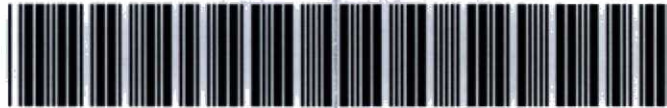




# AE Order Number Banner

## Report Description

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**App Number:** pCS1536330509

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**ENTERPRISE FIELD SERVICES, LLC**

12/9/2016



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**SUPPLEMENTAL CORRECTIVE ACTION AND GROUNDWATER MONITORING  
WORK PLAN**

Property:

**Masden Gas Com #1E Pipeline Release  
NW 1/4, S28 T29N R11W  
San Juan County, New Mexico  
NMOCD RP: 3R-1003**

October 3, 2016  
Apex Project No. 725040112134

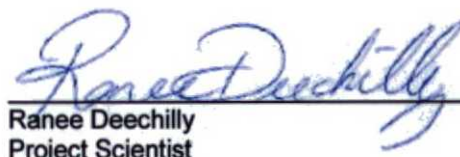
**OIL CONS. DIV DIST. 3**


**OCT 31 2016**

Prepared for:

**Enterprise Field Services, LLC  
614 Reilly Avenue  
Farmington, New Mexico 87401  
Attn: Mr. Thomas Long**

Prepared by:

  
Raneet Deechilly  
Project Scientist

  
Kyle Summers, CPG  
Branch Manager/Senior Geologist



ENTERPRISE PRODUCTS PARTNERS L.P.  
ENTERPRISE PRODUCTS HOLDINGS LLC  
(General Partner)

ENTERPRISE PRODUCTS OPERATING LLC

October 26, 2016

7015 0640 0005 6971 6988  
Return Receipt Requested

Mr. Jim Griswold  
New Mexico Energy, Minerals & Natural Resources  
Department – Oil Conservation Division  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505

**RE: Supplemental Corrective Action and Groundwater Monitoring Work Plan  
Masden Gas Com #1E (2/5/2016 Release)  
NMOCD RP: 3R-1003  
Enterprise Field Services, LLC**

Dear Mr. Griswold,

Please find attached above-referenced work plan prepared by Apex TITAN, Inc. (Apex). This work plan is associated with the Enterprise Field Services, LLC (Enterprise) Masden Gas Com #1E Release Site, referred to herein as the "Site".

The attached work plan (*Supplemental Corrective Action and Groundwater Monitoring Work Plan*, dated October 3, 2016) provides proposed site remediation activities to mitigate the affected groundwater at the location referenced above.

Initial environmental investigations and results from 2015 and 2016 corrective actions indicate that groundwater is impacted at the Site. The attached work plan provides a groundwater remediation approach based on current site conditions, and recommends the initiation of total fluids recovery from the identified source area well and groundwater monitoring.

Following New Mexico Oil Conservation Division review, Enterprise recommends proceeding with the site remediation activities proposed in the attached work plan. Should you have any questions, comments or concerns, or require additional information, please feel free to contact Thomas Long at 505-599-2286 or me directly at 713-381-6684.

Sincerely,

Jon E. Fields  
Director, Environmental

OIL CONS. DIV DIST. 3

OCT 31 2016

cc: ENMRD Oil Conservation Division, Aztec District Office, Attn: Cory Smith  
1000 Rio Brazos Road, Aztec, New Mexico 87410

## TABLE OF CONTENTS

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<b>1.0</b>	<b>INTRODUCTION</b>	<b>1</b>
1.1	Site Description	1
1.2	Proposed Cleanup Goals	2
<b>2.0</b>	<b>SUPPLEMENTAL CORRECTIVE ACTION</b>	<b>2</b>
2.1	Objectives	2
2.2	Health and Safety Plan	2
2.3	Pumping Events	2
<b>3.0</b>	<b>GROUNDWATER MONITORING</b>	<b>3</b>
3.1	Groundwater Laboratory Analytical Program	3
<b>4.0</b>	<b>REPORTING</b>	<b>3</b>
<b>5.0</b>	<b>STANDARD OF CARE, LIMITATIONS, AND RELIANCE</b>	<b>4</b>

## LIST OF APPENDICES

<b>Appendix A:</b>	Figure 1 – Topographic Map
	Figure 2 – Site Vicinity Map
	Figure 3 – Site Map
	Figure 4 – Groundwater Gradient Map (February 2016)
	Figure 5 – Groundwater GQS Exceedance Zone Map (February 2016)





