



DCP Midstream
370 17th Street, Suite 2500
Denver, CO 80202
303-595-3331
303-605-2226 FAX

June 11, 2012

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

**RE: 1st Quarter 2012 Groundwater Monitoring Results
DCP Midstream, LP J-4-2 Pipeline Release (1RP-1728)
Unit C, Section 27, Township 19 South, Range 35 East
Lea County, New Mexico**

Dear Mr. Lowe:

DCP Midstream, LP (DCP) is pleased to submit for your review, a copy of the 1st Quarter 2012 Groundwater Monitoring Results for the DCP J-4-2 Pipeline Release located in Lea County, New Mexico (Unit C, Section 27, Township 19 South, Range 35 East).

If you have any questions regarding the report, please call at 303-605-1718 or e-mail me swweathers@dcpmidstream.com.

Sincerely

DCP Midstream, LP

Stephen Weathers, PG
Principal Environmental Specialist

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

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First Quarter 2012 Groundwater Monitoring Summary Report

J-4-2 Pipeline Release
Lea County, New Mexico
1RP-1728

Prepared for:



370 17th St., Suite 2500
Denver, CO 80202

Prepared by:



Tasman Geosciences

5690 Webster Street
Arvada, CO 80002

May 4, 2012

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1. Introduction

Tasman Geosciences, LLC (Tasman) is submitting to DCP Midstream (DCP) the results of the first quarter 2012 groundwater monitoring activities conducted on March 11, 2012, as well as remediation activities conducted on March 7 2012 at the J-4-2 pipeline release (Site) in Lea County, New Mexico (Figure 1). The field activities described herein were performed with the purpose of monitoring groundwater flow and quality and assessing the presence of light non-aqueous phase liquid (LNAPL) hydrocarbons in the Site subsurface. The data collected herein were used to develop a groundwater elevation map, an analytical results map, and light non-aqueous phase liquid (LNAPL) versus time and groundwater elevation graphs to evaluate current conditions at the Site.

2. Site Location and Background

The Site is located in the northeastern quarter of the northwestern quarter (Unit C) of Section 27, Township 19 South, Range 35 East approximately 3 miles south of the intersection of US Highway 82 and State Highway 483. The area is sparsely populated and land use is primarily associated with livestock grazing and oil and gas extraction and conveyance.

Based on findings from previous Site investigations, a natural gas condensate release was reported at the Site on August 3, 2005. Environmental Plus Incorporated (EPI) of Eunice, New Mexico, performed initial Site investigation activities. EPI reported that the spill was limited to an approximate area of 2,800 square feet and it did not migrate to any surface water features. EPI installed monitoring wells MW-1, MW-2, and MW-3 as a part of the initial soil and groundwater characterization effort in February 2006. Monitoring wells MW-4, MW-6, MW-7, and MW-8 were installed in September 2006 as part of a Site investigation completed by American Environmental Consulting. Installation of monitoring well MW-5 was not completed during this event due to refusal while advancing the borehole. Groundwater samples collected in 2006 from the newly installed wells indicated that dissolved phase petroleum hydrocarbons and chloride had impacted groundwater at the Site in the vicinity of monitoring wells MW-1 and MW-2. In addition, LNAPL was detected at monitoring wells MW-1 and MW-2.

3. Groundwater Monitoring

This section describes the field and laboratory activities performed during the first quarter 2012 groundwater monitoring event. Monitoring activities included Site-wide groundwater gauging, LNAPL measurements, and groundwater sampling. 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 seasonal fluctuations in groundwater elevations at the Site. During the first quarter 2012, groundwater levels were measured at seven monitoring well locations.

Groundwater 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 level data were later converted to elevation (feet above mean sea level [AMSL]). LNAPL levels, where indicated by the IP, were also recorded.

Groundwater elevation measurements collected during the reporting period as well as historical elevations are presented in Table 1, and a first quarter 2012 groundwater elevation contour map is illustrated on Figure 3. Groundwater elevations ranged from 3,705.32 feet AMSL at monitoring well MW-8 to 3,709.67 feet AMSL at monitoring well MW-4. As illustrated on Figure 3, groundwater flow at the Site generally trends to the southeast with a gradient of approximately 0.005 foot per foot between monitoring wells MW-4 and MW-8.

LNAPL was detected at MW-2 (0.01-feet) with the measured thickness indicated in parenthesis.

3.2 Groundwater Quality Monitoring

Groundwater levels, LNAPL thickness, and total well depth were measured at each of the Site monitoring wells prior to collecting groundwater samples. A minimum of three well casing volumes of groundwater were purged 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, 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 six of seven wells. MW-2 was not sampled due to the presence LNAPL in the well casing. Water quality samples were submitted for analysis of benzene, toluene, ethylbenzene, and xylene (BTEX) by United States Environmental Protection Agency (USEPA) Method 8260B, and chloride by USEPA Method 300.

Table 2 summarizes BTEX and chloride concentrations in groundwater samples collected during the March 2012 event. Laboratory analytical reports for the event are included in Appendix A and analytical results are summarized on Figure 4. The groundwater samples collected from the Site monitoring wells did not contain concentrations of dissolved phase BTEX above laboratory reporting limits. Chloride was

detected in all six of the sampled wells with concentrations ranging from 345 milligrams per liter (mg/L) in MW-8 to 2,970 mg/L in MW-1.

