3Q & 4Q

2019

Progress Report

March 15, 2020

RCVD via Email 6/12/2020

Cory Smith
New Mexico Oil Conservation Division
1000 Rio Brazos Road
Aztec, New Mexico 87410

Continue to Monitor/ Remediate
No additional Conditions at this time

Re: 3rd and 4th Quarter 2019 Progress Report
Monitor Well Installation and Groundwater Monitoring Report
Benson-Montin-Greer
Highway 537 Llaves Pipeline 2008 Release
Rio Arriba County, New Mexico
AP-136 (Formerly 3RP-447)

Dear Mr. Smith:

On behalf of Benson-Montin-Greer Drilling Corporation (BMG), Animas Environmental Services, LLC (AES) has prepared this this 3rd and 4th Quarter 2019 Progress Report, which provides details of the installation of one groundwater monitor well (MW-9R) and monitoring and sampling of site wells at the BMG Llaves Pipeline 2008 Release location. Site activities were conducted in accordance with a Stage 1 and 2 Abatement Plan dated June 6, 2019, and Plan approval is currently pending.

1.0 Site Information

1.1 Site Location

The 2008 release originated on the Schmitz Ranch, on the south side of Highway 537 and flowed south and southwest through a small unnamed arroyo for a distance of approximately 920 linear feet (ft). This arroyo eventually drains to the Los Ojitos Arroyo, which ultimately drains to Largo Canyon. The release location is legally described as being located within the NW¼ NE¼ Section 18, T25N, R3W in Rio Arriba County, New Mexico. Latitude and longitude were recorded as being N36.40357 and W107.18422, respectively. A topographic site location map, based on an excerpt from the U.S. Geological Survey (USGS) 7.5-minute Schmitz Ranch, Rio Arriba County, New Mexico topographic quadrangle, is included as Figure 1, and a general site plan is presented as Figure 2.

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1.2 Release History

December 31, 2007 - A Western Refining truck driver discovered the Llaves pipeline leak and immediately contacted BMG. BMG personnel confirmed the release and shut down the Llaves pipeline pumps and block valve located about one mile upstream. BMG contracted with TNT Excavating to remove the oil that had pooled along the surface of the small arroyo. Approximately 40 barrels (bbls) of oil were recovered and placed in storage tanks at the BMG Hwy 537 Transfer Station. A total of 3,932 cubic yards of contaminated soils were excavated and transported to the TNT Landfarm facility for disposal.

January 9, 2008 - Llaves pipeline was repaired. BMG notified the National Response Center of the spill on January 23, 2008, and the release was given identification number 860429.

1.3 Site Investigation and Initial Monitor Well Installation

April and May 2008 - A total of 15 soil borings (TH-1 through TH-15) and nine groundwater monitor wells (TH-3/MW-1 through TH-11/MW-9) were installed by AES between April 14 and 16, 2008. Soils were found to consist of interbedded layers of brown silty clay, poorly sorted tan sands, and very moist plastic brown clays, and groundwater was found to exist about 28 to 35 feet bgs. The locations of the monitoring wells are presented on Figure 2.

Soil petroleum hydrocarbon contamination was evident in TH-1 (below the area of excavation) and in TH-2 (between the excavation and the service road). TH-13, located within the small arroyo, was also impacted by contaminated soils. Soil contaminant concentrations exceeded NMOCD action levels for total BTEX in TH-1 and TH-2 and for total total petroleum hydrocarbons (TPH) in TH-1, TH-2, and TH-13. The highest total BTEX concentrations and total TPH concentrations were reported at 479 mg/kg and 29,000 mg/kg, respectively, at 34 feet bgs in TH-2.

AES conducted baseline groundwater sampling on May 5, 2008. Groundwater analytical results showed that groundwater was impacted above the New Mexico Water Quality Control Commission (WQCC) standard for benzene in MW-8 (26 µg/L) and MW-9 (6.2 µg/L). Monitor wells MW-1, MW-7, MW-8, and MW-9 had TPH-GRO concentrations above laboratory detection limits. Details of the site investigation were presented in the *Site Investigation Report* dated June 23, 2008 (AES, 2008), and *Corrective Action Plan*

dated October 25, 2010 (AES, 2010), both submitted to NMOCD.

March 21-22 and April 14, 2011 – On March 21 and 22, 2011, AES installed five remediation wells, MPE-1 through MPE-5, in and around the area of the release, primarily in the area of MW-9. AES returned to install two additional MPE wells, MPE-6 and MPE-7, at the site on April 14, 2011. The locations of the remediation wells are presented on Figure 2. Installation details were presented in the *Periodic Progress Report* submitted to NMOCD and dated August 10, 2011 (AES, 2011).

1.4 Groundwater Monitoring and Sampling – 2008 to Present

Monitor wells MW-1 through MW-7 were monitored and sampled from 2008 to 2011 and had dissolved phase concentrations which remained below laboratory detection limits or applicable standards for benzene, toluene, ethylbenzene, and xylene (BTEX) for eight consecutive quarters. Well MW-8 was monitored and sampled from 2008 to 2013 and had dissolved phase BTEX concentrations below laboratory detection limits for nine consecutive quarters. Cumulative groundwater measurement and water quality data are presented in Table 1, and a summary of groundwater analytical results is presented in Table 2.

Groundwater monitoring and measurement of NAPL has been conducted on a periodic basis since 2014. MW-9 and MPE-1 through MPE-6 have continued to have measurable NAPL thicknesses. MPE-7, which is hydraulically down-gradient, has had measurable NAPL only in April 2014 (0.01 ft).

1.5 NAPL Recovery – May 2011 to April 2019

1.5.1 Multi-Phase Extraction (MPE) Operations, 2011

The MPE unit was installed in May 2011 and operated until October 2011, when it was removed for the winter season. An estimated **26,250 lbs** of petroleum hydrocarbons were removed via the RSI mobile MPE system.

1.5.2 Additional MPE Operations, 2014 and 2015

In 2014 and 2015, AES re-installed an RSI mobile MPE system to remove residual contaminants. The unit operated from July to September 2014 and from May 8 to August 6, 2015. It is estimated that approximately **7,172 lbs** and **7,052 lbs** of petroleum hydrocarbons were removed during this time.

1.5.3 Residual NAPL Recovery Efforts – December 2017 to April 2019

AES conducted residual NAPL recovery though hand-bailing at the site, with events occurring on a monthly basis from December 2017 through April 2019. Wells included in hand-bailing efforts are MPE-1 through MPE-6 and MW-9.

Because of the low transmissivity of residual NAPL, a total of 5.4 gallons (approximately 33 lbs) were removed from the site from January through April 2019. The cumulative mass of petroleum hydrocarbons removed through 2019 (including 2011, 2014, and 2015 mechanical operations) is approximately 41,421 lbs (6,796 gallons).

Petroleum Hydrocarbon Mass Removal 2015 through 2019
BMG Hwy 537 2008 Release

Time Period	***Mass Petroleum Hydrocarbons Removed (lbs)***
Through August 2015	40,474
August 2015 to April 2019	947
Cumulative Mass Removal (lbs)	***41,421***

Cumulative depth to groundwater and NAPL measurements are presented in Table 1. Further details are presented in the *2018 Annual Report* (AES, 2019), dated February 18, 2019.

1.6 Monitor Well Plugging and Abandonment – August 2017

On August 7, 2017, AES, with approval from NMOCD and with approved Well Plugging Plans from the New Mexico Office of the State Engineer (NMOSE), oversaw the plugging and abandonment (P&A) of six of the existing monitor wells, including MW-1, MW-3, MW-4, MW-5, MW-6 and MW-8. Note that two wells, MW-7 (upgradient) and MW-2 (downgradient), were left open to measure depth to groundwater and to assist in calculating hydraulic gradient. P&A activities were detailed in the *Remedial Activities Update Report* dated September 1, 2017 (AES, 2017).

1.7 NAPL Recovery Pilot Study – August to September 2017

AES conducted a pilot study utilizing low vacuum enhancement to promote NAPL migration to the recovery wells. The Hwy 537 2008 Release pilot study was performed in two phases, passive skimming recovery (August 2017) and low vacuum enhanced recovery (September 2017). Phase I results were reported in the *Remedial Activities Update Report,* dated September 1, 2017 (AES, 2017). Phase II results resulted in insufficient NAPL migration to the recovery wells (i.e. decreased NAPL transmissivity) and

MPE operations continuing to be less than effective at addressing the residual NAPL mass.

1.8 Abatement Plan

A pending Stage 1 and 2 Abatement Plan dated June 6, 2019 has been submitted to NMOCD. As required by New Mexico Administrative Code (NMAC) 19.15.30.11, this plan was requested from NMOCD in correspondence dated March 18, 2019.

The purpose of a Stage 1 Abatement Plan is to design and conduct a site investigation that adequately defines site conditions, and to provide the data necessary to select and design an effective abatement option. The plan proposed that previous site data and associated reports adequately defined site conditions, thereby meeting the requirements of a Stage 1 Abatement Plan.

The proposed activities of the Stage 2 Abatement Plan included replacement monitor well MW-9R installation and sampling, installation of a solar-powered low vacuum NAPL recovery system, groundwater monitoring and sampling, and compliance soil sampling.

2.0 Monitor Well MW-9R Installation and Groundwater Sampling, September 2019

In accordance with the Abatement Plan dated June 6, 2019, AES advanced one soil boring and installed one replacement groundwater monitor well (MW-9R) on September 5, 2019. The soil boring was advanced via hollow stem auger (HSA) drilling by Enviro-Drill, Inc. of Albuquerque, New Mexico. The soil boring and monitor well location is included on Figure 2, and a photograph of site work is included in Appendix A.

2.1 NMOSE Permitting

Prior to site work, AES obtained NMSOE permits to install MW-9R at the BMG site and to permit existing wells MW-2, MW-7, and MPE-1 through MPE-7. AES submitted a WR-07 non-consumptive use permit application for the wells as required by NMOSE. Also, in compliance with permitting requirements, the MW-9R well log was submitted to the office within 30 days of completion of the well. Copies of the NMOSE permits are included in Appendix B.

2.2 Soil Boring Installation

The soils encountered at MW-9R remained consistent with those observed during the 2008 monitor well installation and are characterized by sandy clay from the surface to 5 ft

bgs, underlain by sandy soils. The boring was drilled to 40 ft bgs, and groundwater was encountered at 31 ft bgs. The driller well record is included in Appendix B, and a soil boring log is presented in Appendix C.

2.2.1 Soil Field Sampling and Results

AES collected soil samples for field screening and laboratory analysis from the boring. Soil samples were attempted via 1.5-foot split spoon samplers at 5-foot intervals in each boring. As noted in the soil boring log, field screening results for the borings varied, and AES recorded OVM readings from recovered samples. OVM readings varied from 0.0 ppm between 5 and 25 ft bgs, to 1,058 ppm in at 30 ft bgs. Grey staining and an odor were observed at 31 ft bgs. Soil staining and petroleum hydrocarbon odors were noted between 35 and 40 ft bgs. Field screening OVM results are included on Figure 3.

2.2.2 Soil Laboratory Analyses

Soil samples were collected from soil boring MW-9R at 15 and 30 ft bgs, with the latter submitted for laboratory analysis based upon it being the interval just above water at capillary fringe, and the interval with highest OVM reading. Samples collected for laboratory analysis were placed in new, clean, laboratory-supplied containers, labeled, placed on ice, and logged onto a sample chain of custody record. The samples were maintained on ice until delivery to the analytical laboratory, Hall Environmental Analysis Laboratory (Hall), in Albuquerque, New Mexico. Soil samples were analyzed for:

- BTEX per USEPA Method 8021B; and
- TPH (GRO/DRO/MRO) per USEPA Method 8015M.

2.2.3 Soil Analytical Results

Soil samples from boring MW-9R at 15 ft bgs and 30 ft bgs reported BTEX concentrations below laboratory detection limits in both samples except xylenes (1.6 mg/kg) at MW-9R at 30 ft bgs. The saturated soil sample collected from MW-9R at 30 ft bgs showed elevated concentrations of TPH as GRO (130 mg/kg), DRO (2,100 mg/kg), and MRO (880 mg/kg). Laboratory analytical results are summarized and presented in Table 4 and on Figure 3.

2.3 Groundwater Monitor Well Installation and Sampling

2.3.1 Groundwater Monitor Well Installation

Monitor well MW-9R was constructed using 2.0-inch Schedule 40 PVC and 0.020-inch slotted screen installed extending 10 ft up from each well's terminal depth. The well was sanded with silica sand 10/20 from terminal depth up to 1.9 ft above the top of well screen. The remainder of the well was finished with 3/8-inch bentonite chip seal to 3.2 ft

above the sand pack, at which point the well was completed and grouted. The top of well casing is metallic and extends approximately 3-ft above surface grade. Monitor well construction details are presented on driller well record included in Appendix B and on the soil boring log presented in Appendix C.

2.3.2 Monitor Well Development

On September 6, 2019, well MW-9R was developed by Envirodrill to remove fine-grained sediments and to increase hydraulic conductivity through the well screen.

2.3.3 Groundwater Monitoring and Sampling

Groundwater gauging of all site wells and sampling of monitor well MW-9R was conducted by AES on September 25, 2019. Samples were able to be collected from MW-9R for laboratory analysis. All groundwater measurement, purge volumes and water quality readings (where obtainable) were recorded onto Water Sample Collection Forms, which are included in Appendix D.

Groundwater Elevations and Water Quality Measurements

Depth to groundwater at the site ranged from 33.12 ft bgs at MPE-7 to 40.85 ft bgs at MW-7. Well MW-2 was dry. NAPL was measured in 6 of the 10 on-site wells: MPE-1 (1.92 ft), MPE-2 (0.04 ft), MPE-3 (1.91 ft), MPE-4 (2.16 ft), MPE-5 (0.54), and MPE-6 (0.80 ft). Field water quality measurements were obtained from MW-9R. Groundwater gradient is historically to the southwest. Groundwater elevations are summarized in Table 1, and groundwater elevation and contours are presented in Figure 4. NAPL contours are presented on Figure 5.

Groundwater Laboratory Analyses

Groundwater samples from MW-9R were submitted to Hall in Albuquerque, New Mexico, for analysis of the following parameters listed in NMAC 20.6.2.3103(A, B, and C):

- BTEX per USEPA Method 8021B;
- TPH (GRO/DRO/MRO) per USEPA Method 8015B;
- Metals per USEPA Method 200.7;
- RCRA 8 metals per USEPA Method 200.8;
- Mercury per USEPA Method 245.1;
- Anions per USEPA Method 200.0;
- Total dissolved solids per USEPA Method SM2540C;
- pH per USEPA Method SM4500-H+B/9040C;
- Phenolics per USEPA Method SW-846 9067;
- Cyanide per USEPA Method 4500CN; and
- Radium-226 and -228 per USEPA Methods 903.1 and 904.0, respectively.

All samples were preserved in laboratory-supplied containers and stored in an insulated cooler containing ice. Samples were shipped by Hall personnel in chilled and insulated coolers at less than 6°C to the analytical laboratory.

Groundwater Laboratory Analytical Results

Groundwater analytical results for dissolved phase benzene, toluene, ethylbenzene, and total xylene concentrations were reported below laboratory detection limits or the applicable WQCC standards in all wells. TPH as GRO was detected (0.87 mg/L) and TPH-DRO and TPH-MRO levels were below laboratory detection limits.

Total dissolved solid (TDS) levels (1,040 mg/L) exceeded the WQCC standard of 1,000 mg/L. Similarly, total iron (4.2 mg/L) and manganese (3.3 mg/L) levels exceeded the respective dissolved WQCC standards of 1.0 mg/L and 0.2 mg/L. In contrast, other metals, anions, cyanide, pH, phenols, and combined radium-226 and -228 were reported below applicable WQCC standards.

Groundwater analytical results are tabulated in Tables 2 and 3, and are also presented on Figure 6. The laboratory analytical reports are included in Appendix E.

3.0 Solar Sipper Installation

On October 24 and 25, 2019, AES personnel installed a Geotech® Solar Sipper at the location. The solar sipper is a solar powered remediation system designed to recover NAPL and other fluids from depths up to 180 ft bgs. Skimmer pumps were set at 35.20 ft below top of casing (TOC) at MPE-1 and at 36.20 ft below TOC at MPE-6. BMG personnel operated and maintained the system as needed.

The solar sipper was taken offline on December 11, 2019, because of low NAPL recovery in wells and low sunlight hours. On this date, 0.03 ft of NAPL was detected in MPE-1 and no NAPL was noted in MPE-6. The solar sipper was returned to service at MPE-1 on March 10, 2020, and the second skimmer is planned for transfer from MPE-6 to MPE-3. Photographs of the solar sipper system are included in Appendix A.

4.0 Conclusions

On September 5, 2019, AES installed one groundwater monitor well (MW-9R) to better determine vertical and lateral extent of petroleum hydrocarbon impacts at the Llaves

Pipeline 2008 Release location. AES advanced one boring, MW-9R, to replace MW-9, a 0.75-inch well which has been blocked by roots since December 2018. Site lithology was observed to consist of sandy clay to about 5 ft bgs, and sandy soils to the terminal depth of 40 ft bgs. Grey staining and an odor were observed at 31 ft bgs. Stained soils and a petroleum hydrocarbon odor were observed near the terminal depth, from 35 to 40 ft bgs.