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## **SUPPLEMENTAL CORRECTIVE ACTION AND GROUNDWATER MONITORING WORK PLAN**

**Masden Gas Com #1E Pipeline Release**  
NW 1/4, S28 T29N R11W  
San Juan County, New Mexico  
NMOCD RP: 3R-1003

**Apex Project No. 725040112134**

### **1.0 INTRODUCTION**

#### **1.1 Site Description**

The Masden Gas Com #1E Pipeline Release site is located in the Enterprise Field Services, LLC (Enterprise) pipeline right-of-way (ROW) in the northeast (NE) ¼ of Section 28, Township 29 North, Range 11 West, in San Juan County, New Mexico (36.70096N, 108.00164W), referred to hereinafter as the "Site". The Site is located on private property, adjacent to a county road and a natural gas well pad. The surrounding properties are private acreages in the San Juan River Valley near the city of Bloomfield, some with single family residences. The area also supports natural gas production and gathering appurtenances, including the Enterprise natural gas gathering pipeline which traverses the area from approximately north to south.

A release of natural gas was discovered at the Site on February 4, 2015. Enterprise performed pipeline repair activities and removed hydrocarbon-affected soils from the Site. During corrective action activities, groundwater was encountered at 4 feet below grade surface (bgs). Souder, Miller & Associates (SMA) collected five (5) soil samples and one (1) water sample from the repair excavation and subsequent analytical results identified constituent of concern (COC) concentrations above Oil Conservation Division (OCD) Remediation Action Levels (RALs) in soil at the base of the excavation and above the New Mexico Water Quality Control Commission (WQCC) Groundwater Quality Standards (GQSs) in groundwater. (*Masden Gas Com #1E Pipeline Release and Subsurface Water Investigation Plan* – SMA, dated April 17, 2015).

During July 2015, SMA performed a groundwater investigation to evaluate apparent impact to shallow groundwater. SMA installed and sampled five (5) groundwater monitoring wells (MW-1 through MW-5). The resulting groundwater analytical results identified COC concentrations above WQCCGQSs in monitoring wells MW-2 and MW-3. Details of the soil and groundwater investigation activities are documented in the *Masden Gas Com #1E Monitoring Well Installation & Sampling Report* - SMA, dated August 25, 2015.

During February 2016, Apex TITAN, Inc. (Apex) conducted a groundwater monitoring event. Analytical results indicated benzene concentrations above applicable WQCC GQSs in monitoring well MW-2. Detailed of the groundwater monitoring activities are provided in the *Masden Gas Com #1E Groundwater Monitoring Report (February 2016 Event)* - Apex, dated April 18, 2016.

A Topographic Map depicting the location of the Site is included as Figure 1, a Site Vicinity Map is included as Figure 2, and a Site Map is included as Figure 3 in Appendix A. A Groundwater Gradient Map and a Groundwater GQS Exceedance Map from the February 2016 groundwater sampling event are included as Figure 4 and Figure 5, respectively, in Appendix A.



## 1.2 Proposed Cleanup Goals

The Site is subject to regulatory oversight by the New Mexico EMNRD OCD. To address activities related to condensate releases, the New Mexico EMNRD OCD utilizes the *Guidelines for Remediation of Leaks, Spills and Releases* as guidance, in addition to the OCD rules, specifically NMAC 19.15.29 *Release Notification*. These guidance documents establish investigation and abatement action requirements for sites subject to reporting and/or corrective action. Cleanup goals for groundwater located at the Site will derive from the New Mexico WQCC GQSSs.

- The cleanup goals for groundwater located at the Site include: 10 micrograms per liter (µg/L) for benzene, 750 µg/L for toluene, 700 µg/L for ethylbenzene, and 620 µg/L for xylenes.

## 2.0 SUPPLEMENTAL CORRECTIVE ACTION

### 2.1 Objectives

The primary objective of the corrective action investigation is to reduce COC concentrations in groundwater at the Site by implementing total fluids pumping events at monitoring well MW-2.

Quarterly groundwater monitoring events will be conducted at the Site for a minimum of one year to evaluate pumping effectiveness, but may be temporarily switched to semi-annual events after that time frame if groundwater does not yet meet applicable WQCC GQSSs. In that scenario, quarterly monitoring would resume once the cleanup goals have been achieved, to verify groundwater remediation status.

