

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
811 S. First St., Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy Minerals and Natural Resources

JAN 29 2016

Form C-141  
Revised August 8, 2011

Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Submit 1 Copy to appropriate District Office in  
accordance with 19.15.29 NMAC.

### Release Notification and Corrective Action

#### OPERATOR

 Initial Report  Final Report

|                 |                                   |               |                       |
|-----------------|-----------------------------------|---------------|-----------------------|
| Name of Company | ConocoPhillips Company            | Contact       | Lisa Hunter           |
| Address         | 5525 Hwy 64, Farmington, NM 87401 | Telephone No. | 505-326-9525          |
| Facility Name   | Mangum No. 1                      | Facility Type | Natural Gas Well      |
| Surface Owner   | BLM                               | Mineral Owner | Federal (SF-047020-B) |
|                 |                                   | API No.       | 30-045-07835          |

#### LOCATION OF RELEASE

| Unit Letter | Section | Township | Range | Feet from the | North/South Line | Feet from the | East/West Line | County   |
|-------------|---------|----------|-------|---------------|------------------|---------------|----------------|----------|
| L           | 27      | 29N      | 11W   | 2200          | South            | 1175          | West           | San Juan |

Latitude 36.69571<sup>0</sup> Longitude 107.98404<sup>0</sup>

#### NATURE OF RELEASE

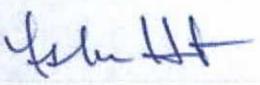
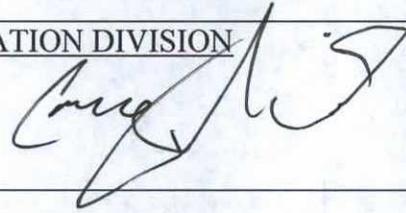
|                             |   |   |                        |                            |          |
|-----------------------------|---|---|------------------------|----------------------------|----------|
| Type of Release             | Historic Release of Produced Water and/or Condensate  | Volume of Release                         | Unknown                | Volume Recovered           | 0        |
| Source of Release           | Believed to be from former AGT  | Date and Hour of Occurrence               |                        | Date and Hour of Discovery | 04/06/15 |
| Was Immediate Notice Given? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required | If YES, To Whom?                          | NMOCD                  |                            |          |
| By Whom?                    | Ashley Maxwell-COP  | Date and Hour                             | April 17, 2015 12:46PM |                            |          |
| Was a Watercourse Reached?  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No                                       | If YES, Volume Impacting the Watercourse. | Unknown                |                            |          |

If a Watercourse was Impacted, Describe Fully.\* A groundwater sample was collected through the soil boring augers and analyzed by EPA Method 8021B. Ethylbenzene was detected at a concentration of 160 parts per billion (ppb). Xylenes were detected at a concentration of 930 ppb.

Describe Cause of Problem and Remedial Action Taken.\* On April 6, 2015, seven backhoe test holes were dug to depths of 7.5 to 8 ft deep on the site as part of a due diligence site assessment. Soil samples were collected from the test holes and field screened using a PID and field TPH test kit. Samples from two test holes that indicated TPH field screening concentrations above the 100 parts per million (ppm) site action level were thus submitted for laboratory analysis by EPA Method 8015D. One of these samples indicated a concentration of 3,180 ppm TPH. The location of this boring appears to coincide with the location of a former AGT belonging to a former site operator and a release from this tank is the apparent source of contamination. On April 17, 2015 a soil boring was drilled with hollow stem auger to determine the vertical extent of impacts in the area of the impacted test hole location and where the former AGT was located. Two soil samples from the auger boring were analyzed by EPA Method 8015. The 10-11.5 ft below ground surface (bgs) sample had a concentration of 425 ppm and the 15-16.5 ft bgs sample had a concentration of 1,530 ppm. Groundwater was encountered at a depth of 16.5 ft bgs. A groundwater sample was collected through the augers and analyzed by EPA Method 8021B. This sample had a concentration of 160 ppb ethylbenzene and 930 ppb xylenes. Test hole locations impacted with TPH concentrations above site action levels were backfilled with clean soils and impacted soils were hauled to a landfarm. Impacted soils from the auger boring were also included with soils that were removed to the landfarm.

Describe Area Affected and Cleanup Action Taken.\* The size of the affected area is unknown. COP will conduct a soil excavation beginning at the current known area of soil and groundwater impacts, below the former AGT. Field screening with PID and Petroflag field screening kit will be used to guide the excavation. Once regulatory closure is reached, the excavation will be backfilled and compacted with BLM-approved material. A groundwater monitoring well will then be installed downgradient from the excavation to assess impacts.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

|  |   |                                   |
|--|---|-----------------------------------|
| Signature:  | <u>OIL CONSERVATION DIVISION</u>  |                                   |
| Printed Name: Lisa Hunter  | Approved by Environmental Specialist:  |                                   |
| Title: Field Environmental Specialist  | Approval Date: 2/1/16   | Expiration Date:                  |
| E-mail Address: Lisa.Hunter@cop.com  | Conditions of Approval: Attached  | Attached <input type="checkbox"/> |
| Date: January 28, 20016  | Phone: 505-258-1607   |                                   |

\* Attach Additional Sheets If Necessary

#NCS 1602631162

34

State of New Mexico  
Energy, Minerals and Natural Resources Department

**Susana Martinez**  
Governor

**David Martin**  
Cabinet Secretary

**Brett F. Woods, Ph.D.**  
Deputy Cabinet Secretary

**David R. Catanach, Division Director**  
Oil Conservation Division



New Mexico Oil Conservation Division approval and conditions  
listed below are made in accordance with OCD Rule 19.15.7.11

Application Type:

- P&A   
  Drilling/Casing Change   
  Location Change  
 Recomplete/DHC (For hydraulic fracturing operations review EPA  
 Underground injection control Guidance #84)  
 Other: Remediation Plan

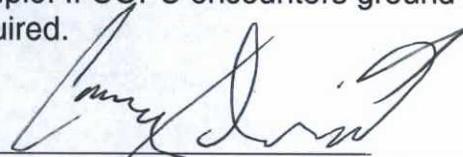
| API WELL #         | Well Name | Well # | Operator Name                             | Type | Stat | County   | Surf_Owner | UL | Sec | Twp | N/S | Rng | W/E |
|--------------------|-----------|--------|---|------|------|----------|------------|----|-----|-----|-----|-----|-----|
| 30-045-07835-00-00 | MANGUM    | 001    | BURLINGTON RESOURCES OIL & GAS COMPANY LP | G    | A    | San Juan | F          | L  | 27  | 29  | N   | 11  | W   |

Conditions of Approval:

OCD has reviewed ConocoPhillips (COPC) remediation plan submitted January 29, 2016. OCD approves COPC remediation plan to excavate and haul the contaminate mass to a Division Approved facility with the following conditions of approval.

- COPC will provide Notification to the OCD 72 hours but not more than one week prior to the start of excavation and installation of monitor well(s).
- COPC will provide Notification to the OCD at least 24 but no more than one week prior to the collection of any conformation samples.
- COPC will sample the base and sidewalls for TPH, BTEX, and Chlorides by collecting at a minimum a 5 pt composit sample of each side wall and the base.
- COPC will return to the site within 60 Days after completion of the excavation to collect a water sample using EPA Method 8260

OCD is concerned that the prevous collected water sample could have been cross contaminated and would recommed that COPC construct a properly constructed and developed temporary monitor well to collect the required sample. If COPC encounters ground water the base soil sample will not be required.

  
NMOCD Approved by Signature

2/1/16  
Date



OIL CONS. DIV DIST. 3

JAN 29 2016

January 18, 2016

Reference No. 11102646

Cory Smith, Environmental Specialist  
Oil Conservation Division  
Energy, Minerals & Natural Resources  
1000 Rio Brazos  
Aztec, NM 87410

Dear Mr. Smith:

**Re: Remediation Plan  
Mangum No.1  
S27, T29N, R11W  
San Juan County, New Mexico**

On behalf of ConocoPhillips Company (ConocoPhillips), GHD Services (GHD) is pleased to present this workplan to remediate hydrocarbons in soil at the above referenced site (the Site). This workplan is being submitted to address soil impacts from an historic release consisting of approximately 200 barrels (bbls) of produced water and condensate at the Site.

An initial release assessment was conducted in April 2015 for the ConocoPhillips San Juan Business Unit (SJBW) by Animas Environmental Services, LLC (AES). In the May 4, 2015 AES Mangum # 1 Release Assessment Report, the Site was assigned soil and water remediation action levels in accordance with New Mexico Oil Conservation Division (NMOCD) release protocols as follows:

- **Depth to Groundwater:** Groundwater was encountered at 16.5 feet below ground surface (ft bgs) during soil boring activities at the Mangum #1. (20 points)
- **Wellhead Protection Area:** Water well SJ 02664 is located approximately 900 feet to the east. (20 points)
- **Distance to Surface Water Body:** An irrigation canal (Hammond Ditch) is approximately 150 feet west and north of the location. There is also an unnamed stream approximately 350 feet to the north that discharges directly to the San Juan River. (20 points)

Based on this, the site-specific Recommended Remediation Action Levels (RRALs) are 10 parts per million (ppm) benzene, 50 ppm BTEX (benzene, toluene, ethylbenzene, xylenes), and 100 ppm total petroleum hydrocarbons (TPH)

**GHD Services Inc.**

6121 Indian School Road NE Suite 200 Albuquerque New Mexico 87110 USA  
T 505 884 0672 F 505 884 4932 W www.ghd.com

## 1. Project Information

The Site is located on federal land within Section 27, Township 29N, Range 11W, San Juan County, New Mexico. Geographical coordinates for the Site are 36.69571° North, 107.98404° West. The location and Site layout details are presented as Figures 1 and 2, respectively.

In April 2015 AES excavated seven assessment trenches at the Site using a backhoe (Figure 3). The trenches were dug to depths of from 7.5 to 8 ft bgs and soils were reported to consist primarily of cobbles. No actual assessment trench logs were included in the report. Soils observed in the TH-4 and TH-5 assessment trenches above the 7.5 to 8 ft bgs elevation were described to have encountered an apparent fill material that may have derived from an historical excavation, however, this activity could not be verified. One soil boring was also drilled to a depth of 16.5 ft bgs in the approximate area determined by historical Site diagrams and aerial imagery to have been a former tank location.

Samples were collected from the bottom of each assessment trench (7.5 or 8 ft bgs) and at 11.5 and 16 ft bgs in the soil boring. Soil samples collected during this initial Site assessment were field screened for total volatile organic vapors (VOCs) with a photoionization detector (PID) and for TPH with a field test kit.

Confirmation laboratory samples were submitted from assessment trench (test holes) TH-4 and TH-5, located within the footprint of the aforementioned historical tank location. The laboratory analytical result from the TH-5 sample, collected from a depth of 8 ft bgs, indicated a TPH concentration of 2700 mg/kg (ppm).

A groundwater sample was collected through the augers from the soil boring as it penetrated a water table at 16.5 ft bgs. The sample was analyzed for BTEX constituents and the result indicated xylenes at a concentration of 930 micrograms per liter (parts per billion), above the New Mexico Water Control Commission Standard of 630 ppb.

