Aug-13	TBD	17.75	18.73	0.98
MPE-68	14-Aug-12	TBD		16.09	
MPE-68	20-Nov-12	TBD		15.91	
MPE-68	22-Feb-13	TBD		15.69	
MPE-68	14-May-13	TBD	15.61	15.62	0.01
MPE-68	14-Aug-13	TBD		16.30	
MPE-69	14-Aug-12	TBD		15.50	
MPE-69	20-Nov-12	TBD		15.45	
MPE-69	22-Feb-13	TBD		15.28	
MPE-69	14-May-13	TBD		15.25	
MPE-69	14-Aug-13	TBD		15.71	
MPE-70	14-Aug-12	TBD	15.67	16.01	0.34
MPE-70	20-Nov-12	TBD	15.65	16.40	0.75
MPE-70	22-Feb-13	TBD	15.52	16.25	0.73
MPE-70	14-May-13	TBD	15.60	16.15	0.55
MPE-70	14-Aug-13	TBD	15.80	16.68	0.88
MPE-71	22-Jun-12	TBD	16.04	16.06	0.02
MPE-71	14-Aug-12	TBD	15.68	16.23	0.55
MPE-71	20-Nov-12	TBD	15.72	16.51	0.79

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)
MPE-71	22-Feb-13	TBD	15.63	16.23	0.60
MPE-71	14-May-13	TBD	15.73	16.40	0.67
MPE-71	14-Aug-13	TBD	15.85	16.85	1.00
MPE-72	22-Jun-12	TBD	15.79	16.76	0.97
MPE-72	14-Aug-12	TBD		16.29	
MPE-72	21-Nov-12	TBD		16.34	
MPE-72	22-Feb-13	TBD	16.21	16.22	0.01
MPE-72	14-May-13	TBD	16.25	16.68	0.43
MPE-72	14-Aug-13	TBD	16.50	16.89	0.39
MPE-73	22-Jun-12	TBD	14.68	15.65	0.97
MPE-73	13-Aug-12	TBD	16.59	17.93	1.34
MPE-73	20-Nov-12	TBD	16.00	17.52	1.52
MPE-73	22-Feb-13	TBD	15.90	17.02	1.12
MPE-73	14-May-13	TBD	16.06	16.12	0.06
MPE-73	14-Aug-13	TBD	16.21	18.09	1.88
MPE-74	22-Jun-12	TBD	13.68	14.56	0.88
MPE-74	13-Aug-12	TBD	14.86	15.72	0.86
MPE-74	20-Nov-12	TBD	14.91	16.20	1.29
MPE-74	22-Feb-13	TBD	14.80	15.80	1.00
MPE-74	14-May-13	TBD	14.88	15.48	0.60
MPE-74	14-Aug-13	TBD	15.27	16.28	1.01
MPE-75	22-Jun-12	TBD		12.91	
MPE-75	13-Aug-12	TBD	13.88	14.88	1.00
MPE-75	20-Nov-12	TBD	13.95	14.85	0.90
MPE-75	22-Feb-13	TBD	13.80	14.62	0.82
MPE-75	14-May-13	TBD	13.89	14.44	0.55
MPE-75	14-Aug-13	TBD	14.25	15.18	0.93
MPE-76	22-Jun-12	TBD		12.47	
MPE-76	13-Aug-12	TBD	13.03	13.37	0.34
MPE-76	20-Nov-12	TBD	13.12	13.40	0.28
MPE-76	22-Feb-13	TBD	13.01	13.03	0.02
MPE-76	14-May-13	TBD	13.07	13.22	0.15
MPE-76	14-Aug-13	TBD	13.29	13.85	0.56

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

Well ID	Date	T.O.C. (ft amsl)	Depth to Product (ft)	Depth to Water (ft)	NAPL Thickness (ft)
MPE-77	22-Jun-12	TBD	11.33	11.36	0.03
MPE-77	13-Aug-12	TBD		12.65	
MPE-77	20-Nov-12	TBD		12.70	
MPE-77	22-Feb-13	TBD	12.53	12.67	0.14
MPE-77	14-May-13	TBD	12.59	12.73	0.14
MPE-77	14-Aug-13	TBD	12.85	13.15	0.30
MPE-78	22-Jun-12	TBD		11.33	
MPE-78	13-Aug-12	TBD	11.51	11.53	0.02
MPE-78	20-Nov-12	TBD		11.57	
MPE-78	22-Feb-13	TBD	11.37	11.60	0.23
MPE-78	14-May-13	TBD	11.40	11.74	0.34
MPE-78	14-Aug-13	TBD	11.61	12.41	0.80
Phase 5 Wells					
MPE-79	13-Aug-12	TBD		11.50	
MPE-79	20-Nov-12	TBD		11.49	
MPE-79	22-Feb-13	TBD		11.28	
MPE-79	14-May-13	TBD		11.35	
MPE-79	14-Aug-13	TBD		11.68	
MPE-80	13-Aug-12	TBD		9.12	
MPE-80	20-Nov-12	TBD		9.15	
MPE-80	22-Feb-13	TBD		8.92	
MPE-80	14-May-13	TBD		9.00	
MPE-80	14-Aug-13	TBD		9.29	
MPE-81	13-Aug-12	TBD		10.64	
MPE-81	20-Nov-12	TBD	10.69	11.67	0.98
MPE-81	22-Feb-13	TBD	10.57	11.14	0.57
MPE-81	14-May-13	TBD	10.61	11.27	0.66
MPE-81	14-Aug-13	TBD	10.79	12.08	1.29
MPE-82	13-Aug-12	TBD	10.89	11.65	0.76
MPE-82	20-Nov-12	TBD	11.04	11.38	0.34
MPE-82	22-Feb-13	TBD		10.90	
MPE-82	14-May-13	TBD	10.88	11.40	0.52
MPE-82	14-Aug-13	TBD	11.15	11.66	0.51

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

<i>Well ID</i>	<i>Date</i>	<i>T.O.C. (ft amsl)</i>	<i>Depth to Product (ft)</i>	<i>Depth to Water (ft)</i>	<i>NAPL Thickness (ft)</i>
MPE-83	13-Aug-12	TBD		12.38	
MPE-83	20-Nov-12	TBD	12.43	12.49	0.06
MPE-83	22-Feb-13	TBD	12.16	12.75	0.59
MPE-83	14-May-13	TBD	12.21	12.98	0.77
MPE-83	14-Aug-13	TBD	12.50	13.47	0.97
MPE-84	20-Nov-12	TBD	17.65	18.63	0.98
MPE-84	22-Feb-13	TBD	17.54	18.43	0.89
MPE-84	14-May-13	TBD	17.67	18.62	0.95
MPE-84	14-Aug-13	TBD	Active MPE--NM		
MPE-85	20-Nov-12	TBD	15.84	16.99	1.15
MPE-85	22-Feb-13	TBD	15.71	16.71	1.00
MPE-85	14-May-13	TBD	15.93	16.70	0.77
MPE-85	14-Aug-13	TBD	Active MPE--NM		
MPE-86	20-Nov-12	TBD	17.25	17.94	0.69
MPE-86	22-Feb-13	TBD	17.16	17.39	0.23
MPE-86	14-May-13	TBD	17.31	17.65	0.34
MPE-86	14-Aug-13	TBD	Active MPE--NM		
MPE-87	20-Nov-12	TBD		15.94	
MPE-87	22-Feb-13	TBD		15.79	
MPE-87	14-May-13	TBD		15.92	
MPE-87	14-Aug-13	TBD		16.20	
MPE-88	20-Nov-12	TBD	13.64	14.80	1.16
MPE-88	22-Feb-13	TBD	13.55	14.45	0.90
MPE-88	14-May-13	TBD	13.59	14.11	0.52
MPE-88	14-Aug-13	TBD	13.78	15.01	1.23
MPE-89	20-Nov-12	TBD		14.85	
MPE-89	22-Feb-13	TBD	14.62	14.86	0.24
MPE-89	14-May-13	TBD	14.70	15.45	0.75
MPE-89	14-Aug-13	TBD	14.78	16.00	1.22
MPE-90	20-Nov-12	TBD	14.81	15.49	0.68
MPE-90	22-Feb-13	TBD	14.62	15.52	0.90
MPE-90	14-May-13	TBD	14.63	15.58	0.95

TABLE 2
SUMMARY OF GROUNDWATER AND FREE PRODUCT MEASUREMENTS OF
PHASES 1 through 5 MPE WELLS
Thriftway Refinery, 626 CR 5500, Bloomfield, New Mexico

<i>Well ID</i>	<i>Date</i>	<i>T.O.C. (ft amsl)</i>	<i>Depth to Product (ft)</i>	<i>Depth to Water (ft)</i>	<i>NAPL Thickness (ft)</i>
MPE-90	14-Aug-13	TBD	14.88	16.23	1.35

FIGURE 1

GENERAL SITE PLAN
THRIFTWAY REFINERY
626 ROAD 5500
BLOOMFIELD, NEW MEXICO



DRAWN BY: C. Lammeman	DATE DRAWN: May 14, 2013
REVISIONS BY: C. Lammeman	DATE REVISED: October 17, 2013
CHECKED BY: D. Watson	DATE CHECKED: October 17, 2013
APPROVED BY: E. McNally	DATE APPROVED: October 17, 2013

LEGEND

MONITOR WELL LOCATIONS



AERIAL SOURCE: © 2012 PICTOMETRY INTERNATIONAL CORP. ONLINE, AERIAL DATE: APRIL 4, 2013.

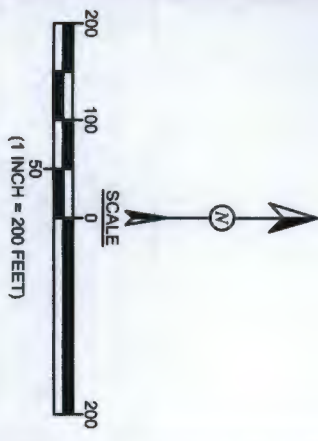


FIGURE 2

GROUNDWATER ELEVATION
CONTOURS
AUGUST 2013
THRIFTWAY REFINERY
626 ROAD 5500
BLOOMFIELD, NEW MEXICO



Animas Environmental Services, LLC

DRAWN BY: C. Lamean	DATE DRAWN: May 14, 2013
REVISIONS BY: C. Lamean	DATE REVISED: October 21, 2013
CHECKED BY: D. Watson	DATE CHECKED: October 21, 2013
APPROVED BY: E. McNally	DATE APPROVED: October 21, 2013

LEGEND

- MONITOR WELL LOCATIONS
- 5440.10 GROUNDWATER ELEVATION IN FEET (AMSL)
- 5434—GROUNDWATER ELEVATION CONTOUR IN FEET (AMSL)

NOTE: GROUNDWATER MEASUREMENTS WERE MADE ON AUGUST 5, 12 AND 13, 2013. LOCATIONS OF TW-45 THROUGH TW-54 ARE APPROXIMATE.