In the event that the pumping and disposal of affected groundwater proves ineffective or impractical at this Site, Enterprise will coordinate with the OCD to affect an alternative remedial strategy.

### 2.2 Health and Safety Plan

Apex will develop a site specific Health and Safety Plan (HSP) for the performance of the scope of services described in this work plan. For the purposes of this HSP, it is assumed that the constituents of concern include petroleum hydrocarbons. For the purposes of this work plan, it is assumed that the scope of services can be conducted under modified Level D personal protective equipment (PPE), which will include a hard hat, steel-toed boots, protective eyewear, and gloves. Should the need arise to upgrade PPE (e.g. respiratory protection), the client will be notified, and the HSP will be modified accordingly. Although it is not anticipated at this time, it should be noted that a PPE upgrade will constitute a change in scope of work, requiring a change order.

### 2.3 Pumping Events

Apex will conduct groundwater pumping and disposal activities at monitoring well MW-2 to reduce the COC concentrations to below the New Mexico WQCC GQSSs. Apex will utilize a portable submersible pump to remove approximately 200 to 300 gallons of affected groundwater from monitoring well (MW-2) per event. Pumping events will be performed on an approximately semi-monthly basis for an estimated three (3) months (one (1) quarter), for a total of six (6) events. The pumping schedule from that point forward may vary, based on analytical results from the groundwater monitoring events. Purged groundwater will be disposed of off-Site at a New Mexico Oil Conservation Division (OCD) approved disposal facility.



### 3.0 GROUNDWATER MONITORING

Apex will collect one (1) groundwater sample from each of the on-Site monitoring wells, utilizing low-flow sampling or bailer sampling methods.

Prior to sample collection, Apex will gauge the depth to fluids in each monitoring well using an interface probe capable of detecting non-aqueous phase liquids (NAPL).

Low-flow refers to the velocity with which groundwater enters the pump intake and that is imparted to the formation pore water in the immediate vicinity of the well screen. It does not necessarily refer to the flow rate of water discharged at the surface which can be affected by flow regulators or restrictions. Water level drawdown provides the best indication of the stress imparted by a given flow-rate for a given hydrological situation. The objective is to pump in a manner that minimizes stress (drawdown) to the system, to the extent practical, taking into account established Site sampling objectives. Flow rates on the order of 0.1 to 0.5 liters per minute (L/min) are maintained during sampling activities, using dedicated sampling equipment. The water level is checked periodically to monitor drawdown in the well as a guide to flow rate adjustment.

The pump intake is placed within the screened interval such that the groundwater recovered is drawn in directly from the formation with little mixing of casing water or disturbance to the sampling zone.

The groundwater samples are collected from each monitoring well once produced groundwater is consistent in color, clarity, pH, temperature, and conductivity. Measurements are taken every three to five minutes. Stabilization is achieved after key parameters (especially pH and conductivity) have stabilized for three successive readings.

Groundwater samples will be collected in laboratory supplied containers and placed on ice in a cooler secured with a custody seal. The samples will be shipped under proper chain-of-custody to Hall Environmental Analysis Laboratory (HEAL) in Albuquerque, New Mexico.

#### 3.1 Groundwater Laboratory Analytical Program

The groundwater samples will be analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) utilizing EPA SW-846 Method 8021.

A summary of the per-event analytes, sample type, and EPA-approved method is presented below:

Analytes	Sample Type	No. of Samples	EPA Method
BTEX	Groundwater	5	SW-846 8021

### 4.0 REPORTING

A Supplemental Corrective Action Report and/or Groundwater Monitoring Report will be prepared annually that will include documentation of the field activities, tabular data summaries, a site plan detailing pertinent site features, groundwater flow direction and gradient maps, laboratory analytical reports, an evaluation of sampling results, and recommendations concerning further action.

## **5.0 STANDARD OF CARE, LIMITATIONS, AND RELIANCE**

Apex's services will be performed in accordance with standards customarily provided by a firm rendering the same or similar services in the area during the same time period. Apex makes no warranties, expressed or implied, as to the services performed hereunder. Additionally, Apex does not warrant the work of third parties supplying information used in the report (e.g. laboratories, regulatory agencies, or other third parties). This scope of services will be performed in accordance with the scope of work agreed with the client.