The AES Site assessment trench TH-5 encountered impacted soils in the location associated with a former on-Site tank. The assessment trench TH-4, located approximately 15 ft to the northwest of TH-5 encountered soil concentrations below laboratory detection limits. Assessment trenches TH-1 through TH-3 excavated to the northeast of the release location had field sampling results below action levels, as did TH-6 and TH-7, excavated west of the release location.

GHD proposes to excavate impacted soils beginning in the source area and the extent of excavation will be guided using field screening techniques and through laboratory confirmation sampling.

## 2. Scope of Work

The scope of work for this project will involve the excavation of impacted soil to approximately 16 to 20 ft bgs, in the area of the TH-5 assessment trench. For the purposes of this workplan, a volume of 1,500 cubic yards (cy) of soil is used for cost estimating. This would cover an excavation of approximately 40 ft X 50 ft in area, up to 20 ft bgs (Figure 3). The following outlines basic project details that will be completed by GHD and its subcontractors:

Fieldwork will begin with a project kickoff meeting. The project kickoff meeting will include a discussion of the Health and Safety Plan (HASP), applicable Job Hazard Analyses, and stop work authority. GHD oversight of excavation activities will be conducted by an OSHA Excavation Competent Person. Tailgate safety meetings will be conducted daily at the beginning of the day and as conditions change. The field program will consist of the following:

- The anticipated impacted area, as indicated in **Figure 3**, will be excavated to a depth of approximately 16 to 20 ft bgs. Impacted soil will be disposed of at Industrial Ecosystems landfarm facility.
- Soils will be field screened during excavation using a calibrated PID and Petroflag kit for hydrocarbon assessment and a Hach chloride test kit. Field screening will be used to guide the excavation. Confirmation samples will be collected from the sidewalls of each excavation and analyzed for TPH (Gasoline Range Organics/Diesel Range Organics) by EPA Method 8015, Benzene Toluene Ethylbenzene and Xylenes (BTEX) by EPA Method 8260 and chlorides by EPA Method 300.0.
- Field screened soils that indicate TPH concentrations below the 100 ppm will be segregated to the extent possible and possibly used as eventual backfill material.
- The excavation will be backfilled to grade using clean fill material, once regulatory levels are achieved, either from segregated Site soils, or imported material. The backfill material shall be wheel roll compacted, using on-site equipment.
- After completion of backfill activities, the disturbed areas will be restored to their pre-excavation condition as accepted by ConocoPhillips and the Bureau of Land Management (BLM).

The excavation will continue until field screening data indicate soil sample are below RRALs. GHD will obtain approval from ConocoPhillips and the BLM prior to continuing excavation and soil disposal activities beyond the original estimate of 1,500 cy.

Upon completion of remediation, a letter report summarizing activities to date will be submitted. The letter report will include a Site description, project history, description of field events, a discussion of results, and recommendations. The report will include:

- A scaled site plan showing the locations of the excavation and other site features (including latitude and longitude coordinates).
- Tabulation of field screening and laboratory analytical test results.
- Copies of waste manifests.
- Final, geo-referenced site photographs.

Report recommendations will include a plan for the number and location of monitoring wells to be installed at the site to assess groundwater quality. These activities will be performed in a subsequent work phase.

### ***Health and Safety Considerations***

Personal protective equipment including fire retardant clothing, steel-toed work boots, gloves, safety glasses and hard hats will be required (basic Level D requirements) during field tasks. The project HASP will be maintained onsite. It will be reviewed and signed by on-site personnel, subcontractors, and authorized visitors.

### **Quality Assurance/Quality Control**

Soil excavation and sampling will be completed in accordance with GHDs standard Quality Assurance/Quality Control procedures designed to minimize cross-contamination between samples and to provide reliable laboratory results.

### **Schedule**

GHD is prepared to initiate the scope of work immediately, subsequent to ConocoPhillips and NMOCD approvals, the availability of resources and stakeholder concurrence. A start date and schedule of report submittals will be provided following receipt of subcontractor availability.

If you have any questions or comments with regards to this work plan, please do not hesitate to contact GHDs Albuquerque office at (505) 884-0672. Your timely response to this correspondence is appreciated.

GHD



Jeffrey Walker, CPG, PMP  
Project Manager

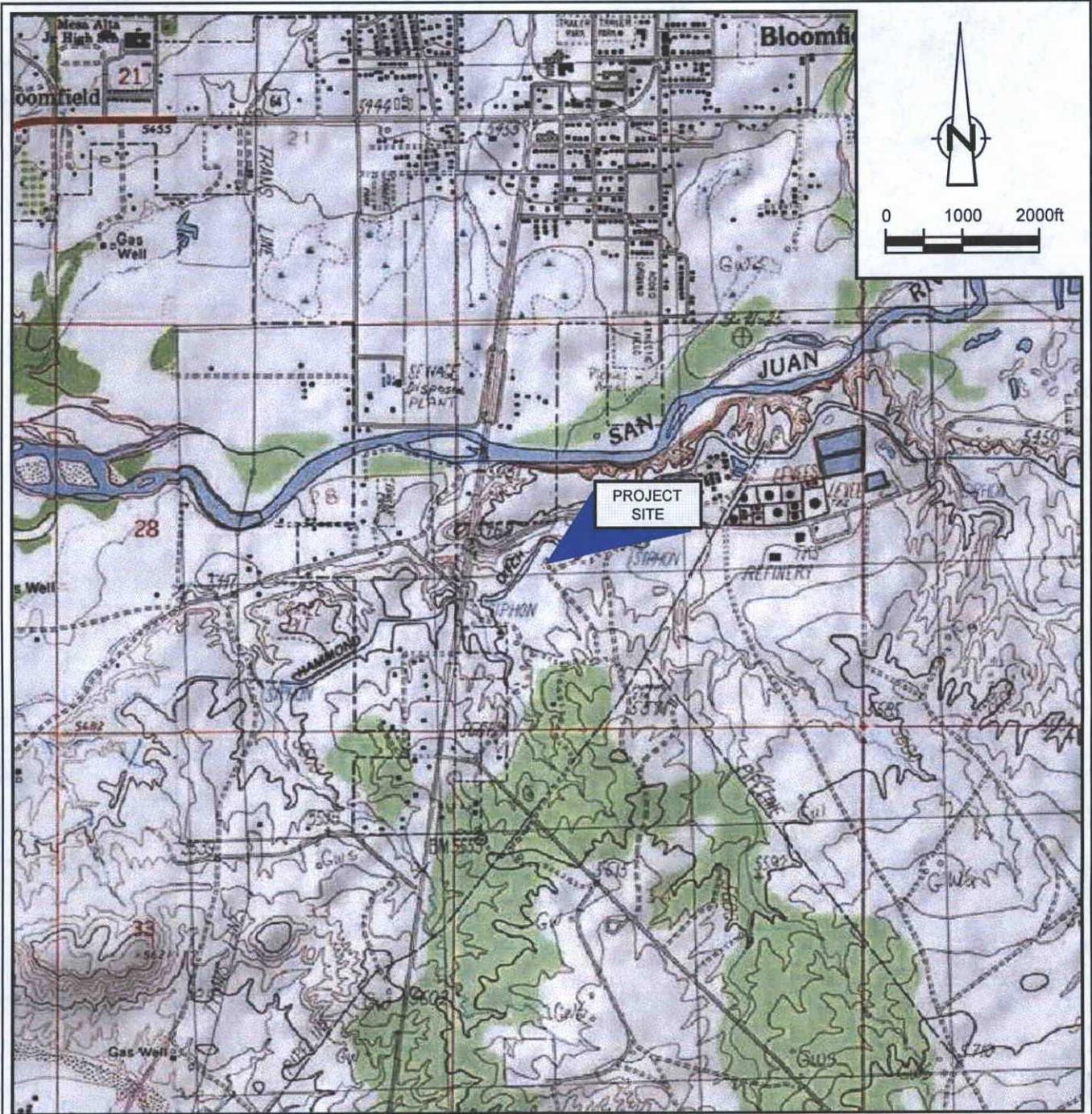


Bernie Bockisch, PMP  
Sr. Project Manager

JW/mc/1

Encl. (3)

- Figure 1 – Site Location Map
- Figure 2 – Site Details Map
- Figure 3 - Site Assessment Trench and Boring Locations/Proposed Area of Excavation



SOURCE: USGS 7.5 MINUTE QUAD  
 "BLOOMFIELD AND HORN CANYON, NEW MEXICO WEST"

LAT/LONG: 36.6955° NORTH, 107.9840° WEST  
 COORDINATE: NAD83 DATUM, U.S. FOOT  
 STATE PLANE ONE - NEW MEXICO WEST

Figure 1  
 SITE LOCATION MAP  
 MANGUM #1  
 SAN JUAN COUNTY, NEW MEXICO  
 ConocoPhillips Company