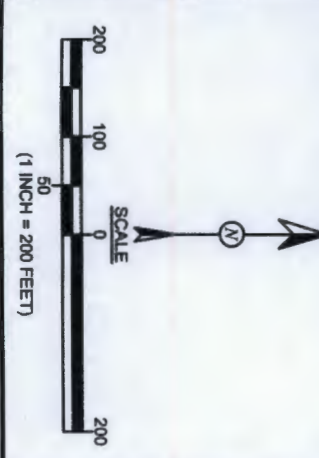
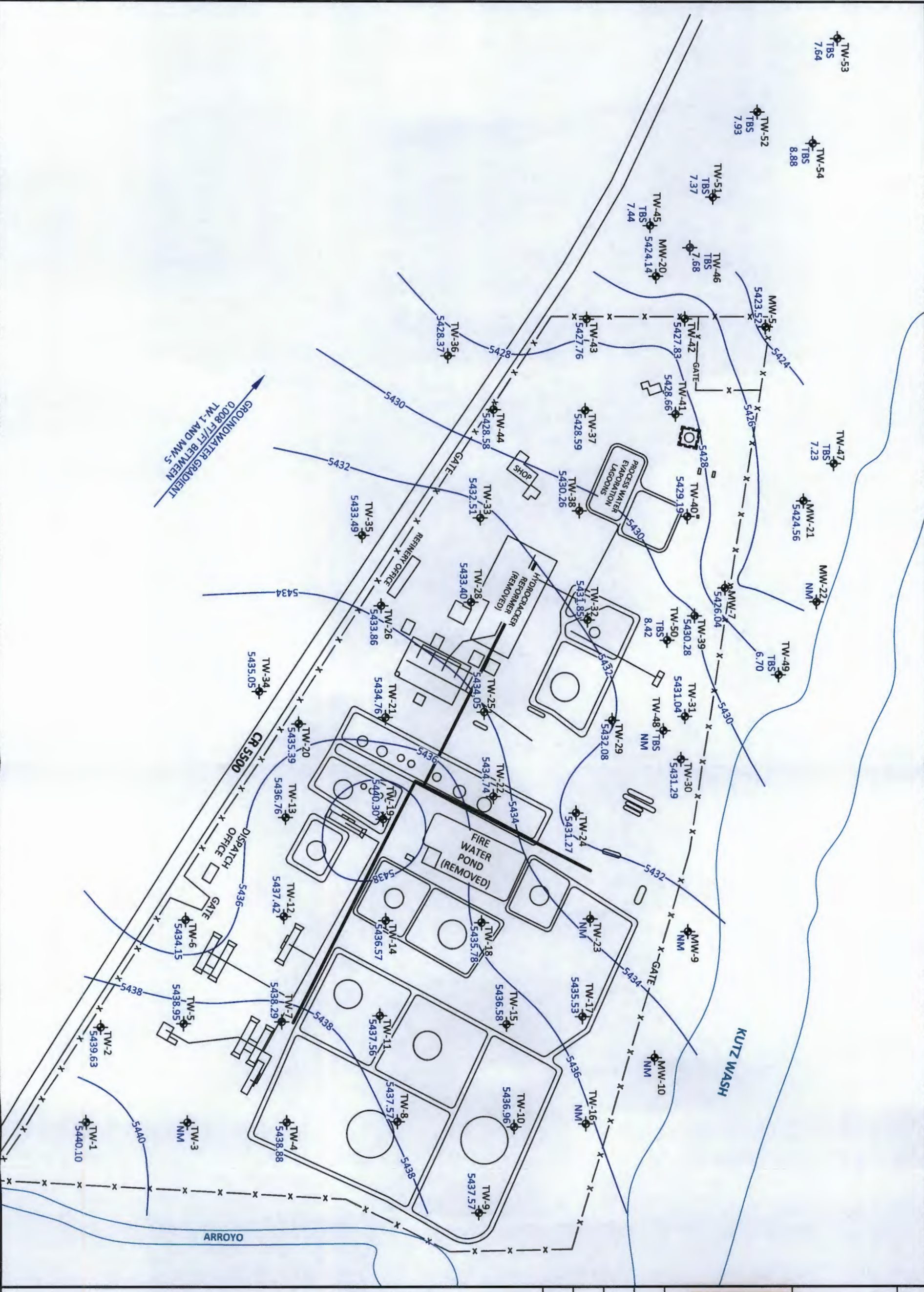


FIGURE 3

FREE PRODUCT THICKNESS
CONTOURS
AUGUST 2013
THRIFTWAY REFINERY
626 ROAD 5500
BLOOMFIELD, NEW MEXICO

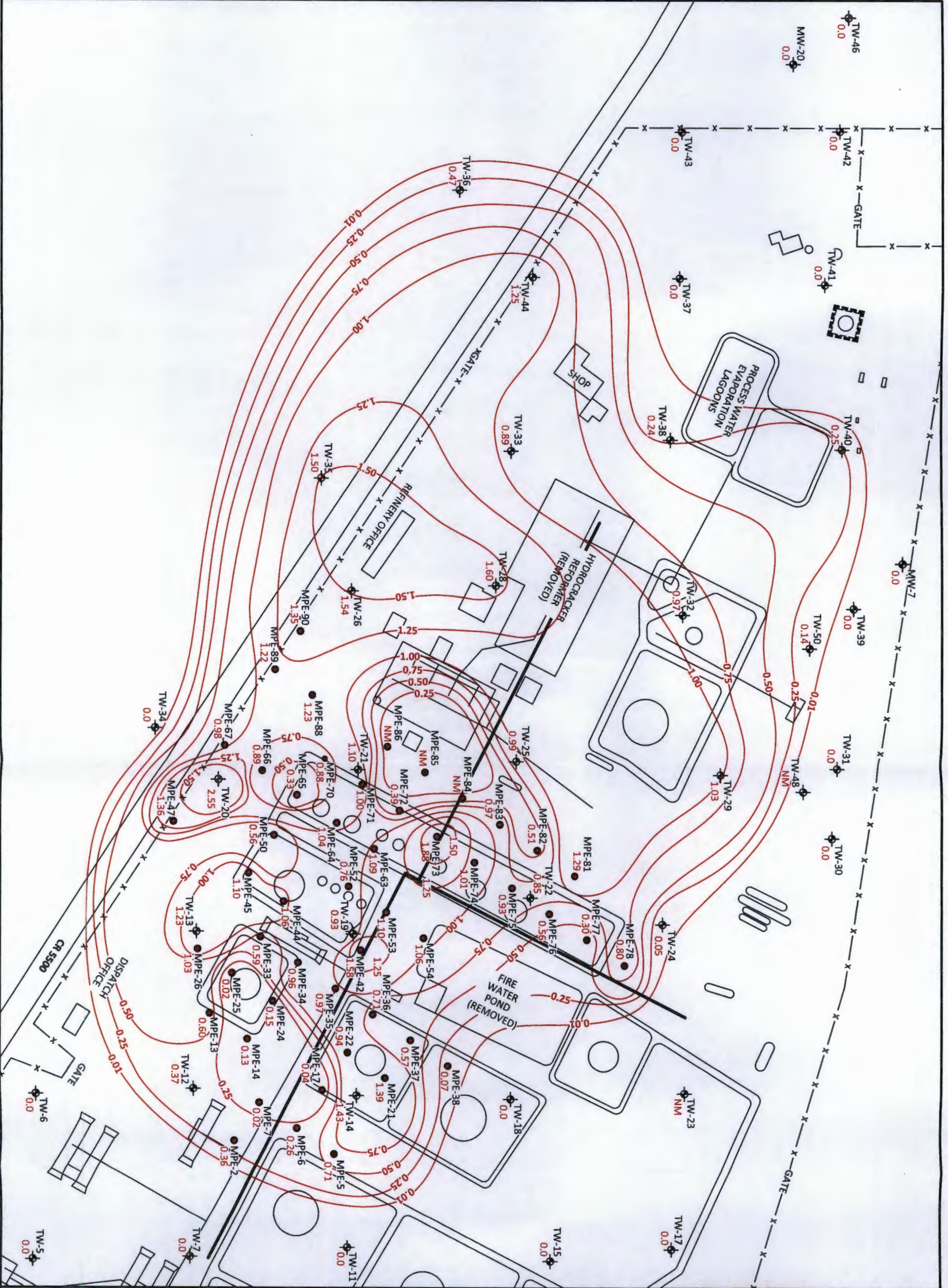


Animas Environmental Services, LLC

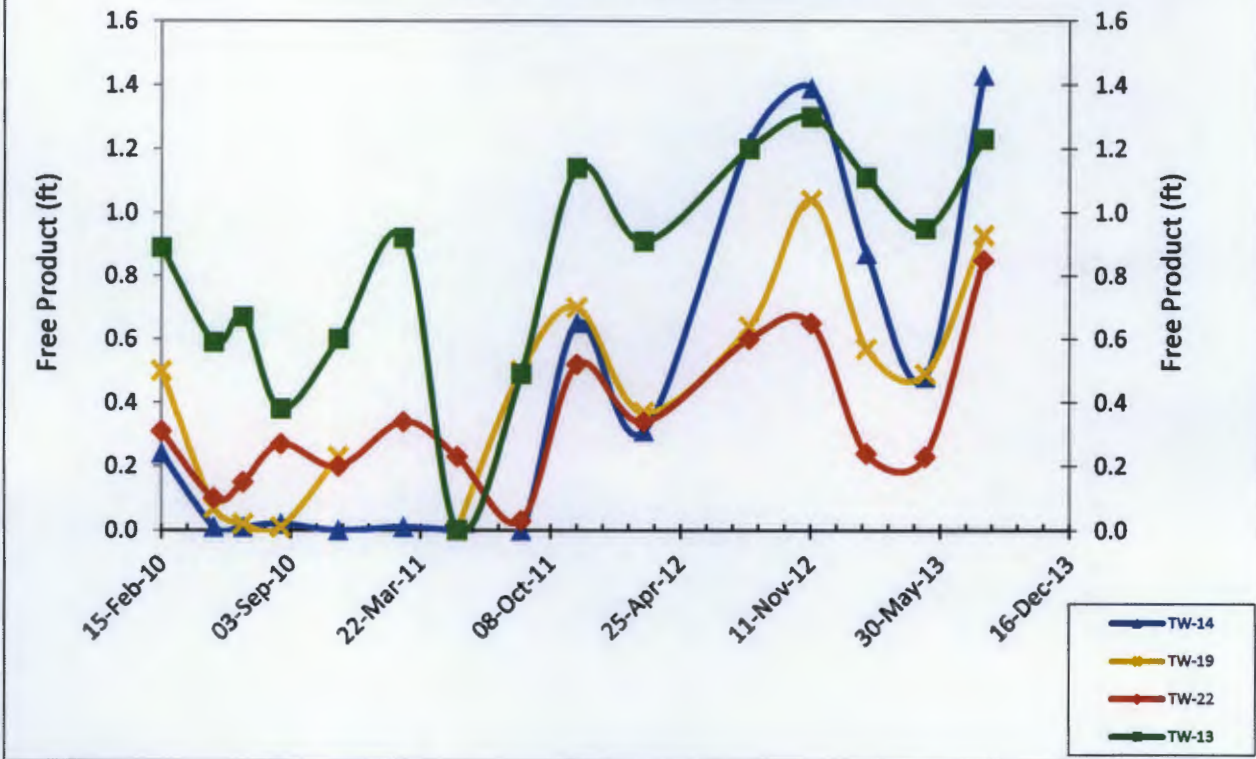
DRAWN BY:	C. Llameman	DATE DRAWN:	May 14, 2013
REVISIONS BY:	C. Llameman	DATE REVISED:	October 21, 2013
CHECKED BY:	D. Watson	DATE CHECKED:	October 21, 2013
APPROVED BY:	E. McNally	DATE APPROVED:	October 21, 2013

