



**DCP Midstream**  
370 17<sup>th</sup> Street, Suite 2500  
Denver, CO 80202  
**303-595-3331**  
303-605-2226 FAX

January 16, 2012

Mr. Leonard Lowe  
Environmental Engineer.  
New Mexico Oil Conservation Division  
1220 S. St. Francis Dr.  
Santa Fe, NM 87505

**RE: 3rd Quarter 2011 (Annual) Groundwater Monitoring Results  
Hobbs Booster Station, Lea County New Mexico (GW-044)  
Unit C and D, Section 4, Township 19 South, Range 38 East**

RECEIVED OCD  
2012 JAN 17 P

Dear Mr. Lowe:

DCP Midstream, LP (DCP), is pleased to submit for your review, a one copy of the 3rd Quarter 2011 (Annual) Groundwater Monitoring Report for the DCP Hobbs Booster Station located in Hobbs, New Mexico (Unit C and D Section 4, T19S, R38E (32.696 degrees North, 103.156 degrees West). During the 3<sup>rd</sup> Quarter groundwater sampling of Hobbs Booster Station, additional groundwater monitor wells are only sampled on an annual basis.

If you have any questions regarding the report, please call me at 303-605-1718 or email me at [swweathers@dcpmidstream.com](mailto:swweathers@dcpmidstream.com).

Sincerely

**DCP Midstream, LP**

Stephen Weathers, P.G.  
Principal Environmental Specialist

cc: Larry Johnson, OCD Hobbs District Office (Copy on CD)  
Environmental Files

Annual 2011 Groundwater Monitoring and Activities  
Summary Report

Hobbs Booster Station  
Lea County, New Mexico  
GW-044

Prepared for:



370 17<sup>th</sup> St., Suite 2500  
Denver, CO 80202

*Prepared by:*



Tasman Geosciences

5690 Webster, Ave  
Arvada, CO 80002

**November 30, 2011**

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2012 JAN 17 P 1:17

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## 1. Introduction

Tasman Geosciences, LLC (Tasman) is submitting to DCP Midstream (DCP) the results of the annual 2011 groundwater monitoring activities conducted in the third quarter, September 15 and 16, 2011 at the Hobbs Booster Station (Site) in Lea County, New Mexico (Figure 1). The purpose of the field activities described herein were to: a) determine the presence of light non-aqueous phase liquid (LNAPL) hydrocarbons; b) measure groundwater levels; c) obtain groundwater samples for chemical analysis; and d) subsequently evaluate and present groundwater flow and quality conditions. Previous groundwater monitoring activities were performed by American Environmental Consulting LLC (AEC) after which project responsibilities were transferred to Tasman Geosciences, LLC (Tasman). The field data and laboratory analytical results collected during the reporting period were used to develop a groundwater elevation contour map and an analytical results map, to evaluate current conditions at the Site.

## 2. Site Location and Background

The Site is located in New Mexico Oil Conservation Division (OCD) designated Units C and D, Section 4, Township 19 South, Range 38 East (Figure 1). The facility coordinates are 32.696 degrees north and 103.156 degrees west. This facility is no longer used as an active gas compression facility or product transfer site, currently the site is primarily used as a DCP field office and as an overhaul shop. All ancillary equipment and buildings associated with the former Booster Station have been decommissioned and/or demolished.

The Site currently has 30 groundwater monitoring wells which are illustrated on Figure 2. Twenty-seven of the wells are located on the Site property while the other three wells, MW-23, MW-24, and MW-25 are located to the southeast of the property boundary on land currently owned by Occidental Permian.

A dual phase LNAPL recovery and soil vapor extraction (SVE) system (LNAPL/SVE System) utilizing LNAPL "skimming" product recovery pumps and vacuum blower units is currently operated at the Site. There are 28 dual phase extraction wells (Figure 2) located on-Site including, MW-4, MW-8, MW-11, and MW-13 which were previously converted from monitoring wells due to the historically high levels of LNAPL observed in those wells. LNAPL/SVE System operations and maintenance activities are describe in Section 4.

Additionally, the Site operates an air-sparge (AS) cut-off system that was installed along the south-central Site boundary and includes 21 AS injection wells connected in series (Figure 2). Historically, the AS system injects air into the groundwater table at pressures averaging between 9 and 10 pounds per square inch (psi).

### 3. Groundwater Monitoring

This section describes the field groundwater monitoring activities as well as laboratory analyses performed during the annual 2011 monitoring event. Monitoring activities included Site-wide groundwater gauging, LNAPL measurements, groundwater purging and sampling, and subsequent packaging and shipping of the samples to the laboratory for chemical analyses. Figure 2 illustrates the groundwater monitoring network utilized to perform these activities at the Site.

#### 3.1 Groundwater and LNAPL Elevation Monitoring

Groundwater and LNAPL levels were measured in order to evaluate hydraulic characteristics and provide information regarding fluctuations in groundwater and LNAPL elevations at the Site. In addition, wells that did not have LNAPL present were measured for total depth and recorded for subsequent use to estimate groundwater purge volumes. During the annual 2011 monitoring event, groundwater and LNAPL levels, if present, were measured at 24 monitoring well locations.

Groundwater and LNAPL levels were measured on the north side of the well casing to the nearest 0.01-foot using an oil-water interface probe (IP). Groundwater levels were subsequently converted to elevations (feet above mean sea level [AMSL]).

Groundwater elevations collected during the annual 2011 monitoring event as well as groundwater elevations from previous monitoring events are presented in Table 1 and a groundwater elevation contour map is illustrated on Figure 3. Groundwater elevations ranged from 3577.62 feet AMSL at monitoring well MW-2 and 3568.64 feet AMSL in monitoring well MW-19D. As illustrated on Figure 3, groundwater flow at the Site generally trends to the east with a gradient of approximately 0.004 foot per foot between monitoring wells MW-6 and MW-21.

LNAPL was detected in eight of the measured groundwater monitoring wells with thicknesses ranging between 0.20-feet in MW-18 to 8.28-feet in MW-12. Calculated groundwater elevation in these wells was corrected to account for LNAPL thickness and density.