The boring was completed as a 2-inch diameter monitor well. On September 6, 2019, the well was developed, and on September 25, 2019, groundwater samples were collected from MW-9R for laboratory analysis. Monitoring occurred at other site wells.

Based on September 2019 field observations, field screening, and laboratory analytical results, the following is concluded:

1. Residual petroleum hydrocarbon contaminants as GRO/DRO/MRO are present in soil at MW-9R at a depth of 30 ft bgs (top of groundwater), with a total concentration of 3,110 mg/kg.

2. Depth to groundwater at the site ranged from 33.12 ft bgs at MPE-7 to 40.85 ft bgs at MW-7. Well MW-2 was dry.

3. Residual NAPL was observed in MPE-1 (1.92 ft), MPE-2 (0.04 ft), MPE-3 (1.91 ft), MPE-4 (2.16 ft), MPE-5 (0.54 ft), and MPE-6 (0.80 ft).

4. MW-9R TDS levels (1,040 mg/L) exceeded the WQCC standard of 1,000 mg/L. Similarly, total iron (4.2 mg/L) and total manganese (3.3 mg/L) levels exceeded the respective WQCC standards of 1.0 mg/L and 0.2 mg/L. Note that March 2020 sampling will include collection of filtered samples for analysis of dissolved iron and manganese in MW-9R and upgradient MW-7. Groundwater concentrations were either below laboratory detection limits or below applicable WQCC standards for all other parameters analyzed.

A solar sipper was installed at the site for recovery of residual NAPL on October 24 and 25, 2019. The solar sipper was taken off-line on December 11, 2019, and returned to service on March 10, 2020.

5.0 Scheduled Site Activities

The following site activities are currently scheduled for 2020:

- Ongoing recovery of residual NAPL via solar sipper from wells where NAPL recovery is sufficient for removal;
- June 2020 - Sampling of MW-7 (upgradient well) for TDS and dissolved iron and manganese. A report summarizing activities will be combined with those of the March 25, 2020 sampling (of MW-7 and MW-9R) event; and
- September 2020 - Semi-annual gauging events of the remaining monitor wells, MW-2, MW-7 and MW-9R; Sampling of MW-9R for BTEX, TPH (GRO, DRO, MRO).

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

Respectfully Submitted,

David J. Reese
Environmental Scientist

Elizabeth McNally, P.E.

Tables

Table 1. Summary of Groundwater Measurement and Water Quality Data
Table 2. Summary of Groundwater Analytical Results – VOCs and TPH
Table 3. Summary of Groundwater Analytical Results – NMAC 20.6.2.3103
Table 4. Summary of Soil Analytical Results

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2. General Site Plan
3. Soil Field Screening and Laboratory Analysis Results, September 2019
4. Groundwater Elevation Contours, September 2019

5. Residual NAPL Thickness Contours, September 2019
6. Groundwater Contaminant Concentrations, September 2019

Appendices

A. Photograph Log
B. NMOSE Well Permits WR-07 (MW-2, MW-7, MW-9R, MPE-1 through MPE-7) and Well Records WR-20 (MW-9R)
C. Soil Boring Log/Well Construction Schematic (MW-9R)
D. Water Sample Collection Forms
E. Laboratory Analytical Reports (Hall Nos. 1909341 and 1909E81)
F. Solar Sipper Manufacturer's Information

Cc: Zach Stradling (*zstradling@bmgdrilling.com*)
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References

Animas Environmental Services, LLC (AES). 2008, June 23. *Site Investigation Report: Highway 537 Llaves Oil Pipeline Spill*.

———2010, October 25. *Corrective Action Plan*.

———2011, August 10. *Periodic Progress Report for the Benson-Montin-Greer Highway 537 Llaves Pipeline 2008 Oil Release.*

———2017, September 1. *Remedial Activities Update Report.*

———2019, February 18. *2018 Annual Report*.

Tables

TABLE 1
SUMMARY OF GROUNDWATER MEASUREMENT AND WATER QUALITY DATA
BMG HWY 537 LLAVES PIPELINE 2008 OIL RELEASE
Rio Arriba County, New Mexico

Well ID	*Date Sampled*	*Surveyed TOC (ft)*	*Depth to NAPL (ft)*	*Depth to Water (ft)*	*NAPL Thickness (ft)*	*GW Elev. (ft)*	*Temp. (°C)*	*Specific Conduct. (mS)*	*Dissolved Oxygen (mg/L)*	*pH*	*ORP (mV)*
MW-1	14-Jan-14	7082.57		33.51		7049.06	NM	NM	NM	NM	NM
MW-1	04-Apr-14	7082.57		33.50		7049.07	NM	NM	NM	NM	NM
MW-1	10-Sep-14	7082.57		33.75		7048.82	NM	NM	NM	NM	NM
MW-1	03-Dec-14	7082.57		33.83		7048.74	NM	NM	NM	NM	NM
MW-1	27-Mar-15	7082.57		33.64		7048.93	NM	NM	NM	NM	NM
MW-1	08-Dec-15	7082.57		33.84		7048.73	NM	NM	NM	NM	NM
MW-1	17-Jun-16	7082.57		33.91		7048.66	NM	NM	NM	NM	NM
MW-1	20-Oct-16	7082.57		34.20		7048.37	NM	NM	NM	NM	NM
MW-1	27-Jan-17	7082.57		34.12		7048.45	NM	NM	NM	NM	NM
MW-1	07-Aug-17	7082.57	Plugged and Abandoned								
MW-2	14-Jan-14	7079.94		31.28		7048.66	NM	NM	NM	NM	NM
MW-2	04-Apr-14	7079.94		31.15		7048.79	NM	NM	NM	NM	NM
MW-2	10-Sep-14	7079.94		Dry		NA	NM - WELL DRY				
MW-2	03-Dec-14	7079.94		Dry		NA	NM - WELL DRY				
MW-2	27-Mar-15	7079.94		Dry		NA	NM - WELL DRY				
MW-2	08-Dec-15	7079.94		Dry		NA	NM - WELL DRY				
MW-2	17-Jun-16	7079.94		Dry		NA	NM - WELL DRY				
MW-2	20-Oct-16	7079.94		Dry		NA	NM - WELL DRY				
MW-2	27-Jan-17	7079.94		Dry		NA	NM - WELL DRY				
MW-2	14-Apr-17	7079.94		Dry		NA	NM - WELL DRY				
MW-2	25-Sep-19	7079.94		Dry		NA	NM - WELL DRY				
MW-3	14-Jan-14	7081.10		31.77		7049.33	NM	NM	NM	NM	NM
MW-3	04-Apr-14	7081.10		31.66		7049.44	NM	NM	NM	NM	NM

TABLE 1
SUMMARY OF GROUNDWATER MEASUREMENT AND WATER QUALITY DATA
BMG HWY 537 LLAVES PIPELINE 2008 OIL RELEASE
Rio Arriba County, New Mexico

Well ID	*Date Sampled*	*Surveyed TOC (ft)*	*Depth to NAPL (ft)*	*Depth to Water (ft)*	*NAPL Thickness (ft)*	*GW Elev. (ft)*	*Temp. (°C)*	*Specific Conduct. (mS)*	*Dissolved Oxygen (mg/L)*	*pH*	*ORP (mV)*
MW-3	10-Sep-14	7081.10		32.19		7048.91	NM	NM	NM	NM	NM
MW-3	03-Dec-14	7081.10		32.18		7048.92	NM	NM	NM	NM	NM
MW-3	27-Mar-15	7081.10		31.78		7049.32	NM	NM	NM	NM	NM
MW-3	08-Dec-15	7081.10		32.12		7048.98	NM	NM	NM	NM	NM
MW-3	17-Jun-16	7081.10		32.21		7048.89	NM	NM	NM	NM	NM
MW-3	20-Oct-16	7081.10		32.47		7048.63	NM	NM	NM	NM	NM
MW-3	27-Jan-17	7081.10		32.36		7048.74	NM	NM	NM	NM	NM
MW-3	07-Aug-17	7081.10	Plugged and Abandoned								
MW-4	14-Jan-14	7084.79		34.85		7049.94	NM	NM	NM	NM	NM
MW-4	04-Apr-14	7084.79		34.84		7049.95	NM	NM	NM	NM	NM
MW-4	10-Sep-14	7084.79		35.14		7049.65	NM	NM	NM	NM	NM
MW-4	03-Dec-14	7084.79		35.21		7049.58	NM	NM	NM	NM	NM
MW-4	27-Mar-15	7084.79		35.04		7049.75	NM	NM	NM	NM	NM
MW-4	08-Dec-15	7084.79		35.28		7049.51	NM	NM	NM	NM	NM
MW-4	17-Jun-16	7084.79		35.31		7049.48	NM	NM	NM	NM	NM
MW-4	20-Oct-16	7084.79		35.54		7049.25	NM	NM	NM	NM	NM
MW-4	27-Jan-17	7084.79		35.52		7049.27	NM	NM	NM	NM	NM
MW-4	07-Aug-17	7084.79	Plugged and Abandoned								
MW-5	05-May-08	7087.98		Dry		NA	NM - WELL DRY				
MW-5	24-Sep-08	7087.98		Dry		NA	NM - WELL DRY				
MW-5	02-Jan-09	7087.98		Dry		NA	NM - WELL DRY				
MW-5	07-Apr-09	7087.98		Dry		NA	NM - WELL DRY				
MW-5	07-Jul-09	7087.98		Dry		NA	NM - WELL DRY				
MW-5	12-Oct-09	7087.98		Dry		NA	NM - WELL DRY				

TABLE 1
SUMMARY OF GROUNDWATER MEASUREMENT AND WATER QUALITY DATA
BMG HWY 537 LLAVES PIPELINE 2008 OIL RELEASE
Rio Arriba County, New Mexico

Well ID	*Date Sampled*	*Surveyed TOC (ft)*	*Depth to NAPL (ft)*	*Depth to Water (ft)*	*NAPL Thickness (ft)*	*GW Elev. (ft)*	*Temp. (°C)*	*Specific Conduct. (mS)*	*Dissolved Oxygen (mg/L)*	*pH*	*ORP (mV)*
MW-5	12-Jan-10	7087.98		Dry		NA	NM - WELL DRY				
MW-5	13-Oct-10	7087.98		Dry		NA	NM - WELL DRY				
MW-5	20-Jan-11	7087.98		Dry		NA	NM - WELL DRY				
MW-5	09-May-11	7087.98		Dry		NA	NM - WELL DRY				
MW-5	15-Aug-11	7087.98		Dry		NA	NM - WELL DRY				
MW-5	21-Nov-11	7087.98		Dry		NA	NM - WELL DRY				
MW-5	21-Feb-12	7087.98		Dry		NA	NM - WELL DRY				
MW-5	24-May-12	7087.98		Dry		NA	NM - WELL DRY				
MW-5	18-Sep-12	7087.98		Dry		NA	NM - WELL DRY				
MW-5	04-Dec-12	7087.98		Dry		NA	NM - WELL DRY				
MW-5	26-Mar-13	7087.98		Dry		NA	NM - WELL DRY				
MW-5	26-Jun-13	7087.98		Dry		NA	NM - WELL DRY				
MW-5	25-Sep-13	7087.98		Dry		NA	NM - WELL DRY				
MW-5	14-Jan-14	7087.98		Dry		NA	NM - WELL DRY				
MW-5	04-Apr-14	7087.98		Dry		NA	NM - WELL DRY				
MW-5	10-Sep-14	7088.98		Dry		NA	NM - WELL DRY				
MW-5	03-Dec-14	7088.98		Dry		NA	NM - WELL DRY				
MW-5	27-Mar-15	7088.98		Dry		NA	NM - WELL DRY				
MW-5	08-Dec-15	7088.98		Dry		NA	NM - WELL DRY				
MW-5	17-Jun-16	7088.98		Dry		NA	NM - WELL DRY				
MW-5	20-Oct-16	7088.98		Dry		NA	NM - WELL DRY				
MW-5	27-Jan-17	7088.98		Dry		NA	NM - WELL DRY				
MW-5	07-Aug-17	7088.98	Plugged and Abandoned								
MW-6	14-Jan-14	7088.43		38.14		7050.29	NM	NM	NM	NM	NM
MW-6	04-Apr-14	7088.43		38.14		7050.29	NM	NM	NM	NM	NM

TABLE 1
SUMMARY OF GROUNDWATER MEASUREMENT AND WATER QUALITY DATA
BMG HWY 537 LLAVES PIPELINE 2008 OIL RELEASE
Rio Arriba County, New Mexico

Well ID	*Date Sampled*	*Surveyed TOC (ft)*	*Depth to NAPL (ft)*	*Depth to Water (ft)*	*NAPL Thickness (ft)*	*GW Elev. (ft)*	*Temp. (°C)*	*Specific Conduct. (mS)*	*Dissolved Oxygen (mg/L)*	*pH*	*ORP (mV)*
MW-6	10-Sep-14	7088.43		38.37		7050.06	NM	NM	NM	NM	NM
MW-6	03-Dec-14	7088.43		38.55		7049.88	NM	NM	NM	NM	NM
MW-6	27-Mar-15	7088.43		38.28		7050.15	NM	NM	NM	NM	NM
MW-6	08-Dec-15	7088.43		38.55		7049.88	NM	NM	NM	NM	NM
MW-6	17-Jun-16	7088.43		38.57		7049.86	NM	NM	NM	NM	NM
MW-6	20-Oct-16	7088.43		38.79		7049.64	NM	NM	NM	NM	NM
MW-6	27-Jan-17	7088.43		38.81		7049.62	NM	NM	NM	NM	NM
MW-6	07-Aug-17	7088.43	Plugged and Abandoned								
MW-7	14-Jan-14	7090.15		39.85		7050.30	NM	NM	NM	NM	NM
MW-7	04-Apr-14	7090.15		39.89		7050.26	NM	NM	NM	NM	NM
MW-7	10-Sep-14	7090.15		40.07		7050.08	NM	NM	NM	NM	NM
MW-7	03-Dec-14	7090.15		40.24		7049.91	NM	NM	NM	NM	NM
MW-7	27-Mar-15	7090.15		39.94		7050.21	NM	NM	NM	NM	NM
MW-7	08-Dec-15	7090.15		40.27		7049.88	NM	NM	NM	NM	NM
MW-7	17-Jun-16	7090.15		40.30		7049.85	NM	NM	NM	NM	NM
MW-7	20-Oct-16	7090.15		40.51		7049.64	NM	NM	NM	NM	NM
MW-7	27-Jan-17	7090.15		40.49		7049.66	NM	NM	NM	NM	NM
MW-7	14-Apr-17	7090.15		40.23		7049.92	NM	NM	NM	NM	NM
MW-7	25-Sep-19	7090.15		40.85		7049.30	NM	NM	NM	NM	NM
MW-8	14-Jan-14	7085.20		35.87		7049.33	NM	NM	NM	NM	NM
MW-8	04-Apr-14	7085.20		35.79		7049.41	NM	NM	NM	NM	NM
MW-8	10-Sep-14	7085.20		36.04		7049.16	NM	NM	NM	NM	NM
MW-8	03-Dec-14	7085.20		36.15		7049.05	NM	NM	NM	NM	NM
MW-8	27-Mar-15	7085.20		35.94		7049.26	NM	NM	NM	NM	NM

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BMG HWY 537 LLAVES PIPELINE 2008 OIL RELEASE
Rio Arriba County, New Mexico

Well ID	*Date Sampled*	*Surveyed TOC (ft)*	*Depth to NAPL (ft)*	*Depth to Water (ft)*	*NAPL Thickness (ft)*	*GW Elev. (ft)*	*Temp. (°C)*	*Specific Conduct. (mS)*	*Dissolved Oxygen (mg/L)*	*pH*	*ORP (mV)*
MW-8	08-Dec-15	7085.20		36.19		7049.01	NM	NM	NM	NM	NM
MW-8	17-Jun-16	7085.20		36.28		7048.92	NM	NM	NM	NM	NM
MW-8	20-Oct-16	7085.20		36.54		7048.66	NM	NM	NM	NM	NM
MW-8	27-Jan-17	7085.20		36.49		7048.71	NM	NM	NM	NM	NM
MW-8	07-Aug-17	7085.20	Plugged and Abandoned								
MW-9	05-May-08	7083.64		31.81		7051.83	15.01	1.955	2.59	7.85	-37.9
MW-9	24-Sep-08	7083.64		32.26		7051.38	14.03	1.515	2.84	7.08	43.3
MW-9	05-Jan-09	7083.64				7083.64	NM - WELL DRY				
MW-9	07-Apr-09	7083.64		32.34		7051.30	12.85	1.876	1.11	6.89	7.0
MW-9	07-Jul-09	7083.64		32.41		7051.23	16.77	1.672	1.14	7.19	-9.7
MW-9	12-Oct-09	7083.64		32.63		7051.01	13.78	1.352	2.10	7.22	72.9
MW-9	12-Jan-10	7083.64	32.43	34.80	2.37	7050.68	NM - 2.37 feet NAPL				
MW-9	13-Oct-10	7083.64	32.63	35.29	2.66	7050.42	NM - 2.66 feet NAPL				
MW-9	20-Jan-11	7083.64	32.71	35.21	2.50	7050.38	NM - 2.50 feet NAPL				
MW-9	09-May-11	7083.64	32.43	34.96	2.53	7050.65	NM - 2.53 feet NAPL				
MW-9	15-Aug-11	7083.64	33.11	35.33	2.22	7050.04	NM - 2.22 feet NAPL				
MW-9	07-Oct-11	7083.64	33.14	35.23	2.09	7050.04	NM - 2.09 feet NAPL				
MW-9	21-Nov-11	7083.64	33.25	35.37	2.12	7049.92	NM - 2.12 feet NAPL				
MW-9	21-Feb-12	7083.64	33.14	35.06	1.92	7050.07	NM - 1.92 feet NAPL				
MW-9	24-May-12	7083.64	33.15	35.19	2.04	7050.04	NM - 2.04 feet NAPL				
MW-9	18-Sep-12	7083.64	33.47	35.26	1.79	7049.77	NM - 1.79 feet NAPL				
MW-9	04-Dec-12	7083.64	33.68	35.64	1.96	7049.52	NM - 1.96 feet NAPL				
MW-9	26-Mar-13	7083.64	33.53	35.22	1.69	7049.73	NM - 1.69 feet NAPL				
MW-9	26-Jun-13	7083.64	33.70	35.27	1.57	7049.59	NM - 1.57 feet NAPL				
MW-9	25-Sep-13	7083.64	32.96	36.46	3.50	7049.90	NM - 3.50 feet NAPL				