3.3 Data Quality Assurance / Quality Control

A trip blank, matrix spike or matrix spike duplicate (MS/MSD) and field duplicate sample (MW-04) were collected during the sampling event. The data were reviewed for compliance with the analytical method and the associated quality assurance/quality control (QA/QC) procedures. All samples were analyzed using the correct analytical methods and within the correct holding times. Chain of custody forms were in order and properly executed and indicate that samples were received at the proper temperature with no headspace. All data were reported using the correct method number and reporting units. The trip blank was fully in control, having no detections of targets.

Duplicate samples collected at MW-04 were in compliance with QA/QC measures, both returning results below laboratory detection limits.

The overall QA/QC assessment of the data, based on the data review, indicate that both field precision and overall data precision and accuracy are acceptable.

4. Remediation Activities

4.1 Vacuum Enhanced LNAPL Recovery

On March 7, 2012, Tasman conducted a 3.5-hour vacuum enhanced LNAPL recovery events at monitoring wells MW-1 and MW-2 utilizing a vacuum truck. Product thickness prior to vacuum recovery was 0.03 feet and 0.02 feet at MW-1 and MW-2, respectively.

Approximately 168 gallons of mixed liquids were recovered from MW-1 and 336 gallons were recovered from MW-2. The recovered liquids were subsequently transported to and disposed of at the DCP Linam Ranch facility.

During the vacuum enhanced recovery events at each well, subsurface pressure was measured at the nearby monitoring wells to determine possible vacuum communication. Vacuum was not observed at the nearby wells during either of the vacuum recovery events. Additionally, LNAPL measurements were collected subsequent to the vacuum enhanced recovery events, and no measureable amount of LNAPL was observed in either well.

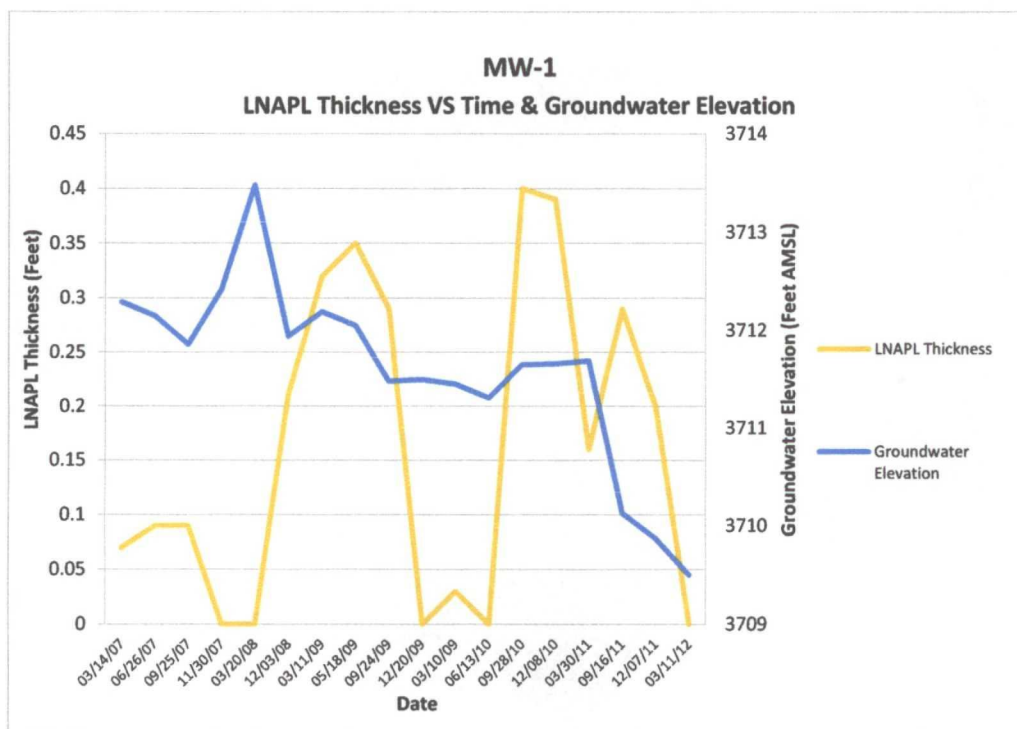
4.2 LNAPL Collection Bailer

A passive LNAPL collection bailer is installed at monitoring well MW-2. During the first quarter 2012 groundwater monitoring event, approximately 0.09 gallons of LNAPL was recovered from the collection