#### 3.2 Groundwater Quality Monitoring

Prior to collecting groundwater samples, groundwater levels, the presence of LNAPL, and the total depth of the wells (in wells without LNAPL) were measured as previously described. Subsequently, a minimum of three well casing volumes of groundwater (calculated from total depth of the well and groundwater level measurements) were purged using dedicated polyethylene bailers from the subject well prior to collecting groundwater samples. Groundwater samples were collected using dedicated polyethylene bailers, placed in clean laboratory supplied containers for the selected analytical methods and packed in an ice-filled cooler and maintained at approximately four (4) degrees Celsius ( $^{\circ}\text{C}$ ) for transportation.

Groundwater samples were then shipped under chain-of-custody procedures to Accutest Laboratories (Accutest) in Wheat Ridge, Colorado, for analysis.

Water quality samples were collected from 15 monitoring wells during the annual 2011 monitoring event. MW-1, MW-2, MW-9, MW-12, MW-17, MW-18, TW-K, and TW-N were not sampled due to the presence of measurable LNAPL detected in the well. MW-7 was not sampled due to an obstruction that was encountered within the well at approximately 42-feet below ground surface (bgs). Water quality samples were submitted to Accutest for benzene, toluene, ethylbenzene, and xylene (BTEX) analyses by United States Environmental Protection Agency (USEPA) Method 8260B.

Table 2 summarizes BTEX concentrations in groundwater samples collected during the September 2011 event. Laboratory analytical reports for the event are included in Appendix A and analytical results are summarized on Figure 4.

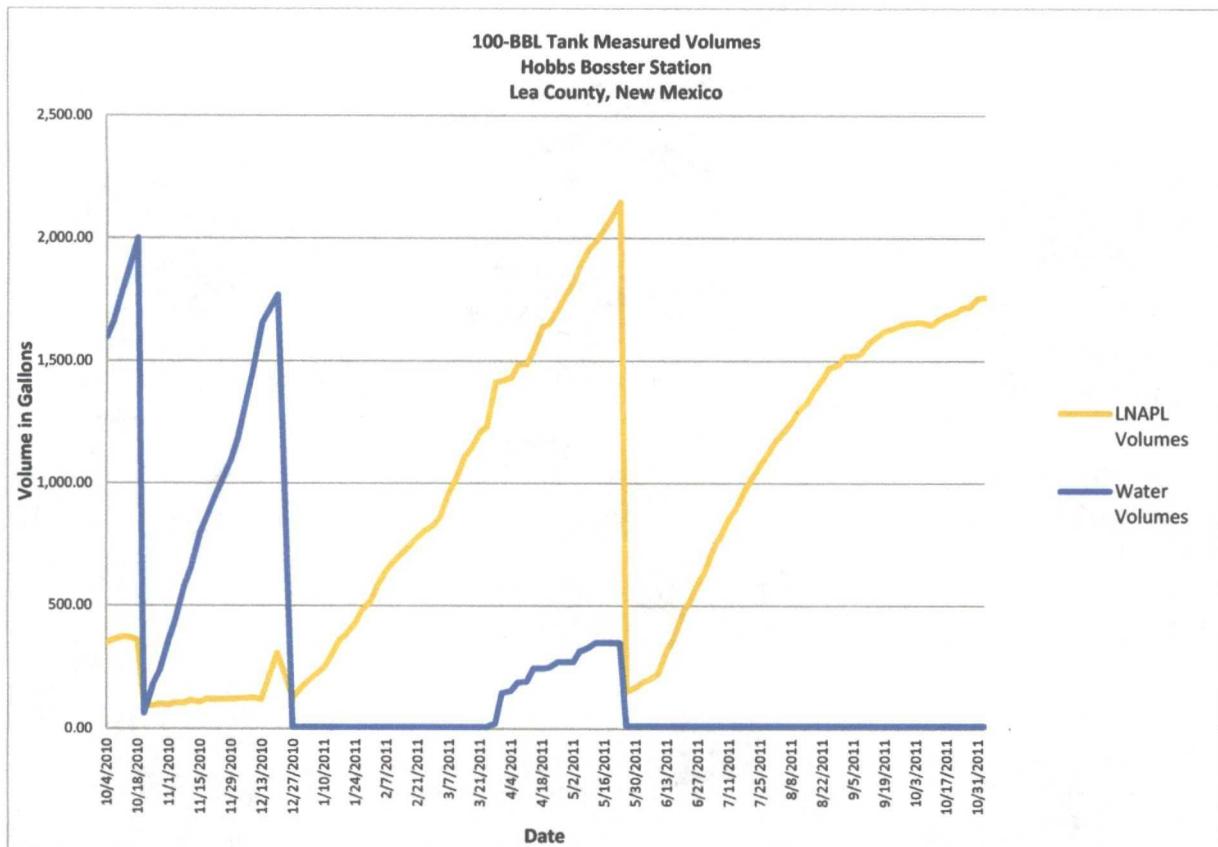
Water quality parameters were not collected during the monitoring event due to a malfunctioning field instrument. However, based on evaluation of previous monitoring field data sheets (first half 2011 data), the Site monitoring wells did not require more than three purge volumes to achieve parameter stabilization. As such, the analytical data are considered to be representative of site conditions in that a minimum of three purge volumes were evacuated from all sampled monitoring wells during the annual sampling event.