- LEGEND
- MONITOR WELL LOCATIONS
 - MPE REMEDIATION WELL
 - 1.39 FREE PRODUCT THICKNESS IN FEET
 - 0.5 FREE PRODUCT THICKNESS CONTOUR IN FEET

NOTE: ALL MEASUREMENTS WERE MADE ON AUGUST 5, 12 AND 13, 2013. LOCATIONS OF TW-45 THROUGH TW-54 ARE APPROXIMATE.



Graph 1. Selected Wells with Free Product Over Time,
Former Thriftway Refinery #810, Bloomfield, NM



DEPTH TO GROUNDWATER MEASUREMENT FORM

Animas Environmental Services

624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Project: Groundwater Monitoring

Project No.: AES 050204

Site: Thriftway #810 Refinery

Date: 8-5-13 / 8-12-13

Location: Bloomfield, New Mexico

Time:

Tech: Mike Beuparlant

Form: 1 of 5

Well I.D.	Time	Depth to NAPL (ft.)	Depth to Water (ft.)	NAPL Thickness (ft.)	Notes / Observations
TW-1	14:09		31.48'		
TW-2	14:14		29.68		
TW-3	14:21		-		NM / Rooted in @ 28.15'
TW-4	14:25		19.84'		
TW-5	14:51		26.23'		
TW-6	14:59		29.42'		
TW-7	15:02		22.88		
TW-8	14:32		20.42'		
TW-9	14:39		13.04'		
TW-10	14:42		13.20'		
TW-11	15:12		18.75'		
TW-12	15:21	22.96	23.33'	0.37'	
TW-13	15:28	21.20'	22.43'	1.23'	
TW-14	15:36	17.42'	18.85'	1.43'	
TW-15	15:46		13.86'		NM / Rooted in
TW-16	15:48		-		
TW-17	15:51		10.71'		
TW-18	15:55		16.95'		
TW-19	16:00	18.03	18.96	0.93'	
TW-20	16:06	17.91'	20.46'	2.55'	
TW-21	14:09	16.90'	18.00	1.90' / 1.10	
TW-22	14:14	15.30'	16.15'	0.85'	
TW-23					NM / Rooted In.
TW-24	14:21	13.51'	13.56'	0.05'	
TW-25	14:28	14.58'	15.57'	0.99'	
TW-26	14:39	16.21'	17.75'	1.54'	
TW-28	14:45	15.56'	17.16	1.60'	
TW-29	14:56	9.61	10.64	1.03'	
TW-30	15:03		6.64'		
TW-31	15:08	9.59'	7.50' / 10.56'	0.97'	
TW-32	15:24	13.19' / 9.59	14.08' / 10.55	0.89' / 10.97	
TW-33	15:24	13.19	14.08'	0.89'	
TW-34	15:31		20.75		

Wells measured with KECK water level or KECK interface tape, decontaminated between each well measurement.

Animas Environmental Services

624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Project:	Groundwater Monitoring
-----------------	------------------------

Site: Thriftway #810 Refinery

Location: Bloomfield, New Mexico

Tech: Mike Beauparlant

Project No.: AES 050204

Date:

Time:

Form: 2 of 5

[illegible]

Wells measured with KECK water level or KECK interface tape, decontaminated between each well measurement.

DEPTH TO GROUNDWATER MEASUREMENT FORM

Animas Environmental Services

624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Project: Groundwater Monitoring
Site: Thriftway #810 Refinery
Location: Bloomfield, New Mexico
Tech: Mike Beuparlant

Project No.: AES 050204

Date: 8-14-13

Time: 09:00

Form: 3 of 5

Well I.D.	Time	Depth to NAPL (ft.)	Depth to Water (ft.)	NAPL Thickness (ft.)	Notes / Observations
MPE-1	09:25		24.34'		
MPE-2	09:27	22.17	22.53'	0.36'	
MPE-3	09:29		21.52'		
MPE-4	09:31		20.71'		
MPE-5	09:34	19.92'	20.63'	0.71'	
MPE-6	09:36	20.34'	20.60'	0.26'	
MPE-7	09:38	21.18'	21.20'	0.02'	
MPE-8	09:40		22.48'		
MPE-9	09:42		24.18'		
MPE-10	09:44		23.99'		
MPE-11	09:48		-		NM Rooted in @ 21.6'
MPE-12	09:50		-		NM Rooted in @ 22.5'
MPE-13	09:53	23.33'	23.93'	0.60'	
MPE-14	09:58	22.50	22.63'	0.13'	
MPE-16	10:00		20.65'		
MPE-17	10:01	20.82'	20.86'	0.04'	
MPE-18	10:03		19.96'		
MPE-19	10:04		19.73'		
MPE-20	10:06		19.45'		
MPE-21	10:09	20.36'	21.75'	1.39'	
MPE-22	10:11	21.26'	22.20'	0.94'	
MPE-23	10:13		21.46'		
MPE-24	10:15	23.36'	23.51'	0.15'	
MPE-25	10:17	23.75	23.77	0.02'	
MPE-26	10:19	23.42	24.45	1.03'	
MPE-27	10:40		-		NM Rooted in @ 22'
MPE-28	10:41		-		NM Rooted in @ 22'
MPE-29	10:42		-		NM Rooted in @ 20.6'
MPE-30	10:43		-		NM Rooted in @ 21.4'
MPE-31	10:45		-		NM Rooted in @ 22.6'
MPE-33	10:47	22.91'	23.50'	0.59'	
MPE-34	10:50	22.66'	23.62	0.96'	
MPE-35	10:51	21.22'	22.19'	0.97'	
MPE-36	11:01	20.44	21.15'	0.71'	

Wells measured with KECK water level or KECK interface tape, decontaminated between each well measurement.

DEPTH TO GROUNDWATER MEASUREMENT FORM

Animas Environmental Services

624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Project: Groundwater Monitoring

Project No.: AES 050204

Site: Thriftway #810 Refinery

Date:

Location: Bloomfield, New Mexico

Time:

Tech: Mike Beuparlant

Form: 4 of 5

Well I.D.	Time	Depth to NAPL (ft.)	Depth to Water (ft.)	NAPL Thickness (ft.)	Notes / Observations
MPE-37	11:04	20.85'	21.42	0.57'	
MPE-38	11:06	20.45'	20.52	0.07'	
MPE-39	11:08		18.13'		
MPE-40	11:09		18.34'		
MPE-41	11:10		19.00'		
MPE-42	11:12	19.42'	21.00'	1.58'	
MPE-43	11:15		20.59'		
MPE-44	11:17	20.53'	21.59'	1.06'	
MPE-45	11:19	20.70'	21.80'	1.10'	
MPE-46	11:21		21.98'		
MPE-47	11:23	21.29'	22.65	1.36'	
MPE-48	11:24		-		NM Rooted in @ 20'
MPE-49	11:26		-		NM Rooted in @ 20'
MPE-50	11:28	21.04'	21.60	0.56'	
MPE-51	11:29		21.48		
MPE-52	11:31	21.15'	21.91'	0.76'	
MPE-53	11:33	19.85'	20.95'	1.10'	
MPE-54	11:35	19.58'	20.64'	1.06'	
MPE-55	11:37		19.22'		
MPE-56	14:14		14.65'		
MPE-57	14:15		15.33'		
MPE-58	14:17		15.56'		
MPE-59	14:19		14.28'		
MPE-60	14:21		14.58'		
MPE-61	14:23		14.41'		
MPE-62	14:26		14.49'		
MPE-63	14:28	15.33'	16.42'	1.09'	
MPE-64	14:29	15.60'	16.64'	1.04'	
MPE-65	14:32	16.42	16.75	0.33'	
MPE-66	14:34	16.51	17.40	0.89'	
MPE-67	14:36	17.75	18.73	0.98'	
MPE-68	14:39		16.30'		
MPE-69	14:41		15.71'		
MPE-70	14:45	15.80	16.68	0.88'	

Wells measured with KECK water level or KECK interface tape, decontaminated between each well measurement.

Remediation Service Int'l
 4835 Colt Unit D 76573.8
 Ventura CA 93003
 805.644.8382
 805.644.8378 FAX
 www.rsi-save.com Report Generator Version 1.4

Date of Report:	11/11/2013	Assumptions:	20000 Btu/lb
Project Name:	Thriftway #810 Refinery 3rd Quar. 2013 Operations		6.2 lb/gallon of gasoline
Unit ID:	0		120 Mole Weight of Extracted VOC
Controller S/N:	182		2520 Btu/Cubic Foot of Propane
Software version:	844		1000 Btu/Cubic Foot of Natural Gas
Date Range From:	6/3/2013 7:01	Parts/Million by Volume (PPMV) Conversion to Micrograms/Liter (ug/L)	
Date Range To :	9/30/2013 23:34	(PPMV/24.055)*AVG. Mole Weight=ug/L	
Lbs. Removed/Period:	3120.81	Mass Transfer Equation to Convert to Pounds/Hour:	
Gal Removed/Period:	503.32	(ug/L)*(Flow SCFM)*28.3 L/SCF*60 Minutes/Hour*2.2 lbs/kg*(1/10 ⁹)	
SCF Processed/Period:	5292019		

There are no express or implied warranties for fitness of use or any other purpose of the data contained herein.
 See report footnotes for disclaimer details and other technical information relating to calculation procedures.