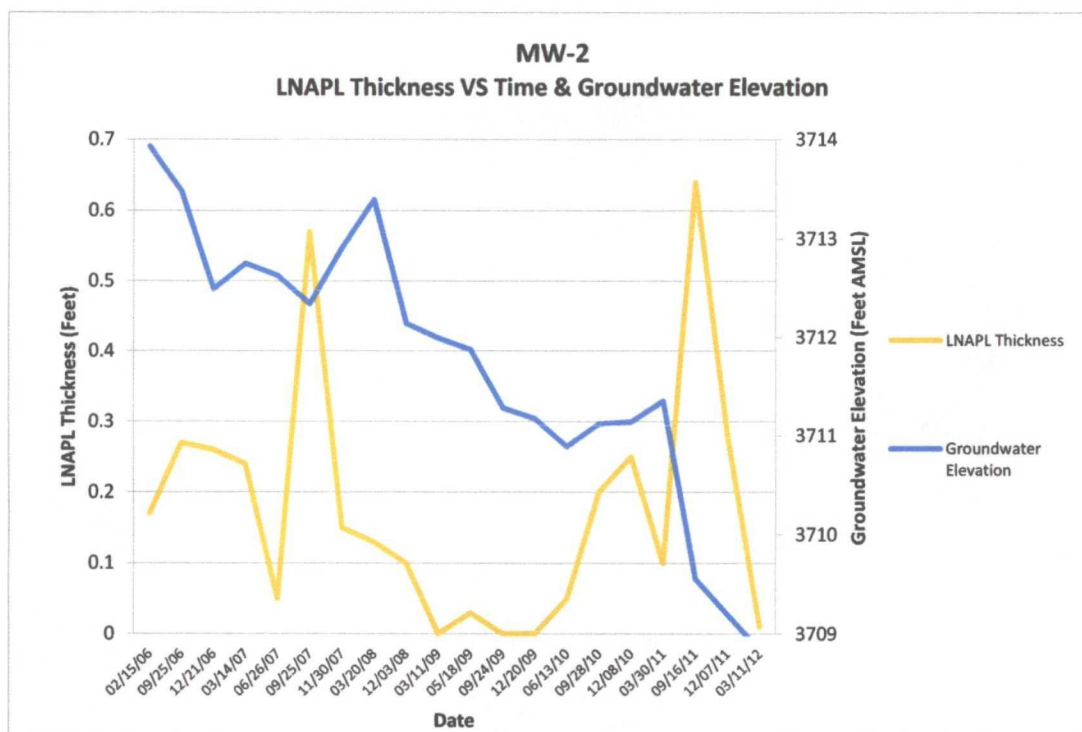
bailer. The recovered LNAPL was removed during the enhanced vacuum recovery event and added to the contents of the vacuum truck. The LNAPL collection bailer was subsequently replaced in the monitoring well at the level of the product-water interface.

4.3 LNAPL Trends

As illustrated in the graphs below, the LNAPL thickness in MW-1 and MW-2 does not appear to exhibit any seasonal fluctuation trends or a relationship to groundwater levels.



Groundwater elevations have exhibited a steady decrease in elevation over time, whereas product thickness has fluctuated sporadically over time with no apparent correlation to groundwater elevation.



5. Conclusions

While the dissolved phase hydrocarbon impacts did not exceed the regulatory limits in any of the sampled monitoring wells during this event, LNAPL persists at MW-2. It appears that the fourth quarter 2011 and first quarter 2012 vacuum recovery events have been successful in reducing LNAPL thickness by an order of magnitude in this well, however.

BTEX concentrations were below detection limits in a groundwater sample collected from MW-1 four days after the first quarter 2012 vacuum enhanced recovery event, indicating that vacuum recovery has been successful in removing constituents of concern from the groundwater.

Given the success of vacuum recovery events in decreasing benzene concentrations in MW-1 and LNAPL thickness in MW-2, additional recovery events are warranted. Ongoing quarterly groundwater sampling will provide for continued monitoring of Site conditions, BTEX, and LNAPL trends.

6. Recommendations

Based on evaluation of first quarter 2012 and historical Site observations and monitoring results, recommendations for future activities include:

- Continue groundwater monitoring and sampling at the monitoring locations illustrated on Figure 2;
- Continue to conduct and evaluate the success of vacuum enhanced recovery of LNAPL at monitoring wells MW-1 and MW-2 for an additional quarter, and;
- Continue use of the LNAPL recovery bailer at MW-2.