#### **4. Remediation System O&M**

##### LNAPL/SVE System

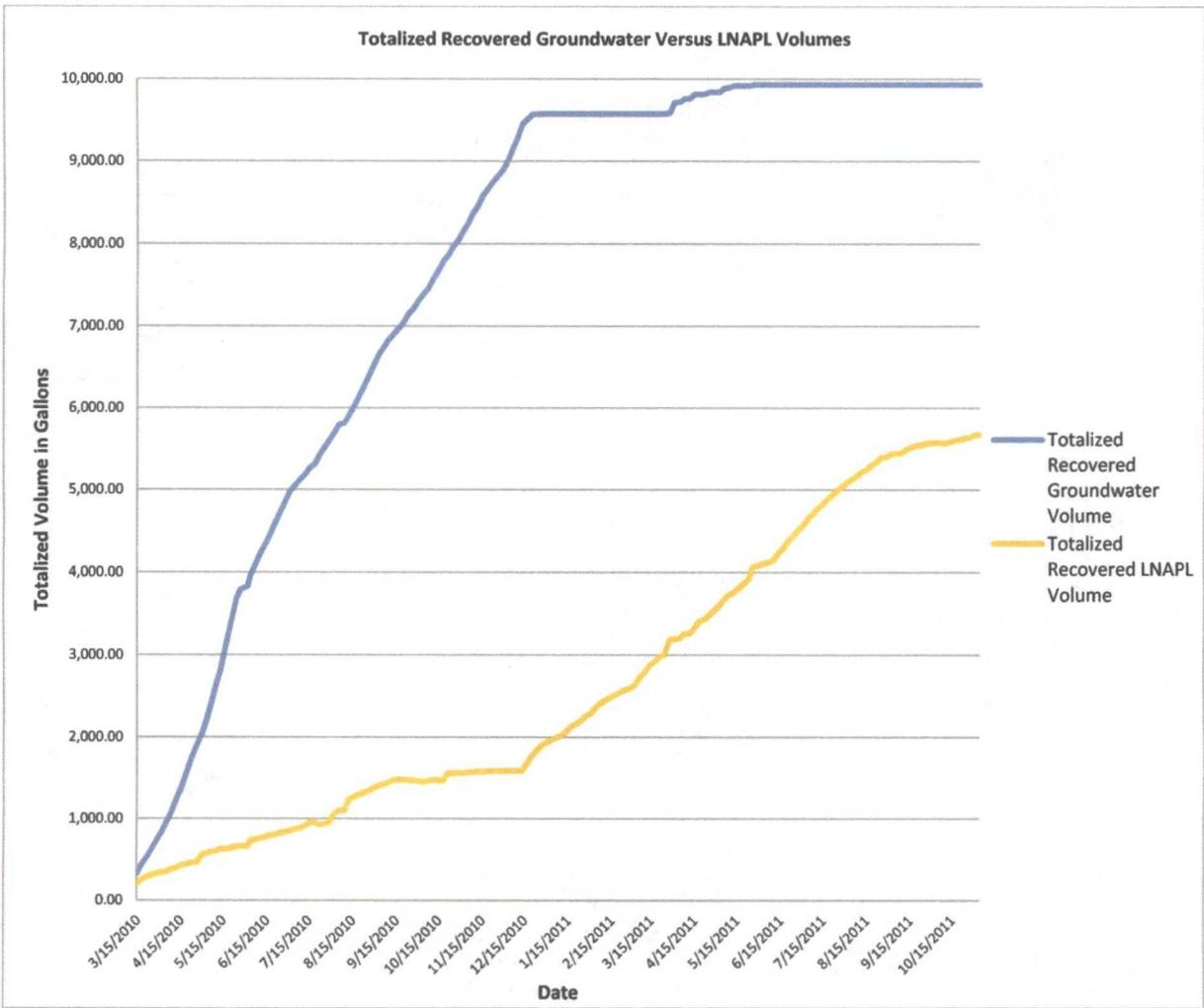
The SVE portion of the LNAPL/SVE System has been non-operational since December 2010 due to an associated interference with product recovery pump operation during SVE operation. Use of an alternate product recovery pump is currently under evaluation so that vacuum enhanced product recovery may resume.

Currently ten of the above referenced LNAPL recovery wells have operational recovery pumps (PW-KK, TW-B, PW-DD, MW-13, TW-D, TW-C, PW-CC, TW-L, TW-P and TW-J). The recovery wells have been monitored on a bi-weekly basis for LNAPL and groundwater elevation data as well as LNAPL recovery pump operation by Environmental Plus, Inc. (EPI). The active LNAPL recovery pumps discharge through recovery system transfer lines to a 100 barrel (bbl) welded steel holding tank located on-Site. The 100-bbl tank is gauged on a bi-weekly basis by EPI for LNAPL and water volumes. The graph below illustrates LNAPL to groundwater recovery volumes that have been collected in the 100-bbl tank through October 31, 2011.



Notes:  
The steep declines in water and LNAPL volumes indicate evacuation of the tank contents.

Recovery well TW-C is connected to a 500-gallon polyethylene (poly) tank on-Site via recovery transfer lines. EPI has been checking the level of the tank on a bi-weekly basis since product recovery was initiated at TW-C. The graph below illustrates the combined (100-bbl tank and 500-gallon tank) volume of recovered groundwater and LNAPL from March 15, 2010 through November 3, 2011.



**AS System**

The AS System has continued to operate on a 24-hour per day basis with minor down time due to routine scheduled equipment maintenance. As evidenced by the dissolved phase hydrocarbon concentrations exhibited in monitoring wells MW-15 and MW-23, the AS system continues to effectively cut of the dissolved phase plume from migrating off-site.

## 5. Conclusions

Of the sampled monitoring wells, dissolved phase benzene impacts exceeded the regulatory limits in monitoring wells MW-10 and MW-14. Analytical results were above the laboratory detection limits for dissolved phase BTEX impacts in monitoring wells MW-3, MW-15, MW-19D, and MW-22. Based on the data presented herein, LNAPL distribution and dissolved-phase hydrocarbon impacts are stable or decreasing and operation of the SVE, AS, and LNAPL recovery Systems are sufficiently addressing the hydrocarbon impacts at the Site.

Ongoing O&M and optimization of the LNAPL recovery system and the AS system will provide for continued extraction of LNAPL mass and aid in the natural attenuation of dissolved phase hydrocarbon impacts at the Site. Initiation and optimization of the Site SVE System in conjunction with the LNAPL Recovery System will provide for vapor phase hydrocarbon removal and enhanced LNAPL recovery rates. Ongoing quarterly groundwater monitoring and sampling activities will provide for continued monitoring of dissolved phase BTEX concentration and LNAPL trends.