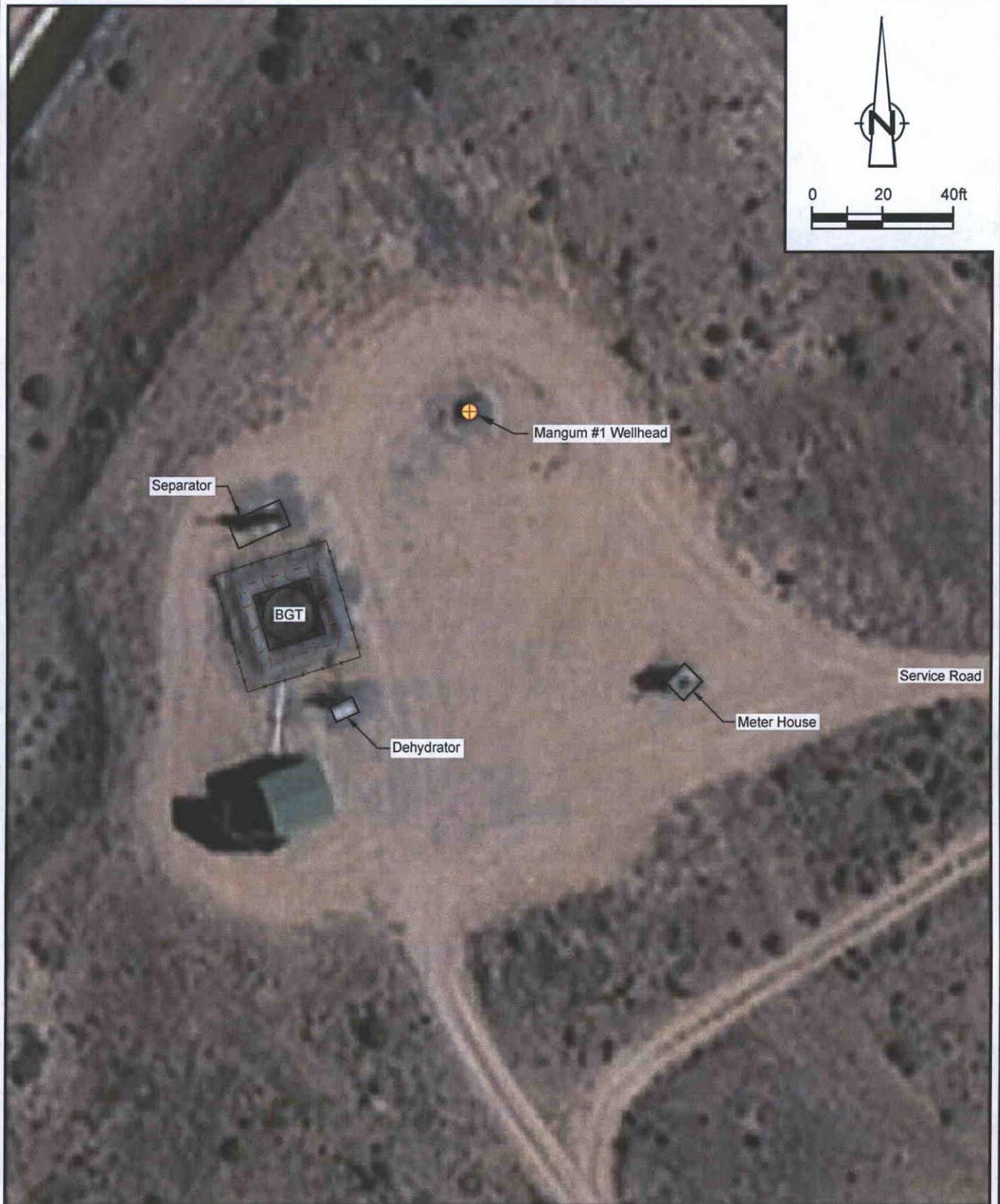


Figure 2

SITE DETAILS MAP  
 MANGUM #1  
 SAN JUAN COUNTY, NEW MEXICO  
*ConocoPhillips Company*

| LEGEND |            |
|--------|------------|
| — ) —  | Berm Line  |
| — * —  | Fence Line |



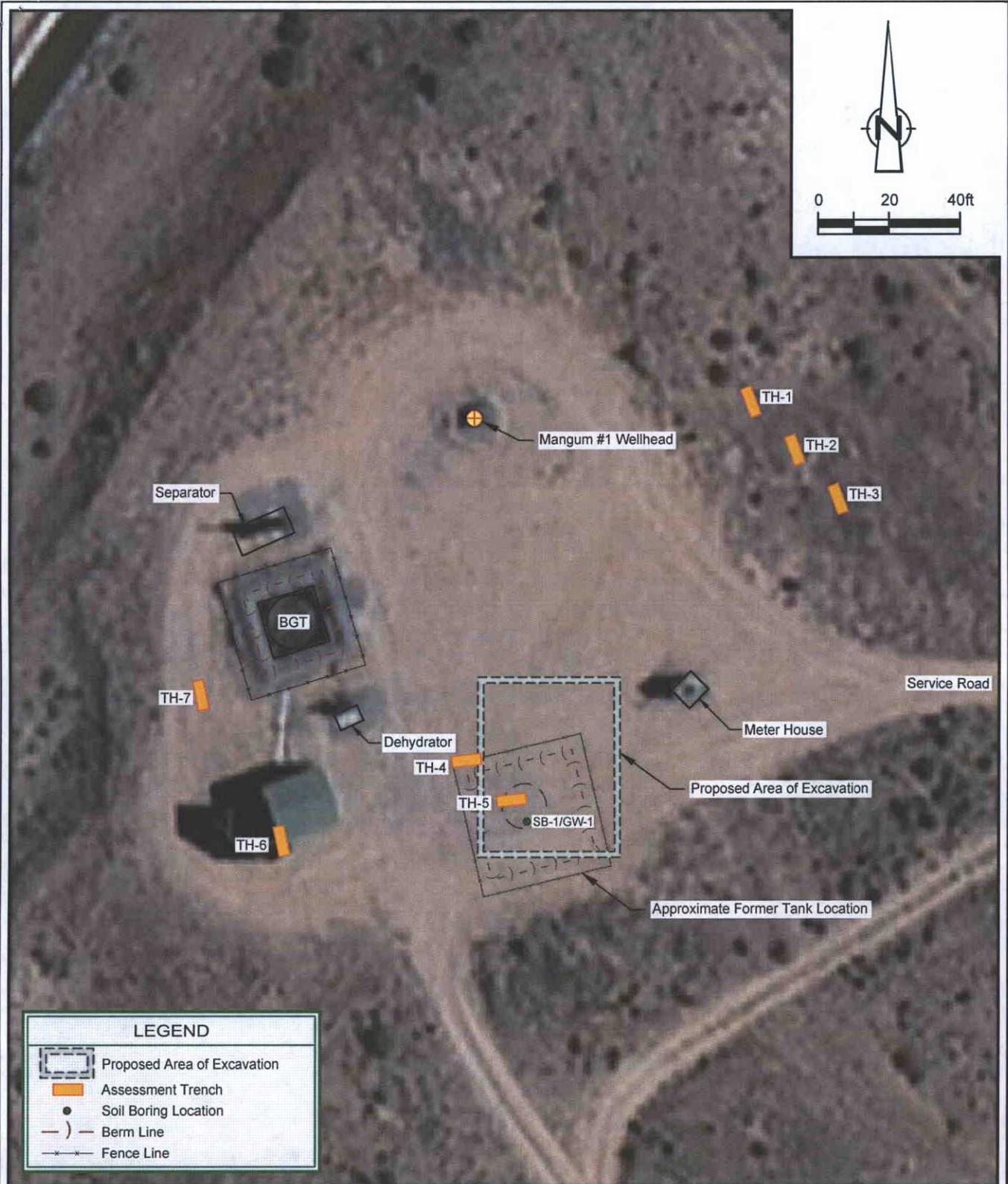


Figure 3

SITE ASSESSMENT TRENCH AND BORING LOCATIONS/  
 PROPOSED AREA OF EXCAVATION  
 MANGUM #1  
 SAN JUAN COUNTY, NEW MEXICO  
*ConocoPhillips Company*





May 4, 2015

OIL CONS. DIV DIST. 3

JAN 29 2016

Lisa Hunter  
ConocoPhillips  
San Juan Business Unit  
Office 214-04  
5525 Hwy 64  
Farmington, New Mexico 87401

*Via electronic mail to:*

[SJBUE-Team@ConocoPhillips.com](mailto:SJBUE-Team@ConocoPhillips.com)

**RE: Release Assessment Report  
Mangum #1  
San Juan County, New Mexico**

Dear Ms. Hunter:

On April 6 and 17, 2015, Animas Environmental Services, LLC (AES) completed a release assessment at the ConocoPhillips (CoP) Mangum #1, located in San Juan County, New Mexico. The historic release consisted of approximately 200 barrels (bbls) of produced water and condensate.

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## 1.0 Site Information

### 1.1 Location

Site Name – Mangum #1

Location – NW¼ SW¼, Section 27, T29N, R11W, San Juan County, New Mexico

Well Head Latitude/Longitude – N36.69571 and W107.98404, respectively

Release Location Latitude/Longitude – N36.69540 and W107.98396, respectively

Land Jurisdiction – Bureau of Land Management (BLM)

Figure 1. Topographic Site Location Map

Figure 2. Aerial Site Map, April 2015

604 W. Piñon St.  
Farmington, NM 87401  
505-564-2281

1911 Main, Ste 280  
Durango, CO  
970-403-3084

## 1.2 NMOCD Ranking

In accordance with New Mexico Oil Conservation Division (NMOCD) release protocols, action levels were established per NMOCD *Guidelines for Remediation of Leaks, Spills, and Releases* (August 1993) prior to site work. The release was given a ranking score of 60 based on the following factors:

- **Depth to Groundwater:** Groundwater was encountered at 16.5 feet below ground surface (bgs) during soil boring activities at the Mangum #1. (20 points)
- **Wellhead Protection Area:** Water well SJ 02664 is located approximately 900 feet to the east. (20 points)
- **Distance to Surface Water Body:** An irrigation canal (Hammond Ditch) is approximately 150 feet west and north of the location. There is also an unnamed stream approximately 350 feet to the north that discharges directly to the San Juan River. (20 points)

## 1.3 Assessment

AES was initially contacted by Lindsay Dumas of CoP and on April 6, 2015, Ross Kennemer and Emilee Skyles of AES began the release assessment field work. The assessment included collection and field sampling of seven soil samples from seven test holes in and around the release area. Test holes were terminated between 7.5 to 8 feet bgs and consisted primarily of cobbles. All petroleum contaminated soil was removed from the location for proper disposal at an offsite facility. Clean, native fill soil was used to fill in TH-4 and TH-5. Sample locations and results are presented on Figure 3.

On April 17, 2015, AES returned to the location with a CME-75 hollow stem auger drill rig in order to determine the vertical extent of contamination. One soil boring was placed within the contaminated area that was determined during the initial assessment (TH-5). The assessment included collection and field sampling of two soil samples. Samples were not collected between the surface and 8 feet due to clean imported backfill material. Groundwater was encountered at 16.52 feet bgs. The soil boring location and results are presented on Figure 4.

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## 2.0 Soil Sampling

Seven soil samples from seven test holes (TH-1 through TH-7) and two samples from one soil boring (SB-1 at 11 ft and SB-1 at 16 ft) were collected during the assessments. All soil samples were field screened for volatile organic compounds (VOCs) and analyzed for total petroleum hydrocarbons (TPH). Two samples (TH-4 at 7.5 ft and TH-5 at 8 ft) were also submitted for confirmation laboratory analysis.

## 2.1 Field Sampling

### 2.1.1 Volatile Organic Compounds

Field screening for VOC vapors was conducted with a photo-ionization detector (PID) organic vapor meter (OVM). Before beginning field screening, the PID-OVM was first calibrated with 100 parts per million (ppm) isobutylene gas.

### 2.1.2 Total Petroleum Hydrocarbons

Field TPH samples were analyzed per U.S. Environmental Protection Agency (USEPA) Method 418.1 using a Buck Scientific Model HC-404 Total Hydrocarbon Analyzer Infrared Spectrometer (Buck). A 3-point calibration was completed prior to conducting soil analyses. Field analytical protocol followed AES's *Standard Operating Procedure: Field Analysis Total Petroleum Hydrocarbons per EPA Method 418.1*.

## 2.2 Laboratory Analyses

The soil samples collected for laboratory analysis were placed into new, clean, laboratory-supplied containers, which were then labeled, placed on ice, and logged onto a sample chain of custody record. Samples were maintained on ice until delivery to the analytical laboratory, Hall Environmental Analysis Laboratory (Hall) in Albuquerque, New Mexico. All soil samples were laboratory analyzed for:

- Benzene, toluene, ethylbenzene, and xylene (BTEX) per USEPA Method 8021B.
- TPH for gasoline range organics (GRO), diesel range organics (DRO), and motor oil range organics (MRO) per USEPA Method 8015D.