Tables

TABLE 1
FIRST QUARTER 2012
SUMMARY OF GROUNDWATER ELEVATION DATA
J-4-2 PIPELINE RELEASE
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 (3) (feet amsl)	Groundwater Elevation (feet amsl)	Change in Groundwater Elevation Since Previous Event (4) (feet)
MW-1*	3/30/2011	28.88	28.72	0.16			3711.69	0.03
MW-1*	6/11/2011	29.5	29.31	0.19			3711.09	-0.60
MW-1*	9/16/2011	30.54	30.25	0.29	43.05	3740.45	3710.13	-0.96
MW-1*	12/7/2011	30.73	30.53	0.2	43.05	3740.45	3709.87	-0.26
MW-1	3/11/2012	30.95			43.05	3740.45	3709.50	-0.37
MW-2*	3/30/2011	29.35	29.25	0.1			3711.35	0.21
MW-2*	6/11/2011	30.55	30.35	0.2			3710.22	-1.13
MW-2*	9/16/2011	31.54	30.90	0.64	43.30	3740.62	3709.56	-0.66
MW-2*	12/7/2011	31.63	31.35	0.28	43.30	3740.62	3709.20	-0.36
MW-2*	3/11/2012	31.79	31.78	0.01	43.30	3740.62	3708.84	-0.36
MW-3	3/30/2011	28.14					3711.25	0.00
MW-3	6/11/2011	28.76					3710.63	-0.62
MW-3	9/16/2011	29.62			35.20	3739.39	3709.77	-0.86
MW-3	12/7/2011	30.1			35.20	3739.39	3709.29	-0.48
MW-3	3/11/2012	30.25			35.20	3739.39	3709.14	-0.15
MW-4	3/30/2011	28.47					3711.77	0.05
MW-4	6/11/2011	29.12					3711.12	-0.65
MW-4	9/16/2011	29.91			37.95	3740.24	3710.33	-0.79
MW-4	12/7/2011	30.46			37.95	3740.24	3709.78	-0.55
MW-4	3/11/2012	30.57			37.95	3740.24	3709.67	-0.11
MW-6	3/30/2011	29.05					3710.91	0.20
MW-6	6/11/2011	29.81					3710.15	-0.76
MW-6	9/16/2011	30.55			34.31	3739.96	3709.41	-0.74
MW-6	12/7/2011	30.09			34.31	3739.96	3709.87	0.46
MW-6	3/11/2012	31.03			34.31	3739.96	3708.93	-0.94
MW-7	3/30/2011	32.37					3708.36	0.08
MW-7	6/11/2011	33.14					3707.59	-0.77
MW-7	9/16/2011	33.76			40.41	3740.73	3706.97	-0.62
MW-7	12/7/2011	34.04			40.41	3740.73	3706.69	-0.28
MW-7	3/11/2012	34.15			40.41	3740.73	3706.58	-0.11
MW-8	3/30/2011	30.63					3706.69	-0.01
MW-8	6/11/2011	31.32					3706.00	-0.69
MW-8	9/16/2011	31.67			38.58	3737.32	3705.65	-1.04
MW-8	12/7/2011	31.83			38.58	3737.32	3705.49	-0.16
MW-8	3/11/2012	32.00			38.58	3737.32	3705.32	-0.17
Average Change in groundwater elevation since the previous monitoring event								-0.32

Notes:

- 1- Depths measured from the north edge of the well casing.
 - 2- Total depths were collected and recorded during the first quarter 2012 monitoring event. Total depths were not collected in wells that had LNAPL.
 - 3- TOC elevations for monitoring wells MW-4, MW-5, MW-6, MW-7, & MW-8 were calculated by adding the PVC stick-up length (in feet) to the surveyed ground surface elevations (in feet amsl).
 - 4- 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.
- Monitoring well location MW-5 was not installed due to geologic refusal that was encountered during drilling activities.