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Rio Arriba County, New Mexico

Well ID	*Date Sampled*	*Surveyed TOC (ft)*	*Depth to NAPL (ft)*	*Depth to Water (ft)*	*NAPL Thickness (ft)*	*GW Elev. (ft)*	*Temp. (°C)*	*Specific Conduct. (mS)*	*Dissolved Oxygen (mg/L)*	*pH*	*ORP (mV)*
MW-9	14-Jan-14	7083.64	33.95	34.31	0.36	7049.61	NM - 0.36 feet NAPL				
MW-9	04-Apr-14	7083.64	33.94	34.01	0.07	7049.68	NM - 0.07 feet NAPL				
MW-9	10-Sep-14	7083.64	34.15	34.27	0.12	7049.46	NM - 0.12 feet NAPL				
MW-9	03-Dec-14	7083.64	34.25	34.31	0.06	7049.38	NM - 0.06 feet NAPL				
MW-9	27-Mar-15	7083.64	33.96	34.03	0.07	7049.66	NM - 0.07 feet NAPL				
MW-9	08-Dec-15	7083.64	34.30	34.36	0.06	7049.33	NM - 0.01 feet NAPL				
MW-9	17-Jun-16	7083.64	34.50	34.51	0.01	7049.14	NM - 0.01 feet NAPL				
MW-9	20-Oct-16	7083.64	34.63	34.90	0.27	7048.95	NM - 0.27 feet NAPL				
MW-9	27-Jan-17	7083.64	34.62	35.12	0.50	7048.91	NM - 0.50 feet NAPL				
MW-9	14-Apr-17	7083.64	34.32	34.87	0.55	7049.20	NM - 0.55 feet NAPL				
MW-9	21-Jun-17	7083.64	34.25	35.81	1.56	7049.04	NM - 1.56 feet NAPL				
MW-9	09-Aug-17	7083.64	34.32	36.68	2.36	7048.80	NM - 2.36 feet NAPL				
MW-9	07-Dec-17	7083.64	34.29	36.68	2.39	7048.82	NM - 2.39 feet NAPL				
MW-9	09-Jan-18	7083.64	34.19	36.59	2.40	7048.92	NM - 2.40 feet NAPL				
MW-9	18-Feb-18	7083.64	34.27	36.65	2.38	7048.84	NM - 2.38 feet NAPL				
MW-9	05-Mar-18	7083.64	34.26	36.52	2.26	7048.88	NM - 2.26 feet NAPL				
MW-9	05-Apr-18	7083.64	34.34	36.27	1.93	7048.87	NM - 1.93 feet NAPL				
MW-9	18-May-18	7083.64	34.26	36.49	2.23	7048.88	NM - 2.23 feet NAPL				
MW-9	12-Jun-18	7083.64	34.45	36.72	2.27	7048.69	NM - 2.27 feet NAPL				
MW-9	09-Jul-18	7083.64	34.55	36.88	2.33	7048.57	NM - 2.33 feet NAPL				
MW-9	13-Aug-18	7083.64	34.56	36.76	2.20	7048.59	NM - 2.20 feet NAPL				
MW-9	24-Sep-18	7083.64	34.68	36.87	2.19	7048.47	NM - 2.19 feet NAPL				
MW-9	26-Oct-18	7083.64	34.73	36.90	2.17	7048.43	NM - 2.17 feet NAPL				
MW-9	19-Nov-18	7083.64	34.74	37.00	2.26	7048.40	NM - 2.26 feet NAPL				
MW-9	14-Dec-18	7083.64	34.85	37.00	2.15	7048.31	NM - 2.15 feet NAPL				

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Rio Arriba County, New Mexico

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MW-9R	25-Sep-19	TBS		35.32		NA	13.6	1.413	1.41	6.65	24.9
MPE-1	14-Jan-14	TBS	35.12	37.44	2.32	NA	NM - 2.32 feet NAPL				
MPE-1	04-Apr-14	TBS	35.10	37.40	2.30	NA	NM - 2.30 feet NAPL				
MPE-1	10-Sep-14	TBS	35.36	37.70	2.34	NA	NM - 2.34 feet NAPL				
MPE-1	03-Dec-14	TBS	35.44	37.77	2.33	NA	NM - 2.33 feet NAPL				
MPE-1	09-Oct-15	TBS	35.48	37.37	1.89	NA	NM - 1.89 feet NAPL				
MPE-1	27-Mar-15	TBS	35.22	37.29	2.07	NA	NM - 2.07 feet NAPL				
MPE-1	09-Oct-15	TBS	35.48	37.37	1.89	NA	NM - 1.89 feet NAPL				
MPE-1	08-Dec-15	TBS	35.58	37.60	2.02	NA	NM - 2.02 feet NAPL				
MPE-1	17-Jun-16	TBS	35.62	37.72	2.10	NA	NM - 2.10 feet NAPL				
MPE-1	20-Oct-16	TBS	35.84	38.05	2.21	NA	NM - 2.21 feet NAPL				
MPE-1	27-Jan-17	TBS	35.80	37.88	2.08	NA	NM - 2.08 feet NAPL				
MPE-1	14-Apr-17	TBS	35.58	37.37	1.79	NA	NM - 1.79 feet NAPL				
MPE-1	21-Jun-17	TBS	35.74	37.65	1.91	NA	NM - 1.91 feet NAPL				
MPE-1	09-Aug-17	TBS	35.96	37.50	1.54	NA	NM - 1.54 feet NAPL				
MPE-1	07-Dec-17	TBS	35.83	37.69	1.86	NA	NM - 1.86 feet NAPL				
MPE-1	09-Jan-18	TBS	35.79	37.69	1.90	NA	NM - 1.90 feet NAPL				
MPE-1	12-Feb-18	TBS	35.85	37.19	1.34	NA	NM - 1.34 feet NAPL				
MPE-1	05-Mar-18	TBS	35.93	37.06	1.13	NA	NM - 1.13 feet NAPL				
MPE-1	05-Apr-18	TBS	35.95	37.23	1.28	NA	NM - 1.28 feet NAPL				
MPE-1	18-May-18	TBS	35.92	37.40	1.48	NA	NM - 1.48 feet NAPL				
MPE-1	12-Jun-18	TBS	36.10	37.35	1.25	NA	NM - 1.25 feet NAPL				
MPE-1	09-Jul-18	TBS	36.23	37.30	1.07	NA	NM - 1.07 feet NAPL				
MPE-1	13-Aug-18	TBS	36.33	37.17	0.84	NA	NM - 0.84 feet NAPL				
MPE-1	24-Sep-18	TBS	36.44	36.98	0.54	NA	NM - 0.54 feet NAPL				

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Rio Arriba County, New Mexico

Well ID	*Date Sampled*	*Surveyed TOC (ft)*	*Depth to NAPL (ft)*	*Depth to Water (ft)*	*NAPL Thickness (ft)*	*GW Elev. (ft)*	*Temp. (°C)*	*Specific Conduct. (mS)*	*Dissolved Oxygen (mg/L)*	*pH*	*ORP (mV)*
MPE-1	26-Oct-18	TBS	36.51	36.75	0.24	NA	NM - 0.24 feet NAPL				
MPE-1	19-Nov-18	TBS	36.54	36.86	0.32	NA	NM - 0.32 feet NAPL				
MPE-1	14-Dec-18	TBS	36.63	36.78	0.15	NA	NM - 0.15 feet NAPL				
MPE-1	25-Sep-19	TBS	36.19	38.11	1.92	NA	NM - 1.92 feet NAPL				
MPE-2	14-Jan-14	TBS	33.80	34.13	0.33	NA	NM - 0.33 feet NAPL				
MPE-2	04-Apr-14	TBS	33.74	34.03	0.29	NA	NM - 0.29 feet NAPL				
MPE-2	10-Sep-14	TBS	34.03	34.44	0.41	NA	NM - 0.41 feet NAPL				
MPE-2	03-Dec-14	TBS	34.10	34.55	0.45	NA	NM- - 0.45 feet NAPL				
MPE-2	09-Oct-15	TBS	34.07	34.43	0.36	NA	NM - 0.36 feet NAPL				
MPE-2	27-Mar-15	TBS	33.85	34.20	0.35	NA	NM - 0.35 feet NAPL				
MPE-2	09-Oct-15	TBS	34.07	34.43	0.36	NA	NM - 0.36 feet NAPL				
MPE-2	08-Dec-15	TBS	34.20	34.38	0.18	NA	NM - 0.18 feet NAPL				
MPE-2	17-Jun-16	TBS	34.31	34.43	0.12	NA	NM - 0.12 feet NAPL				
MPE-2	20-Oct-16	TBS	34.52	34.77	0.25	NA	NM - 0.75 feet NAPL				
MPE-2	27-Jan-17	TBS	34.48	34.73	0.25	NA	NM - 0.25 feet NAPL				
MPE-2	14-Apr-17	TBS	34.22	34.36	0.14	NA	NM - 0.14 feet NAPL				
MPE-2	21-Jun-17	TBS	34.36	34.62	0.26	NA	NM - 0.26 feet NAPL				
MPE-2	09-Aug-17	TBS	34.57	34.74	0.17	NA	NM - 0.17 feet NAPL				
MPE-2	07-Dec-17	TBS	34.47	34.62	0.15	NA	NM - 0.15 feet NAPL				
MPE-2	09-Jan-18	TBS	34.43	34.58	0.15	NA	NM - 0.15 feet NAPL				
MPE-2	12-Feb-18	TBS	34.41	34.50	0.09	NA	NM - 0.09 feet NAPL				
MPE-2	05-Mar-18	TBS	34.52	34.54	0.02	NA	NM - 0.02 feet NAPL				
MPE-2	05-Apr-18	TBS	34.52	34.57	0.05	NA	NM - 0.05 feet NAPL				
MPE-2	18-May-18	TBS	34.50	34.55	0.05	NA	NM - 0.05 feet NAPL				
MPE-2	12-Jun-18	TBS	34.67	34.79	0.12	NA	NM - 0.12 feet NAPL				

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Rio Arriba County, New Mexico

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MPE-2	09-Jul-18	TBS	34.78	34.83	0.05	NA	NM - 0.05 feet NAPL				
MPE-2	13-Aug-18	TBS	34.83	34.87	0.04	NA	NM - 0.04 feet NAPL				
MPE-2	24-Sep-18	TBS	34.90	34.99	0.09	NA	NM - 0.09 feet NAPL				
MPE-2	26-Oct-18	TBS	34.95	35.00	0.05	NA	NM - 0.05 feet NAPL				
MPE-2	19-Nov-18	TBS	34.99	35.03	0.04	NA	NM - 0.04 feet NAPL				
MPE-2	14-Dec-18	TBS	35.03	35.09	0.06	NA	NM - 0.06 feet NAPL				
MPE-2	25-Sep-19	TBS	34.84	34.88	0.04	NA	NM - 0.04 feet NAPL				
MPE-3	14-Jan-14	TBS	33.86	34.32	0.46	NA	NM - 0.46 feet NAPL				
MPE-3	04-Apr-14	TBS	33.83	34.18	0.35	NA	NM - 0.35 feet NAPL				
MPE-3	10-Sep-14	TBS	34.15	34.55	0.40	NA	NM - 0.40 feet NAPL				
MPE-3	03-Dec-14	TBS	34.20	34.57	0.37	NA	NM - 0.37 feet NAPL				
MPE-3	09-Oct-15	TBS	34.10	34.47	0.37	NA	NM - 0.37 feet NAPL				
MPE-3	27-Mar-15	TBS	33.96	34.20	0.24	NA	NM - 0.24 feet NAPL				
MPE-3	09-Oct-15	TBS	34.10	34.47	0.37	NA	NM - 0.37 feet NAPL				
MPE-3	08-Dec-15	TBS	34.28	34.56	0.28	NA	NM - 0.28 feet NAPL				
MPE-3	17-Jun-16	TBS	34.18	36.01	1.83	NA	NM - 1.83 feet NAPL				
MPE-3	20-Oct-16	TBS	34.35	36.53	2.18	NA	NM - 2.18 feet NAPL				
MPE-3	27-Jan-17	TBS	34.29	36.48	2.19	NA	NM - 2.19 feet NAPL				
MPE-3	14-Apr-17	TBS	34.05	35.85	1.80	NA	NM - 1.80 feet NAPL				
MPE-3	21-Jun-17	TBS	34.24	35.59	1.35	NA	NM - 1.35 feet NAPL				
MPE-3	09-Aug-17	TBS	34.39	36.39	2.00	NA	NM - 2.00 feet NAPL				
MPE-3	07-Dec-17	TBS	34.27	36.39	2.12	NA	NM - 2.12 feet NAPL				
MPE-3	09-Jan-18	TBS	34.22	36.33	2.11	NA	NM - 2.11 feet NAPL				
MPE-3	12-Feb-18	TBS	34.25	36.04	1.79	NA	NM - 1.79 feet NAPL				
MPE-3	05-Mar-18	TBS	34.40	35.81	1.41	NA	NM - 1.41 feet NAPL				

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MPE-3	05-Apr-18	TBS	34.38	36.05	1.67	NA	NM - 1.67 feet NAPL				
MPE-3	18-May-18	TBS	34.43	36.11	1.68	NA	NM - 1.68 feet NAPL				
MPE-3	12-Jun-18	TBS	34.53	36.26	1.73	NA	NM - 1.73 feet NAPL				
MPE-3	09-Jul-18	TBS	34.66	36.19	1.53	NA	NM - 1.53 feet NAPL				
MPE-3	13-Aug-18	TBS	34.73	36.15	1.42	NA	NM - 1.42 feet NAPL				
MPE-3	24-Sep-18	TBS	34.85	35.95	1.10	NA	NM - 1.10 feet NAPL				
MPE-3	26-Oct-18	TBS	34.90	35.95	1.05	NA	NM - 1.05 feet NAPL				
MPE-3	19-Nov-18	TBS	34.84	36.43	1.59	NA	NM - 1.59 feet NAPL				
MPE-3	14-Dec-18	TBS	34.90	36.48	1.58	NA	NM - 1.58 feet NAPL				
MPE-3	25-Sep-19	TBS	34.66	36.57	1.91	NA	NM - 1.91 feet NAPL				
MPE-4	14-Jan-14	TBS	34.62	37.00	2.38	NA	NM - 2.38 feet NAPL				
MPE-4	04-Apr-14	TBS	34.59	36.91	2.32	NA	NM - 2.32 feet NAPL				
MPE-4	10-Sep-14	TBS	34.89	37.22	2.33	NA	NM - 2.33 feet NAPL				
MPE-4	03-Dec-14	TBS	34.95	37.30	2.35	NA	NM - 2.35 feet NAPL				
MPE-4	09-Oct-15	TBS	34.90	36.86	1.96	NA	NM - 1.96 feet NAPL				
MPE-4	27-Mar-15	TBS	34.73	36.82	2.09	NA	NM - 2.09 feet NAPL				
MPE-4	09-Oct-15	TBS	34.90	36.86	1.96	NA	NM - 1.96 feet NAPL				
MPE-4	08-Dec-15	TBS	35.09	37.17	2.08	NA	NM - 2.08 feet NAPL				
MPE-4	17-Jun-16	TBS	35.13	37.51	2.38	NA	NM - 2.38 feet NAPL				
MPE-4	20-Oct-16	TBS	35.38	37.83	2.45	NA	NM - 2.45 feet NAPL				
MPE-4	27-Jan-17	TBS	35.31	37.83	2.52	NA	NM - 2.52 feet NAPL				
MPE-4	14-Apr-17	TBS	35.06	37.16	2.10	NA	NM - 2.10 feet NAPL				
MPE-4	21-Jun-17	TBS	35.21	37.53	2.32	NA	NM - 2.32 feet NAPL				
MPE-4	09-Aug-17	TBS	35.42	37.65	2.23	NA	NM - 2.23 feet NAPL				
MPE-4	07-Dec-17	TBS	35.53	37.53	2.00	NA	NM - 2.00 feet NAPL				

TABLE 1
SUMMARY OF GROUNDWATER MEASUREMENT AND WATER QUALITY DATA
BMG HWY 537 LLAVES PIPELINE 2008 OIL RELEASE
Rio Arriba County, New Mexico