Footnotes:

RSIs Innovative Approach to Estimating Btu/Hr:

1. Measure alternate fuel usage of engine prior to introduction of process flow
2. Multiply the SCFM flow rate of the alternate fuel (propane or natural gas) by the Btu value to determine energy demand on the engine at static conditions
3. The controller records a "snapshot" of the energy demand at a given RPM and engine manifold vacuum just prior to allowing the process flow to begin
4. The controller adjusts the initial baseline based on engine load or oxygen deficiency as necessary
5. Any drop in energy demand is assumed to be caused by the introduction of the process flow and is displayed as Estimated Btu/hr and recorded accordingly

RSIs Innovative Approach to Estimating PPMV:

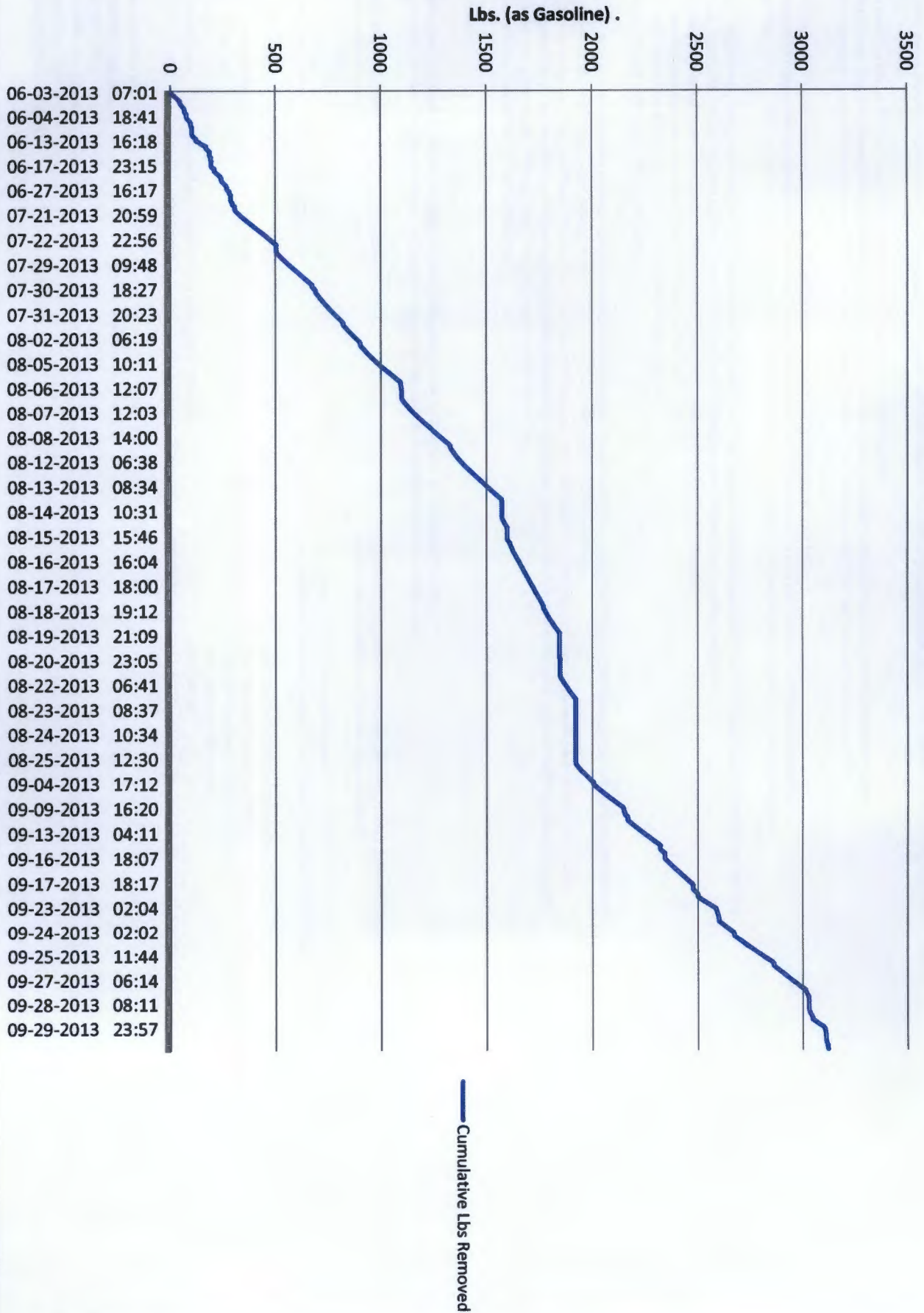
1. The controller completes the Btu/hr calculation as explained above
2. The controller looks at the well flow rate (estimated or measured in SCFM)
3. The controller then computes the average PPMV using the mass transfer equation to solve for PPMV
4. If the flow rate is estimated then PPMV is subject to accuracy of estimated flow and accuracy of the Btu/hr calculation
5. If the flow rate is measured then this PPMV estimate will be relative to actual lab data assuming the flow measurement and the Btu calculations are correct

There are many advantages to using RSIs innovative approach in calculating how much mass was removed from a project in a given time period.
 Our method eliminates human calculation error and prevents incorrect or non-calibrated use of field instrumentation and it is a consistent periodic measurement over time which when used properly will reduce costly laboratory analysis.

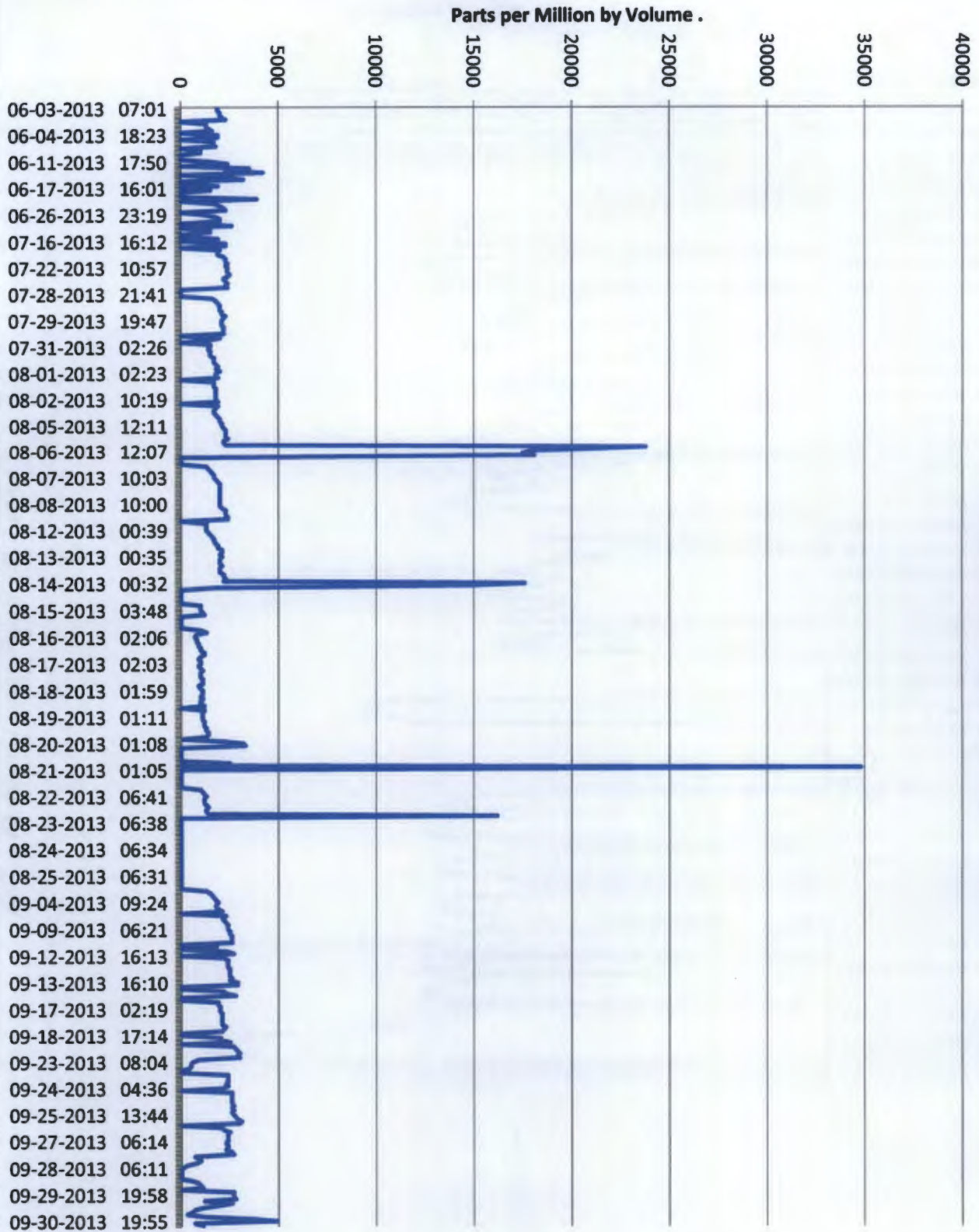
Our estimates of VOC removal have proven to be reasonable when compared to independent lab data. Because the process flow rate and the alternate fuel flow rate measurements are dependent upon proper system operation there are no expressed or implied warranties of fitness of use for any purpose when using this report or the data contained herein.