- Data presented for all other well locations includes previous four sampling events, when available. 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

* Groundwater elevation was corrected for product thickness using the following calculation:

$$\text{Groundwater elevation} = (\text{TOC Elevation} - \text{Measured Depth to Water}) + (\text{LNAPL Thickness in Well} \times \text{LNAPL Density})$$

LNAPL density was assumed to be approximately 0.75 grams per cubic centimeter

TABLE 2
FIRST QUARTER 2012
SUMMARY OF BTEX AND CHLORIDE CONCENTRATIONS IN GROUNDWATER
J-4-2 PIPELINE RELEASE
LEA COUNTY, NEW MEXICO

Location Identification	Sample Date	Benzene (mg/l)	Toluene (mg/l)	Ethylbenzene (mg/l)	Total Xylenes (mg/l)	Chlorides (mg/l)	Comments
New Mexico Water Quality Control Commission Groundwater Standards (mg/l)		0.01	0.75	0.75	0.62	250*	
MW-1	12/8/2010	LNAPL	LNAPL	LNAPL	LNAPL	LNAPL	
MW-1	3/30/2011	LNAPL	LNAPL	LNAPL	LNAPL	LNAPL	
MW-1	9/16/2011	LNAPL	LNAPL	LNAPL	LNAPL	LNAPL	
MW-1	12/7/2011	LNAPL	LNAPL	LNAPL	LNAPL	LNAPL	
MW-1	3/11/2012	<0.001	<0.002	<0.002	<0.004	2970	
MW-2	12/8/2010	LNAPL	LNAPL	LNAPL	LNAPL	LNAPL	
MW-2	3/30/2011	LNAPL	LNAPL	LNAPL	LNAPL	LNAPL	
MW-2	9/16/2011	LNAPL	LNAPL	LNAPL	LNAPL	LNAPL	
MW-2	12/7/2011	LNAPL	LNAPL	LNAPL	LNAPL	LNAPL	
MW-2	3/11/2012	LNAPL	LNAPL	LNAPL	LNAPL	LNAPL	
MW-3	3/30/2011	<0.001	<0.002	<0.002	<0.002	2230	
MW-3	6/11/2011	<0.001	<0.002	<0.002	<0.004	2210	
MW-3	9/16/2011	<0.001	<0.002	<0.002	<0.004	2190	Duplicate sample collected
MW-3	12/7/2011	<0.001	<0.002	<0.002	<0.004	2230	Duplicate sample collected
MW-3	3/11/2012	<0.001	<0.002	<0.002	<0.004	2210	
MW-4	3/30/2011	<0.001	<0.002	<0.002	<0.002	2300	
MW-4	6/11/2011	<0.001	<0.002	<0.002	<0.004	2230	
MW-4	9/16/2011	<0.001	<0.002	<0.002	<0.004	1980	
MW-4	12/7/2001	<0.001	<0.002	<0.002	<0.004	2010	
MW-4	3/11/2012	<0.001	<0.002	<0.002	<0.004	1960	Duplicate sample collected
MW-6	3/30/2011	<0.001	<0.002	<0.002	<0.002	491	
MW-6	6/11/2011	<0.001	<0.002	<0.002	<0.004	503	
MW-6	9/16/2011	<0.001	<0.002	<0.002	<0.004	476	
MW-6	12/7/2011	<0.001	<0.002	<0.002	<0.004	526	
MW-6	3/11/2012	<0.001	<0.002	<0.002	<0.004	522	
MW-7	3/30/2011	<0.001	<0.002	<0.002	<0.002	1210	
MW-7	6/11/2011	<0.001	<0.002	<0.002	<0.004	1210	
MW-7	9/16/2011	<0.001	<0.002	<0.002	<0.004	1170	
MW-7	12/7/2011	<0.001	<0.002	<0.002	<0.004	1200	
MW-7	3/11/2012	<0.001	<0.002	<0.002	<0.004	1220	
MW-8	3/30/2011	<0.001	<0.002	<0.002	<0.002	383	
MW-8	6/11/2011	<0.001	<0.002	<0.002	<0.004	454	
MW-8	9/16/2011	<0.001	<0.002	<0.002	<0.004	368	
MW-8	12/7/2011	<0.001	<0.002	<0.002	<0.004	348	
MW-8	3/11/2012	<0.001	<0.002	<0.002	<0.004	345	