Findings, conclusions and recommendations resulting from these services will be based upon information derived from the on-Site activities and other services performed under this scope of work and it should be noted that this information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, or not present during these services, and Apex cannot represent that the Site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this scope of services. Environmental conditions at other areas or portions of the Site may vary from those encountered at actual sample locations. Apex's findings and recommendations will be based solely upon data available to Apex at the time of these services.

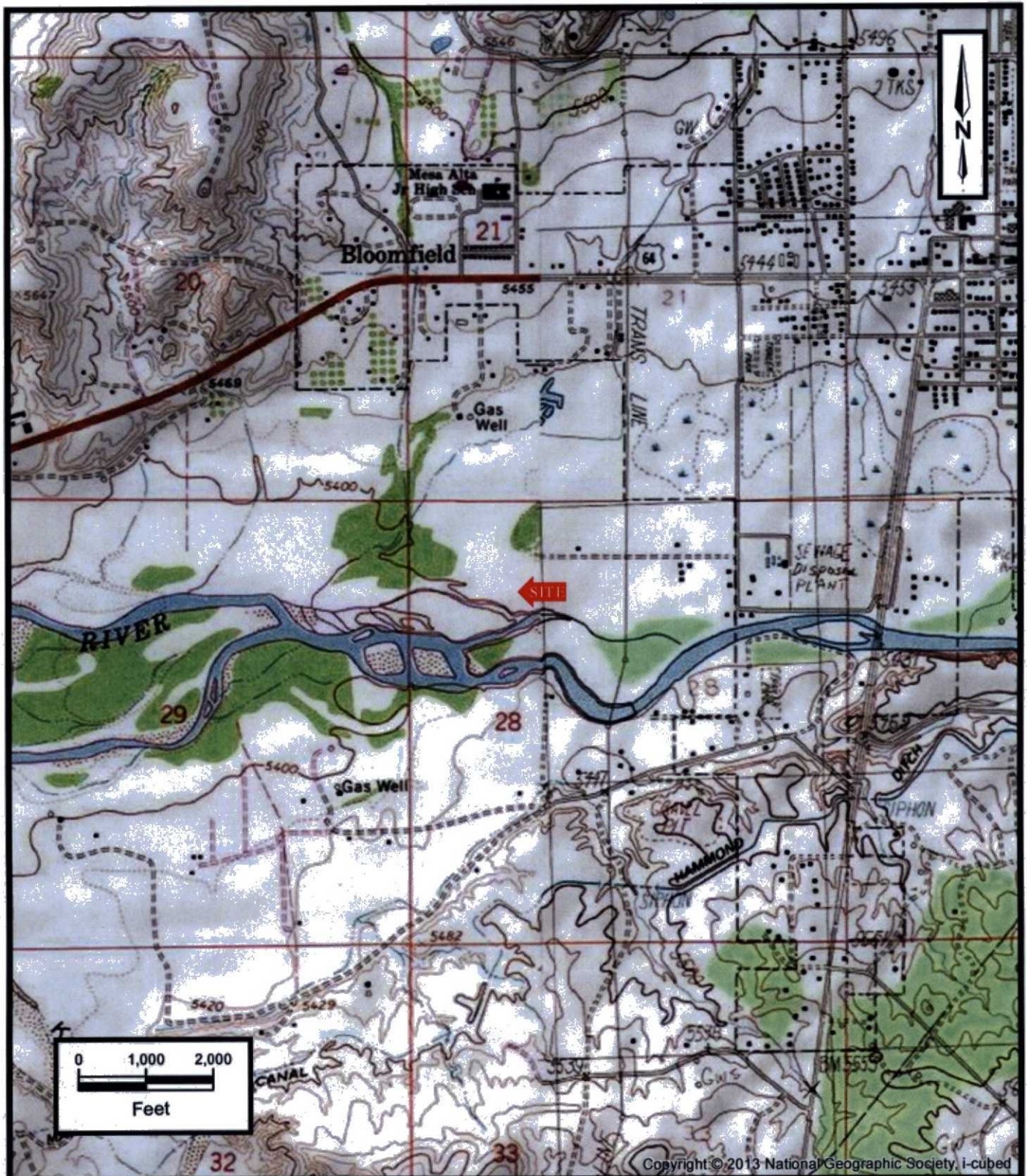
This work plan has been prepared for the exclusive use of Enterprise, and any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the Site) is prohibited without the expressed written authorization of Enterprise and Apex. Any unauthorized distribution or reuse is at the client's sole risk. Notwithstanding the foregoing, reliance by authorized parties will be subject to the terms, conditions and limitations stated in the proposal, the report, and Apex's Agreement. The limitation of liability defined in the agreement is the aggregate limit of Apex's liability to the client.