Please do not hesitate to contact RSI 1-800-368-8685 if you should have any questions or require further information

Engine SVE - Lbs. Removed Over Time-BT u/Hr Approach

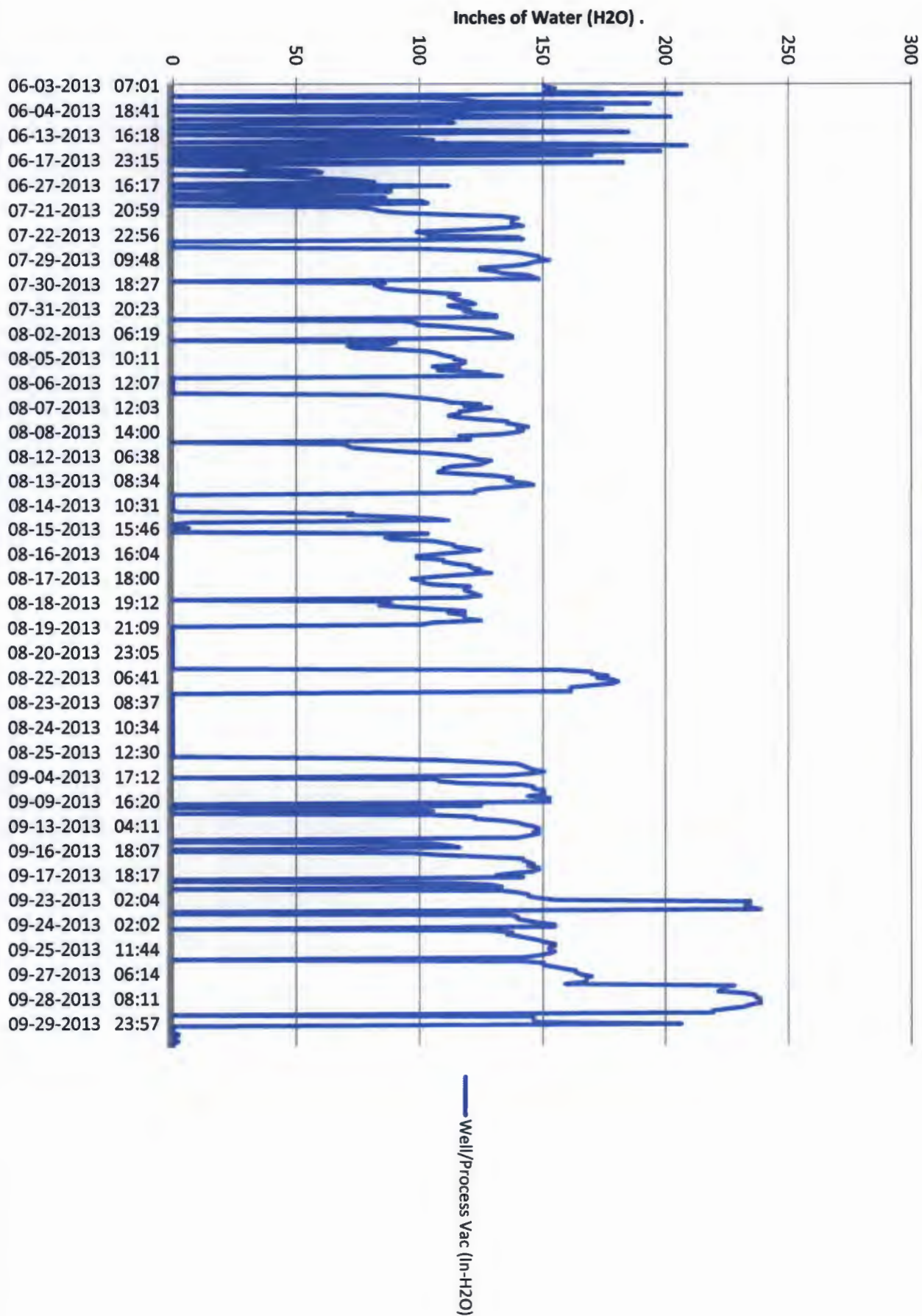


Engine SVE - Estimated ppmV Over Time

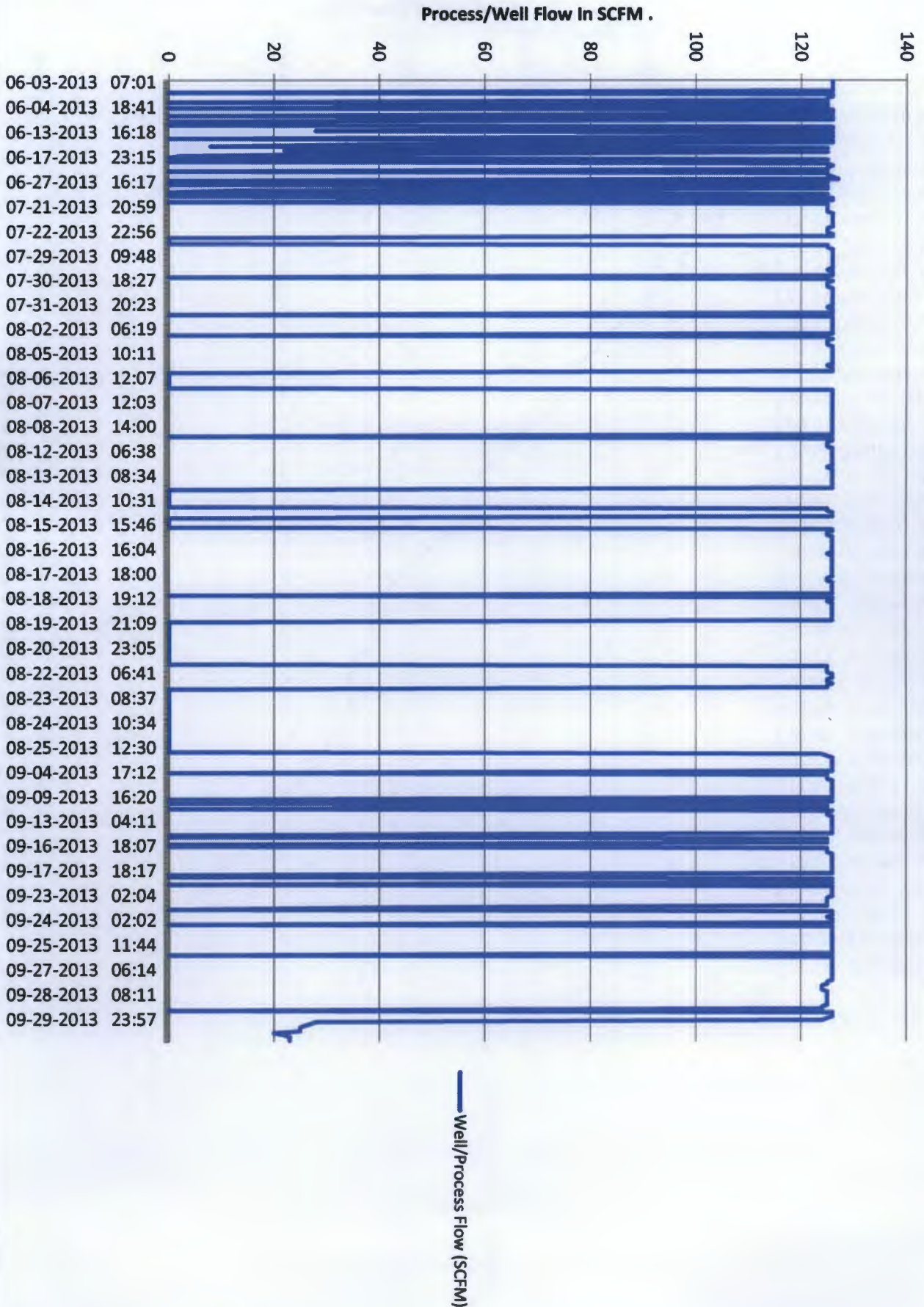


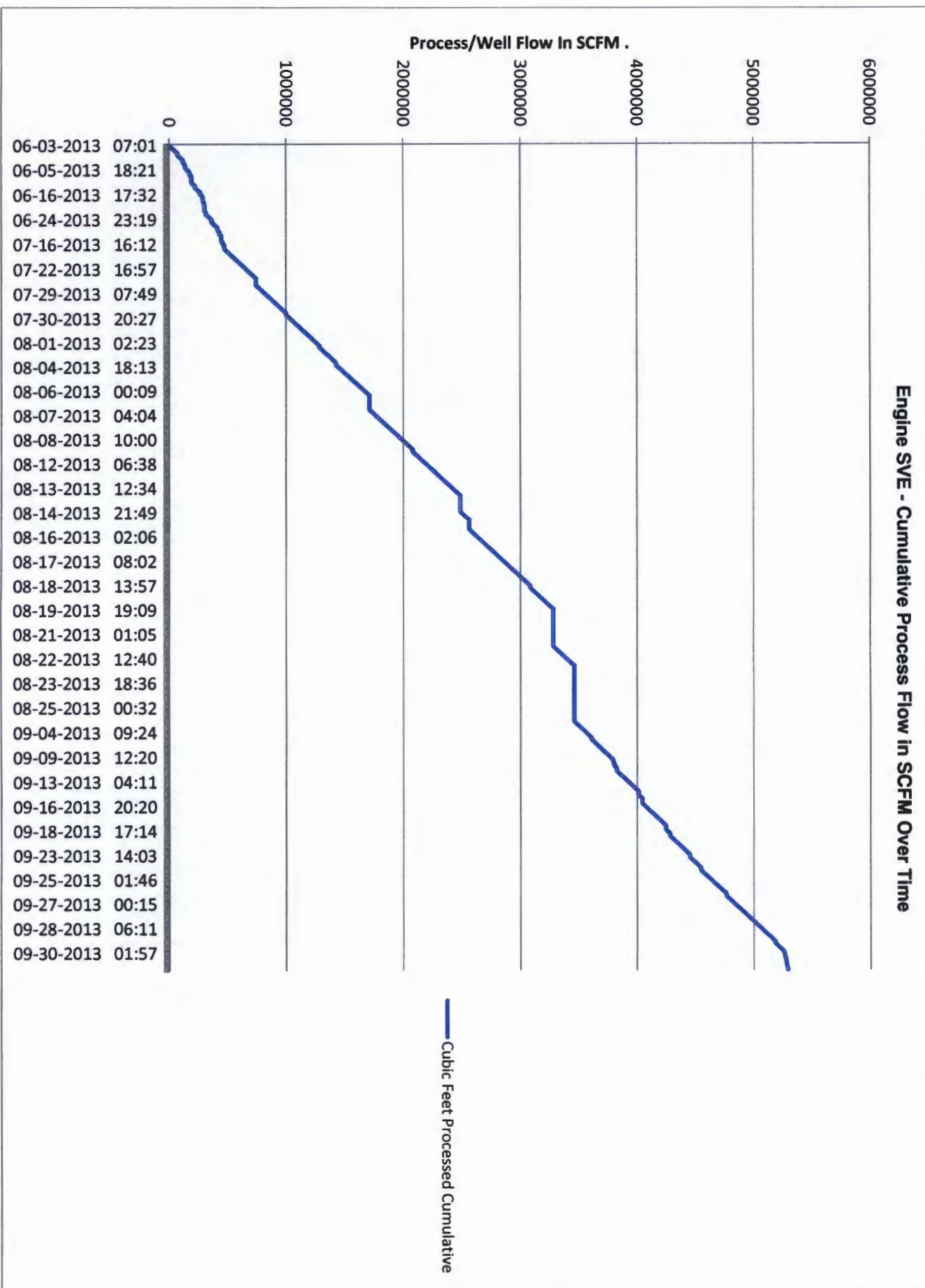
— ppmV(est)