## 6. Recommendations

Based on evaluation of 2011 and historical data as well as remediation system operational parameters, recommendations have been developed for future activities, as described below:

- Continue quarterly groundwater monitoring and sampling activities;
- Continue and optimize AS, SVE, and Product Recovery System operation and maintenance;
- Continue product pump evaluation to re-initiate vacuum enhance product recovery, and;
- Commence and optimize SVE operation at recovery wells not currently equipped with an active product recovery pump.

Tables

**TABLE 1  
ANNUAL SAMPLING 2011  
SUMMARY OF GROUNDWATER ELEVATION DATA  
HOBBS BOOSTER STATION  
LEA COUNTY, NEW MEXICO**

Location	Date	Depth to Groundwater (1) (feet)	Depth to Product (1) (feet)	Free Phase Hydrocarbon Thickness (feet)	Total Depth (2) (feet)	TOC Elevation (feet amsl)	Groundwater Elevation (feet amsl)	Change in Groundwater Elevation Since Previous Event (3) (feet)
MW-21	3/29/2011	53.72					3570.53	
MW-21	6/21/2011	54.19					3570.06	
MW-21	9/15/2011	54.59			62.75	3624.25	3569.66	-0.87
MW-22	3/29/2011	55.49					3569.67	
MW-22	6/21/2011	55.76					3569.40	
MW-22	9/15/2011	56.23			62.00	3625.16	3568.93	-0.74
MW-23	3/29/2011	47.94					3573.22	
MW-23	6/21/2011	48.34					3572.82	
MW-23	9/15/2011	48.84			56.21	3621.16	3572.32	-0.90
MW-24	3/29/2011	45.98					3573.29	
MW-24	3/11/2011	46.36					3572.91	
MW-24	9/15/2011	46.90			56.77	3619.27	3572.37	-0.92
MW-25	3/29/2011	47.04					3572.69	
MW-25	6/21/2011	47.40					3572.33	
MW-25	9/15/2011	47.91			56.29	3619.73	3571.82	-0.87
TW-H	3/29/2011	46.02					3576.28	
TW-H	6/21/2011	46.42					3575.88	
TW-H	9/15/2011	NM			NM	3622.3	NM	NM
TW-K	3/29/2011	62.66	55.51	7.15			3572.13	
TW-K	6/21/2011	62.47	55.71	6.76			3572.00	
TW-K	9/16/2011	62.10	55.67	6.43		3628.95	3571.67	-0.46
TW-N	3/29/2011	55.60	54.48	1.12			3577.29	
TW-N	6/21/2011	57.24	54.30	2.94			3577.14	
TW-N	9/16/2011	59.13	53.71	5.42		3631.98	3576.92	-0.38
Average Change in groundwater elevation since the previous monitoring event								-0.63

Notes:

- 1- Depths measured from the north edge of the well casing.
- 2- Total depths were collected and recorded during the third quarter 2011 monitoring event. Total depths were not collected in wells that contained LNAPL.
- 3- Changes in groundwater elevation calculated by subtracting the measurement collected during the previous monitoring event from the measurement collected during the most recent monitoring event.

Data presented includes previous sampling event. Historic groundwater elevation data for these locations are available upon request.

Sample locations are shown on Figure 2 and a groundwater elevation contour map is shown on Figure 3.

amsl - feet above mean sea level.

TOC - top of casing.

NM - Not Measured.

**TABLE 1**  
**ANNUAL SAMPLING 2011**  
**SUMMARY OF GROUNDWATER ELEVATION DATA**  
**HOBBS BOOSTER STATION**  
**LEA COUNTY, NEW MEXICO**

Location	Date	Depth to Groundwater (1) (feet)	Depth to Product (1) (feet)	Free Phase Hydrocarbon Thickness (feet)	Total Depth (2) (feet)	TOC Elevation (feet amsl)	Groundwater Elevation (feet amsl)	Change in Groundwater Elevation Since Previous Event (3) (feet)
MW-1	3/29/2011	54.35	49.99	4.36			3575.27	
MW-1	6/21/2011	54.33	50.33	4.00			3575.00	
MW-1	9/16/2011	54.68	50.17	4.51	NM	3626.06	3574.76	-0.51
MW-2	3/29/2011	48.42	45.13	3.29			3577.41	
MW-2	6/21/2011	48.18	45.48	2.70			3577.16	
MW-2	9/16/2011	46.35	45.25	1.10	NM	3623.14	3577.62	0.20
MW-3	3/29/2011	45.42					3577.59	
MW-3	6/21/2011	45.85					3577.16	
MW-3	9/16/2011	46.37			55.80	3623.01	3576.64	-0.95
MW-5	3/29/2011	52.74					3576.42	
MW-5	6/21/2011	52.40					3576.76	
MW-5	9/15/2011	53.40			59.20	3629.16	3575.76	-0.66
MW-6	3/29/2011	48.65					3578.28	
MW-6	6/21/2011	49.02					3577.91	
MW-6	9/16/2011	49.52			56.46	3626.93	3577.41	-0.87
MW-7	3/29/2011	41.64					3579.76	
MW-7	6/21/2011	41.80					3579.60	
MW-7	9/16/2011	NM			NM	3621.40	NM	NM
MW-9	3/29/2011	57.60	51.54	6.06			3572.56	
MW-9	6/21/2011	57.91	51.82	6.09			3572.27	
MW-9	9/16/2011	58.02	51.74	6.28	NM	3625.21	3571.90	-0.66
MW-10	3/29/2011	46.14					3574.93	
MW-10	6/21/2011	46.49					3574.58	
MW-10	9/16/2011	46.99			58.28	3621.07	3574.08	-0.85
MW-12	3/29/2011	28.33	51.75	6.58			3573.64	
MW-12	6/21/2011	59.20	51.84	7.36			3573.41	
MW-12	9/16/2011	59.86	51.58	8.28	NM	3626.60	3572.95	-0.69
MW-14	3/29/2011	48.35					3573.07	
MW-14	6/21/2011	48.37					3573.05	
MW-14	9/16/2011	49.25			62.94	3621.42	3572.17	-0.90
MW-15	3/29/2011	44.09					3575.30	
MW-15	6/21/2011	44.51					3574.88	
MW-15	9/16/2011	45.02			58.17	3619.39	3574.37	-0.93
MW-16	3/29/2011	44.37					3577.50	
MW-16	6/21/2011	44.79					3577.08	
MW-16	9/16/2011	45.31			56.35	3621.87	3576.56	-0.94
MW-17	3/29/2011	54.25	53.46	0.79			3570.35	
MW-17	6/21/2011	54.46	53.71	0.75			3570.09	
MW-17	9/16/2011	53.66	54.47	0.81	NM	3623.94	3570.89	0.54
MW-18	3/29/2011	54.53					3569.77	
MW-18	6/21/2011	54.83	54.77	0.06			3569.52	
MW-18	9/15/2011	54.51	54.71	0.20	NM	3624.30	3569.94	0.17
MW-19	3/29/2011	54.42					3569.70	
MW-19	6/21/2011	54.75					3569.37	
MW-19	9/15/2011	55.18			65.15	3624.12	3568.94	-0.76
MW-19D	3/29/2011	54.33					3569.46	
MW-19D	6/21/2011	54.74					3569.05	
MW-19D	9/15/2011	55.15			78.75	3623.79	3568.64	-0.82
MW-20	3/29/2011	51.97					3569.52	
MW-20	6/21/2011	52.32					3569.17	
MW-20	9/16/2011	52.75			60.80	3621.49	3568.74	-0.78