## APPENDIX A

### Figures

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**Masden Gas Com #1E  
Pipeline Release**  
NW1/4 Sec28 T29N R11W  
San Juan County, New Mexico  
36.70096N, 108.00164W

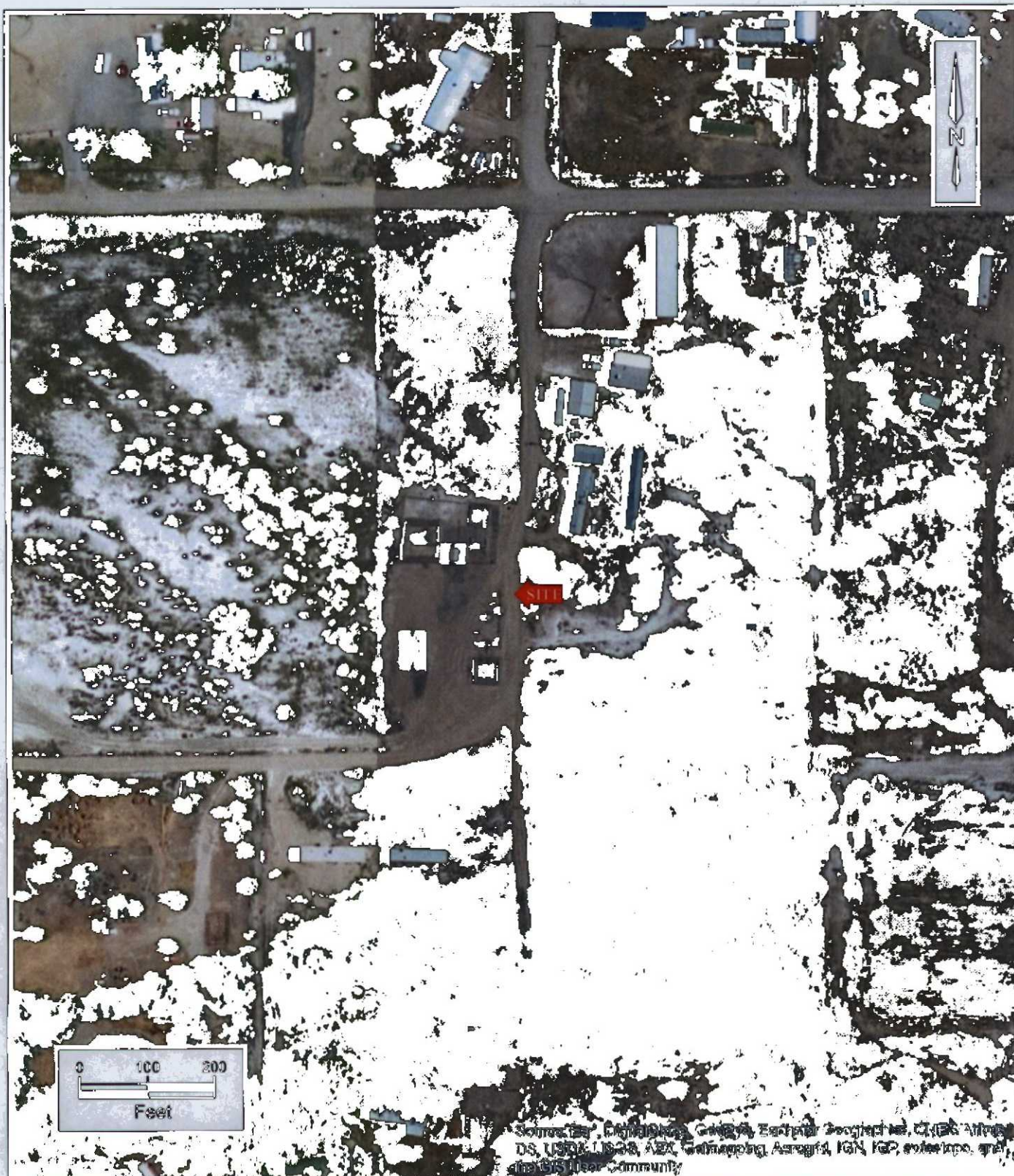
Project No. 725040112134



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Aztec, NM 87410  
Phone: (505) 334-5200  
[www.apexcos.com](http://www.apexcos.com)  
A Subsidiary of Apex Companies, LLC