Well ID	*Date Sampled*	*Surveyed TOC (ft)*	*Depth to NAPL (ft)*	*Depth to Water (ft)*	*NAPL Thickness (ft)*	*GW Elev. (ft)*	*Temp. (°C)*	*Specific Conduct. (mS)*	*Dissolved Oxygen (mg/L)*	*pH*	*ORP (mV)*
MPE-4	09-Jan-18	TBS	35.26	37.52	2.26	NA	NM - 2.26 feet NAPL				
MPE-4	12-Feb-18	TBS	35.31	37.15	1.84	NA	NM - 1.84 feet NAPL				
MPE-4	05-Mar-18	TBS	35.44	37.04	1.60	NA	NM - 1.60 feet NAPL				
MPE-4	05-Apr-18	TBS	35.47	37.03	1.56	NA	NM - 1.56 feet NAPL				
MPE-4	18-May-18	TBS	35.42	37.10	1.68	NA	NM - 1.68 feet NAPL				
MPE-4	12-Jun-18	TBS	35.73	36.58	0.85	NA	NM - 0.85 feet NAPL				
MPE-4	09-Jul-18	TBS	35.93	36.14	0.21	NA	NM - 0.21 feet NAPL				
MPE-4	13-Aug-18	TBS	35.99	36.04	0.05	NA	NM - 0.05 feet NAPL				
MPE-4	24-Sep-18	TBS	36.05	36.16	0.11	NA	NM - 0.11 feet NAPL				
MPE-4	26-Oct-18	TBS	36.11	36.17	0.06	NA	NM - 0.06 feet NAPL				
MPE-4	19-Nov-18	TBS	36.15	36.19	0.04	NA	NM - 0.04 feet NAPL				
MPE-4	14-Dec-18	TBS	36.21	36.26	0.05	NA	NM - 0.05 feet NAPL				
MPE-4	25-Sep-19	TBS	35.70	37.86	2.16	NA	NM - 2.16 feet NAPL				
MPE-5	14-Jan-14	TBS	36.15	38.50	2.35	NA	NM - 2.35 feet NAPL				
MPE-5	04-Apr-14	TBS	36.15	38.32	2.17	NA	NM - 2.17 feet NAPL				
MPE-5	10-Sep-14	TBS	36.38	38.86	2.48	NA	NM - 2.48 feet NAPL				
MPE-5	03-Dec-14	TBS	36.49	38.91	2.42	NA	NM - 2.42 feet NAPL				
MPE-5	09-Oct-15	TBS	36.45	38.57	2.12	NA	NM - 2.12 feet NAPL				
MPE-5	27-Mar-15	TBS	36.27	38.28	2.01	NA	NM - 2.01 feet NAPL				
MPE-5	09-Oct-15	TBS	36.45	38.57	2.12	NA	NM - 2.12 feet NAPL				
MPE-5	08-Dec-15	TBS	36.58	38.92	2.34	NA	NM - 2.34 feet NAPL				
MPE-5	17-Jun-16	TBS	36.66	38.90	2.24	NA	NM - 2.24 feet NAPL				
MPE-5	20-Oct-16	TBS	36.88	39.31	2.43	NA	NM - 2.43 feet NAPL				
MPE-5	27-Jan-17	TBS	36.84	39.20	2.36	NA	NM - 2.36 feet NAPL				
MPE-5	14-Apr-17	TBS	36.61	38.55	1.94	NA	NM - 1.94 feet NAPL				

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SUMMARY OF GROUNDWATER MEASUREMENT AND WATER QUALITY DATA
BMG HWY 537 LLAVES PIPELINE 2008 OIL RELEASE
Rio Arriba County, New Mexico

Well ID	*Date Sampled*	*Surveyed TOC (ft)*	*Depth to NAPL (ft)*	*Depth to Water (ft)*	*NAPL Thickness (ft)*	*GW Elev. (ft)*	*Temp. (°C)*	*Specific Conduct. (mS)*	*Dissolved Oxygen (mg/L)*	*pH*	*ORP (mV)*
MPE-5	21-Jun-17	TBS	36.75	38.82	2.07	NA	NM - 2.07 feet NAPL				
MPE-5	09-Aug-17	TBS	36.91	39.22	2.31	NA	NM - 2.31 feet NAPL				
MPE-5	26-Sep-17	TBS	37.09	38.65	1.56	NA	NM - 1.56 feet NAPL				
MPE-5	07-Dec-17	TBS	36.85	38.97	2.12	NA	NM - 2.12 feet NAPL				
MPE-5	09-Jan-18	TBS	36.79	38.88	2.09	NA	NM - 2.09 feet NAPL				
MPE-5	12-Feb-18	TBS	36.86	38.49	1.63	NA	NM - 1.63 feet NAPL				
MPE-5	05-Mar-18	TBS	36.96	38.46	1.50	NA	NM - 1.50 feet NAPL				
MPE-5	05-Apr-18	TBS	37.01	38.38	1.37	NA	NM - 1.37 feet NAPL				
MPE-5	18-May-18	TBS	37.03	38.07	1.04	NA	NM - 1.04 feet NAPL				
MPE-5	12-Jun-18	TBS	37.21	38.18	0.97	NA	NM - 0.97 feet NAPL				
MPE-5	09-Jul-18	TBS	37.33	38.13	0.80	NA	NM - 0.80 feet NAPL				
MPE-5	13-Aug-18	TBS	37.36	38.25	0.89	NA	NM - 0.89 feet NAPL				
MPE-5	24-Sep-18	TBS	37.42	38.37	0.95	NA	NM - 0.95 feet NAPL				
MPE-5	26-Oct-18	TBS	37.50	38.26	0.76	NA	NM - 0.76 feet NAPL				
MPE-5	19-Nov-18	TBS	37.52	38.41	0.89	NA	NM - 0.89 feet NAPL				
MPE-5	14-Dec-18	TBS	37.61	38.21	0.60	NA	NM - 0.60 feet NAPL				
MPE-5	25-Sep-19	TBS	37.43	37.97	0.54	NA	NM - 0.54 feet NAPL				
MPE-6	14-Jan-14	TBS	33.88	36.14	2.26	NA	NM - 2.26 feet NAPL				
MPE-6	04-Apr-14	TBS	33.82	36.10	2.28	NA	NM - 2.28 feet NAPL				
MPE-6	10-Sep-14	TBS	34.12	36.42	2.30	NA	NM - 2.30 feet NAPL				
MPE-6	03-Dec-14	TBS	34.20	36.50	2.30	NA	NM - 2.30 feet NAPL				
MPE-6	09-Oct-15	TBS	34.16	36.21	2.05	NA	NM - 2.05 feet NAPL				

TABLE 1
SUMMARY OF GROUNDWATER MEASUREMENT AND WATER QUALITY DATA
BMG HWY 537 LLAVES PIPELINE 2008 OIL RELEASE
Rio Arriba County, New Mexico

Well ID	*Date Sampled*	*Surveyed TOC (ft)*	*Depth to NAPL (ft)*	*Depth to Water (ft)*	*NAPL Thickness (ft)*	*GW Elev. (ft)*	*Temp. (°C)*	*Specific Conduct. (mS)*	*Dissolved Oxygen (mg/L)*	*pH*	*ORP (mV)*
MPE-6	27-Mar-15	TBS	33.97	35.95	1.98	NA	NM - 1.98 feet NAPL				
MPE-6	09-Oct-15	TBS	34.16	36.21	2.05	NA	NM - 2.05 feet NAPL				
MPE-6	08-Dec-15	TBS	34.63	36.68	2.05	NA	NM - 2.05 feet NAPL				
MPE-6	17-Jun-16	TBS	34.36	36.65	2.29	NA	NM - 2.29 feet NAPL				
MPE-6	20-Oct-16	TBS	34.62	36.80	2.18	NA	NM - 2.18 feet NAPL				
MPE-6	27-Jan-17	TBS	34.55	36.76	2.21	NA	NM - 2.21 feet NAPL				
MPE-6	14-Apr-17	TBS	34.30	36.20	1.90	NA	NM - 1.90 feet NAPL				
MPE-6	21-Jun-17	TBS	34.45	36.60	2.15	NA	NM - 2.15 feet NAPL				
MPE-6	09-Aug-17	TBS	34.71	36.44	1.73	NA	NM - 1.73 feet NAPL				
MPE-6	07-Dec-17	TBS	34.60	36.56	1.96	NA	NM - 1.96 feet NAPL				
MPE-6	09-Jan-18	TBS	34.51	36.54	2.03	NA	NM - 2.03 feet NAPL				
MPE-6	12-Feb-18	TBS	34.58	36.08	1.50	NA	NM - 1.50 feet NAPL				
MPE-6	05-Mar-18	TBS	34.73	35.81	1.08	NA	NM - 1.08 feet NAPL				
MPE-6	05-Apr-18	TBS	34.73	36.02	1.29	NA	NM - 1.29 feet NAPL				
MPE-6	18-May-18	TBS	34.68	36.13	1.45	NA	NM - 1.45 feet NAPL				
MPE-6	12-Jun-18	TBS	34.95	35.76	0.81	NA	NM - 0.81 feet NAPL				
MPE-6	09-Jul-18	TBS	35.10	35.60	0.50	NA	NM - 0.50 feet NAPL				
MPE-6	13-Aug-18	TBS	35.17	35.50	0.33	NA	NM - 0.33 feet NAPL				
MPE-6	24-Sep-18	TBS	35.27	35.48	0.21	NA	NM - 0.21 feet NAPL				
MPE-6	26-Oct-18	TBS	35.30	35.56	0.26	NA	NM - 0.26 feet NAPL				
MPE-6	19-Nov-18	TBS	35.06	35.34	0.28	NA	NM - 0.28 feet NAPL				
MPE-6	14-Dec-18	TBS	35.40	35.60	0.20	NA	NM - 0.20 feet NAPL				
MPE-6	25-Sep-19	TBS	35.13	35.93	0.80	NA	NM - 0.80 feet NAPL				
MPE-7	14-Jan-14	TBS		NM		NA	NM	NM	NM	NM	NM
MPE-7	04-Apr-14	TBS	32.00	32.01	0.01	NA	NM - 0.01 feet NAPL				

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SUMMARY OF GROUNDWATER MEASUREMENT AND WATER QUALITY DATA
BMG HWY 537 LLAVES PIPELINE 2008 OIL RELEASE
Rio Arriba County, New Mexico

Well ID	*Date Sampled*	*Surveyed TOC (ft)*	*Depth to NAPL (ft)*	*Depth to Water (ft)*	*NAPL Thickness (ft)*	*GW Elev. (ft)*	*Temp. (°C)*	*Specific Conduct. (mS)*	*Dissolved Oxygen (mg/L)*	*pH*	*ORP (mV)*
MPE-7	10-Sep-14	TBS		32.34		NA	NM	NM	NM	NM	NM
MPE-7	03-Dec-14	TBS		32.41		NA	NM	NM	NM	NM	NM
MPE-7	09-Oct-15	TBS		32.29		NA	NM	NM	NM	NM	NM
MPE-7	27-Mar-15	TBS		32.14		NA	NM	NM	NM	NM	NM
MPE-7	09-Oct-15	TBS		32.29		NA	NM	NM	NM	NM	NM
MPE-7	08-Dec-15	TBS		32.47		NA	NM	NM	NM	NM	NM
MPE-7	17-Jun-16	TBS		32.56		NA	NM	NM	NM	NM	NM
MPE-7	20-Oct-16	TBS		32.79		NA	NM	NM	NM	NM	NM
MPE-7	27-Jan-17	TBS		32.76		NA	NM	NM	NM	NM	NM
MPE-7	25-Sep-19	TBS		33.12		NA	NM	NM	NM	NM	NM

NOTE: **Table includes only data from 2014 through present; comprehensive table available upon request.

NA = NOT AVAILABLE
NM = NOT MEASURED
NS = NOT SAMPLED
TBS = TO BE SURVEYED

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS -
VOLATILE ORGANICS AND PETROLEUM HYDROCARBONS
BMG HWY 537 LLAVES PIPELINE 2008 OIL RELEASE
Rio Arriba County, New Mexico

Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPH-GRO	TPH-DRO	TPH-MRO
		(µg/L)	*(µg/L)*	*(µg/L)*	*(µg/L)*	*(mg/L)*	*(mg/L)*	*(mg/L)*
Analytical Method		**8021B**	**8021B**	**8021B**	**8021B**	**8015D**	**8015M/D**	**8015M/D**
New Mexico WQCC		***5***	***1000***	***700***	***620***	***NE***	***NE***	***NE***
MW-1	05-May-08	<1.0	<1.0	<1.0	<2.0	0.092	<1.0	<5.0
MW-1	24-Sep-08	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-1	02-Jan-09	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-1	07-Apr-09	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-1	07-Jul-09	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-1	12-Oct-09	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-1	12-Jan-10	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-1	13-Oct-10	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-1	20-Jan-11	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-1	10-May-11	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-1	07-Aug-17	Plugged and Abandoned						
MW-2	05-May-08	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-2	24-Sep-08	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-2	02-Jan-09	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-2	07-Apr-09	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-2	07-Jul-09	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-2	12-Oct-09	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-2	12-Jan-10	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-2	13-Oct-10	NS - Well Filled with Roots						
MW-2	20-Jan-11	NS - Well Filled with Roots						
MW-2	10-May-11	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-3	05-May-08	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-3	24-Sep-08	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-3	02-Jan-09	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-3	07-Apr-09	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-3	07-Jul-09	NS - Well filled with sediment						
MW-3	12-Oct-09	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-3	12-Jan-10	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-3	13-Oct-10	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-3	20-Jan-11	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-3	10-May-11	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-3	07-Aug-17	Plugged and Abandoned						
MW-4	05-May-08	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS -
VOLATILE ORGANICS AND PETROLEUM HYDROCARBONS
BMG HWY 537 LLAVES PIPELINE 2008 OIL RELEASE
Rio Arriba County, New Mexico

Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPH-GRO	TPH-DRO	TPH-MRO
		(µg/L)	*(µg/L)*	*(µg/L)*	*(µg/L)*	*(mg/L)*	*(mg/L)*	*(mg/L)*
Analytical Method		**8021B**	**8021B**	**8021B**	**8021B**	**8015D**	**8015M/D**	**8015M/D**
New Mexico WQCC		***5***	***1000***	***700***	***620***	***NE***	***NE***	***NE***
MW-4	24-Sep-08	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-4	02-Jan-09	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-4	07-Apr-09	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-4	07-Jul-09	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-4	12-Oct-09	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-4	12-Jan-10	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-4	13-Oct-10	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-4	20-Jan-11	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-4	09-May-11	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-4	07-Aug-17	Plugged and Abandoned						
MW-5	05-May-08	NS - Well Dry						
MW-5	24-Sep-08	NS - Well Dry						
MW-5	02-Jan-09	NS - Well Dry						
MW-5	07-Apr-09	NS - Well Dry						
MW-5	07-Jul-09	NS - Well Dry						
MW-5	12-Oct-09	NS - Well Dry						
MW-5	12-Jan-10	NS - Well Dry						
MW-5	13-Oct-10	NS - Well Dry						
MW-5	20-Jan-11	NS - Well Dry						
MW-5	09-May-11	NS - Well Dry						
MW-5	07-Aug-17	Plugged and Abandoned						
MW-6	05-May-08	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-6	24-Sep-08	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-6	02-Jan-09	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-6	07-Apr-09	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-6	07-Jul-09	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-6	12-Oct-09	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-6	12-Jan-10	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-6	13-Oct-10	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-6	20-Jan-11	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-6	09-May-11	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-6	07-Aug-17	Plugged and Abandoned						
MW-7	05-May-08	2.8	<1.0	<1.0	<2.0	0.40	<1.0	<5.0

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BMG HWY 537 LLAVES PIPELINE 2008 OIL RELEASE
Rio Arriba County, New Mexico

Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPH-GRO	TPH-DRO	TPH-MRO
		(µg/L)	*(µg/L)*	*(µg/L)*	*(µg/L)*	*(mg/L)*	*(mg/L)*	*(mg/L)*
Analytical Method		**8021B**	**8021B**	**8021B**	**8021B**	**8015D**	**8015M/D**	**8015M/D**
New Mexico WQCC		***5***	***1000***	***700***	***620***	***NE***	***NE***	***NE***
MW-7	24-Sep-08	<1.0	<1.0	<1.0	<2.0	0.069	<1.0	<5.0
MW-7	02-Jan-09	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-7	07-Apr-09	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-7	07-Jul-09	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-7	12-Oct-09	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-7	12-Jan-10	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-7	13-Oct-10	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-7	20-Jan-11	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-7	09-May-11	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-8	05-May-08	**26**	10	<1.0	<2.0	1.10	<1.0	<5.0
MW-8	24-Sep-08	**65**	26	<1.0	<2.0	0.90	<1.0	<5.0
MW-8	05-Jan-09	**45**	25	<1.0	2.2	1.0	<1.0	<5.0
MW-8	07-Apr-09	**25**	20	<1.0	2.9	0.89	<1.0	<5.0
MW-8	07-Jul-09	**7.5**	4.5	<1.0	<2.0	0.21	<1.0	<5.0
MW-8	12-Oct-09	**15**	11	<1.0	<2.0	0.52	<1.0	<5.0
MW-8	12-Jan-10	<1.0	<1.0	<1.0	<2.0	0.088	<1.0	<5.0
MW-8	13-Oct-10	**12**	<1.0	1.7	16	0.25	<1.0	<5.0
MW-8	20-Jan-11	**35**	<1.0	6.5	6.3	0.16	<1.0	<5.0
MW-8	10-May-11	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-8	15-Aug-11	<2.0	<2.0	<2.0	<4.0	<0.10	<1.0	<5.0
MW-8	21-Nov-11	<2.0	<2.0	<2.0	<4.0	<0.10	2.2	<5.0
MW-8	21-Feb-12	<2.0	<2.0	<2.0	<4.0	<0.10	<1.0	<5.0
MW-8	24-May-12	<2.0	<2.0	<2.0	<4.0	<0.10	<1.0	<5.0
MW-8	21-Sep-12	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-8	04-Dec-12	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-8	26-Mar-13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-8	26-Jun-13	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-8	07-Aug-17	Plugged and Abandoned						
MW-9	05-May-08	**6.2**	7.5	<1.0	2.3	0.90	<1.0	<5.0
MW-9	24-Sep-08	**17**	12	<1.0	<2.0	0.32	<1.0	<5.0
MW-9	05-Jan-09	NS - Well Dry						
MW-9	07-Apr-09	**12**	6.2	<1.0	<2.0	0.32	<1.0	<5.0
MW-9	07-Jul-09	**7.0**	5.3	<1.0	<2.0	0.28	<1.0	<5.0
MW-9	12-Oct-09	**26**	2.0	<1.0	<2.0	0.31	<1.0	<5.0