**TABLE 2**  
**ANNUAL SAMPLING EVENT 2011**  
**SUMMARY OF BTEX CONCENTRATIONS IN GROUNDWATER**  
**HOBBS BOOSTER STATION**  
**LEA COUNTY, NEW MEXICO**

Location Identification	Sample Date	Benzene (mg/l)	Toluene (mg/l)	Ethylbenzene (mg/l)	Total Xylenes (mg/l)	Comments
New Mexico Water Quality Control Commission Groundwater Standards (mg/L)		0.01	0.75	0.75	0.62	
MW-3	3/29/2011	NS	NS	NS	NS	
MW-3	9/16/2011	<0.001	<0.002	0.0246	0.0135	
MW-5	03/29/11	NS	NS	NS	NS	
MW-5	9/15/2011	<0.001	<0.002	<0.002	<0.004	
MW-6	03/29/11	NS	NS	NS	NS	
MW-6	9/16/2011	<0.001	<0.002	<0.002	<0.004	
MW-10	03/29/11	NS	NS	NS	NS	
MW-10	9/16/2011	0.213	<0.01	0.135	<0.02	Duplicate sample collected
MW-14	03/29/11	0.0901	0.0041	<0.002	<0.002	
MW-14	06/21/11	0.187	<0.002	<0.0043	<0.004	
MW-14	09/16/11	0.15	<0.002	0.0024	<0.004	
MW-15	03/29/11	<0.001	<0.002	0.0039	<0.002	
MW-15	06/21/11	0.0048	<0.002	0.0012	<0.004	
MW-15	09/16/11	0.0054	<0.002	0.0124	<0.004	
MW-16	03/29/11	<0.001	<0.002	<0.002	<0.002	
MW-16	06/21/11	<0.001	<0.002	<0.002	<0.004	
MW-16	09/16/11	<0.001	<0.002	<0.002	<0.004	
MW-19	03/29/11	<0.001	<0.002	<0.002	<0.002	
MW-19	06/21/11	<0.001	<0.002	<0.002	<0.004	
MW-19	09/15/11	<0.001	<0.002	<0.002	<0.004	
MW-19D	03/29/11	<0.001	<0.002	<0.002	<0.002	
MW-19D	06/21/11	0.006 J	<0.002	<0.002	<0.004	
MW-19D	09/15/11	0.0014	<0.002	<0.002	<0.004	
MW-20	03/29/11	<0.001	<0.002	<0.002	<0.002	
MW-20	06/21/11	<0.001	<0.002	<0.002	<0.004	
MW-20	09/15/11	<0.001	<0.002	<0.002	<0.004	
MW-21	03/29/11	<0.001	<0.002	<0.002	<0.002	
MW-21	06/21/11	<0.001	<0.002	<0.002	<0.004	
MW-21	09/15/11	<0.001	<0.002	<0.002	<0.004	
MW-22	03/29/11	0.0034	<0.002	<0.002	0.0022	
MW-22	06/21/11	0.0041	<0.002	0.005 J	<0.004	
MW-22	09/15/11	0.0037	<0.002	<0.002	<0.004	
MW-23	03/29/11	<0.001	<0.002	<0.002	<0.002	
MW-23	06/21/11	<0.001	<0.002	<0.002	<0.004	
MW-23	09/15/11	<0.001	<0.002	<0.002	<0.004	

**TABLE 2**  
**ANNUAL SAMPLING EVENT 2011**  
**SUMMARY OF BTEX CONCENTRATIONS IN GROUNDWATER**  
**HOBBS BOOSTER STATION**  
**LEA COUNTY, NEW MEXICO**

Location Identification	Sample Date	Benzene (mg/l)	Toluene (mg/l)	Ethylbenzene (mg/l)	Total Xylenes (mg/l)	Comments
<b>New Mexico Water Quality Control Commission Groundwater Standards (mg/L)</b>		<b>0.01</b>	<b>0.75</b>	<b>0.75</b>	<b>0.62</b>	
MW-24	03/29/11	<0.001	<0.002	<0.002	<0.002	
MW-24	06/21/11	<0.001	<0.002	<0.002	<0.004	
MW-24	09/15/11	<0.001	<0.002	<0.002	<0.004	
MW-25	03/29/11	<0.001	<0.002	<0.002	<0.002	
MW-25	06/21/11	<0.001	<0.002	<0.002	<0.004	
MW-25	09/15/11	<0.001	<0.002	<0.002	<0.004	

Notes:

1.) The environmental cleanup standards for groundwater that are applicable to the Hobbs Booster Station are the New Mexico Water Quality Control Commission (NMWQCC) Groundwater Standards.