Engine SVE - Well/Process Vacuum Over Time

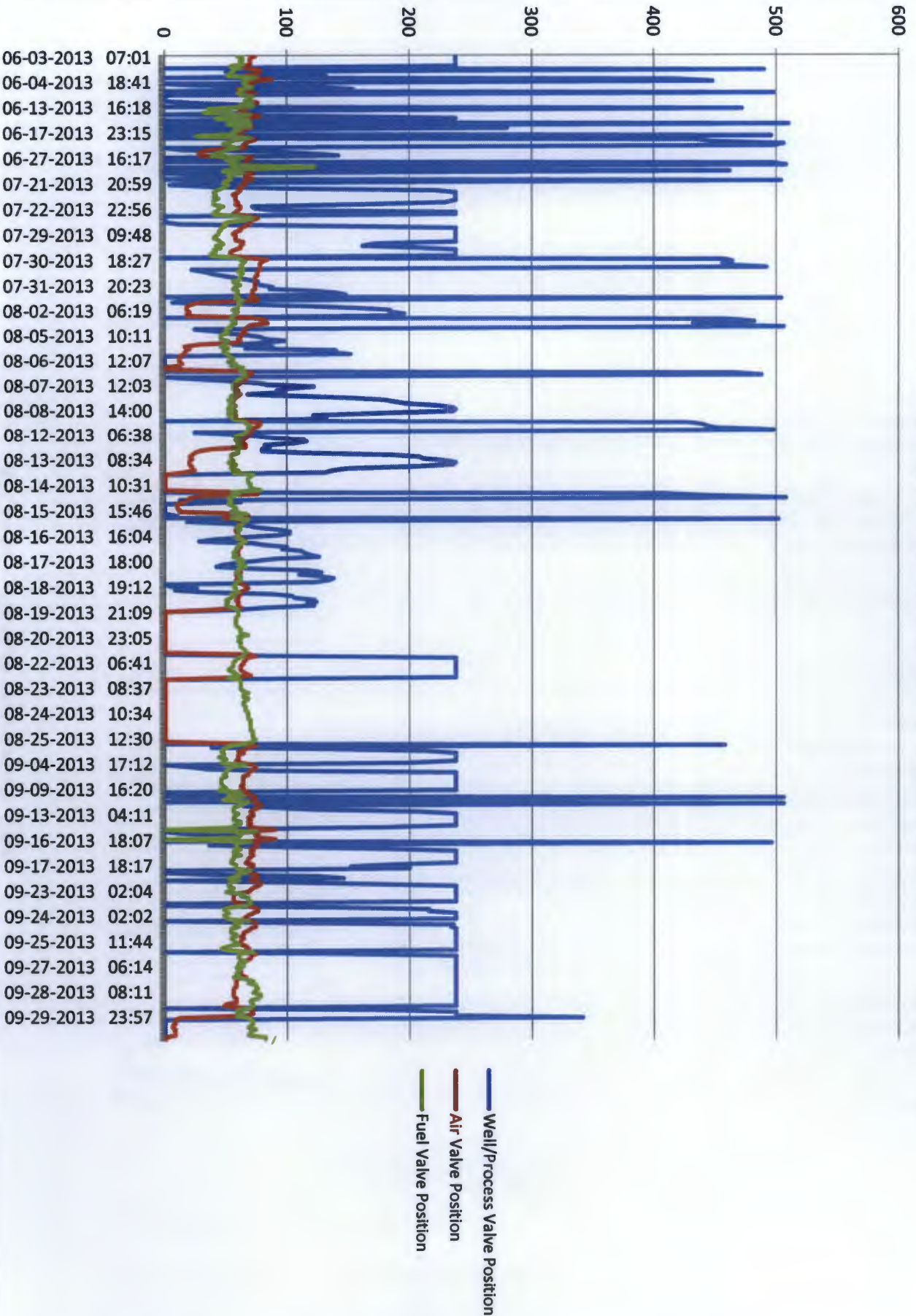


Engine SVE - Well/Process Flow Over Time

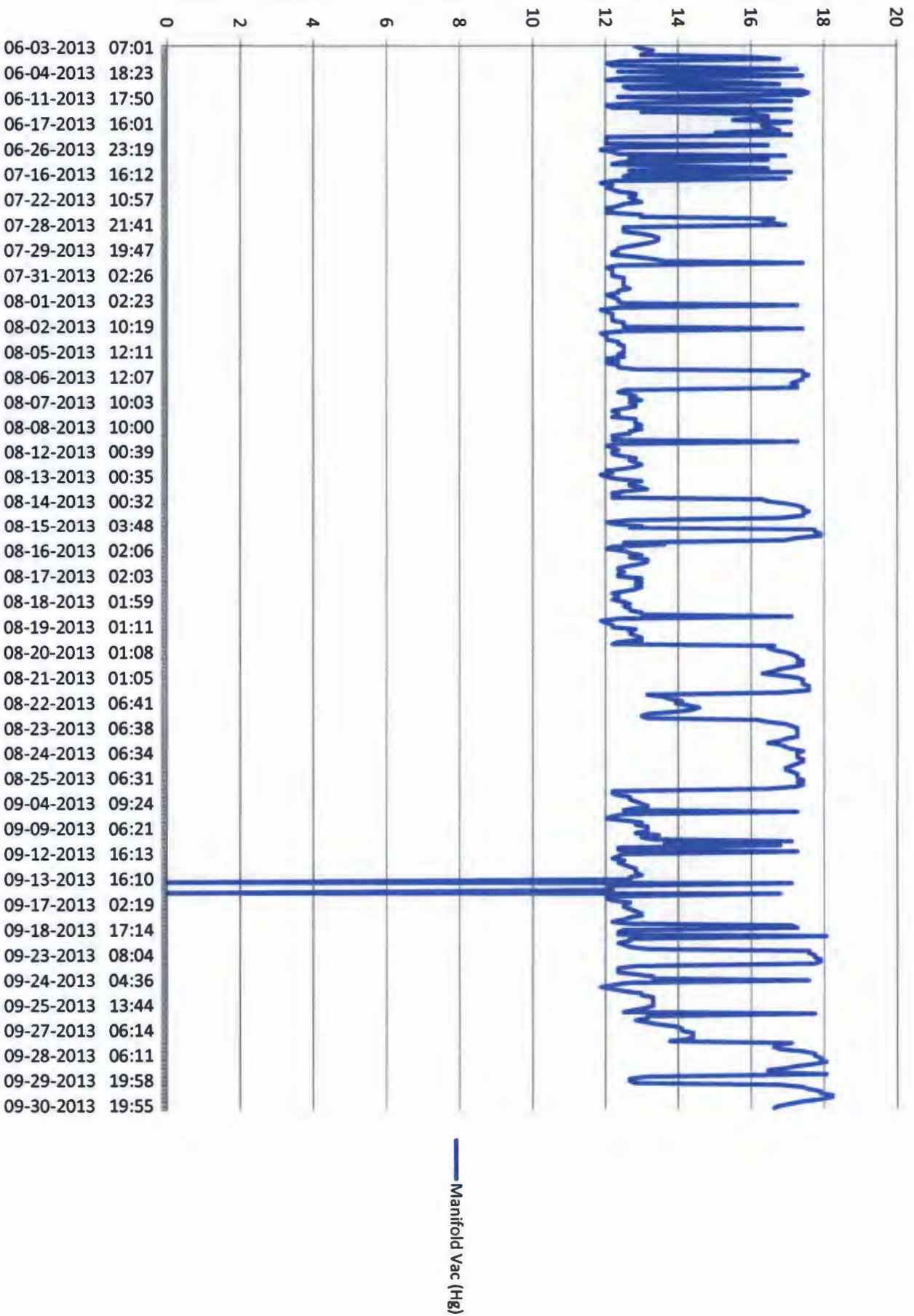




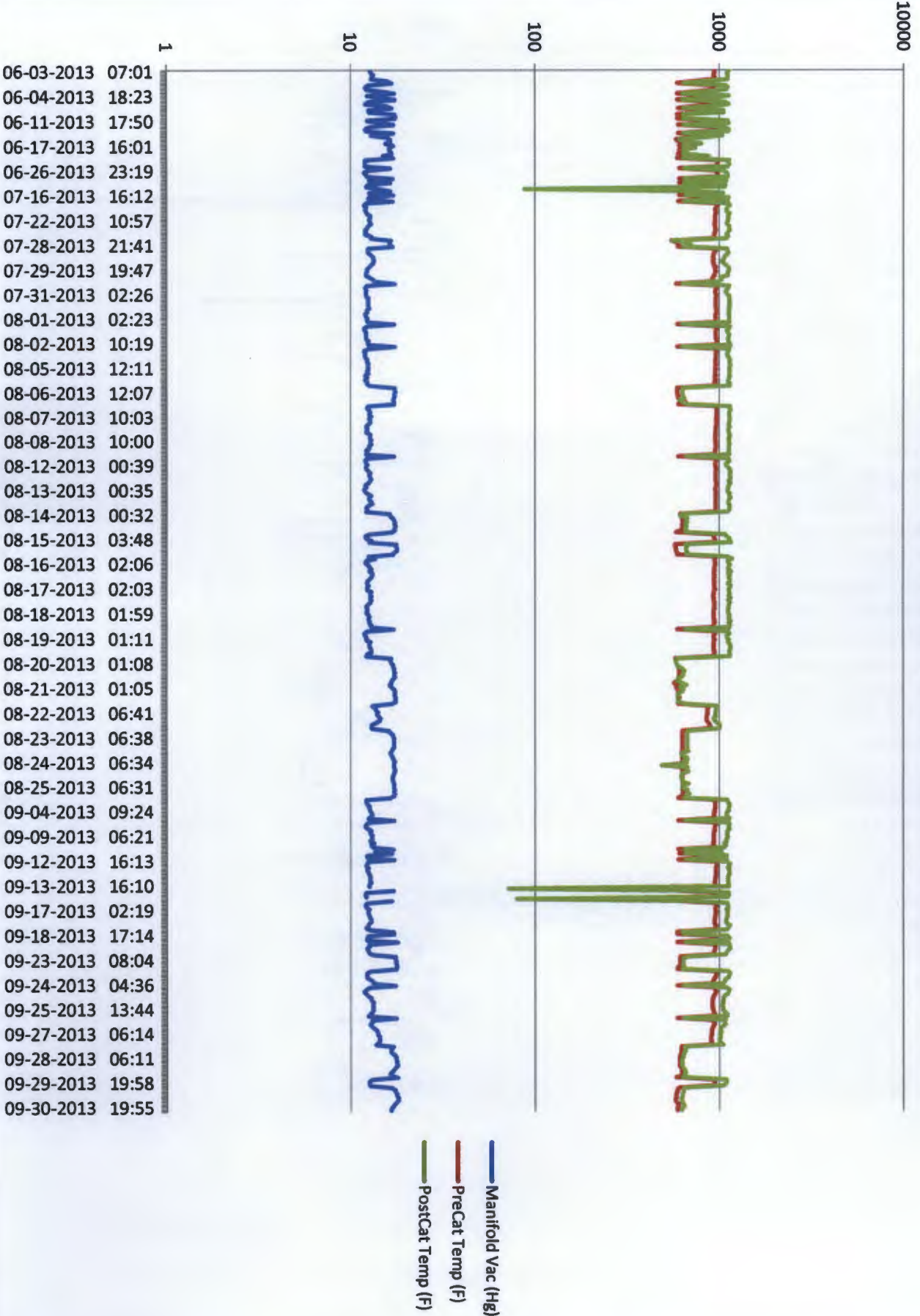
SVE Engine - Air, Fuel & Well Valve Positions Over Time