Notes:

- 1.) The environmental cleanup standards for water that are applicable to this site are the New Mexico Water Quality Control Commission (NMWQCC) Groundwater Standards.
- 2.) Monitoring well location MW-5 was not installed due geologic refusal that was encountered during drilling activities.
- 3.) 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.

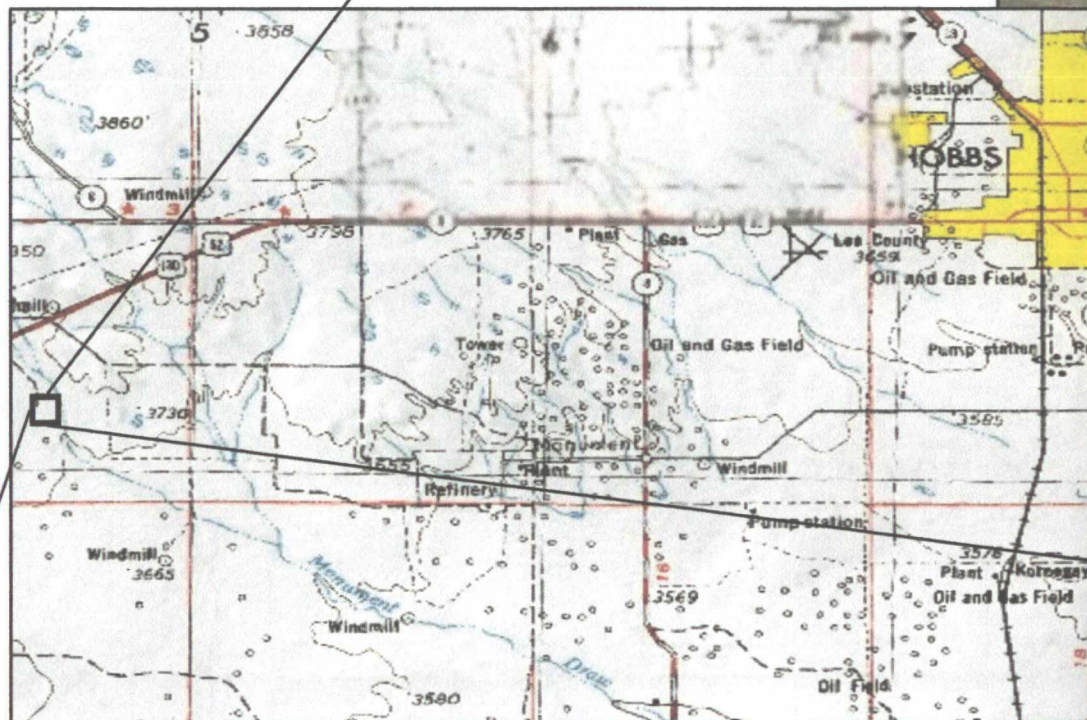
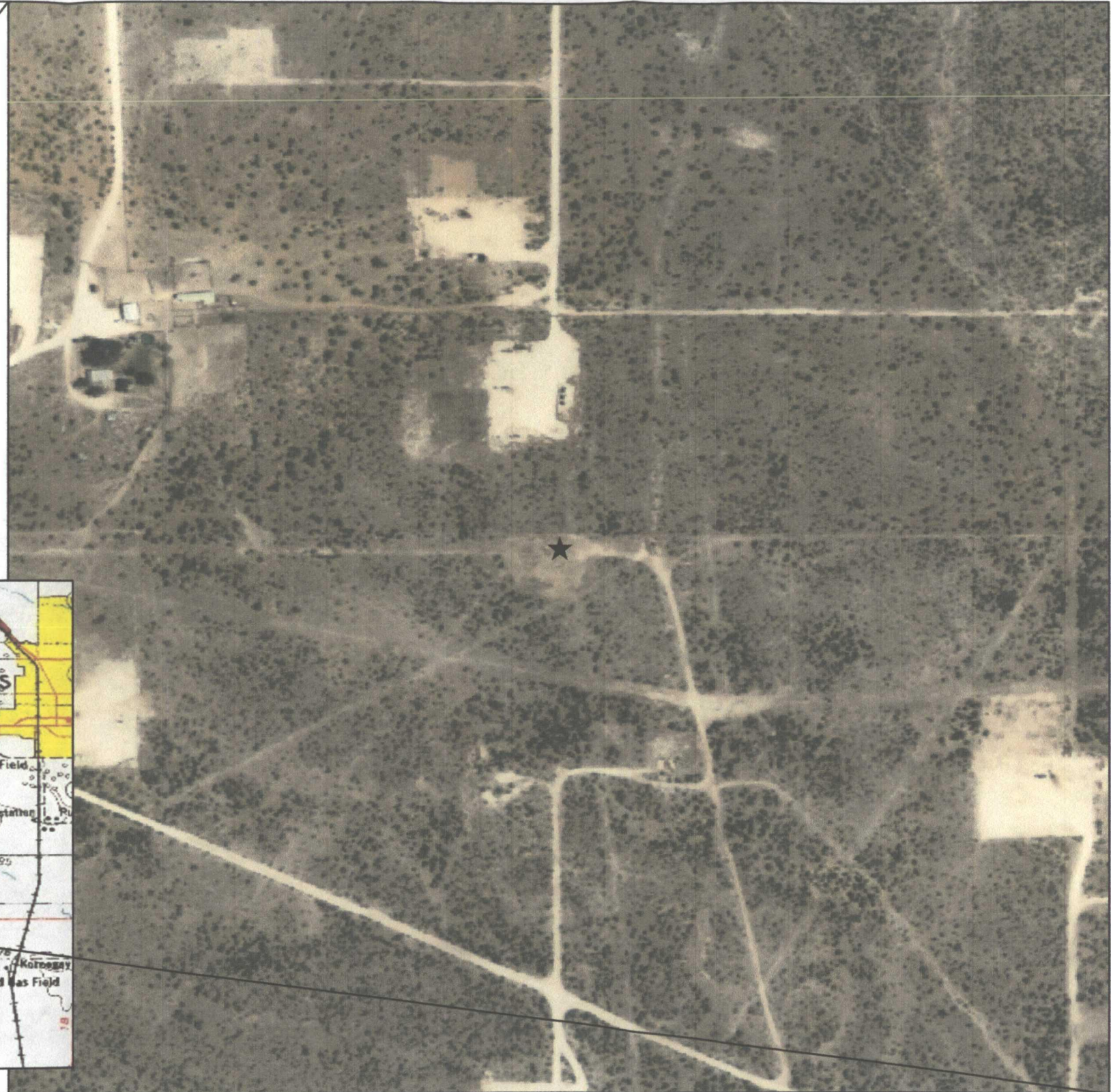
Sample locations are shown on Figure 2 and analytical results are illustrated on Figure 4.

* Chlorides are subject to the National Secondary Drinking Water Regulations (NSDWR) secondary maximum contaminant levels (SMCLs) and not an enforceably regulated constituent. The 250 mg/L standard is established only as a guideline to assist public water systems in managing their drinking water for aesthetic considerations, such as taste, color, and odor.

LNAPL = Light Non-Aqueous Phase Liquid

mg/L = milligrams per liter.