2.) Data presented for all other well locations includes previous four sampling events, when available. Historic groundwater analytical results for these locations are available upon request.

**Bold red** values indicate an exceedance of the NMWQCC groundwater standards for the Site.

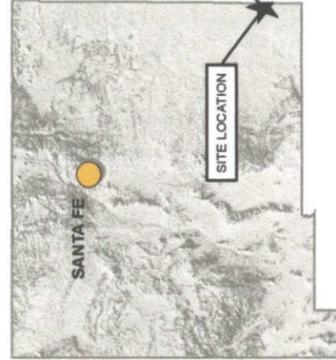
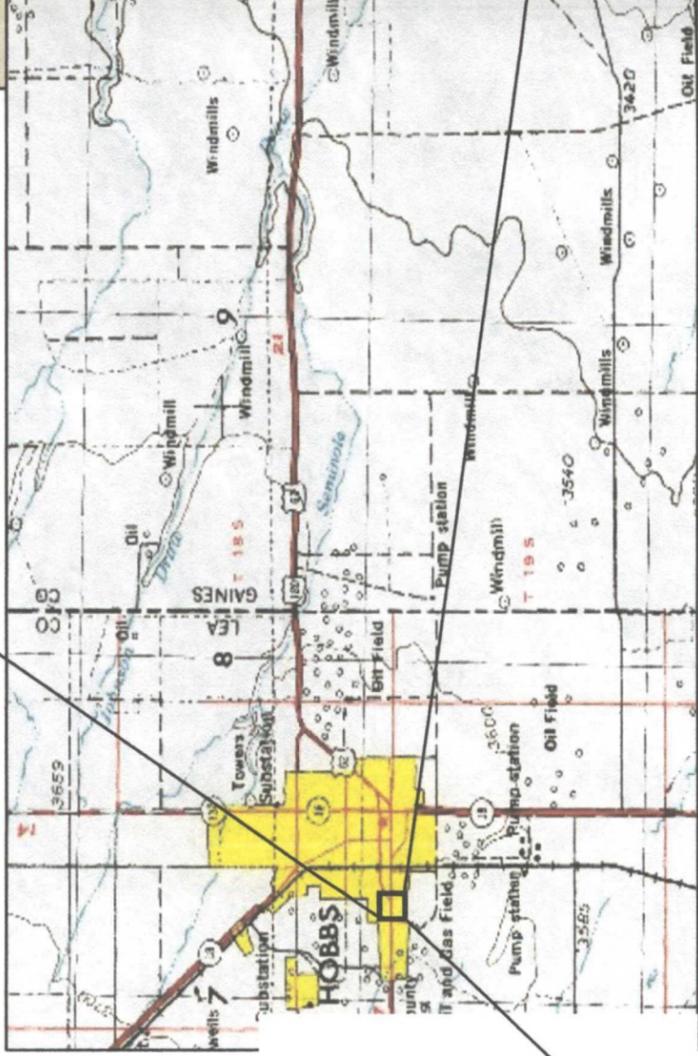
Sample locations are shown on Figure 2 and analytical results are illustrated on Figure 4.

LNAPL = Light Non-Aqueous Phase Liquid

NS = Not sampled.

mg/L = milligrams per liter.