## 2.3 Field and Laboratory Analytical Results

On April 6 and 17, 2015, release assessment field screening results for VOCs via OVM showed concentrations ranging from 0.0 ppm in TH-1 and TH-2 up to 2,662 ppm in TH-5. Field TPH concentrations ranged from less than 20.0 mg/kg in TH-3 up to greater than 2,500 mg/kg in TH-5. Results are included below in Table 1 and on Figure 3. The AES Field Sampling Reports are attached.

Table 1. Field Sampling VOCs and TPH Results  
Mangum #1 Release Assessment, April 2015

| <i>Sample ID</i>           | <i>Date Sampled</i> | <i>Sample Depth (ft bgs)</i> | <i>VOCs via OVM (ppm)</i> | <i>TPH 418.1 (mg/kg)</i> |
|----------------------------|---------------------|------------------------------|---------------------------|--------------------------|
| <i>NMOCD Action Level*</i> |                     |                              | 100                       | 100                      |
| TH-1                       | 4/06/15             | 7.5                          | 0.0                       | 23.0                     |
| TH-2                       | 4/06/15             | 7.5                          | 0.0                       | 25.4                     |
| TH-3                       | 4/06/15             | 8                            | 1.3                       | <20.0                    |
| TH-4                       | 4/06/15             | 7.5                          | <b>265</b>                | 36.2                     |
| TH-5                       | 4/06/15             | 8                            | <b>2,662</b>              | <b>&gt;2,500</b>         |
| TH-6                       | 4/06/15             | 7.5                          | 2.2                       | 30.2                     |
| TH-7                       | 4/06/15             | 8                            | 0.7                       | 27.8                     |
| SB-1                       | 4/17/15             | 11.5                         | <b>1,824</b>              | <b>425</b>               |
|                            |                     | 16                           | <b>3,676</b>              | <b>1,530</b>             |

\*Action level determined by the NMOCD ranking score per *NMOCD Guidelines for Remediation of Leaks, Spills, and Releases* (August 1993)

Laboratory analyses for TH-4 and TH-5 were used to confirm field sampling results of the initial release assessment. Benzene concentrations were reported below laboratory detection limits in each sample. Total BTEX concentrations were reported as less than 0.245 mg/kg and at 33 mg/kg in TH-4 and TH-5, respectively. TPH concentrations as GRO/DRO/MRO were reported at less than 63.6 mg/kg in TH-4 and 2,700 mg/kg in TH-5. Results are presented in Table 2 and on Figure 3. The laboratory analytical report is attached.

Table 2. Laboratory Analytical Results – Benzene, Total BTEX, and TPH  
Mangum #1 Release Assessment, April 2015

| <i>Sample ID</i>           | <i>Date Sampled</i> | <i>Sample Depth (ft bgs)</i> | <i>Benzene (mg/kg)</i> | <i>Total BTEX (mg/kg)</i> | <i>GRO (mg/kg)</i> | <i>DRO (mg/kg)</i> | <i>MRO (mg/kg)</i> |
|----------------------------|---------------------|------------------------------|------------------------|---------------------------|--------------------|--------------------|--------------------|
| <i>NMOCD Action Level*</i> |                     |                              | 10                     | 50                        | 100                |                    |                    |
| TH-4                       | 4/06/15             | 7.5                          | <0.049                 | <0.245                    | <4.9               | <9.7               | <49                |
| TH-5                       | 4/06/15             | 8                            | <0.25                  | 33                        | <b>1,600</b>       | <b>1,100</b>       | <b>&lt;480</b>     |

\*Action level determined by the NMOCD ranking score per *NMOCD Guidelines for Remediation of Leaks, Spills, and Releases* (August 1993)

### 3.0 Groundwater Sampling

On April 17, 2015, AES used a new disposable bailer inserted into the hollow stem of the drill rig assembly to collect one grab sample (GW-1) from the accumulated recharged groundwater. An interface probe was used to determine the depth to water. Sample GW-1 was submitted to Hall for laboratory analyses of the following:

- BTEX per USEPA Method 8021B.

#### 3.1 Laboratory Analytical Results

Laboratory analytical results for the water sample (GW-1) reported dissolved phase concentrations of less than 5.0 µg/L benzene, less than 10 µg/L toluene, 160 µg/L ethylbenzene, and 930 µg/L xylenes. Laboratory analytical results are included in Table 3 and on Figure 3.

Table 3. Groundwater Laboratory Analytical Results –  
Benzene, Toluene, Ethylbenzene, and Xylenes  
Mangum #1 Release Assessment, April 2015

| <i>Sample ID</i>      | <i>Date Sampled</i> | <i>Benzene (µg/L)</i> | <i>Toluene (µg/L)</i> | <i>Ethyl-Benzene (µg/L)</i> | <i>Xylenes (µg/L)</i> |
|-----------------------|---------------------|-----------------------|-----------------------|-----------------------------|-----------------------|
| <i>WQCC Standards</i> |                     | <b>10</b>             | <b>750</b>            | <b>750</b>                  | <b>620</b>            |
| GW-1                  | 04/17/15            | <5.0                  | <10                   | 160                         | 930                   |

### 4.0 Conclusions and Recommendations

On April 6, 2015, AES conducted a release assessment of petroleum contaminated soils associated with a historic release of produced water and condensate at the Mangum #1. Action levels for releases are determined by the NMOCD ranking score per *NMOCD Guidelines for Remediation of Leaks, Spills, and Releases* (August 1993), and the site was assigned a rank of 60.

Release assessment field sampling results above the NMOCD action level of 100 ppm VOCs and 100 mg/kg TPH were reported in TH-4 and TH-5. The highest VOC and TPH concentrations were reported in TH-5 with 2,662 ppm and greater than 2,500 mg/kg, respectively. Laboratory analyses for TH-4 and TH-5 were used to confirm field sampling results. Benzene and total BTEX concentrations were reported below the NMOCD action levels of 10 mg/kg and 50 mg/kg, respectively, in both samples. TPH concentrations as

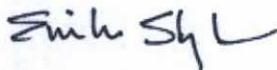
GRO/DRO/MRO in TH-4 were below the NMOCD action level of 100 mg/kg; however, TPH concentrations in TH-5 were above the NMOCD action level with 2,700 mg/kg.

On April 17, 2015, a grab groundwater sample (GW-1) was collected from the immediate vicinity of the release location. Laboratory analytical results showed dissolved phase benzene, toluene and ethylbenzene below the applicable New Mexico WQCC standards; however, dissolved phase xylenes concentrations exceeded the WQCC standard of 620 µg/L with 930 µg/L. Depth to groundwater was measured at 16.52 feet bgs.

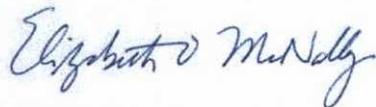
Based on final field sampling and laboratory analytical results of the release assessment at the Mangum #1, continued horizontal delineation of hydrocarbon impacted soils and groundwater is recommended.

If you have any questions about this report or site conditions, please do not hesitate to contact me at (505) 564-2281.

Sincerely,



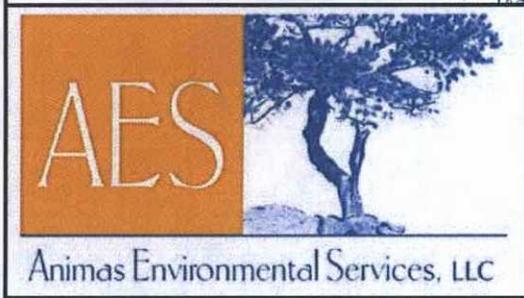
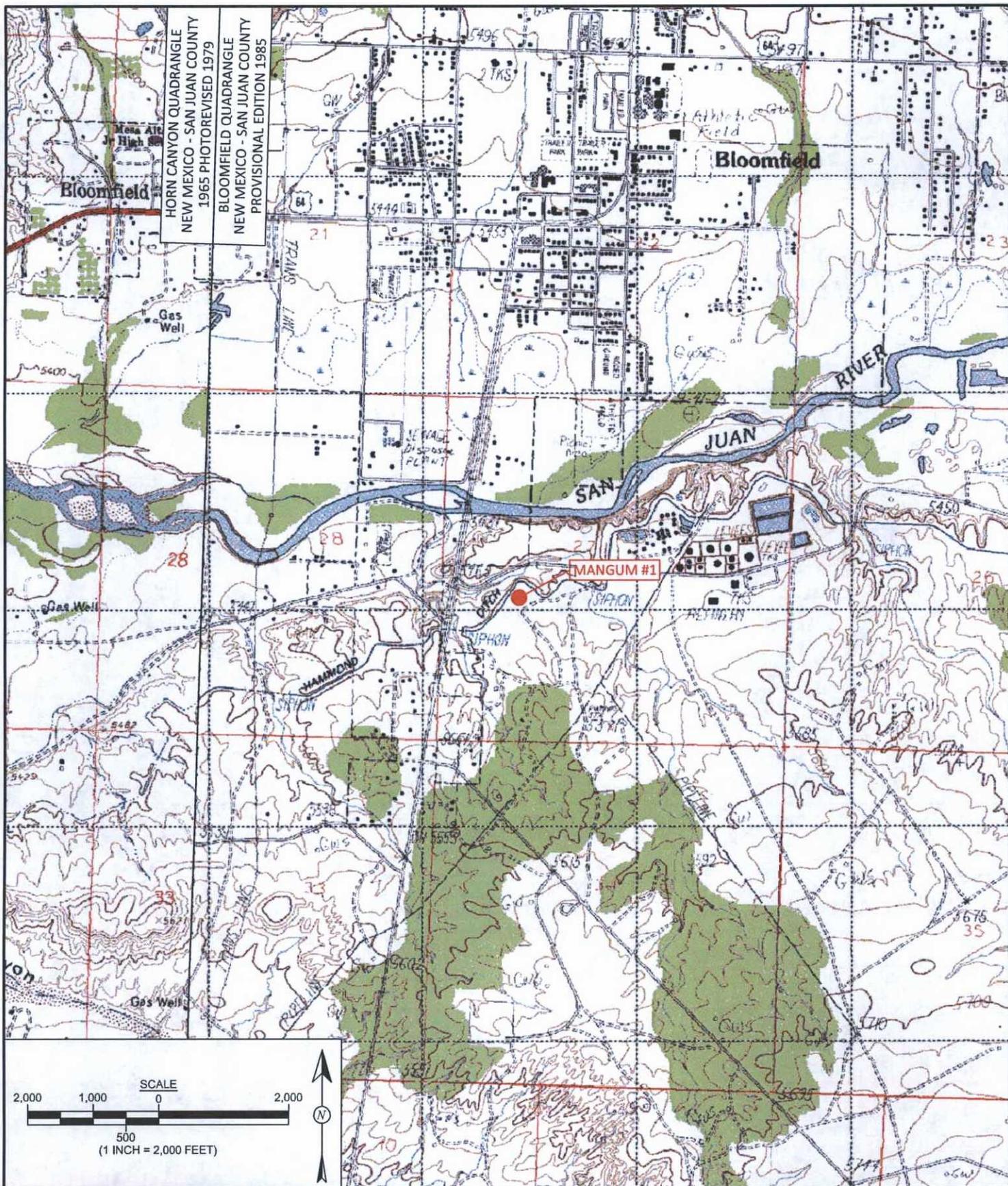
Emilee Skyles  
Geologist