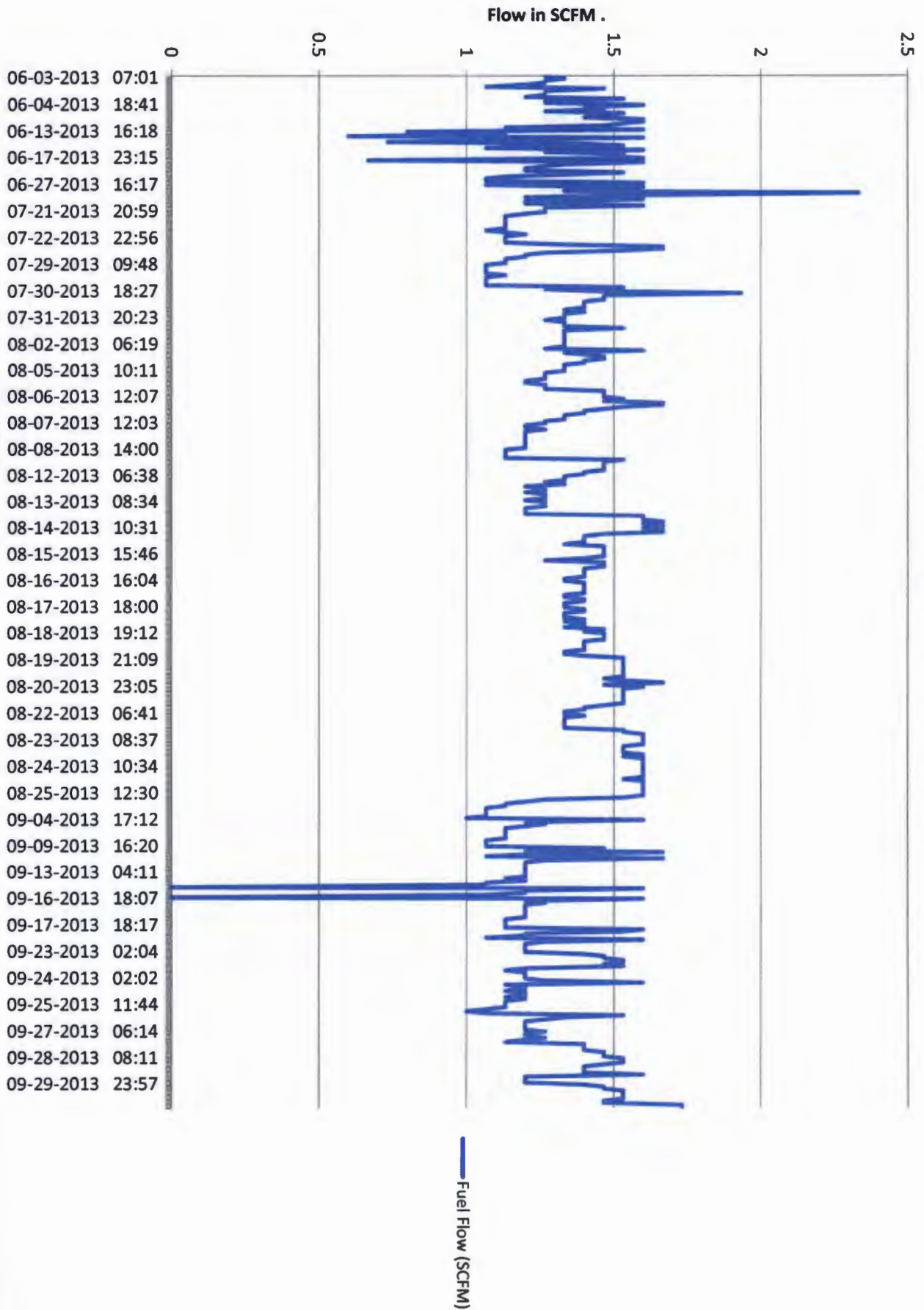
SVE Engine - Manifold Vacuum Over Time



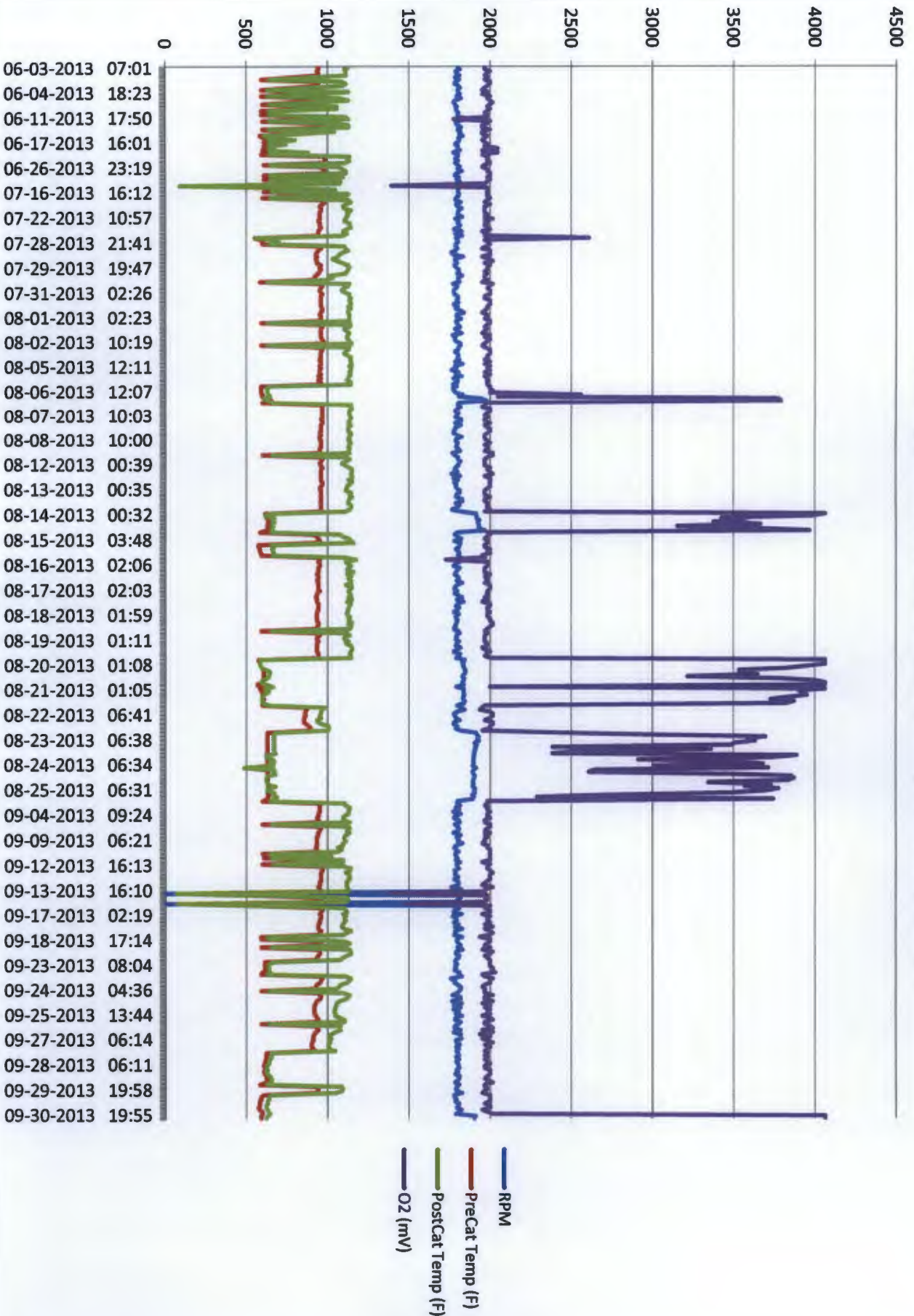
SVE Engine - Pre- & Post-Cat T, Manifold Vacuum Over Time



SVE Engine - Alternate Fuel Flow Over Time



SVE Engine - RPM, O2 and Pre/Post Cat Temperatures Over Time



Poplar Phytoremediation Project on an Abandoned Oil Refinery Site in Northwestern New Mexico

Michael O'Neill, Samuel Allen, and Robert Heyduck

Abstract

An abandoned oil refinery in Bloomfield, NM was targeted for a multi-phase phytoremediation project starting in spring 2010. Phase 1 involved the planting of 233 bareroot seedlings of local and hybrid poplars (*Populus spp.*), plus the xeric woody perennial, four-wing saltbush (*Atriplex canescens*), in four rows along the northern perimeter of the site. Phase 2, which began in March 2011 and is situated just west of Phase 1, involved the planting of 239 dormant poplar poles, 15-20 feet (4.5-6 m) in length with a 1 to 2-inch (2.5-5 cm) aboveground diameter at breast height (DBH). Poles were inserted into groundwater 5 feet (1.5 m) apart with 10 feet (3 m) alleys between rows. Phase 3, which began in April 2012, involved the planting of an additional 224 hybrid poplar poles with similar size and layout dimensions in the northwest corner of the site. Drip irrigation was supplied to all trees from an on-site well. As of late 2012, results were mixed for survival, height, DBH and leaf vigor, particularly across the three phases. Phase 1 plantings demonstrated adequate survival and growth after three growing seasons. Survival for hybrid poplar clones PC-6, DN-34, and OP-367 was 86.0%, 85.0%, and 82.9%, respectively, with native cottonwood at 82.9%, reflecting reasonable survival for these entries. Four-wing saltbush had 50.8% survival. Height and DBH were satisfactory for the three top poplar clones and the cottonwood, with height ranging from 5.9 to 8.8 feet (1.8 to 2.7 m), and DBH ranging from 0.6 to 0.9 inches (1.0 to 1.6 cm). Phase 2 poplars (OP-367) had near 100% survival and an average new stem growth of 8 inches after the first growing season; however, general health of these trees decreased somewhat during the second growing season. Average height in 2012 was 14.8 feet (4.5 m), a seasonal increase of 1 foot (0.3 m). Average DBH was 1.5 inches (3.8 cm), and average leaf vigor was 3.4. Phase 3 poplars (OP-367) failed to demonstrate acceptable survival or growth. Only 27% of trees were deemed to be 'healthy' (i.e., with a healthy/intact mainstem and a leaf vigor rating of 3 or higher). Many of the trees exhibited severe leaf yellowing and mainstem die-back at 3-7 feet (0.9-2.1 m) above tree base. Given the poor performance and high level of contamination in Phase 3, it is recommended that the western half of this area be replanted with a shallow-rooted xeric species, such as four-wing saltbush. Factors that may have inhibited tree growth include higher bark density at planting, late planting and its impact on bud break, and dry conditions resulting from lack of summer rains, salt and iron buildup in downstream driplines, and time needed for new irrigation installation in Phase 3. Initial observations suggest hybrid poplar, native cottonwood, and four-wing saltbush are capable of adequate initial growth on a petroleum-contaminated site. However, adequate and timely irrigation is a key factor in survival of transplanted material. In addition, disparities in tree health need to be examined, and long-term monitoring of plants, soil and groundwater is needed to determine if poplars are impacting the site.