Figures



NEW MEXICO

SANTA FE

SITE LOCATION

DESIGNED BY: B. Humphrey

DRAWN BY: J. Clonts

SHEET CHK'D BY: \_\_\_\_\_

CROSS CHK'D BY: \_\_\_\_\_

APPROVED BY: \_\_\_\_\_

APPROVED BY: \_\_\_\_\_

Tasman Geosciences, LLC  
 5690 Webster St.  
 Arvada, CO 8002  
 720-988-2024



Tasman Geosciences

**HOBBS PIPELINE RELEASE**

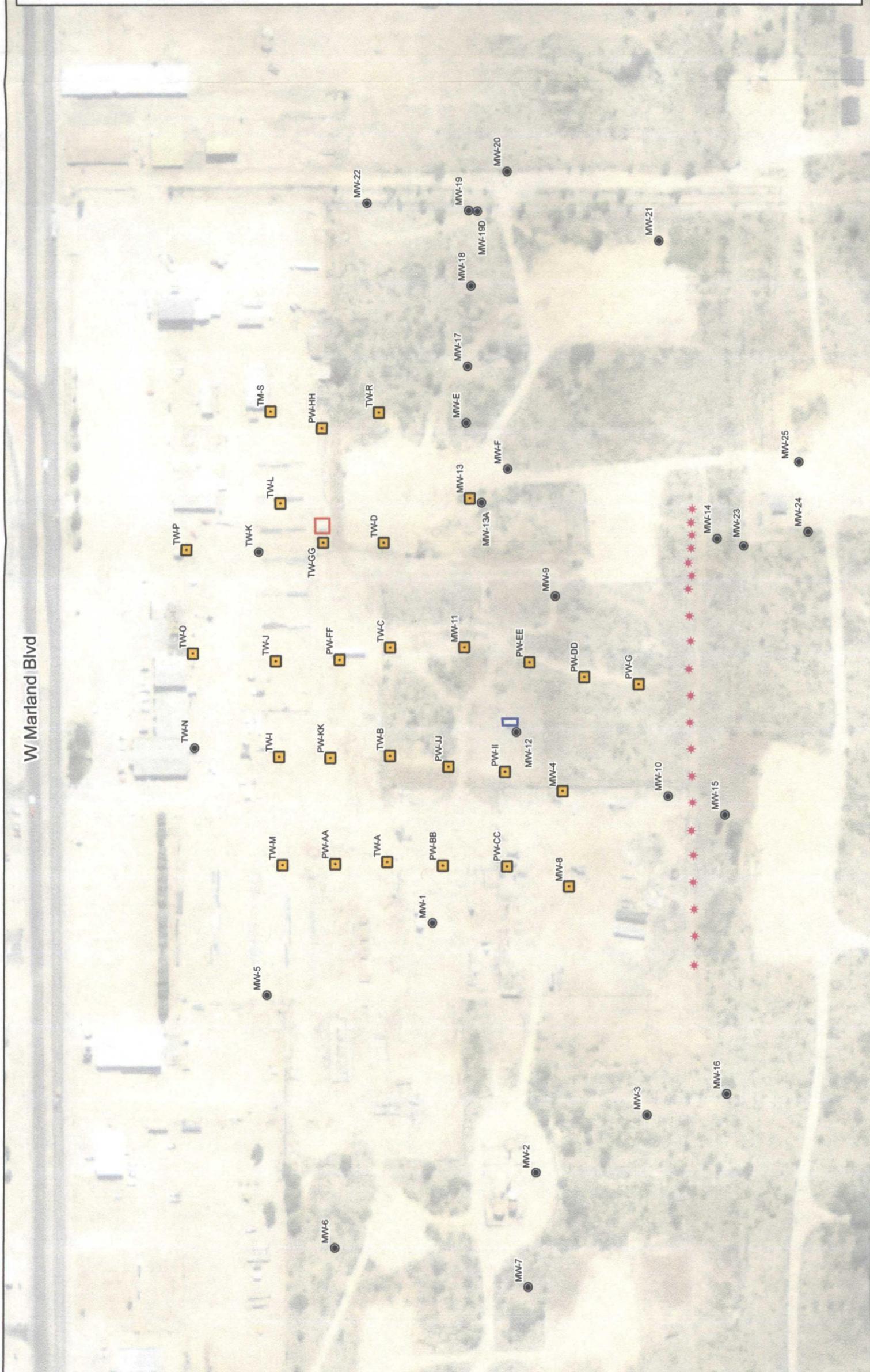
*Third Quarter 2011 Groundwater Monitoring  
 Summary Report*

SITE LOCATION

FIGURE  
 1

W Marland Blvd

- Legend**
- Monitoring Well
  - LNAPL/SVE Recovery Well
  - \* Air Sparge Point
  - ▭ Air Sparge System Equipment Platform
  - ▭ LNAPL/SVE Recovery System Equipment Platform and Holding Tanks



DESIGNED BY: B. Humphrey  
 DRAWN BY: J. Clontis  
 SHEET CHK'D BY: \_\_\_\_\_  
 CROSS CHK'D BY: \_\_\_\_\_  
 APPROVED BY: \_\_\_\_\_  
 APPROVED BY: \_\_\_\_\_