Elizabeth McNally, PE

Attachments:

- Figure 1. Topographic Site Location Map
- Figure 2. Aerial Site Map, April 2015
- Figure 3. Initial Assessment Sample Locations and Results, April 2015
- Figure 4. Soil Boring Sample Location and Results, April 2015
- AES Field Sampling Report 040615
- AES Field Sampling Report 041715
- Hall Laboratory Analytical Report 1504214
- Hall Laboratory Analytical Report 1504799



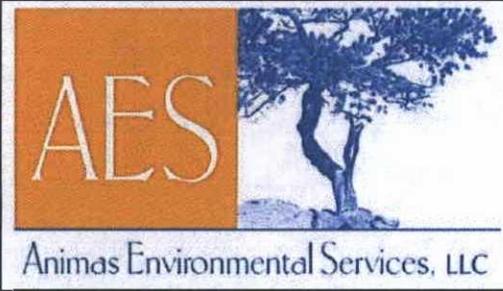
|                                    |  |
|------------------------------------|--|
| <b>DRAWN BY:</b><br>S. Glasses     | <b>DATE DRAWN:</b><br>April 7, 2015    |
| <b>REVISIONS BY:</b><br>C. Lameman | <b>DATE REVISED:</b><br>April 7, 2015  |
| <b>CHECKED BY:</b><br>E. Skyles    | <b>DATE CHECKED:</b><br>April 7, 2015  |
| <b>APPROVED BY:</b><br>E. McNally  | <b>DATE APPROVED:</b><br>April 7, 2015 |

**FIGURE 1**

**TOPOGRAPHIC SITE LOCATION MAP**  
ConocoPhillips  
MANGUM #1  
NW¼ SW¼, SECTION 27, T29W, R11W  
SAN JUAN COUNTY, NEW MEXICO  
N36.69571, W107.98404



AERIAL SOURCE: © 2014 PICTOMETRY INTERNATIONAL CORP. ONLINE, AERIAL DATE: MARCH 12, 2011



|                                    |  |
|------------------------------------|--|
| <b>DRAWN BY:</b><br>S. Glasses     | <b>DATE DRAWN:</b><br>April 7, 2015    |
| <b>REVISIONS BY:</b><br>C. Lameman | <b>DATE REVISED:</b><br>April 7, 2015  |
| <b>CHECKED BY:</b><br>E. Skyles    | <b>DATE CHECKED:</b><br>April 7, 2015  |
| <b>APPROVED BY:</b><br>E. McNally  | <b>DATE APPROVED:</b><br>April 7, 2015 |

**FIGURE 2**

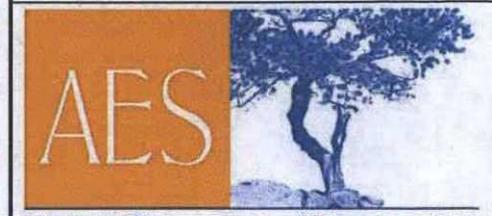
**AERIAL SITE MAP**  
**APRIL 2015**  
 ConocoPhillips  
 MANGUM #1  
 NW¼ SW¼, SECTION 27, T29W, R11W  
 SAN JUAN COUNTY, NEW MEXICO  
 N36.69571, W107.98404

| Field Sampling Results    |        |            |               |             |
|---------------------------|--------|------------|---------------|-------------|
| Sample ID                 | Date   | Depth (ft) | OVM-PID (ppm) | TPH (mg/kg) |
| <b>NMOCD ACTION LEVEL</b> |        |            | <b>100</b>    | <b>100</b>  |
| TH-1                      | 4/6/15 | 7.5        | 0.0           | 23.0        |
| TH-2                      | 4/6/15 | 7.5        | 0.0           | 25.4        |
| TH-3                      | 4/6/15 | 8          | 1.3           | <20.0       |
| TH-4                      | 4/6/15 | 7.5        | 265           | 36.2        |
| TH-5                      | 4/6/15 | 8          | 2,662         | >2,500      |
| TH-6                      | 4/6/15 | 7.5        | 2.2           | 30.2        |
| TH-7                      | 4/6/15 | 8          | 0.7           | 27.8        |

| Laboratory Analytical Results |        |            |                 |                    |                   |                   |                   |
|-------------------------------|--------|------------|-----------------|--------------------|-------------------|-------------------|-------------------|
| Sample ID                     | Date   | Depth (ft) | Benzene (mg/kg) | Total BTEX (mg/kg) | TPH - GRO (mg/kg) | TPH - DRO (mg/kg) | TPH - MRO (mg/kg) |
| <b>NMOCD ACTION LEVEL</b>     |        |            | <b>10</b>       | <b>50</b>          | <b>100</b>        |                   |                   |
| TH-4                          | 4/6/15 | 7.5        | <0.049          | <0.245             | <4.9              | <9.7              | <49               |
| TH-5                          | 4/6/15 | 8          | <0.25           | 33                 | 1,600             | 1,100             | <480              |

ALL SAMPLES WERE ANALYZED PER USEPA METHOD 8021B AND 8015D.

**INITIAL ASSESSMENT SAMPLE LOCATIONS AND RESULTS**  
**APRIL 2015**  
 ConocoPhillips  
 MANGUM #1  
 NW¼ SW¼, SECTION 27, T29W, R11W  
 SAN JUAN COUNTY, NEW MEXICO  
 N36.69571, W107.98404

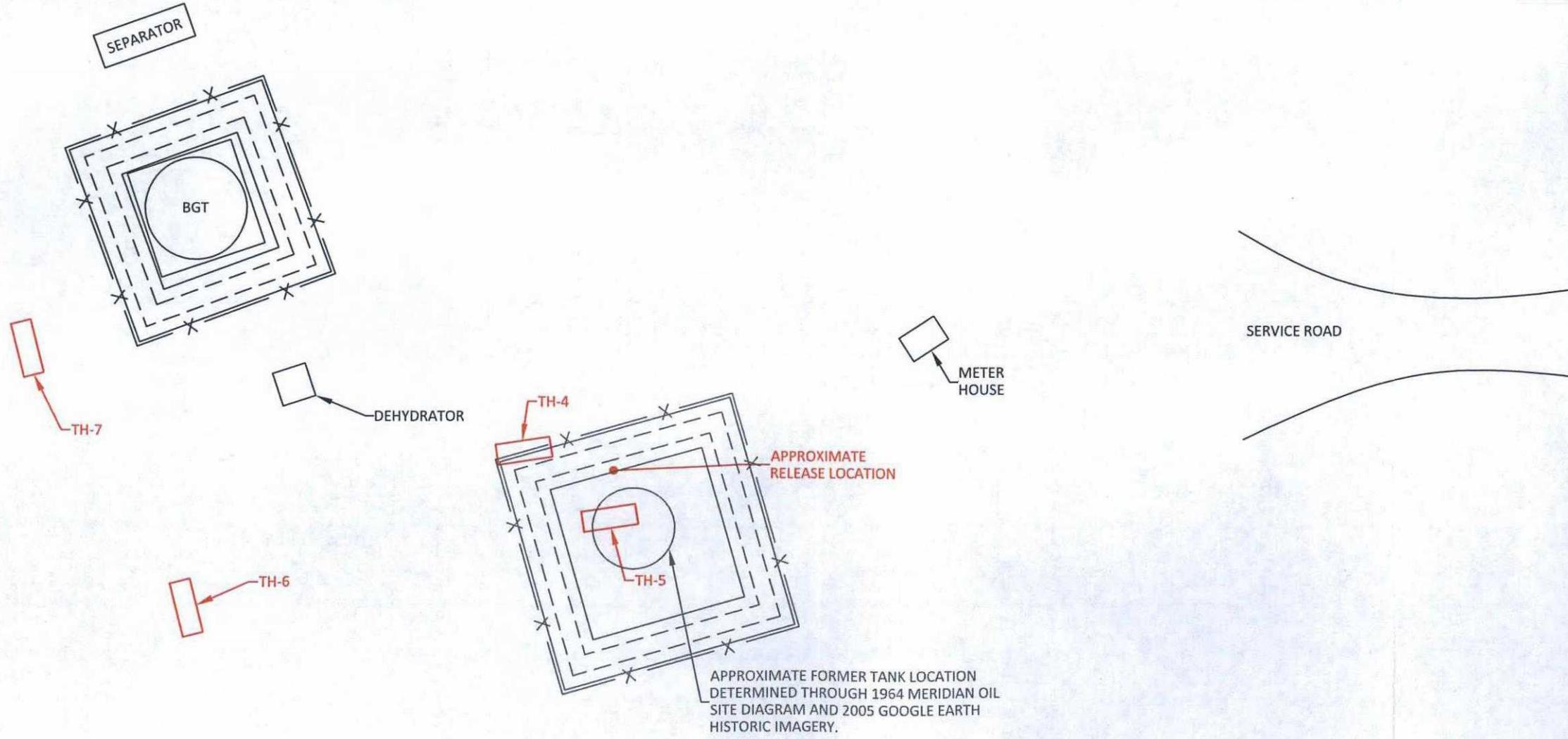


Animas Environmental Services, LLC

|                                    |   |
|------------------------------------|---|
| <b>DRAWN BY:</b><br>S. Glasses     | <b>DATE DRAWN:</b><br>April 15, 2015    |
| <b>REVISIONS BY:</b><br>C. Lameman | <b>DATE REVISED:</b><br>April 15, 2015  |
| <b>CHECKED BY:</b><br>E. Skyles    | <b>DATE CHECKED:</b><br>April 15, 2015  |
| <b>APPROVED BY:</b><br>E. McNally  | <b>DATE APPROVED:</b><br>April 15, 2015 |

**LEGEND**

|  |                            |
|--|----------------------------|
|  | SECONDARY CONTAINMENT BERM |
|  | FENCE                      |



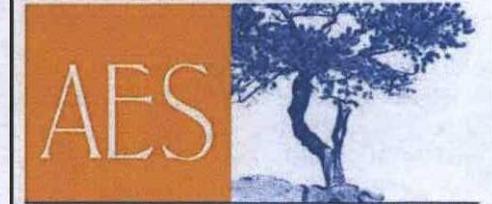
APPROXIMATE FORMER TANK LOCATION DETERMINED THROUGH 1964 MERIDIAN OIL SITE DIAGRAM AND 2005 GOOGLE EARTH HISTORIC IMAGERY.

| Soil Field Sampling Results |         |            |               |             |
|-----------------------------|---------|------------|---------------|-------------|
| Sample ID                   | Date    | Depth (ft) | OVM-PID (ppm) | TPH (mg/kg) |
| NMOCD ACTION LEVEL          |         |            | 100           | 100         |
| SB-1                        | 4/17/15 | 10 - 11.5  | 1,824         | 425         |
|                             |         | 15 - 16.5  | 3,676         | 1,530       |

| Groundwater Laboratory Analytical Results |         |                |                |                      |                |
|---|---------|----------------|----------------|----------------------|----------------|
| Sample ID                                 | Date    | Benzene (µg/L) | Toluene (µg/L) | Ethyl-Benzene (µg/L) | Xylenes (µg/L) |
| WQCC STANDARD                             |         | 10             | 750            | 750                  | 620            |
| GW-1                                      | 4/17/15 | <5.0           | <10            | 160                  | 930            |

NOTE: SAMPLE WAS ANALYZED PER USEPA METHOD 8021B.