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS -
VOLATILE ORGANICS AND PETROLEUM HYDROCARBONS
BMG HWY 537 LLAVES PIPELINE 2008 OIL RELEASE
Rio Arriba County, New Mexico

Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPH-GRO	TPH-DRO	TPH-MRO
		(µg/L)	*(µg/L)*	*(µg/L)*	*(µg/L)*	*(mg/L)*	*(mg/L)*	*(mg/L)*
Analytical Method		**8021B**	**8021B**	**8021B**	**8021B**	**8015D**	**8015M/D**	**8015M/D**
New Mexico WQCC		***5***	***1000***	***700***	***620***	***NE***	***NE***	***NE***
MW-9	12-Jan-10	NAPL Present through Current Date						
MW-9R	25-Sep-19	<1.0	<1.0	56	80	0.87	<1.0	<5.0

NOTE: NS = Not Sampled
NA = Not Analyzed
TPH = Total Petroleum Hydrocarbons
GRO = Gasoline Range Organics
DRO = Diesel Range Organics
MRO = Motor Oil Range Organics

TABLE 3

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS - NMAC 20.6.2.3103

BMG HWY 537 LLAVES PIPELINE 2008 OIL RELEASE

Rio Arriba County, New Mexico

Well ID	Sample Date	Antimony	Arsenic	Copper	Lead	Selenium	Thallium	Uranium	Fluoride	Chloride	Nitrite-N	Nitrate-N	Sulfate	TDS	Aluminum	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Iron	Manganese	Molybdenum	Nickel	Silver	Zinc	Mercury	Phenols	Cyanide	pH	Radium 226/228
Analytical Method		200.8							300.0					2540 C	200.7													245.1	SW-846 9067	4500 CN	4500-H+B	903.1 904.0
NM WQCC Standard		0.006	0.01	1.0	0.015	0.05	0.002	0.03	1.6	250	1.0	10.0	600	1,000	5.0	2.0	0.004	0.75	0.005	0.05	0.05	1.0	0.2	1.0	0.2	0.05	10.0	0.002	0.005	0.2	6 to 9	5.0
		(mg/L)																													--	pCi/L
MW-9R	25-Sep-19	<0.0010	0.0016	0.0057	0.0015	0.0011	<0.00050	0.0061	<0.50	110	<0.50	<0.50	76	**1,040**	3.7	0.31	<0.0020	0.078	<0.0020	<0.0060	<0.0060	**4.2 (T)**	**3.3 (T)**	<0.0080	<0.010	<0.0050	0.017	<0.00020	0.0042	<0.00500	7.44	3.11

Notes: < Analyte not detected above listed method limit

NA Not analyzed

NE Not established

mg/L Milligrams per liter (ppm)

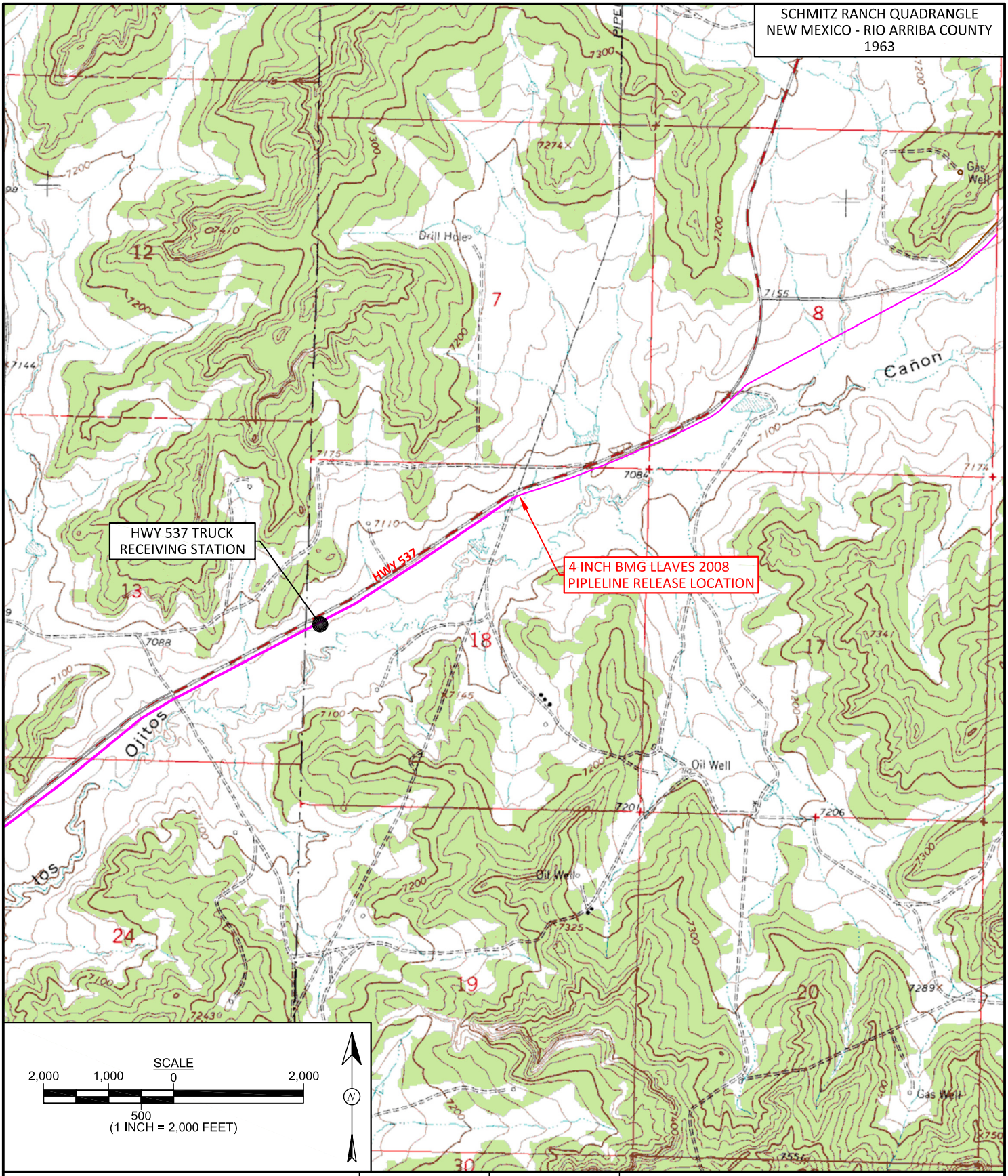
Bold where results are above WQCC standards.

TABLE 4
SUMMARY OF SOIL ANALYTICAL RESULTS
BMG HWY 537 LLAVES PIPELINE 2008 OIL RELEASE
Rio Arriba County, New Mexico

Sample ID	Date Sampled	Depth	Benzene	Toluene	Ethyl-benzene	Total Xylenes	GRO	DRO	MRO
		(feet)	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*
		Analytical Method	**8021B**	**8021B**	**8021B**	**8021B**	**8015**	**8015**	**8015**
		NMOCD Action Level*	**50**				**100**		
TH-1	14-Apr-08	17-19	**15**	**81**	**23**	**130**	**2,700**	**14,000**	**3,100**
TH-1	14-Apr-08	33-33.5	<0.050	0.064	<0.050	<0.10	**<5.0**	**710**	**110**
TH-2	14-Apr-08	7.5-8	<0.050	0.082	<0.050	0.13	<5.0	<10	<50
TH-2	14-Apr-08	19	<0.050	<0.050	<0.050	<0.10	<5.0	<10	<50
TH-2	14-Apr-08	34	**45**	**160**	**40**	**230**	**5,200**	**20,000**	**3,800**
TH-3/MW-1	14-Apr-08	37-38	<0.050	<0.050	<0.050	<0.10	<5.0	<10	<50
TH-4/MW-2	14-Apr-08	31	<0.050	<0.050	<0.050	<0.10	<5.0	<10	<50
TH-5/MW-3	14-Apr-08	29	<0.050	<0.050	<0.050	<0.10	<5.0	<10	<50
TH-6/MW-4	14-Apr-08	28.5	<0.050	<0.050	<0.050	<0.10	<5.0	<10	<50
TH-8/MW-6	15-Apr-08	31	<0.050	<0.050	<0.050	<0.10	<5.0	<10	<50
TH-9/MW-7	15-Apr-08	33	<0.050	<0.050	<0.050	<0.10	<5.0	<10	<50
TH-10/MW-8	16-Apr-08	31	<0.050	<0.050	<0.050	<0.10	<5.0	<10	<50
TH-11/MW-9	16-Apr-08	27	<0.050	<0.050	<0.050	<0.10	<5.0	<10	<50
TH-12	16-Apr-08	4	<0.050	<0.050	<0.050	<0.10	<5.0	<10	<50
TH-13	16-Apr-08	4	1.5	12	5.1	31	**320**	**300**	**56**
TH-14	16-Apr-08	4	<0.050	<0.050	<0.050	<0.10	<5.0	<10	<50
TH-15	16-Apr-08	4	<0.050	<0.050	<0.050	<0.10	<5.0	<10	<50
MW-9R	05-Sep-19	15	<0.024	<0.049	<0.049	<0.097	<4.9	15	<49
MW-9R	05-Sep-19	30	<0.12	<0.24	<0.24	1.6	**130**	**2,100**	**880**

NOTE: NE = Not Established
GRO = Gasoline Range Organics
DRO = Diesel Range Organics
MRO = Motor Oil Range Organics
****NMAC 19.15.17.13 Table I**

Figures



DRAWN BY: C. Lameman	**DATE DRAWN:** March 3, 2017
REVISIONS BY: C. Lameman	**DATE REVISED:** November 21, 2019
CHECKED BY: E. McNally	**DATE CHECKED:** November 21, 2019
APPROVED BY: E. McNally	**DATE APPROVED:** November 21, 2019

FIGURE 1

TOPOGRAPHIC SITE LOCATION MAP
BMG HIGHWAY 537
LLAVES 2008 PIPELINE OIL RELEASE
NW¼ NE¼, SECTION 18, T25N, R3W
RIO ARRIBA COUNTY, NEW MEXICO
N36.40357, W107.18422

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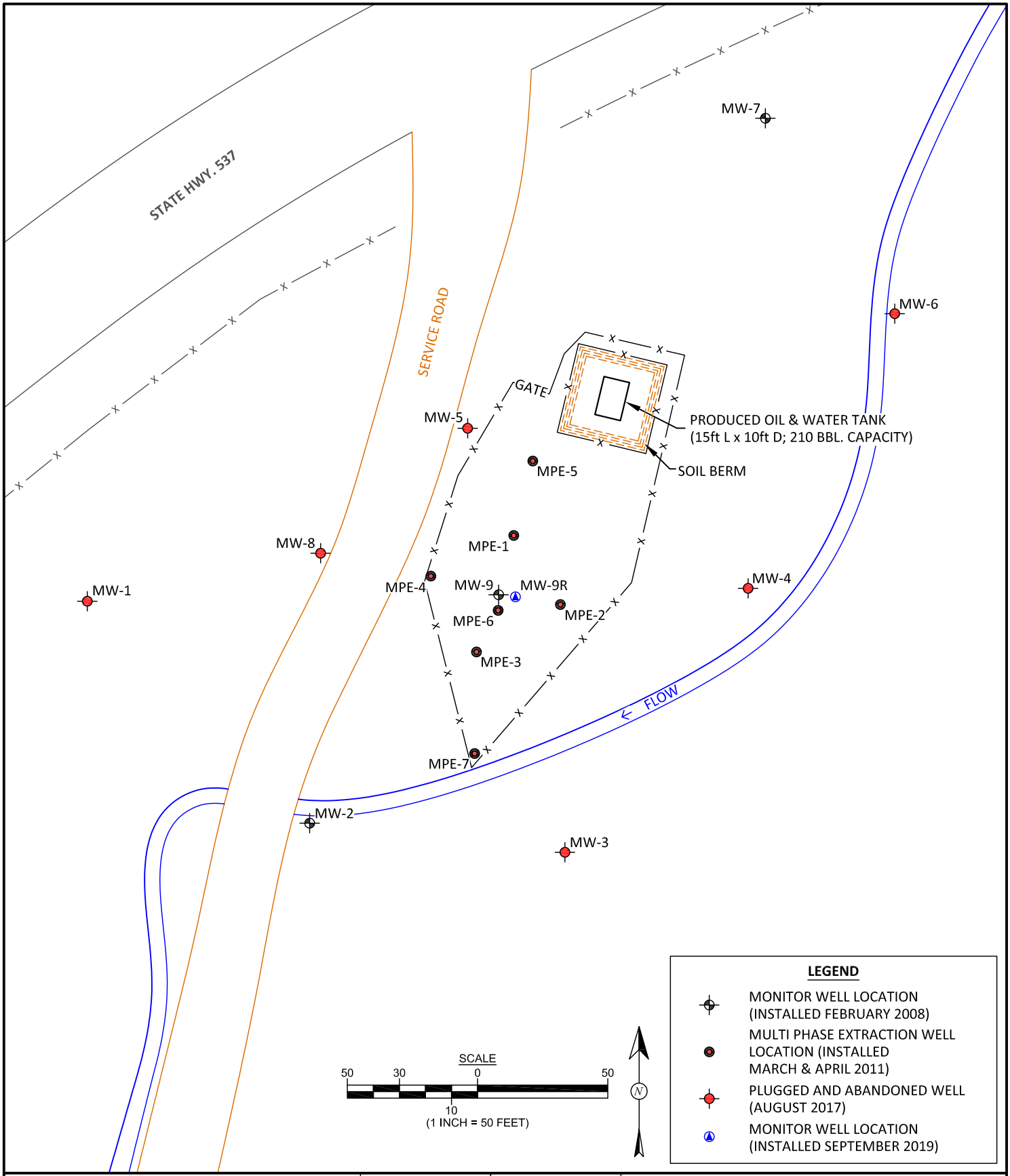

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DRAWN BY: C. Lameman	**DATE DRAWN:** March 3, 2017
REVISIONS BY: C. Lameman	**DATE REVISED:** June 11, 2019
CHECKED BY: E. McNally	**DATE CHECKED:** June 11, 2019
APPROVED BY: E. McNally	**DATE APPROVED:** June 11, 2019

FIGURE 2

GENERAL SITE MAP

BMG HIGHWAY 537
LLAVES 2008 PIPELINE OIL RELEASE
NW¼ NE¼, SECTION 18, T25N, R3W
RIO ARRIBA COUNTY, NEW MEXICO
N36.40357, W107.18422

FIGURE 3

SOIL FIELD SCREENING AND LABORATORY ANALYSIS RESULTS

BMG HIGHWAY 537
LLAVES 2008 PIPELINE OIL RELEASE
NW¼ NE¼, SECTION 18, T25N, R3W
RIO ARRIBA COUNTY, NEW MEXICO
N36.40357, W107.18422