Introduction

Hybrid poplars are gaining in scientific interest for their reported ability to serve as phytoremediation agents for certain types of oil-contaminated soil and groundwater (El Gendy et al., 2009; Gordon et al., 1998). Given the high density of abandoned oilfields in New Mexico, and environmental regulations requiring the mitigation of these contaminated lands, the potential of poplars to clean up these sites is intriguing. A phytoremediation project was initiated in 2010 at the abandoned Thriftway Oil Refinery on CR5500 in Bloomfield, NM, to examine the ability of hybrid poplars (*Populus spp.*) to serve as phytoremediation agents for oil-contaminated soil and groundwater, in effect, serving as sponges for pollutants (El Gendy et al., 2009; Gordon et al., 1998). The project is an innovative collaboration between Animas Environmental Services, BioTech Remediation, and the New Mexico State University Agricultural Science Center (ASC) at Farmington. The refinery site, which had been in operation from 1973 to 1991, was selected for the current study due to the high quality of existing groundwater monitoring data, proximity to NSMU Agricultural Science Center, and high levels of soil and groundwater contamination with free product floating on the water table above the site selected for remediation and a significant but lower level of groundwater contamination at the remediation site. The site is situated along the Kutx Wash north of Bloomfield, and has been managed for several years by Animas Environmental Services and BioTech for mitigation of petrochemical contaminants in the soil and groundwater. The water table at the site is 5-6 feet below the soil surface. Analysis of groundwater at the planting site shows levels of total dissolved solids (TDS) exceeding 4,500 mg/L and concentrations of methyl tertiary butyl ether (MTBE) near 55 µg/L. Levels of Gasoline Range Organics (GRO C6-C10) are ~0.11 mg/L.

Materials and methods

The site has undergone three phases of tree plantings, starting in early 2010. In that first year, whips of local and hybrid poplar (*Populus spp.*) as well as bareroots of the xeric woody species, four-wing saltbush (*Atriplex canescens*), were planted in rows bordering the northern fenceline of the site. A drip irrigation system was then installed that supplies moderately to severely saline water (TDS 1,000 to 2,700 mg/L) from a 1,500-foot well approximately 200 feet from the irrigated area. For the second phase of tree planting (March 2011), 239 dormant poplar poles, 15-20 feet in length with a 1 to 2-inch aboveground diameter at breast height (DBH), were planted in four rows just west of the 2010 plantings. Poles were inserted into groundwater 5 feet apart with 10 foot alleys between rows. In April 2012, a third grouping of approximately 224 hybrid poplar poles with similar size and layout dimensions was planted towards the northwest corner of the site, and was also supplied with drip irrigation. NMSU's ASC-Farmington provided the poplar planting material, largely OP-367, a hybrid of *Populus deltoides* and *P. nigra* which has shown strong survival and growth characteristics in this region. Plantings were observed seasonally for general survival and health, and were evaluated at the end of each season for survival, height, DBH, and leaf vigor (for late 2012). Soil samples were also taken in increments down to water table depth at two sites in each of the planting sites in October 2012 using a heavy-duty sand auger paired with a split-core sampler, to aid in understanding physiochemical dynamics at the tree root zone as well as underlying factors impacting tree health.

Results and discussion

As of late 2012, results were mixed for survival, height, DBH and leaf vigor, particularly across the three phases (Table 1).

Table 1. Survival, height, DBH, and leaf vigor of local and hybrid poplars (*Populus* spp.) and four-wing saltbush (*Atriplex canescens*) planted in a multi-phase phytoremediation project at an abandoned oil refinery site in Bloomfield, NM; Study conducted by NMSU Agricultural Science Center at Farmington, NM. 2012.

Phase	Species	Total Studled	2010*		2011*			2012*			
			Survival (%)	Height (ft)	Survival (%)	Height (ft)	DBH (in)	Survival (%)	Height (ft)	DBH (in)	Leaf Vigor (5-0)**
Phase 1 (Planted Spring 2010)											
	OP-367	111	91.0	4.5	84.7	6.9	0.6	82.9	8.8	0.9	2.9
	PC-6	50	86.0	4.2	86.0	6.4	0.6	86.0	8.6	0.8	3.1
	DN-34	20	85.0	3.5	85.0	4.9	0.4	85.0	5.9	0.6	2.2
	58-280	11	10.0	5.0	10.0	6.9	0.7	10.0	8.7	0.9	0.4
	Native	41	85.0	3.3	82.9	6.1	0.4	82.9	7.8	0.6	3.5
	Saltbush	61	80.3	0.8	50.8	2.0	-	50.8	2.5	-	1.2
Phase 2 (Planted Spring 2011)											
	OP-367	220	-	-	100.0 [†]	13.8 [†]	1.3 [†]	97.3	14.8 [‡]	1.5 [‡]	3.4
Phase 3 (Planted Spring 2012)											
	OP-367	197	-	-	-	-	-	73.1	14.7 [‡]	1.3 [‡]	1.9

* End-of-season data collected October 2010, January 2012, and October/November 2012.

** Leaf vigor is a visual measure of leaf color/health/abundance, where 5=excellent, 4=good, 3=fair, 2=poor, 1=general absence of leaves, and 0=dead tree.

† Data based on a representative subsample (N=40).

‡ Data based on measurements from healthy trees, i.e., trees with a healthy/intact mainstem and a leaf vigor rating of 3 or higher (Phase 2 N=162; Phase 3 N=54).

Phase 1 plantings demonstrated adequate survival and growth after three growing seasons (Figure 1). Survival for hybrid poplar clones PC-6, DN-34, and OP-367 was 86.0%, 85.0%, and 82.9%, respectively, with native cottonwood at 82.9%, reflecting reasonable survival for these entries. Fourwing saltbush had 50.8% survival. Height and DBH were satisfactory for the three top poplar clones and the cottonwood, with height ranging from 5.9 to 8.8 feet, and DBH ranging from 0.6 to 0.9 inches.

Phase 2 poplars (OP-367), planted in Spring 2011 as mature poles, demonstrated near 100% survival and an average new stem growth of 8 inches after the first growing season; however, general health



Figure 1. Phase 1 plots (planted in 2010) with local cottonwood and hybrid poplar demonstrating exceptional growth and leafiness. Open area in center has been naturally revegetated with native grasses and forbs.

and survival of these trees decreased somewhat during the second growing season (Figure 2). Average height in 2012 was 14.8 feet, representing approximately one foot of new growth since the previous year. Average DBH was 1.5 inches, and average leaf vigor was 3.4.

Phase 3 poplars (OP-367), planted in Spring 2012 as mature poles, failed to demonstrate acceptable survival or growth (Figure 3). Only 27% of trees were deemed to be 'healthy' (i.e., with a healthy/intact mainstem and a leaf vigor rating of 3 or higher). Many of the trees exhibited severe leaf yellowing and mainstem die-back at 3-7 feet above tree base.

A September 2012 evaluation showed variable leaf vigor and overall tree health, with most favorable health for 2010 plantings, mediocre health for 2011 plantings, and poor health for 2012 plantings.

A definite leafing gradient from healthy to poor was noted among the different plantings. Phase 3 trees exhibited poor leaf-out, discolored leaves, and an overall lack of vigor. Inhibiting factors may have included higher bark density at planting, late planting and its impact on bud break, and dry conditions resulting from lack of summer rains, salt and iron buildup in downstream drip lines, and time needed for new irrigation installation. Given the poor performance and high level of contamination in Phase 3, it is recommended that the western half of this area be replanted with a shallow-rooted xeric species, such as four-wing saltbush.

Soil and water samples from the site are still being analyzed, but they show some unique challenges faced by the introduced trees. Figure 4 shows the location of Phase 1 plantings at the refinery. Note the salt and iron deposits clearly visible in the downstream areas of the dripline. Analysis of groundwater at the planting sites indicated high levels of total dissolved solids (TDS) greater than 4,500 mg/L and concentrations of methyl tertiary butyl ether (MTBE), a pervasive residual contaminant, at nearly 55 µg/L. Levels of Gasoline Range Organics (GRO C6-C10) were ~0.11 mg/L. Soil samples taken in increments to water table depth (up to 5 ft) revealed a layer of dark, petroleum-laden sludge in the moisture zone, overlying a dense clay layer. This clay layer likely impairs root growth both physically and chemically, and restricts downward movement of water and petroleum. High levels of irrigation may be needed to promote healthy root development in this environment. Detailed soil and water analyses will be reported later.



Figure 2. Phase 2 hybrid poplars (planted in 2011) demonstrating good growth and leafiness. Naturally revegetated native grass and herbaceous forb species are established along the drip irrigation line.



Figure 3. Phase 3 hybrid poplars (planted in 2012) showing poor growth and leafiness. Naturally revegetated native grass and herbaceous forb species are evident.



Figure 4. Satellite Image of phytoremediation site in Bloomfield, NM showing Phase 1 plantings in four long rows along the north perimeter of the refinery. Note the salt and iron deposits clearly visible in the downstream areas of the dripline on the west side of the site (Google, 2013). Despite the difficult growing environment, poplars have shown adequate growth and health.

Conclusions

Given the level of salt and iron in the irrigation water and the groundwater plus the elevated levels of MTBE and GRO C6-C10, it's a wonder there is a single leaf on the trees and bushes, let alone the significant foliage produced to date. Initial observations suggest hybrid poplar, native cottonwood, and four-wing saltbush are capable of adequate initial growth on a petroleum-contaminated site. However, adequate and timely irrigation is a key factor in early survival of transplanted poplars. In addition, disparities in tree health need to be examined, and long-term monitoring of plant tissue, soil and groundwater is needed to determine if poplars are impacting the site. It will be interesting to observe the degree of survival and growth of these poplars in future years, and to determine if they are able to exert a phytoremediatory effect on adjacent soil and groundwater.