**SOIL BORING SAMPLE LOCATION AND RESULTS**  
**APRIL 2015**  
 ConocoPhillips  
 MANGUM #1  
 NW¼ SW¼, SECTION 27, T29W, R11W  
 SAN JUAN COUNTY, NEW MEXICO  
 N36.69571, W107.98404

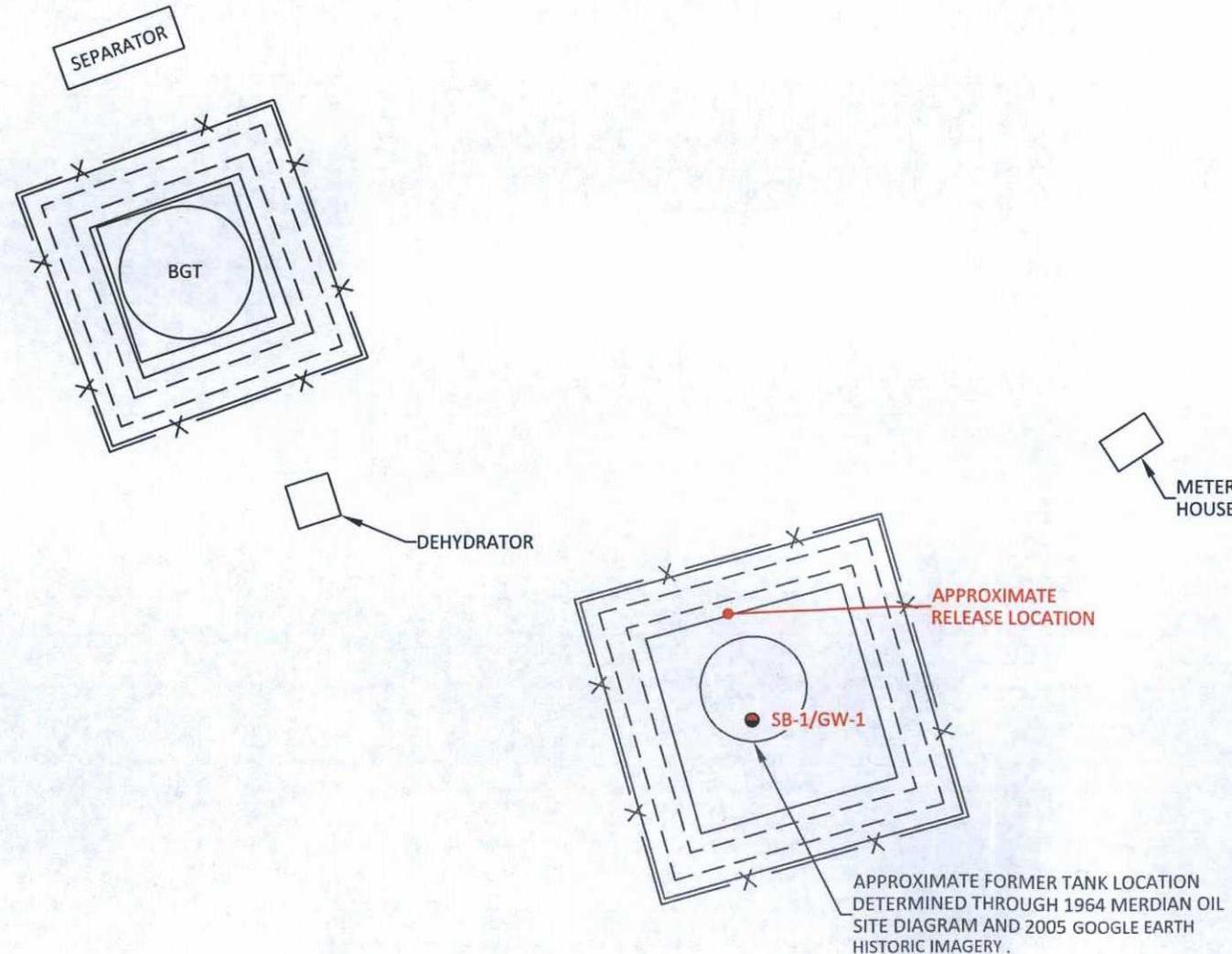


Animas Environmental Services, LLC

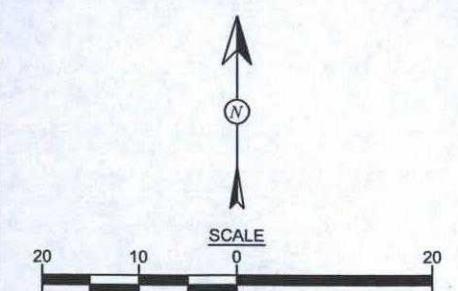
|                                    |   |
|------------------------------------|---|
| <b>DRAWN BY:</b><br>C. Lameman     | <b>DATE DRAWN:</b><br>April 30, 2015    |
| <b>REVISIONS BY:</b><br>C. Lameman | <b>DATE REVISED:</b><br>April 30, 2015  |
| <b>CHECKED BY:</b><br>E. Skyles    | <b>DATE CHECKED:</b><br>April 30, 2015  |
| <b>APPROVED BY:</b><br>E. McNally  | <b>DATE APPROVED:</b><br>April 30, 2015 |

**LEGEND**

- SOIL BORING LOCATION
- SECONDARY CONTAINMENT BERM
- FENCE



MANGUM #1 WELLHEAD



# AES Field Sampling Report

Animas Environmental Services, LLC



Client: ConocoPhillips

Project Location: Mangum #1

Date: 4/6/2015

Matrix: Soil

| Sample ID   | Collection Date | Collection Time | OVM (ppm) | Field TPH* (mg/kg) | Field TPH Analysis Time | TPH PQL (mg/kg) | DF | TPH Analysts Initials |
|-------------|-----------------|-----------------|-----------|--------------------|-------------------------|-----------------|----|-----------------------|
| TH-1 @ 7.5' | 4/6/2015        | 9:34            | 0.0       | 23.0               | 10:00                   | 20.0            | 1  | EMS                   |
| TH-2 @ 7.5' | 4/6/2015        | 9:45            | 0.0       | 25.4               | 10:03                   | 20.0            | 1  | EMS                   |
| TH-3 @ 8'   | 4/6/2015        | 9:50            | 1.3       | 18.2               | 10:05                   | 20.0            | 1  | EMS                   |
| TH-4 @ 7.5' | 4/6/2015        | 11:00           | 265       | 36.2               | 11:31                   | 20.0            | 1  | EMS                   |
| TH-5 @ 8'   | 4/6/2015        | 11:20           | 2,662     | >2,500             | 11:33                   | 20.0            | 1  | EMS                   |
| TH-6 @ 7.5' | 4/6/2015        | 11:50           | 2.2       | 30.2               | 12:09                   | 20.0            | 1  | EMS                   |
| TH-7 @ 8'   | 4/6/2015        | 11:56           | 0.7       | 27.8               | 12:12                   | 20.0            | 1  | EMS                   |

DF Dilution Factor  
 NA Not Analyzed  
 PQL Practical Quantitation Limit

\*Field TPH concentrations recorded may be below PQL.

Total Petroleum Hydrocarbons - USEPA 418.1

Analyst: *Eric Skelton*

# AES Field Sampling Report

Animas Environmental Services, LLC



Client: ConocoPhillips

Project Location: Mangum #1

Date: 4/17/2015

Matrix: Soil

| Sample ID    | Collection Date | Collection Time | OMV (ppm) | Field TPH* (mg/kg) | Field TPH Analysis Time | TPH PQL (mg/kg) | DF | TPH Analysts Initials |
|--------------|-----------------|-----------------|-----------|--------------------|-------------------------|-----------------|----|-----------------------|
| SB-1 @ 11.5' | 4/17/2015       | 10:05           | 1,824     | 425                | 10:27                   | 20.0            | 1  | EMS                   |
| SB-1 @ 16'   | 4/17/2015       | 10:43           | 3,676     | 1,530              | 11:10                   | 20.0            | 1  | EMS                   |

DF Dilution Factor  
NA Not Analyzed  
PQL Practical Quantitation Limit

*\*Field TPH concentrations recorded may be below PQL.*

Total Petroleum Hydrocarbons - USEPA 418.1

Analyst: *Eric Skelton*



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

April 13, 2015

Emilee Skyles  
Animas Environmental  
604 Pinon Street  
Farmington, NM 87401  
TEL: (505) 564-2281  
FAX

RE: CoP Mangum #1

OrderNo.: 1504214

Dear Emilee Skyles:

Hall Environmental Analysis Laboratory received 2 sample(s) on 4/7/2015 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a light blue horizontal line.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1504214

Date Reported: 4/13/2015

CLIENT: Animas Environmental

Client Sample ID: TH-4 @ 7.5'

Project: CoP Mangum #1

Collection Date: 4/6/2015 11:00:00 AM

Lab ID: 1504214-001

Matrix: SOIL

Received Date: 4/7/2015 6:40:00 AM

| Analyses                                       | Result | RL       | Qual | Units | DF | Date Analyzed        | Batch        |
|--|--------|----------|------|-------|----|----------------------|--------------|
| <b>EPA METHOD 8015D: DIESEL RANGE ORGANICS</b> |        |          |      |       |    |                      | Analyst: BCN |
| Diesel Range Organics (DRO)                    | ND     | 9.7      |      | mg/Kg | 1  | 4/9/2015 10:51:18 PM | 18546        |
| Motor Oil Range Organics (MRO)                 | ND     | 49       |      | mg/Kg | 1  | 4/9/2015 10:51:18 PM | 18546        |
| Surr: DNOP                                     | 95.2   | 63.5-128 |      | %REC  | 1  | 4/9/2015 10:51:18 PM | 18546        |
| <b>EPA METHOD 8015D: GASOLINE RANGE</b>        |        |          |      |       |    |                      | Analyst: NSB |
| Gasoline Range Organics (GRO)                  | ND     | 4.9      |      | mg/Kg | 1  | 4/8/2015 5:02:45 PM  | 18551        |
| Surr: BFB                                      | 86.1   | 80-120   |      | %REC  | 1  | 4/8/2015 5:02:45 PM  | 18551        |
| <b>EPA METHOD 8021B: VOLATILES</b>             |        |          |      |       |    |                      | Analyst: NSB |
| Benzene  | ND     | 0.049    |      | mg/Kg | 1  | 4/8/2015 5:02:45 PM  | 18551        |
| Toluene  | ND     | 0.049    |      | mg/Kg | 1  | 4/8/2015 5:02:45 PM  | 18551        |
| Ethylbenzene                                   | ND     | 0.049    |      | mg/Kg | 1  | 4/8/2015 5:02:45 PM  | 18551        |
| Xylenes, Total                                 | ND     | 0.098    |      | mg/Kg | 1  | 4/8/2015 5:02:45 PM  | 18551        |
| Surr: 4-Bromofluorobenzene                     | 94.3   | 80-120   |      | %REC  | 1  | 4/8/2015 5:02:45 PM  | 18551        |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

|                    |   |  |
|--------------------|---|--|
| <b>Qualifiers:</b> | * Value exceeds Maximum Contaminant Level.        | B Analyte detected in the associated Method Blank    |
|                    | E Value above quantitation range                  | H Holding times for preparation or analysis exceeded |
|                    | J Analyte detected below quantitation limits      | ND Not Detected at the Reporting Limit               |
|                    | O RSD is greater than RSDlimit                    | P Sample pH Not In Range                             |
|                    | R RPD outside accepted recovery limits            | RL Reporting Detection Limit                         |
|                    | S Spike Recovery outside accepted recovery limits |  |