**FIGURE 1**  
**Topographic Map**  
Horn canyon, NM Quadrangle  
1965





Madden Gas Com #1E  
 Pipeline Release  
 NW1/4 Sec28 T29N R11W  
 San Juan County, New Mexico  
 36.70096N, 108.00184W

Project No. 725040112134

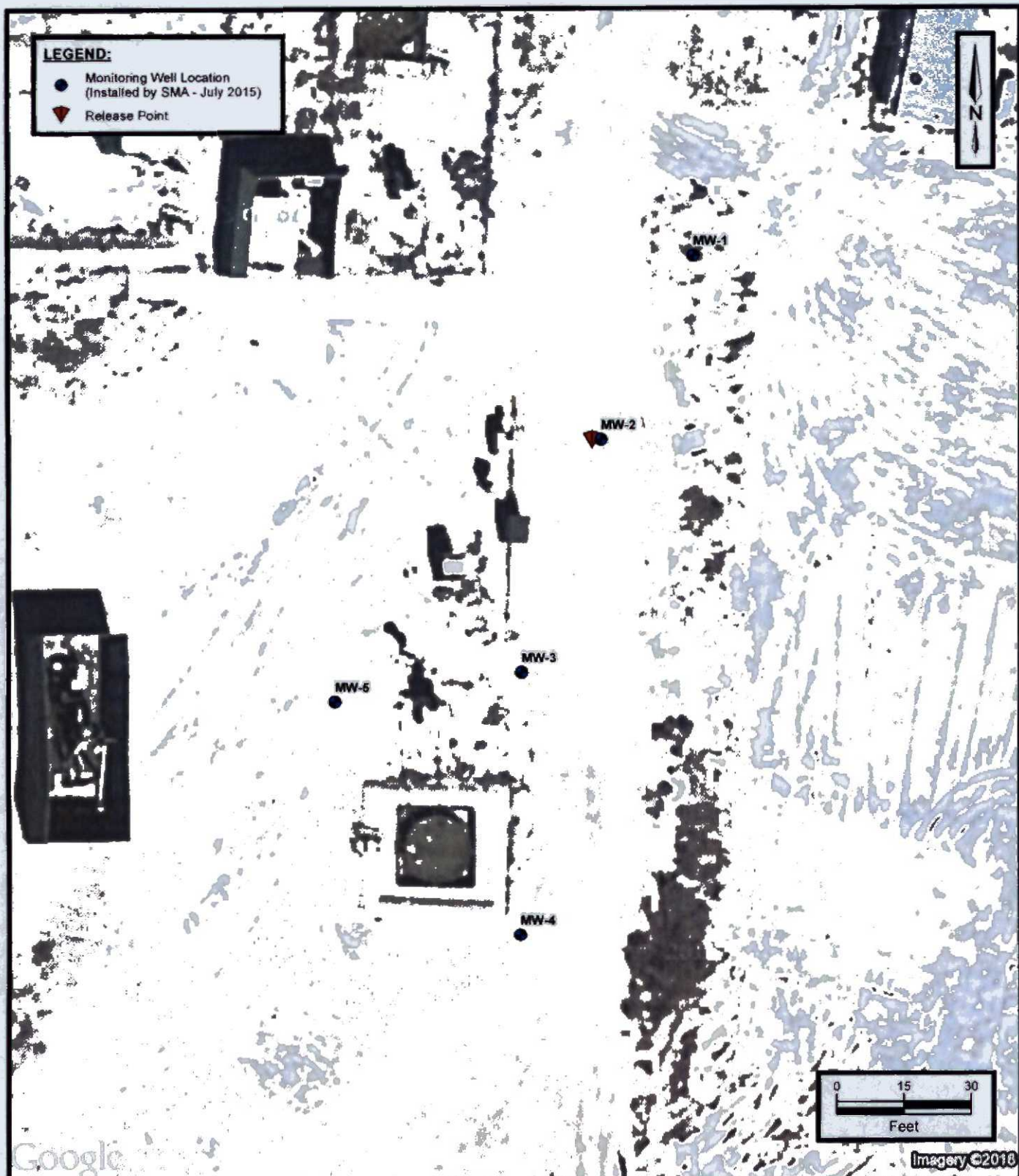


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**FIGURE 2**

Site Vicinity Map





**Masden Gas Com #1E Pipeline Release**  
 NW1/4 Sec28 T29N R11W  
 San Juan County, New Mexico  
 36.70096 N, 108.00164 W