Tasman Geosciences, LLC  
 5690 Webster St.  
 Arvada, CO 8002  
 720-988-2024

**HOBBS PIPELINE RELEASE**  
 Third Quarter 2011 Groundwater Monitoring  
 Summary Report

**SITE MAP**

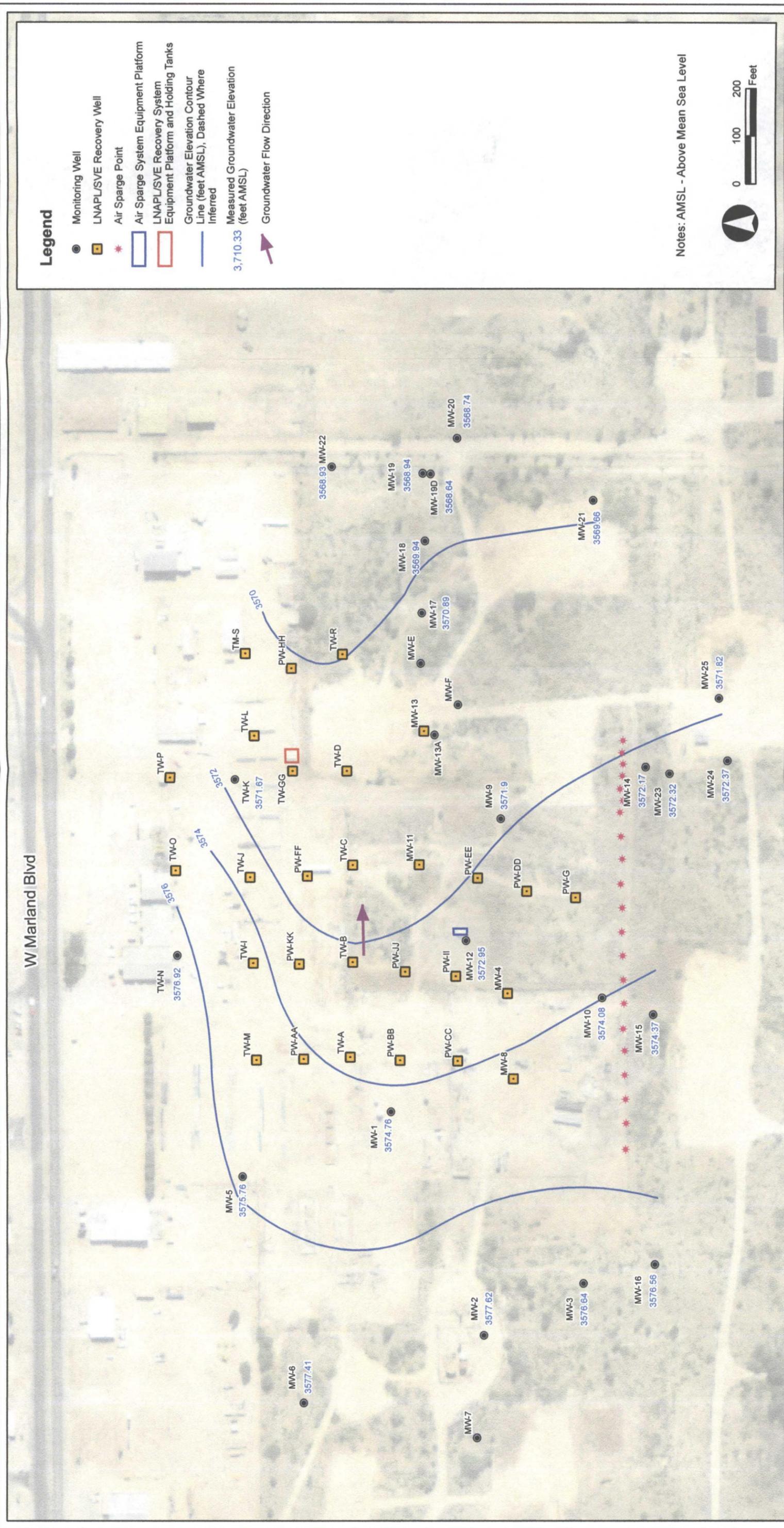
**FIGURE 2**

W Marland Blvd

**Legend**

- Monitoring Well
- LNAPL/SVE Recovery Well
- \* Air Sparge Point
- Air Sparge System Equipment Platform
- LNAPL/SVE Recovery System Equipment Platform and Holding Tanks
- Groundwater Elevation Contour Line (feet AMSL), Dashed Where Inferred
- 3,710.33 Measured Groundwater Elevation (feet AMSL)
- ➔ Groundwater Flow Direction

Notes: AMSL - Above Mean Sea Level



**GROUNDWATER ELEVATION  
CONTOUR MAP  
(SEPTEMBER 16 & 15, 2011)**

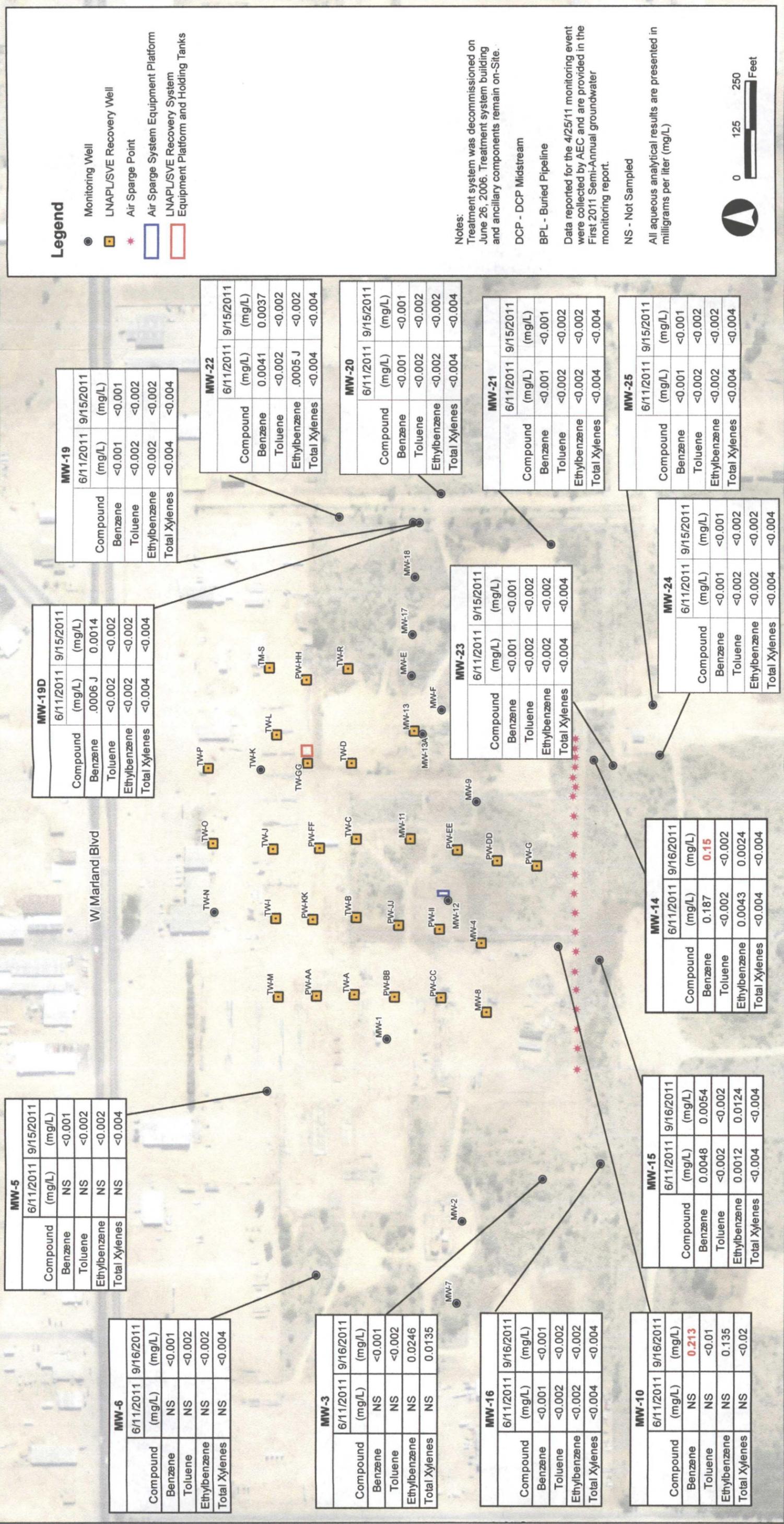
**HOBBS PIPELINE RELEASE**  
*Third Quarter 2011 Groundwater Monitoring  
Summary Report*

Tasman Geosciences, LLC  
5690 Webster St.  
Arvada, CO 8002  
720-988-2024



**Tasman Geosciences**

DESIGNED BY: B. Humphrey  
 DRAWN BY: J. Clontis  
 SHEET CHK'D BY: \_\_\_\_\_  
 CROSS CHK'D BY: \_\_\_\_\_  
 APPROVED BY: \_\_\_\_\_  
 APPROVED BY: \_\_\_\_\_



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**ANALYTICAL RESULTS MAP**

**FIGURE 4**

**Appendix A**  
**Laboratory Analytical Report**