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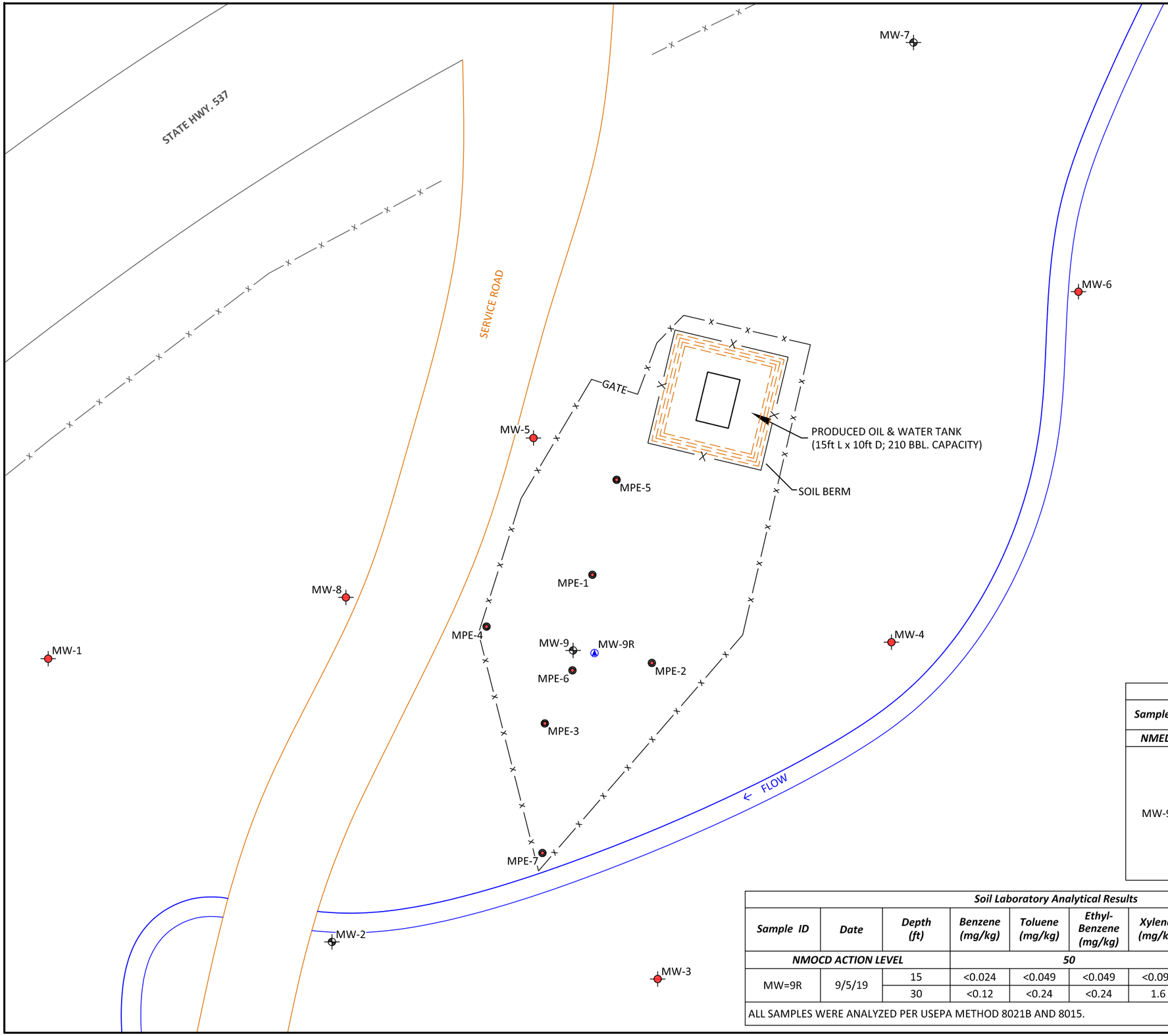
DRAWN BY:	DATE DRAWN:
C. Lameman	November 21, 2019
REVISIONS BY:	**DATE REVISED:**
C. Lameman	November 21, 2019
CHECKED BY:	**DATE CHECKED:**
D. Reese	November 21, 2019
APPROVED BY:	**DATE APPROVED:**
E. McNally	November 21, 2019



LEGEND

- MONITOR WELL LOCATION (INSTALLED FEBRUARY 2008)
- MULTI PHASE EXTRACTION WELL LOCATION (INSTALLED MARCH & APRIL 2011)
- PLUGGED AND ABANDONED WELL (AUGUST 2017)
- MONITOR WELL LOCATION (INSTALLED SEPTEMBER 2019)

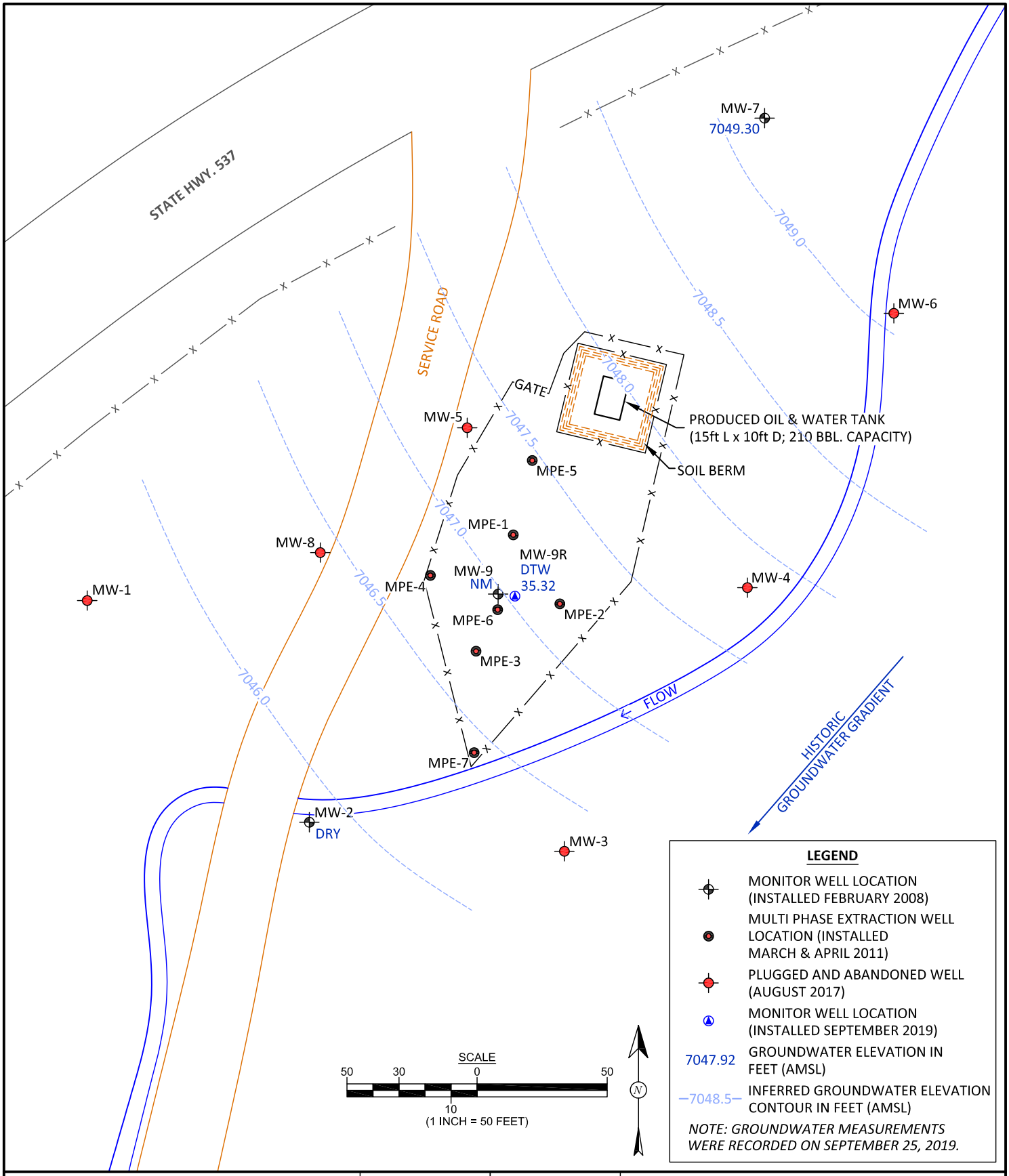
Field OVM Results			
Sample ID	***Date***	***Depth (ft)***	***PID-OVM (ppm)***
NMED SOIL SCREENING LEVELS			***100***
MW-9R	9/5/19	5	0.0
		10	0.0
		15	0.0
		20	0.0
		25	0.0
		30	**1,058**
		35	30.2
		40	12.4

Soil Laboratory Analytical Results

Sample ID	***Date***	***Depth (ft)***	***Benzene (mg/kg)***	***Toluene (mg/kg)***	***Ethyl-Benzene (mg/kg)***	***Xylenes (mg/kg)***	***TPH - GRO C6 - C10 (mg/kg)***	***TPH - DRO C10 - C28 (mg/kg)***	***TPH - MRO C29 - C26 (mg/kg)***
NMOCD ACTION LEVEL			***50***				***100***		
MW=9R	9/5/19	15	<0.024	<0.049	<0.049	<0.097	<4.9	15	<49
		30	<0.12	<0.24	<0.24	1.6	**130**	**2,100**	**880**
ALL SAMPLES WERE ANALYZED PER USEPA METHOD 8021B AND 8015.									

N

SCALE
30 20 0 30
10
(1 INCH = 30 FEET)



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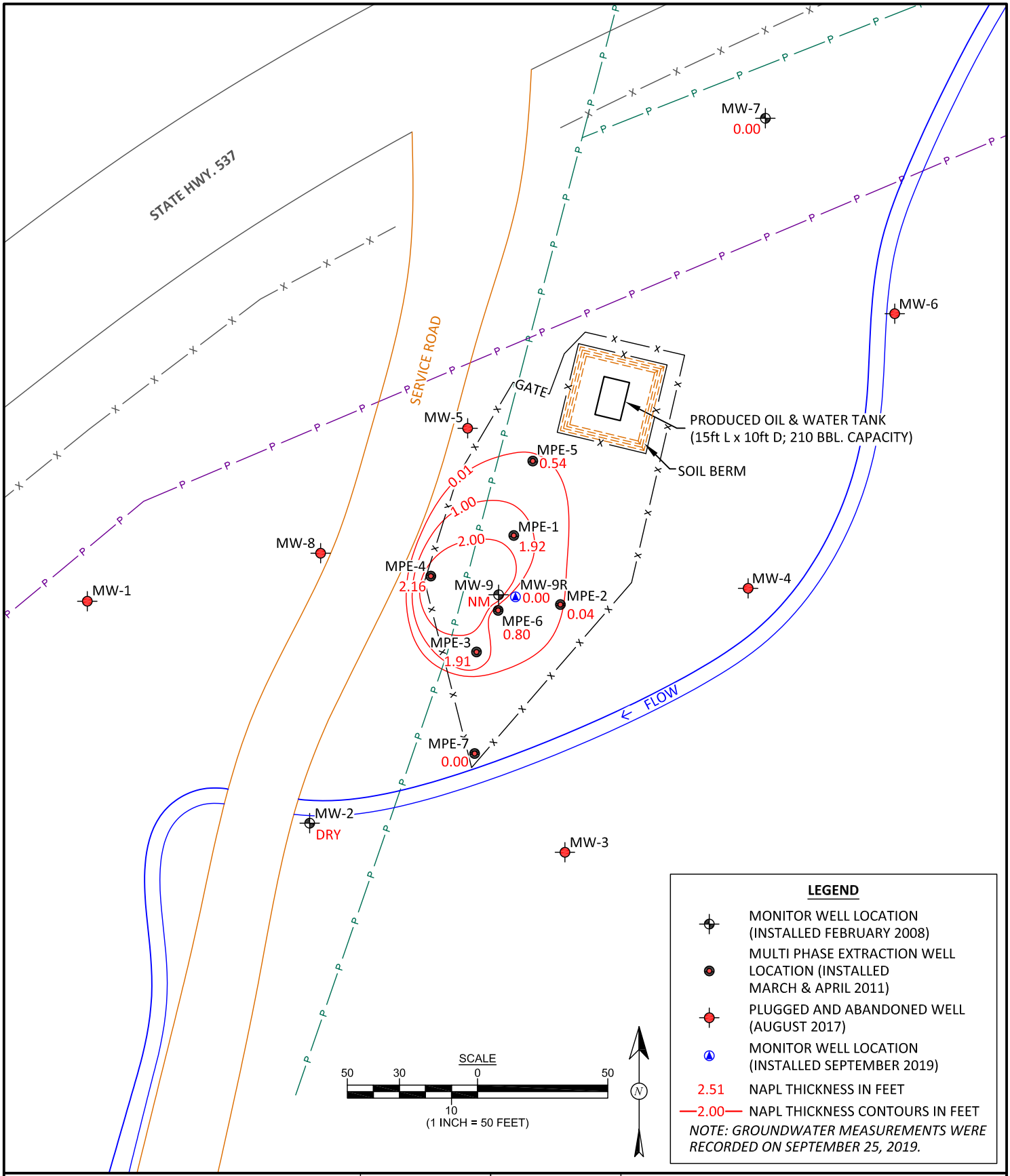
REVISIONS BY: C. Lameman	**DATE REVISED:** November 21, 2019
CHECKED BY: D. Reese	**DATE CHECKED:** November 21, 2019
APPROVED BY: E. McNally	**DATE APPROVED:** November 21, 2019

FIGURE 4

GROUNDWATER ELEVATION CONTOURS, SEPTEMBER 2019

BMG HIGHWAY 537
LLAVES 2008 PIPELINE OIL RELEASE
NW¼ NE¼, SECTION 18, T25N, R3W
RIO ARRIBA COUNTY, NEW MEXICO
N36.40357, W107.18422



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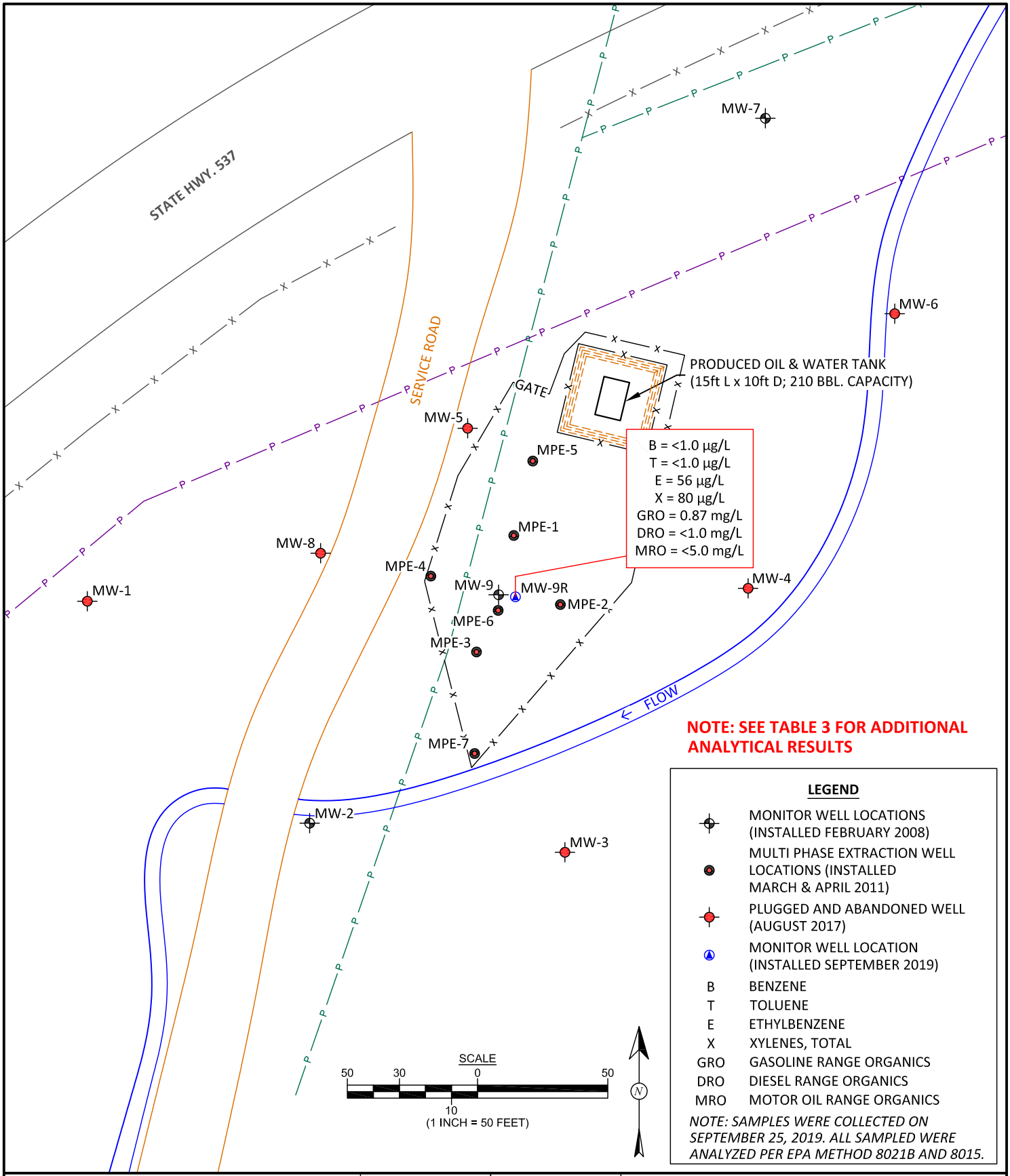
DRAWN BY: C. Lameman	**DATE DRAWN:** March 6, 2017
REVISIONS BY: C. Lameman	**DATE REVISED:** November 21, 2019
CHECKED BY: D. Reese	**DATE CHECKED:** November 21, 2019
APPROVED BY: E. McNally	**DATE APPROVED:** November 21, 2019

FIGURE 5

RESIDUAL NAPL THICKNESS CONTOURS SEPTEMBER 2019

BMG HIGHWAY 537
LLAVES 2008 PIPELINE OIL RELEASE
NW¼ NE¼, SECTION 18, T25N, R3W
RIO ARRIBA COUNTY, NEW MEXICO
N36.40357, W107.18422



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DRAWN BY: C. Lameman	**DATE DRAWN:** November 21, 2019
REVISIONS BY: C. Lameman	**DATE REVISED:** November 21, 2019
CHECKED BY: D. Reese	**DATE CHECKED:** November 21, 2019
APPROVED BY: E. McNally	**DATE APPROVED:** November 21, 2019