Figures



NEW MEXICO

SANTA FE

SITE LOCATION

DESIGNED BY: C. Wasko

DRAWN BY: J. Clonts

SHEET CHK'D BY: _____

CROSS CHK'D BY: _____

APPROVED BY: _____

APPROVED BY: _____



Tasman Geosciences

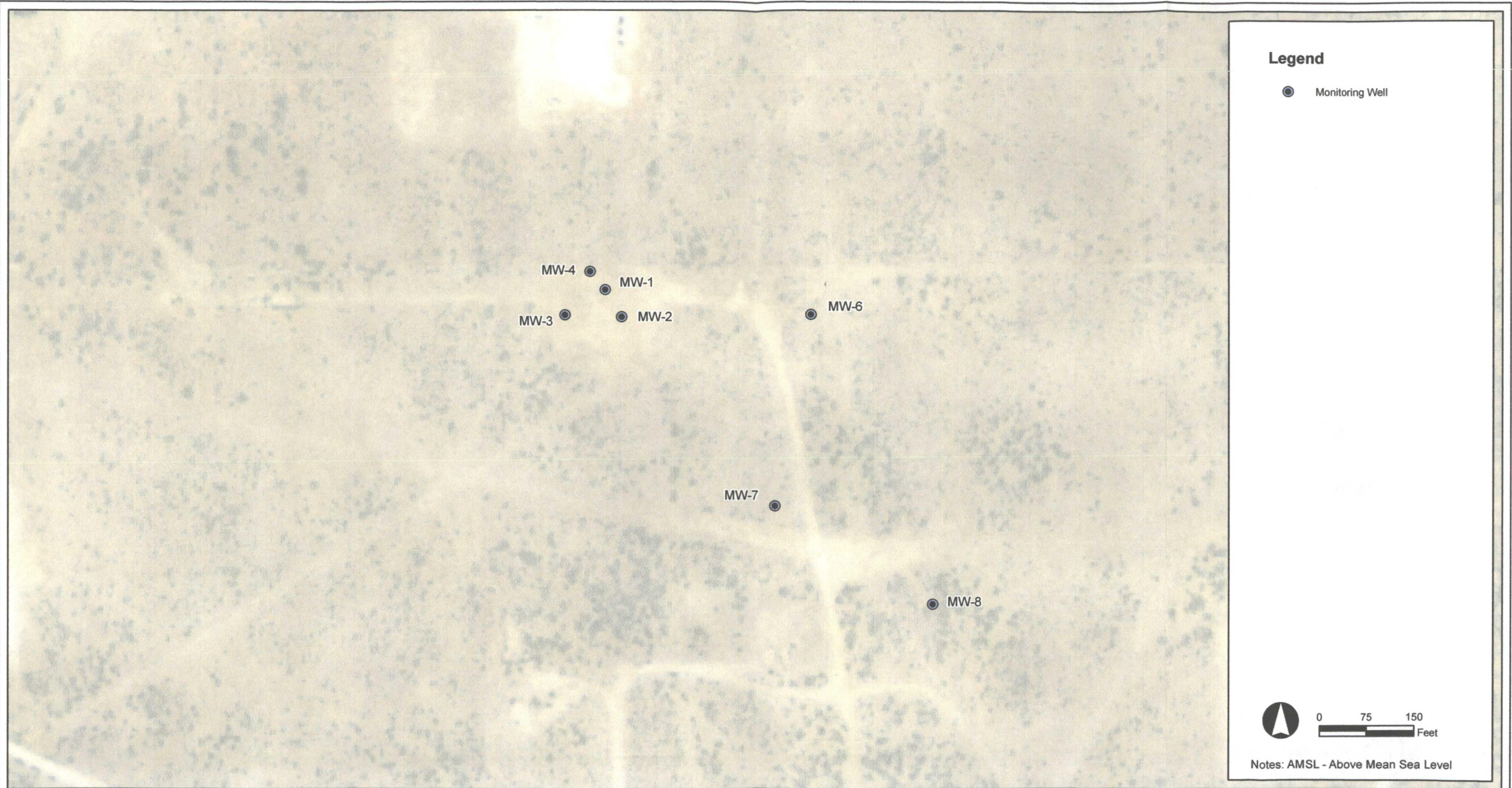
Tasman Geosciences, LLC
5690 Webster St.
Arvada, CO 8002
720-988-2024

J-4-2 PIPELINE RELEASE

*First Quarter 2012 Groundwater Monitoring
Summary Report*

SITE LOCATION

FIGURE
1



DESIGNED BY: C. Wasko
DRAWN BY: J. Clonts
SHEET CHK'D BY: _____
CROSS CHK'D BY: _____
APPROVED BY: _____
APPROVED BY: _____