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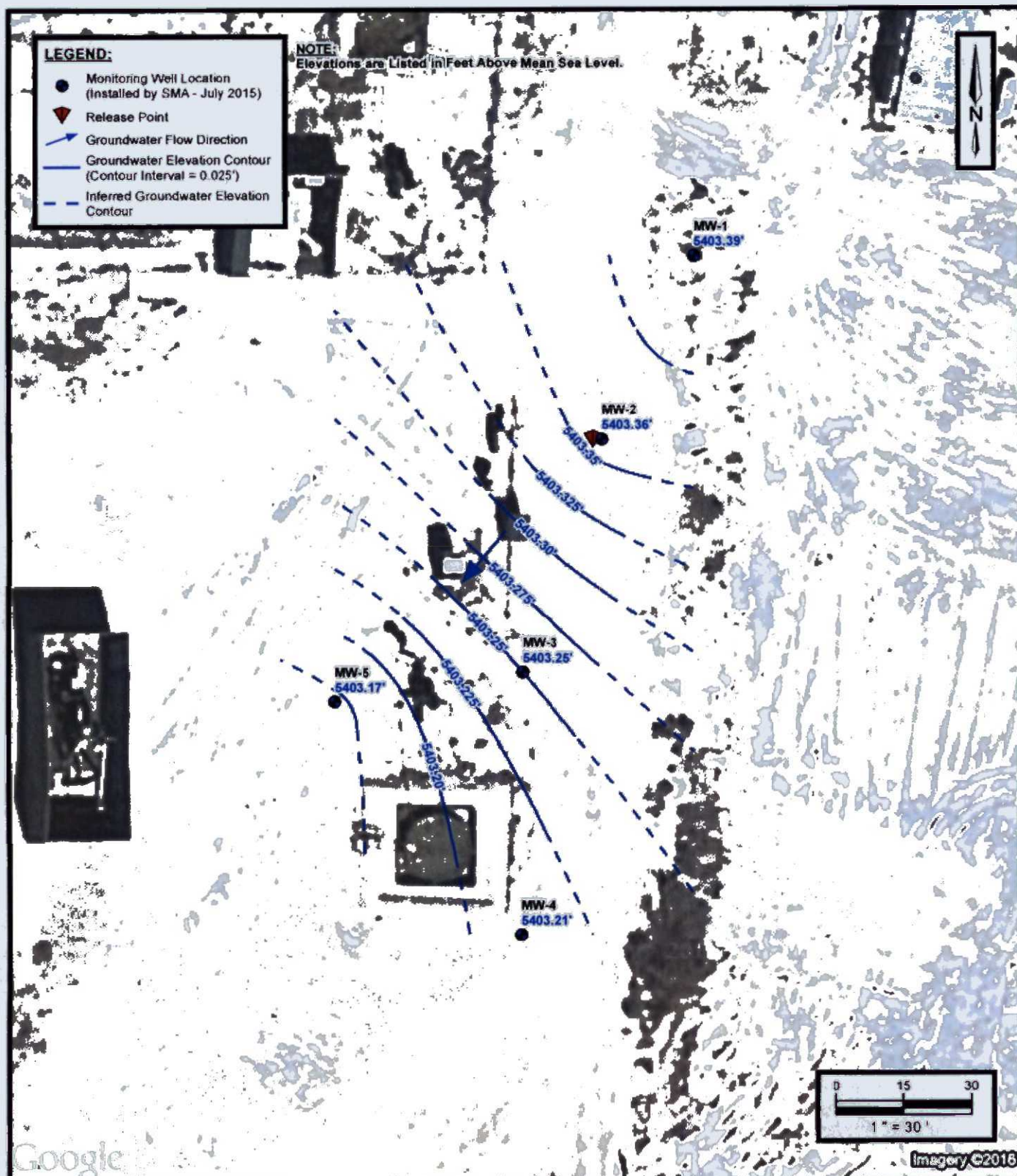
### **FIGURE 3**

#### **Site Map**

Aerial Photograph March 2015

Project No. 725040112134





**Masden Gas Com #1E Pipeline Release**  
 NW1/4 Sec28 T29N R11W  
 San Juan County, New Mexico  
 36.700960 N, 108.001640 W