FIGURE 6

GROUNDWATER CONTAMINANT CONCENTRATIONS, SEPTEMBER 2019

BMG HIGHWAY 537
LLAVES 2008 PIPELINE OIL RELEASE
NW¼ NE¼, SECTION 18, T25N, R3W
RIO ARRIBA COUNTY, NEW MEXICO
N36.40357, W107.18422

Appendix A

Photo 1: MW-9R Well Installation. MW-9 at center. ***Photo taken 9/5/2019.***

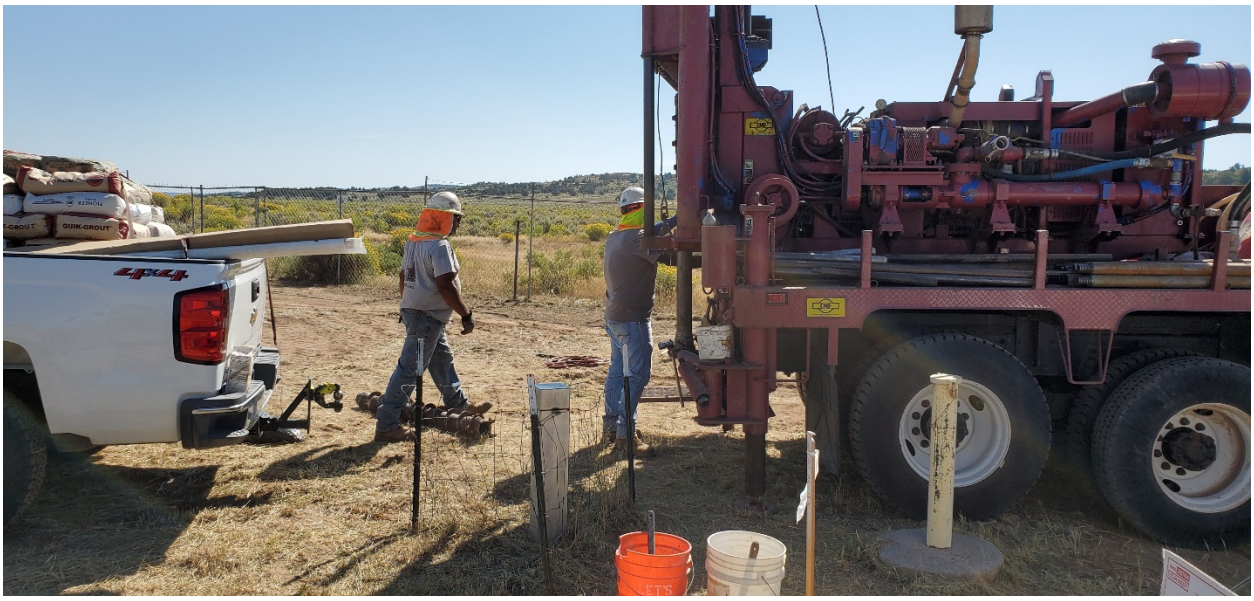


Photo 2: Geotech® Solar Sipper installed at MPE-1 (left) and MPE-6 (right). ***Photo taken 3/25/2020.***

Photo 3: Geotech® Solar Sipper instrumentation. ***Photo taken 3/25/2020.***

Photo 4: Product recovery drum. ***Photo taken 3/25/2020.***

Appendix B

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER
AZTEC

John R. D'Antonio, Jr., P.E.
State Engineer

100 Gossett Drive, Suite A
Aztec, New Mexico 87410

August 27, 2019

Benson-Montin-Greer Drilling Corp.
Attn: Zach Stradling
4900 College Blvd.
Farmington, NM 87402

RE: Permit Approval for Monitoring Wells, SJ-4364 POD1-POD10 and Approval for Use of Conditioned Standardized Plugging Method for Existing Well, MW-9; BMG HWY 537 2008 Abatement Site; Rural Rio Arriba County, New Mexico

Dear Mr. Stradling,

On August 21, 2019, the New Mexico Office of the State Engineer received an application for a permit for the installation of one new monitoring well, and use of two existing monitoring wells and seven existing pollution recovery wells at the above referenced location. The application also requested permission to use the standardized plugging method prescribed by the Conditions of Approval of the Permit for new monitoring wells, to plug and abandon existing monitoring well, MW-9.

Enclosed is a copy of the above numbered permit that has been approved subject to the conditions set forth on the approval page and in the attached Conditions of Approval. Furthermore, your request therein for permission to use the standardized plugging method prescribed by said Conditions of Approval is also hereby granted.

Please be aware that there are deadlines to submit well records for the newly installed monitoring well. These deadlines can be found in the attached Conditions of Approval. A standardized plugging method has also been included in the Conditions of Approval for the future abandonment of the wells covered by this permit. This eliminates the need to submit a separate Well Plugging Plan of Operations for approval by the NMOSE prior to plugging, unless an alternate plugging method is proposed, required by a separate oversight agency, necessary due to incompatibility with actual conditions, or artesian conditions are encountered. The well and plugging records should be sent to the NMOSE District V, 100 Gossett Drive, Suite A, Aztec, NM, 87410.

If you have any questions regarding this permitting action, please feel free to contact me at (505) 334-4571.

Sincerely,

Miles Juett
Assistant Watermaster
Water Rights Division – District V

Enclosures

cc: Aztec Reading (w/o enclosures)
SJ-4364 File
WATERS
Elizabeth McNally, PE, Animas Environmental, via email: emcnally@animasenvironmental.com

File No. SJ-4364 POD1-POD10

NEW MEXICO OFFICE OF THE STATE ENGINEER

WR-07 APPLICATION FOR PERMIT TO DRILL

A WELL WITH NO WATER RIGHT

(check applicable box):

For fees, see State Engineer website: http://www.ose.state.nm.us/

Purpose:	☐ Pollution Control And/Or Recovery	☐ Ground Source Heat Pump
☐ Exploratory Well (Pump test)	☐ Construction Site/Public Works Dewatering	☐ Other(Describe):
☒ Monitoring Well	☐ Mine Dewatering	

A separate permit will be required to apply water to beneficial use regardless if use is consumptive or nonconsumptive.

☒ Temporary Request - Requested Start Date: September 5, 2019 Requested End Date: Unknown

Plugging Plan of Operations Submitted? ☐ Yes ☒ No

1. APPLICANT(S)

Name: Benson-Montin-Greer Drilling Corp. (Site Name: Hwy 537 2008)	Name:
Contact or Agent: check here if Agent ☐ Zach Stradling	Contact or Agent: check here if Agent ☒ Elizabeth McNally, PE
Mailing Address: 4900 College Blvd.	Mailing Address: 624 E. Comanche St.
City: Farmington	City: Farmington
State: NM Zip Code: 87402	State: NM Zip Code: 87401
Phone: 505-325-8874 work ☐ Home ☐ Cell Phone (Work):	Phone: 505-564-2281 work ☐ Home ☐ Cell Phone (Work):
E-mail (optional): zstradling@bmgdrilling.com	E-mail (optional): emcnally@animasenvironmental.com

FOR OSE INTERNAL USE Application for Permit, Form WR-07, Rev 11/17/16

File No.: SJ-4364 POD1-POD10	Trn. No.:	Receipt No.: 5-6444
Trans Description (optional):		
Sub-Basin:	PCW/LOG Due Date: 8-22-2020	

2019 AUG 22 AM 10:20
STATE ENGINEER OFFICE
ALTEC, NEW MEXICO

2. **WELL(S)** Describe the well(s) applicable to this application.

Location Required: Coordinate location must be reported in NM State Plane (NAD 83), UTM (NAD 83), or Latitude/Longitude (Lat/Long - WGS84).
District II (Roswell) and District VII (Cimarron) customers, provide a PLSS location in addition to above.

☐ NM State Plane (NAD83) (Feet)
☐ NM West Zone
☐ NM East Zone
☐ NM Central Zone

☐ UTM (NAD83) (Meters)
☐ Zone 12N
☐ Zone 13N

■ Lat/Long (WGS84) (to the nearest 1/10th of second)

Well Number (if known):	X or Easting or Longitude:	Y or Northing or Latitude:	Provide if known: -Public Land Survey System (PLSS) (*Quarters or Halves , Section, Township, Range*) OR - Hydrographic Survey Map & Tract; OR - Lot, Block & Subdivision; OR - Land Grant Name
MW-9R (SJ-4364 POD8)	-107.18423	36.40338	NW1/4 NE1/4, Sec 18, T25N, R3W
MW-2 (SJ-4364 POD9)	-107°11'04.12"	36°24'11.49"	NW1/4 NE1/4, Sec 18, T25N, R3W
MW-7 (SJ-4364 POD10)	-107°11'01.38"	36°24"14.51"	NW1/4 NE1/4, Sec 18, T25N, R3W

NOTE: If more well locations need to be described, complete form WR-08 (Attachment 1 – POD Descriptions)
Additional well descriptions are attached: ■ Yes ☐ No **If yes, how many** 7

Other description relating well to common landmarks, streets, or other:
on the south side of NM Highway 537; see attached maps - 1) Site Location Map; 2) Site Map with well locations.

Well is on land owned by: Schmitz Ranch - see attached permission for access

Well Information: NOTE: If more than one (1) well needs to be described, provide attachment. **Attached?** ■ Yes ☐ No
If yes, how many 12 more

Approximate depth of well (feet): MW-9R approximately 40-45 feet	Outside diameter of well casing (inches): 2-inch nominal PVC
Driller Name: Enviro-Drill, Inc.	Driller License Number: 1186

3. **ADDITIONAL STATEMENTS OR EXPLANATIONS**

One groundwater monitor well MW-9R (replacement well) will be installed by Enviro-Drill as part of ongoing remedial activities under an Abatement Plan (NMOCD). Well will be advanced to 45 feet bgs and completed as a 2-inch diameter well with screened interval from 30-45 ft. Purpose of the well is for groundwater monitoring and also removal of non-aqueous phase liquids (NAPL); no removal of groundwater has been planned. Existing monitor wells include MW-2, MW-7 and MW-9 (which is currently obstructed). Previously P&A'd wells (August 2017) include MW-1, MW-3, MW-4, MW-5, MW-6, MW-8 (these were approved for P&A by NMOSE) and were installed by Earth Worx of Los Lunas, NM in April 2008. Existing remediation wells (NAPL removal) include MPE-1 through MPE-7. Requesting permission to plug obstructed MW-9 using standardized plugging method prescribed by COA for this permit if approved.

4. SPECIFIC REQUIREMENTS: The applicant must include the following, as applicable to each well type. Please check the appropriate boxes, to indicate the information has been included and/or attached to this application:

Exploratory: ☐ Include a description of any proposed pump test, if applicable.	**Pollution Control and/or Recovery:** ■ Include a plan for pollution control/recovery, that includes the following: ■ A description of the need for the pollution control or recovery operation. ☐ The estimated maximum period of time for completion of the operation. ☐ The annual diversion amount. ☐ The annual consumptive use amount. ☐ The maximum amount of water to be diverted and injected for the duration of the operation. ☐ The method and place of discharge.	**Construction De-Watering:** ☐ Include a description of the proposed dewatering operation, ☐ The estimated duration of the operation, ☐ The maximum amount of water to be diverted, ☐ A description of the need for the dewatering operation, and, ☐ A description of how the diverted water will be disposed of.	**Mine De-Watering:** ☐ Include a plan for pollution control/recovery, that includes the following: ☐ A description of the need for mine dewatering. ☐ The estimated maximum period of time for completion of the operation. ☐ The source(s) of the water to be diverted. ☐ The geohydrologic characteristics of the aquifer(s). ☐ The maximum amount of water to be diverted per annum. ☐ The maximum amount of water to be diverted for the duration of the operation. ☐ The quality of the water. ☐ The method of measurement of water diverted. ☐ The recharge of water to the aquifer. ☐ Description of the estimated area of hydrologic effect of the project. ☐ The method and place of discharge. ☐ An estimation of the effects on surface water rights and underground water rights from the mine dewatering project. ☐ A description of the methods employed to estimate effects on surface water rights and underground water rights. ☐ Information on existing wells, rivers, springs, and wetlands within the area of hydrologic effect.
Monitoring: ■ Include the reason for the monitoring well, and, ■ The duration of the planned monitoring.	☐ The method of measurement of water produced and discharged. ☐ The source of water to be injected. ☐ The method of measurement of water injected. ☐ The characteristics of the aquifer. ☐ The method of determining the resulting annual consumptive use of water and depletion from any related stream system. ☐ Proof of any permit required from the New Mexico Environment Department. ☐ An access agreement if the applicant is not the owner of the land on which the pollution plume control or recovery well is to be located.	**Ground Source Heat Pump:** ☐ Include a description of the geothermal heat exchange project, ☐ The number of boreholes for the completed project and required depths. ☐ The time frame for constructing the geothermal heat exchange project, and, ☐ The duration of the project. ☐ Preliminary surveys, design data, and additional information shall be included to provide all essential facts relating to the request.	

ACKNOWLEDGEMENT

I, We (name of applicant(s)), Zach Stradling, Benson-Montin-Greer Drilling Corp.
Print Name(s)

affirm that the foregoing statements are true to the best of (my, our) knowledge and belief.

Applicant Signature

Applicant Signature

ACTION OF THE STATE ENGINEER

This application is:

☒ approved ☐ partially approved ☐ denied

provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare and further subject to the attached conditions of approval.

Witness my hand and seal this 27 day of August 20 19, for the State Engineer,

John R. D'Antonio, Jr., P.E., State Engineer

By: Signature — Miles Juett Print

Title: Assistant Watermaster
Print

2019 AUG 22 AM 10:20

STATE ENGINEER OFFICE
AZTEC, NEW MEXICO

FOR OSE INTERNAL USE — Application for Permit, Form WR-07

File No.: SJ-4364 POD1-POD10 | Trn No.:

NEW MEXICO OFFICE OF THE STATE ENGINEER

ATTACHMENT 1
POINT OF DIVERSION DESCRIPTIONS

This Attachment is to be completed if more than one (1) point of diversion is described on an Application or Declaration.

a. Is this a: ☐ Move-From Point of Diversion(s) ☒ Move-To Point of Diversion(s)	**b. Information on Attachment(s):** Number of points of diversion involved in the application: 10 Total number of pages attached to the application: 2

☐ **Surface Point of Diversion** OR ☒ **Well**

Name of ditch, acequia, or spring:	
Stream or water course:	
Tributary of:	

c. Location (Required):
Required: Move to POD location coordinate must be either New Mexico State Plane (NAD 83), UTM (NAD 83), or Lat/Long (WGS84)

NM State Plane (NAD83) (feet) NM West Zone ☐ NM Central Zone ☐ NM East Zone ☐	UTM (NAD83) (meters) Zone 13N ☐ Zone 12N ☐	☒ Lat/Long– (WGS84) 1/10th of second	OTHER (allowable only for move-from descriptions - see application form for format) ☒ PLSS (quarters, section, township, range) ☐ Hydrographic Survey, Map & Tract ☐ Lot, Block & Subdivision ☐ Grant
POD Number: MPE-1 (SJ-4364 POD1)	X or Longitude 107°11'03.29"	Y or Latitude 36°24'12.27"	Other Location Description: NW1/4 NE1/4, Sec 18, T25N, R3W
POD Number: MPE-2 (SJ-4364 POD2)	X or Longitude -107°11'03.07"	Y or Latitude 36°24'12.07"	Other Location Description: NW1/4 NE1/4, Sec 18, T25N, R3W
POD Number: MPE-3 (SJ-4364 POD3)	X or Longitude -107°11'03.46"	Y or Latitude 36°24'11.90"	Other Location Description: NW1/4 NE1/4, Sec 18, T25N, R3W
POD Number: MPE-4 (SJ-4364 POD4)	X or Longitude -107°11'03.60"	Y or Latitude 36°24'12.21"	Other Location Description: NW1/4 NE1/4, Sec 18, T25N, R3W
POD Number: MPE-5 (SJ-4364 POD5)	X or Longitude -107°11'03.13"	Y or Latitude 36°24'12.63"	Other Location Description: NW1/4 NE1/4, Sec 18, T25N, R3W
POD Number: MPE-6 (SJ-4364 POD6)	X or Longitude -107°11'03.29"	Y or Latitude 36°24'12.06"	Other Location Description: NW1/4 NE1/4, Sec 18, T25N, R3W
POD Number: MPE-7 (SJ-4364 POD7)	X or Longitude -107°11'03.48"	Y or Latitude 36°24'11.58"	Other Location Description: NW1/4 NE1/4, Sec 18, T25N, R3W
POD Number:	X or Longitude	Y or Latitude	Other Location Description:
POD Number:	X or Longitude	Y or Latitude	Other Location Description:

2019 AUG 22 AM 10: 20

STATE ENGINEER OFFICE
AZTEC, NEW MEXICO

FOR OSE INTERNAL USE

Form wr-08
POD DESCRIPTIONS - ATTACHMENT 1

File Number: SJ-4364 POD1-POD10	Trn Number:
Trans Description (optional):	

NMOSE Permit to Drill a Well(s) With No Water Right
Conditions of Approval
SJ-4364 POD1 – POD10

The New Mexico Office of the State Engineer (NMOSE) has determined that existing water rights will not be impaired by this activity. This application is approved without publication provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare of the state. This application approval (i.e., permit) is further subject to the following conditions of approval.