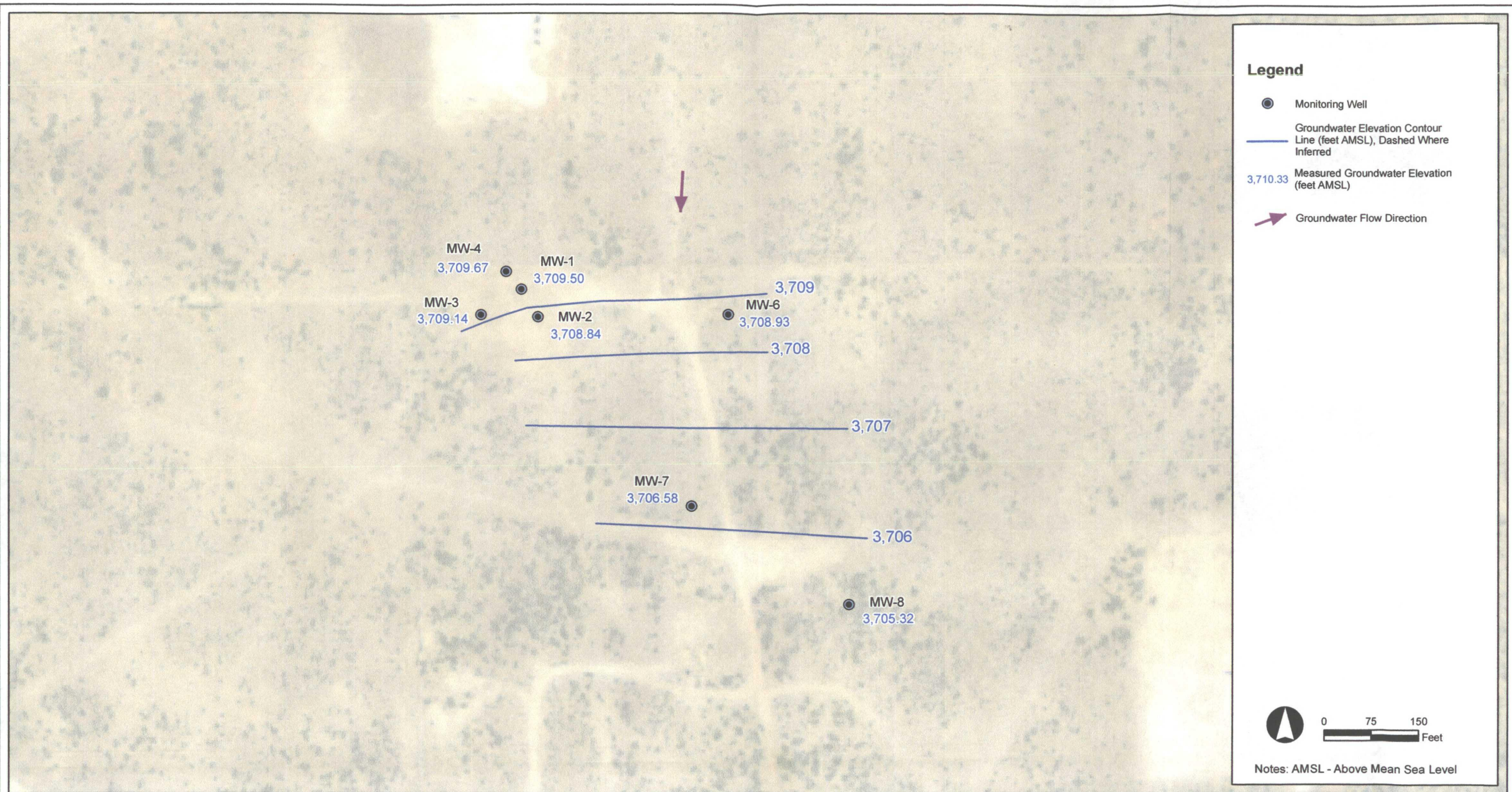


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Arvada, CO 8002
720-988-2024

J-4-2 PIPELINE RELEASE
*First Quarter 2012 Groundwater Monitoring
Summary Report*

SITE MAP

FIGURE
2



DESIGNED BY: C. Wasko
 DRAWN BY: J. Clonts
 SHEET CHK'D BY: _____
 CROSS CHK'D BY: _____
 APPROVED BY: _____
 APPROVED BY: _____



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

J-4-2 PIPELINE RELEASE
*First Quarter 2012 Groundwater Monitoring
 Summary Report*

**GROUNWATER ELEVATION
 CONTOUR MAP
 (MARCH 11, 2012)**

**FIGURE
 3**

MW-4		
Compound	12/7/2011 (mg/L)	3/11/2012 (mg/L)
Benzene	<0.001	<0.001
Toluene	<0.002	<0.002
Ethylbenzene	<0.002	<0.002
Total Xylenes	<0.004	<0.004
Chlorides	2010	1960

MW-1		
Compound	12/7/2011 (mg/L)	3/11/2012 (mg/L)
Benzene	LNAPL	<0.001
Toluene	LNAPL	<0.002
Ethylbenzene	LNAPL	<0.002
Total Xylenes	LNAPL	<0.004
Chlorides	LNAPL	2970

MW-6		
Compound	12/7/2011 (mg/L)	3/11/2012 (mg/L)
Benzene	<0.001	<0.001
Toluene	<0.002	<0.002
Ethylbenzene	<0.002	<0.002
Total Xylenes	<0.004	<0.004
Chlorides	526	522

MW-3		
Compound	12/7/2011 (mg/L)	3/11/2012 (mg/L)
Benzene	<0.001	<0.001
Toluene	<0.002	<0.002
Ethylbenzene	<0.002	<0.002
Total Xylenes	<0.004	<0.004
Chlorides	2230	2210

MW-7		
Compound	12/7/2011 (mg/L)	3/11/2012 (mg/L)
Benzene	<0.001	<0.001
Toluene	<0.002	<0.002
Ethylbenzene	<0.002	<0.002
Total Xylenes	<0.004	<0.004
Chlorides	1200	1220

MW-8		
Compound	12/7/2011 (mg/L)	3/11/2012 (mg/L)
Benzene	<0.001	<0.001
Toluene	<0.002	<0.002
Ethylbenzene	<0.002	<0.002
Total Xylenes	<0.004	<0.004
Chlorides	348	345

MW-2
(0.01)

Legend

- Monitoring Well
- (0.29) Measured LNAPL thickness in feet

Notes:

All aqueous analytical results are presented in milligrams per liter (mg/L)

LNAPL - Light Non Aqueous Phase Liquid



0 75 150
Feet

DESIGNED BY: C. Wasko

DRAWN BY: J. Clonts

SHEET CHK'D BY: _____

CROSS CHK'D BY: _____

APPROVED BY: _____

APPROVED BY: _____



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J-4-2 PIPELINE RELEASE

First Quarter 2012 Groundwater Monitoring Summary Report

ANALYTICAL RESULTS MAP

FIGURE 4

Appendix A
Laboratory Analytical Report