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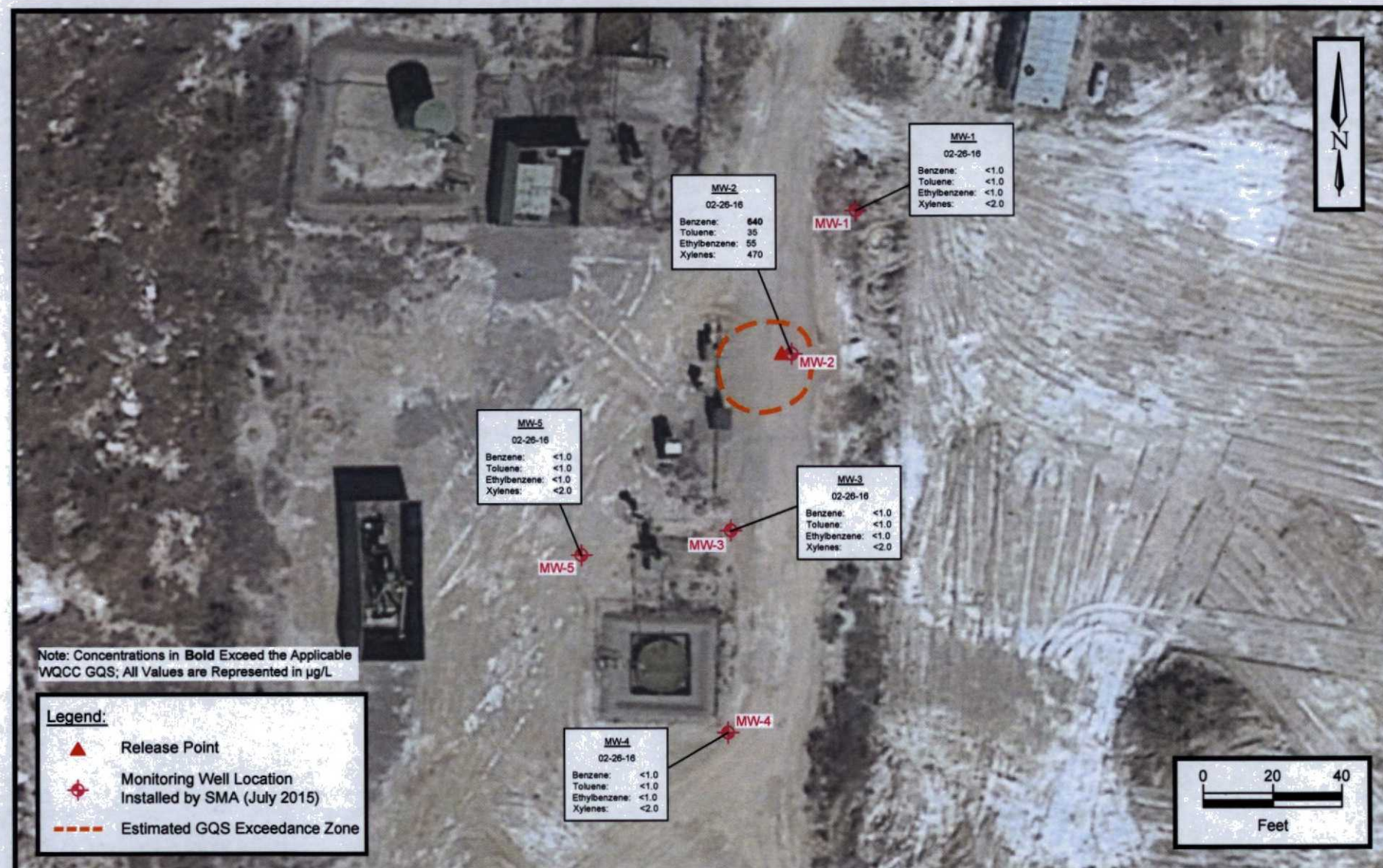
**FIGURE 4**

**Groundwater Gradient Map  
 February 2016**

**Aerial Photograph March 2015**

Project No. 725040112134





**Masden Gas Com #1E Pipeline Release**  
 NW1/4 Sec28 T29N R11W  
 San Juan County, New Mexico  
 36.70096N, 108.00164W

Project No. 725040112134



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**FIGURE 5**  
**Groundwater GQS**  
**Exceedance Zone Map**  
**February 2016**