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1504214

Date Reported: 4/13/2015

CLIENT: Animas Environmental

Client Sample ID: TH-5 @ 8'

Project: CoP Mangum #1

Collection Date: 4/6/2015 11:20:00 AM

Lab ID: 1504214-002

Matrix: SOIL

Received Date: 4/7/2015 6:40:00 AM

| Analyses                                       | Result | RL       | Qual | Units | DF | Date Analyzed        | Batch        |
|--|--------|----------|------|-------|----|----------------------|--------------|
| <b>EPA METHOD 8015D: DIESEL RANGE ORGANICS</b> |        |          |      |       |    |                      | Analyst: JME |
| Diesel Range Organics (DRO)                    | 1100   | 96       |      | mg/Kg | 10 | 4/10/2015 9:55:09 AM | 18546        |
| Motor Oil Range Organics (MRO)                 | ND     | 480      |      | mg/Kg | 10 | 4/10/2015 9:55:09 AM | 18546        |
| Surr: DNOP                                     | 0      | 63.5-128 | S    | %REC  | 10 | 4/10/2015 9:55:09 AM | 18546        |
| <b>EPA METHOD 8015D: GASOLINE RANGE</b>        |        |          |      |       |    |                      | Analyst: NSB |
| Gasoline Range Organics (GRO)                  | 1600   | 50       |      | mg/Kg | 10 | 4/8/2015 5:31:27 PM  | 18551        |
| Surr: BFB                                      | 1100   | 80-120   | S    | %REC  | 10 | 4/8/2015 5:31:27 PM  | 18551        |
| <b>EPA METHOD 8021B: VOLATILES</b>             |        |          |      |       |    |                      | Analyst: NSB |
| Benzene  | ND     | 0.25     |      | mg/Kg | 10 | 4/8/2015 5:31:27 PM  | 18551        |
| Toluene  | ND     | 0.50     |      | mg/Kg | 10 | 4/8/2015 5:31:27 PM  | 18551        |
| Ethylbenzene                                   | ND     | 0.50     |      | mg/Kg | 10 | 4/8/2015 5:31:27 PM  | 18551        |
| Xylenes, Total                                 | 33     | 0.99     |      | mg/Kg | 10 | 4/8/2015 5:31:27 PM  | 18551        |
| Surr: 4-Bromofluorobenzene                     | 194    | 80-120   | S    | %REC  | 10 | 4/8/2015 5:31:27 PM  | 18551        |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

|                    |   |  |
|--------------------|---|--|
| <b>Qualifiers:</b> | * Value exceeds Maximum Contaminant Level.        | B Analyte detected in the associated Method Blank    |
|                    | E Value above quantitation range                  | H Holding times for preparation or analysis exceeded |
|                    | J Analyte detected below quantitation limits      | ND Not Detected at the Reporting Limit               |
|                    | O RSD is greater than RSDlimit                    | P Sample pH Not In Range                             |
|                    | R RPD outside accepted recovery limits            | RL Reporting Detection Limit                         |
|                    | S Spike Recovery outside accepted recovery limits |  |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1504214

13-Apr-15

**Client:** Animas Environmental  
**Project:** CoP Mangum #1

|                                |          |                |           |             |   |          |           |      |          |      |
|--------------------------------|----------|----------------|-----------|-------------|---|----------|-----------|------|----------|------|
| Sample ID                      | MB-18546 | SampType:      | MBLK      | TestCode:   | EPA Method 8015D: Diesel Range Organics |          |           |      |          |      |
| Client ID:                     | PBS      | Batch ID:      | 18546     | RunNo:      | 25386                                   |          |           |      |          |      |
| Prep Date:                     | 4/7/2015 | Analysis Date: | 4/9/2015  | SeqNo:      | 752140                                  | Units:   | mg/Kg     |      |          |      |
| Analyte                        | Result   | PQL            | SPK value | SPK Ref Val | %REC                                    | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Diesel Range Organics (DRO)    | ND       | 10             |           |             |   |          |           |      |          |      |
| Motor Oil Range Organics (MRO) | ND       | 50             |           |             |   |          |           |      |          |      |
| Surr: DNOP                     | 10       |                | 10.00     |             | 100                                     | 63.5     | 128       |      |          |      |

|                             |           |                |           |             |   |          |           |      |          |      |
|-----------------------------|-----------|----------------|-----------|-------------|---|----------|-----------|------|----------|------|
| Sample ID                   | LCS-18546 | SampType:      | LCS       | TestCode:   | EPA Method 8015D: Diesel Range Organics |          |           |      |          |      |
| Client ID:                  | LCSS      | Batch ID:      | 18546     | RunNo:      | 25386                                   |          |           |      |          |      |
| Prep Date:                  | 4/7/2015  | Analysis Date: | 4/9/2015  | SeqNo:      | 752142                                  | Units:   | mg/Kg     |      |          |      |
| Analyte                     | Result    | PQL            | SPK value | SPK Ref Val | %REC                                    | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Diesel Range Organics (DRO) | 66        | 10             | 50.00     | 0           | 132                                     | 67.8     | 130       |      |          | S    |
| Surr: DNOP                  | 6.6       |                | 5.000     |             | 131                                     | 63.5     | 128       |      |          | S    |

|            |           |                |           |             |   |          |           |      |          |      |
|------------|-----------|----------------|-----------|-------------|---|----------|-----------|------|----------|------|
| Sample ID  | MB-18616  | SampType:      | MBLK      | TestCode:   | EPA Method 8015D: Diesel Range Organics |          |           |      |          |      |
| Client ID: | PBS       | Batch ID:      | 18616     | RunNo:      | 25410                                   |          |           |      |          |      |
| Prep Date: | 4/10/2015 | Analysis Date: | 4/10/2015 | SeqNo:      | 753570                                  | Units:   | %REC      |      |          |      |
| Analyte    | Result    | PQL            | SPK value | SPK Ref Val | %REC                                    | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Surr: DNOP | 9.5       |                | 10.00     |             | 94.7                                    | 63.5     | 128       |      |          |      |

|            |           |                |           |             |   |          |           |      |          |      |
|------------|-----------|----------------|-----------|-------------|---|----------|-----------|------|----------|------|
| Sample ID  | LCS-18616 | SampType:      | LCS       | TestCode:   | EPA Method 8015D: Diesel Range Organics |          |           |      |          |      |
| Client ID: | LCSS      | Batch ID:      | 18616     | RunNo:      | 25410                                   |          |           |      |          |      |
| Prep Date: | 4/10/2015 | Analysis Date: | 4/10/2015 | SeqNo:      | 753573                                  | Units:   | %REC      |      |          |      |
| Analyte    | Result    | PQL            | SPK value | SPK Ref Val | %REC                                    | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Surr: DNOP | 4.5       |                | 5.000     |             | 89.3                                    | 63.5     | 128       |      |          |      |

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

# QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1504214

13-Apr-15

Client: Animas Environmental

Project: CoP Mangum #1

|                               |          |                |           |             |                                  |          |           |      |          |      |
|-------------------------------|----------|----------------|-----------|-------------|----------------------------------|----------|-----------|------|----------|------|
| Sample ID                     | MB-18551 | SampType:      | MBLK      | TestCode:   | EPA Method 8015D: Gasoline Range |          |           |      |          |      |
| Client ID:                    | PBS      | Batch ID:      | 18551     | RunNo:      | 25375                            |          |           |      |          |      |
| Prep Date:                    | 4/7/2015 | Analysis Date: | 4/8/2015  | SeqNo:      | 751117                           | Units:   | mg/Kg     |      |          |      |
| Analyte                       | Result   | PQL            | SPK value | SPK Ref Val | %REC                             | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Gasoline Range Organics (GRO) | ND       | 5.0            |           |             |                                  |          |           |      |          |      |
| Surr: BFB                     | 840      |                | 1000      |             | 84.0                             | 80       | 120       |      |          |      |

|                               |           |                |           |             |                                  |          |           |      |          |      |
|-------------------------------|-----------|----------------|-----------|-------------|----------------------------------|----------|-----------|------|----------|------|
| Sample ID                     | LCS-18551 | SampType:      | LCS       | TestCode:   | EPA Method 8015D: Gasoline Range |          |           |      |          |      |
| Client ID:                    | LCSS      | Batch ID:      | 18551     | RunNo:      | 25375                            |          |           |      |          |      |
| Prep Date:                    | 4/7/2015  | Analysis Date: | 4/8/2015  | SeqNo:      | 751118                           | Units:   | mg/Kg     |      |          |      |
| Analyte                       | Result    | PQL            | SPK value | SPK Ref Val | %REC                             | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Gasoline Range Organics (GRO) | 24        | 5.0            | 25.00     | 0           | 97.7                             | 64       | 130       |      |          |      |
| Surr: BFB                     | 900       |                | 1000      |             | 90.4                             | 80       | 120       |      |          |      |

### Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1504214

13-Apr-15

**Client:** Animas Environmental

**Project:** CoP Mangum #1

| Sample ID                  | <b>MB-18551</b> | SampType:      | <b>MBLK</b>     | TestCode:   | <b>EPA Method 8021B: Volatiles</b> |          |              |      |          |      |
|----------------------------|-----------------|----------------|-----------------|-------------|------------------------------------|----------|--------------|------|----------|------|
| Client ID:                 | <b>PBS</b>      | Batch ID:      | <b>18551</b>    | RunNo:      | <b>25375</b>                       |          |              |      |          |      |
| Prep Date:                 | <b>4/7/2015</b> | Analysis Date: | <b>4/8/2015</b> | SeqNo:      | <b>750899</b>                      | Units:   | <b>mg/Kg</b> |      |          |      |
| Analyte                    | Result          | PQL            | SPK value       | SPK Ref Val | %REC                               | LowLimit | HighLimit    | %RPD | RPDLimit | Qual |
| Benzene                    | ND              | 0.050          |                 |             |                                    |          |              |      |          |      |
| Toluene                    | ND              | 0.050          |                 |             |                                    |          |              |      |          |      |
| Ethylbenzene               | ND              | 0.050          |                 |             |                                    |          |              |      |          |      |
| Xylenes, Total             | ND              | 0.10           |                 |             |                                    |          |              |      |          |      |
| Surr: 4-Bromofluorobenzene | 0.95            |                | 1.000           |             | 94.8                               | 80       | 120          |      |          |      |

| Sample ID                  | <b>LCS-18551</b> | SampType:      | <b>LCS</b>      | TestCode:   | <b>EPA Method 8021B: Volatiles</b> |          |              |      |          |      |
|----------------------------|------------------|----------------|-----------------|-------------|------------------------------------|----------|--------------|------|----------|------|
| Client ID:                 | <b>LCSS</b>      | Batch ID:      | <b>18551</b>    | RunNo:      | <b>25375</b>                       |          |              |      |          |      |
| Prep Date:                 | <b>4/7/2015</b>  | Analysis Date: | <b>4/8/2015</b> | SeqNo:      | <b>750900</b>                      | Units:   | <b>mg/Kg</b> |      |          |      |
| Analyte                    | Result           | PQL            | SPK value       | SPK Ref Val | %REC                               | LowLimit | HighLimit    | %RPD | RPDLimit | Qual |
| Benzene                    | 1.2              | 0.050          | 1.000           | 0           | 119                                | 76.6     | 128          |      |          |      |
| Toluene                    | 1.1              | 0.050          | 1.000           | 0           | 115                                | 75       | 124          |      |          |      |
| Ethylbenzene               | 1.2              | 0.050          | 1.000           | 0           | 117                                | 79.5     | 126          |      |          |      |
| Xylenes, Total             | 3.5              | 0.10           | 3.000           | 0           | 117                                | 78.8     | 124          |      |          |      |
| Surr: 4-Bromofluorobenzene | 1.0              |                | 1.000           |             | 102                                | 80       | 120          |      |          |      |

**Qualifiers:**

- |   |  |
|---|--|
| * Value exceeds Maximum Contaminant Level.        | B Analyte detected in the associated Method Blank    |
| E Value above quantitation range                  | H Holding times for preparation or analysis exceeded |
| J Analyte detected below quantitation limits      | ND Not Detected at the Reporting Limit               |
| O RSD is greater than RSDlimit                    | P Sample pH Not In Range                             |
| R RPD outside accepted recovery limits            | RL Reporting Detection Limit                         |
| S Spike Recovery outside accepted recovery limits |  |

**Sample Log-In Check List**

Client Name: Animas Environmental

Work Order Number: 1504214

RcptNo: 1

Received by/date: AS 04/07/15

Logged By: Anne Thorne 4/7/2015 6:40:00 AM *Anne Thorne*

Completed By: Anne Thorne 4/7/2015 *Anne Thorne*

Reviewed By: *[Signature]* 04/07/15

**Chain of Custody**

- 1. Custody seals intact on sample bottles? Yes  No  Not Present
- 2. Is Chain of Custody complete? Yes  No  Not Present
- 3. How was the sample delivered? Courier

**Log In**

- 4. Was an attempt made to cool the samples? Yes  No  NA
- 5. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA
- 6. Sample(s) in proper container(s)? Yes  No
- 7. Sufficient sample volume for indicated test(s)? Yes  No
- 8. Are samples (except VOA and ONG) properly preserved? Yes  No
- 9. Was preservative added to bottles? Yes  No  NA
- 10. VOA vials have zero headspace? Yes  No  No VOA Vials
- 11. Were any sample containers received broken? Yes  No
- 12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes  No
- 13. Are matrices correctly identified on Chain of Custody? Yes  No
- 14. Is it clear what analyses were requested? Yes  No
- 15. Were all holding times able to be met? (If no, notify customer for authorization.) Yes  No

# of preserved bottles checked for pH: \_\_\_\_\_  
 (<2 or >12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: \_\_\_\_\_

**Special Handling (if applicable)**

- 16. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified: \_\_\_\_\_ Date: \_\_\_\_\_  
 By Whom: \_\_\_\_\_ Via:  eMail  Phone  Fax  In Person  
 Regarding: \_\_\_\_\_  
 Client Instructions: \_\_\_\_\_

17. Additional remarks:

**18. Cooler Information**

| Cooler No | Temp °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|-----------|---------|-----------|-------------|---------|-----------|-----------|
| 1         | 1.0     | Good      | Yes         |         |           |           |





Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

April 28, 2015

Emilee Skyles  
Animas Environmental  
604 Pinon Street  
Farmington, NM 87401  
TEL: (505) 564-2281  
FAX

RE: CoP Mangum #1

OrderNo.: 1504799

Dear Emilee Skyles:

Hall Environmental Analysis Laboratory received 1 sample(s) on 4/18/2015 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a light blue horizontal line.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report  
 Lab Order 1504799  
 Date Reported: 4/28/2015

CLIENT: Animas Environmental  
 Project: CoP Mangum #1  
 Lab ID: 1504799-001

Client Sample ID: GW-1  
 Collection Date: 4/17/2015 11:17:00 AM  
 Received Date: 4/18/2015 9:15:00 AM

Matrix: AQUEOUS

| Analyses                           | Result | RL     | Qual | Units | DF | Date Analyzed        | Batch        |
|------------------------------------|--------|--------|------|-------|----|----------------------|--------------|
| <b>EPA METHOD 8021B: VOLATILES</b> |        |        |      |       |    |                      | Analyst: NSB |
| Benzene                            | ND     | 5.0    |      | µg/L  | 10 | 4/23/2015 2:27:08 PM | R25707       |
| Toluene                            | ND     | 10     |      | µg/L  | 10 | 4/23/2015 2:27:08 PM | R25707       |
| Ethylbenzene                       | 160    | 10     |      | µg/L  | 10 | 4/23/2015 2:27:08 PM | R25707       |
| Xylenes, Total                     | 930    | 20     |      | µg/L  | 10 | 4/23/2015 2:27:08 PM | R25707       |
| Surr: 4-Bromofluorobenzene         | 143    | 80-120 | S    | %REC  | 10 | 4/23/2015 2:27:08 PM | R25707       |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Qualifiers:**
- \* Value exceeds Maximum Contaminant Level.
  - E Value above quantitation range
  - J Analyte detected below quantitation limits
  - O RSD is greater than RSDlimit
  - R RPD outside accepted recovery limits
  - S Spike Recovery outside accepted recovery limits

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1504799

28-Apr-15

**Client:** Animas Environmental

**Project:** CoP Mangum #1

| Sample ID                  | 5ML RBB |     | SampType:      | MBLK        |      | TestCode: | EPA Method 8021B: Volatiles |      |             |      |  |
|----------------------------|---------|-----|----------------|-------------|------|-----------|-----------------------------|------|-------------|------|--|
| Client ID:                 | PBW     |     | Batch ID:      | R25707      |      | RunNo:    | 25707                       |      |             |      |  |
| Prep Date:                 |         |     | Analysis Date: | 4/23/2015   |      | SeqNo:    | 762048                      |      | Units: µg/L |      |  |
| Analyte                    | Result  | PQL | SPK value      | SPK Ref Val | %REC | LowLimit  | HighLimit                   | %RPD | RPDLimit    | Qual |  |
| Benzene                    | ND      | 1.0 |                |             |      |           |                             |      |             |      |  |
| Toluene                    | ND      | 1.0 |                |             |      |           |                             |      |             |      |  |
| Ethylbenzene               | ND      | 1.0 |                |             |      |           |                             |      |             |      |  |
| Xylenes, Total             | ND      | 2.0 |                |             |      |           |                             |      |             |      |  |
| Surr: 4-Bromofluorobenzene | 21      |     | 20.00          |             | 103  | 80        | 120                         |      |             |      |  |

| Sample ID                  | 100NG BTEX LCS |     | SampType:      | LCS         |      | TestCode: | EPA Method 8021B: Volatiles |      |             |      |  |
|----------------------------|----------------|-----|----------------|-------------|------|-----------|-----------------------------|------|-------------|------|--|
| Client ID:                 | LCSW           |     | Batch ID:      | R25707      |      | RunNo:    | 25707                       |      |             |      |  |
| Prep Date:                 |                |     | Analysis Date: | 4/23/2015   |      | SeqNo:    | 762049                      |      | Units: µg/L |      |  |
| Analyte                    | Result         | PQL | SPK value      | SPK Ref Val | %REC | LowLimit  | HighLimit                   | %RPD | RPDLimit    | Qual |  |
| Benzene                    | 21             | 1.0 | 20.00          | 0           | 105  | 80        | 120                         |      |             |      |  |
| Toluene                    | 20             | 1.0 | 20.00          | 0           | 102  | 80        | 120                         |      |             |      |  |
| Ethylbenzene               | 20             | 1.0 | 20.00          | 0           | 99.2 | 80        | 120                         |      |             |      |  |
| Xylenes, Total             | 61             | 2.0 | 60.00          | 0           | 101  | 80        | 120                         |      |             |      |  |
| Surr: 4-Bromofluorobenzene | 20             |     | 20.00          |             | 103  | 80        | 120                         |      |             |      |  |

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

**Sample Log-In Check List**

Client Name: Animas Environmental

Work Order Number: 1504799

RcptNo: 1

Received by/date: AF 04/18/15

Logged By: Lindsay Mangin 4/18/2015 9:15:00 AM *[Signature]*

Completed By: Lindsay Mangin 4/20/2015 8:10:22 AM *[Signature]*

Reviewed By: *[Signature]* 04/20/15

**Chain of Custody**

- 1. Custody seals intact on sample bottles? Yes  No  Not Present
- 2. Is Chain of Custody complete? Yes  No  Not Present
- 3. How was the sample delivered? Courier

**Log In**

- 4. Was an attempt made to cool the samples? Yes  No  NA
- 5. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA
- 6. Sample(s) in proper container(s)? Yes  No
- 7. Sufficient sample volume for indicated test(s)? Yes  No
- 8. Are samples (except VOA and ONG) properly preserved? Yes  No
- 9. Was preservative added to bottles? Yes  No
- 10. VOA vials have zero headspace? Yes  No  *es NA 04/20/15 No VOA Vials All vials have but*
- 11. Were any sample containers received broken? Yes  No
- 12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes  No
- 13. Are matrices correctly identified on Chain of Custody? Yes  No
- 14. Is it clear what analyses were requested? Yes  No
- 15. Were all holding times able to be met? (If no, notify customer for authorization.) Yes  No

# of preserved bottles checked for pH: \_\_\_\_\_  
 (<2 or >12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: \_\_\_\_\_

**Special Handling (if applicable)**

- 16. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified: \_\_\_\_\_ Date: \_\_\_\_\_  
 By Whom: \_\_\_\_\_ Via:  eMail  Phone  Fax  In Person  
 Regarding: \_\_\_\_\_  
 Client Instructions: \_\_\_\_\_

17. Additional remarks:

**18. Cooler Information**

| Cooler No | Temp °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|-----------|---------|-----------|-------------|---------|-----------|-----------|
| 1         | 4.1     | Good      | Yes         |         |           |           |