1. This permit is approved as follows:

Permittee(s):

Benson-Montin-Greer Drilling Corp.
4900 College Blvd.
Farmington, NM 87402

Permit Number: SJ-4364

Application File Date: August 21, 2019

Priority: N/A

Source: Groundwater

Point(s) of Diversion: Ten points of diversion (POD), SJ-4364 POD1 through POD10 (Tables 1 and 2), will be used. The PODs consist of nine existing monitoring wells and one new groundwater monitoring well that will be used for periodic groundwater sampling. Seven of the existing wells (MPE-1 through MPE-7) are also being used for temporary removal of non-aqueous phase liquids (NAPL). The method for NAPL removal approved by this permit does not produce groundwater. The wells are all located at the BMG HWY 537 2008 abatement site. The facility is located on the south side of NM HWY 537 on Schmitz Ranch land, in Rural Rio Arriba County, New Mexico. The PODs will be located within the NW/4 NE/4 Section 18, Township 25 North, Range 3 West, NMPM, at the following approximate point locations (Lat/Long, WGS84).

Table 1: Existing Monitoring Wells

POD Name and Owner's Well Identification	Longitude (DMS, W)	Latitude (DMS, N)
SJ-4364 POD1 (MPE-1)	107°11'03.29"	36°24'12.27"
SJ-4364 POD2 (MPE-2)	107°11'03.07"	36°24'12.07"
SJ-4364 POD3 (MPE-3)	107°11'03.46"	36°24"11.90"
SJ-4364 POD4 (MPE-4)	107°11'03.60"	36°24'12.21"
SJ-4364 POD5 (MPE-5)	107°11'03.13"	36°24'12.63"
SJ-4364 POD6 (MPE-6)	107°11'03.29"	36°24'12.06"
SJ-4364 POD7 (MPE-7)	107°11'03.48"	36°24'11.58"
SJ-4364 POD9 (MW-2)	107°11'04.12"	36°24'11.49"
SJ-4364 POD10 (MW-7)	107°11'01.38"	36°24"14.51"

Table 2: New Monitoring Well

POD Name and Owner's Well Identification	Longitude (decimal degrees, W)	Latitude (decimal degrees, N)
SJ-4364 POD8 (MW-9R)	107.18423	36.40338

Purpose of Use: Groundwater monitoring and sampling, and Pollution Recovery

Place of Use: N/A

Amount of Water: N/A

2. No water shall be appropriated and beneficially used from any wells or borings approved under this permit.

3. No water shall be diverted from the well(s) except for initial well development and periodic sampling purposes. Upon completion of monitoring activities the well(s) shall be plugged in accordance with Subsection C of 19.27.4.30 NMAC, unless a permit to use water is acquired from the NMOSE.

4. The well(s) may continue to be used indefinitely for groundwater sampling or monitoring required for the current site investigation and any associated remediation, so long as they remain in good repair. **A new permit shall be obtained from the NMOSE prior to replacing a well(s) or for any change in use as approved herein.**

5. Water well drilling and well drilling activities, including well plugging, are regulated under NMOSE Regulations 19.27.4 NMAC. These regulations apply, and provide both general and specific direction regarding the drilling of wells in New Mexico. Note that the construction of any well that allows groundwater to flow uncontrolled to the land surface or to move appreciably between geologic units is prohibited.

6. In accordance with Subsection A of 19.27.4.29 NMAC, on-site supervision of well drilling/plugging is required by the holder of a New Mexico Well Driller License or a NMOSE-registered Drill Rig Supervisor. The New Mexico licensed Well Driller shall ensure that well drilling activities are completed in accordance with 19.27.4.29, 19.27.4.30 and 19.27.4.31 NMAC. However, pursuant to 72-12-12 NMSA 1978 and 19.27.4.8 NMAC, a driller's license is not required for the construction of a driven well with an outside casing diameter of 2⅜ inches or less and that does not require the use of a drill rig (e.g., auger) for installation. This exemption is not applicable to well plugging.

7. The permittee has not stated whether artesian conditions are likely to be encountered at the proposed well/borehole location(s). However, if artesian conditions are encountered during drilling, all rules and regulations pertaining to the drilling and casing and plugging of artesian wells shall be followed.

8. A Well Record documenting the as-built well construction and materials used shall be filed for each of the new wells in accordance with Subsection N of 19.27.4.29 NMAC. **Well Records shall be filed with the State Engineer (NMOSE District V, 100 Gossett Drive, Suite A, Aztec, NM, 87410) within 30 days after completion of the well(s).** Well installation(s) shall be complete and the well record(s) filed no later than one year from the date of approval of this permit. The required Well Record form is available at http://www.ose.state.nm.us/WR/forms.php.

9. If the required Well Record documentation is not received within one year of the date of permit approval, this permit will automatically expire.

10. When the permittee receives approval or direction to permanently abandon the well(s)/borehole(s) covered by this permit, plugging shall be performed by a New Mexico licensed well driller. The well(s)/borehole(s) shall be plugged pursuant to Subsection C of 19.27.4.30 NMAC using the following method, unless an alternate plugging method has been proposed by or on behalf of the well owner and approved by the NMOSE. If a well/borehole has encountered artesian conditions, a Well Plugging Plan of Operations shall be submitted and NMOSE approval obtained *prior* to the initiation of *any* well plugging activities concerning artesian wells. Additionally, if the following standardized plugging sealant is not appropriate for use due to incompatibility with the water quality or any soil and water contaminates encountered, a Well Plugging Plan of Operations shall be submitted and NMOSE approval obtained *prior* to the initiation of *any* well plugging activities.

    a. Obstructions in a well/borehole shall be identified and removed if possible. If an obstruction cannot be removed, the method used to grout below and around the obstruction shall be described in detail in the plugging record.

    b. Prior to plugging, calculate the theoretical volume of sealant needed for abandonment of the well/borehole based on the actual measured pluggable depth of the well/borehole and the volume factor for the casing/borehole diameter. Compare the actual volume of sealant placed in the well/borehole with the theoretical volume to verify the actual volume of sealant is equal to or exceeds the theoretical volume.

    c. Portland Type I/II cement shall be used for the plugging sealant. The water mixed with the cement to create the plugging sealant shall be potable water or of similar quality. Portland cement has a fundamental water demand of 5.2 gallons of water per 94-lb sack of cement. Up to a maximum of 6.0 gallons per 94-lb sack is acceptable to allow for greater pumpability.

    Pure bentonite powder ("90 barrel yield") is allowed as a cement additive by NMOSE and American Water Works Association (AWWA) guidelines. If a bentonite additive is used, the following rates and mixing guidelines shall be followed. For a rate or a mixing procedure other than that provided below, the NMOSE District V office must be contacted for pre-approval. Neither granular bentonite nor extended-yield bentonite shall be mixed with cement for the purpose of this plugging activity. When supplementing a cement slurry with bentonite powder, water demand for the mix increases at a rate of approximately 0.65 gallon of water for each 1% increment of bentonite bdwc (by dry weight cement) above the stated base water demand of 5.2 gallons water per 94-lb sack of cement for neat cement. Bentonite powder must be hydrated separately with its required increment of water before being mixed into the wet neat cement. If water is otherwise added to the combination of dry ingredients or the dry bentonite is blended into wet cement, the alkalinity of the cement will restrict the yield of the bentonite powder, resulting in excess free water in the slurry and excessive cement shrinkage upon curing.

    d. Placement of the sealant within the well/borehole shall be by pumping through a tremie pipe extended to near the bottom of the well/borehole and kept below the top of the slurry column (i.e., immersed in the slurry) as the well/borehole is plugged from bottom upwards in a manner that displaces the standing water column.

    e. Prior to, or upon completion of plugging, the well casing may be cut-off below grade as necessary to allow for approved construction onsite, provided a minimum six-inch thickness of reinforced abandonment plugging sealant or concrete completely covers the top of the cut-off

casing. Any remaining void to the surface may be filled with native soil, concrete, or asphalt as needed to match the surrounding surface material and blended with the surface topography to prevent ponding.

f. **Within 30 days after completion of well/borehole plugging, a complete Plugging Record shall be filed with the State Engineer** in accordance with Paragraph (3) of Subsection C of 19.27.4.30 NMAC for each well/boring plugged. The Well Plugging Record(s) shall be filed with the State Engineer at the NMOSE District V Office, 100 Gossett Drive, Suite A, Aztec, NM 87410. The required Plugging Record form is available at http://www.ose.state.nm.us/WR/forms.php.

11. In accordance with Subsection C of 19.27.4.30 NMAC, a well/borehole that does not encounter groundwater may be immediately plugged by filling with drill cuttings or clean native fill to within 10 feet of land surface and by plugging the remaining 10 feet to the land surface with a sealant approved by the Office of the State Engineer. A Plugging Record shall be filed with the State Engineer as described above.

12. Should another regulatory agency sharing jurisdiction of the project authorize, or by regulation require, more stringent requirements than stated herein, the more stringent procedure should be followed. These, among others, may include provisions regarding pre-authorization to proceed, type of methods and materials used, inspection, or prohibition of free discharge of any fluid or other material to or from the well that is related to the drilling and/or monitoring process.

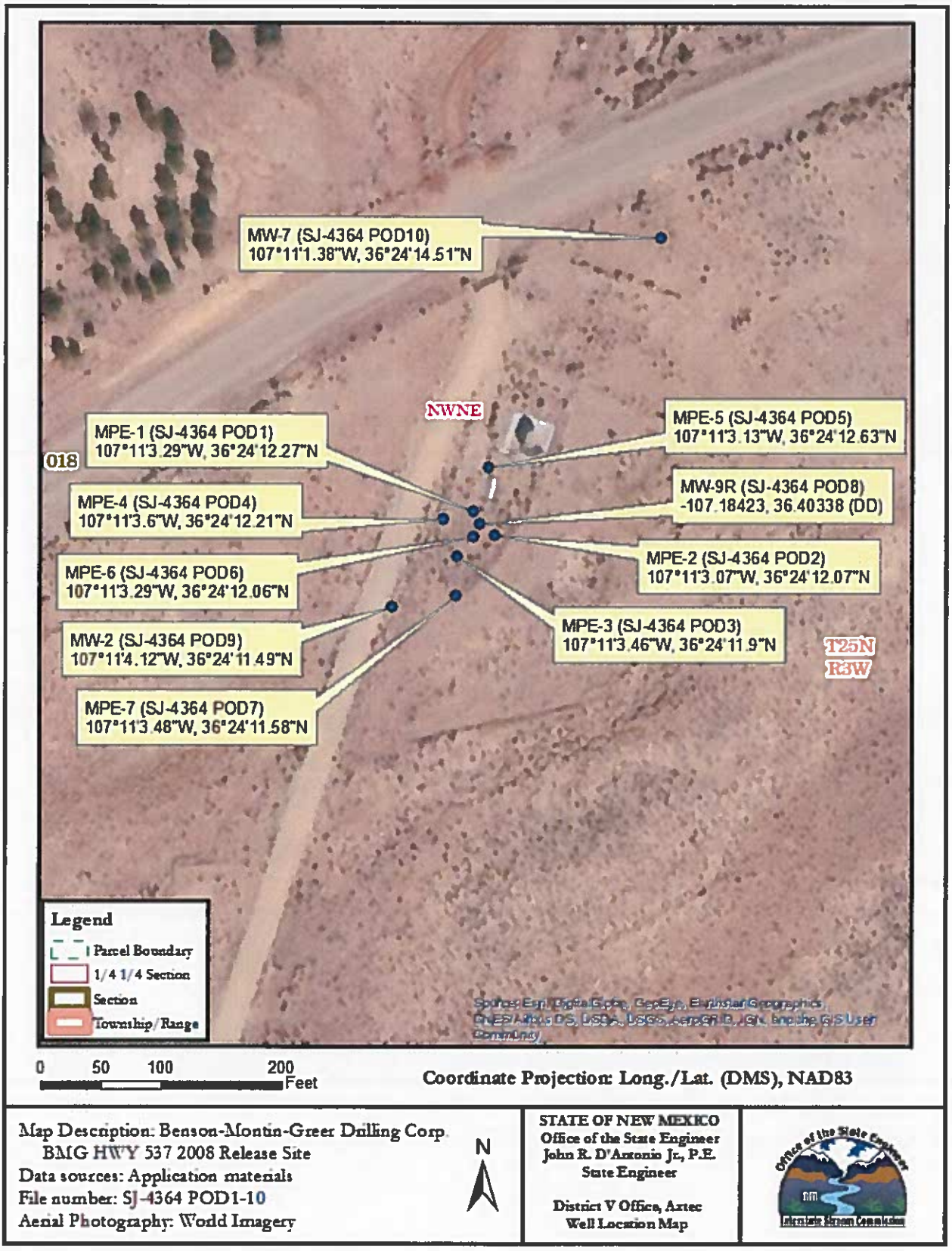
13. Pursuant to 72-12-3 NMSA 1978, the applicant has provided written documentation with the application, which the applicant claims as confirmation that access has been or will be granted for the aforementioned well(s) to be located on property owned by someone other than the well owner/applicant. NMOSE approval of this permit in no way infers the right of access to land not owned by the well owner/applicant.

14. The State Engineer retains jurisdiction of this permit.

The application for permitting one existing well and drilling three new well(s) SJ-4364 POD1-POD10 without a water right, submitted on August 21, 2019 , is hereby approved with the aforesaid conditions applied, when signed by an authorized designee of the State Engineer:

Witness my hand and seal this 27th day of August, A.D. 2019.
John R. D'Antonio, Jr., P.E., State Engineer

By: _____
Miles Juett, Assistant Watermaster
District V Office, Water Rights Division


MW-7 (SJ-4364 POD10)
107°11'1.38"W, 36°24'14.51"N
NWNE
MPE-1 (SJ-4364 POD1)
107°11'3.29"W, 36°24'12.27"N
018
MPE-5 (SJ-4364 POD5)
107°11'3.13"W, 36°24'12.63"N
MPE-4 (SJ-4364 POD4)
107°11'3.6"W, 36°24'12.21"N
MW-9R (SJ-4364 POD8)
-107.18423, 36.40338 (DD)
MPE-6 (SJ-4364 POD6)
107°11'3.29"W, 36°24'12.06"N
MPE-2 (SJ-4364 POD2)
107°11'3.07"W, 36°24'12.07"N
MW-2 (SJ-4364 POD9)
107°11'4.12"W, 36°24'11.49"N
MPE-3 (SJ-4364 POD3)
107°11'3.46"W, 36°24'11.9"N
T25N
R3W
MPE-7 (SJ-4364 POD7)
107°11'3.48"W, 36°24'11.58"N
Legend
Parcel Boundary
1/4 1/4 Section
Section
Township/Range
0 50 100 200
Feet
Coordinate Projection: Long./Lat. (DMS), NAD83
Map Description: Benson-Montin-Greer Drilling Corp.
BMG HWY 537 2008 Release Site
Data sources: Application materials
File number: SJ-4364 POD1-10
Aerial Photography: World Imagery
N
STATE OF NEW MEXICO
Office of the State Engineer
John R. D'Antonio Jr., P.E.
State Engineer
District V Office, Aztec
Well Location Map

OFFICE OF THE STATE ENGINEER/INTERSTATE STREAM COMMISSION – AZTEC OFFICE

OFFICIAL RECEIPT NUMBER: 5 - 6444 DATE: 8-21-2019 FILE NO.: TAD

TOTAL: 50.00 RECEIVED: fifty DOLLARS ☐ CASH: ☒ CHECK NO.: 13278

PAYOR: Animas Environmental Services, LLC ADDRESS: PO Box 8

CITY: Farmington STATE: NM ZIP: 87499 RECEIVED BY: MJ

INSTRUCTIONS: Indicate the number of actions to the left of the appropriate type of filing. Complete the receipt information. **Original** to payor; **pink** copy to Program Support/ASD; **yellow** copy remains in district office; and **goldenrod** copy to accompany application being filed. If a mistake is made, void the original and all copies and submit to Program Support/ASD as part of the daily deposit.

A. Ground Water Filing Fees

___	1. Change of Ownership of Water Right	$ 2.00
___	2. Application to Appropriate or Supplement Domestic 72-12-1 Well	$ 125.00
___	3. Application to Repair or Deepen 72-12-1 Well	$ 75.00
___	4. Application for Replacement 72-12-1 Well	$ 75.00
___	5. Application to Change Purpose of Use 72-12-1 Well	$ 75.00
___	6. Application for Stock Well/Temp. Use	$ 5.00
___	7. Application to Appropriate Irrigation, Municipal, or Commercial Use	$ 25.00
___	8. Declaration of Water Right	$ 1.00
___	9. Application for Supplemental Non 72-12-1 Well	$ 25.00
___	10. Application to Change Place or Purpose of Use Non 72-12-1 Well	$ 25.00
___	11. Application to Change Point of Diversion and Place and/or Purpose of Use from Surface Water to Ground Water	$ 50.00
___	12. Application to Change Point of Diversion and Place and/or Purpose of Use from Ground Water to Ground Water	$ 50.00
___	13. Application to Change Point of Diversion of Non 72-12-1 Well	$ 25.00
___	14. Application to Repair or Deepen Non 72-12-1 Well	$ 5.00
10	15. Application for Test, Expl. Observ. Well	$ 5.00
___	16. Application for Extension of Time	$ 25.00
___	17. Proof of Application to Beneficial Use	$ 25.00
___	18. Notice of Intent to Appropriate	$ 25.00

B. Surface Water Filing Fees

___	1. Change of Ownership of a Water Right	$ 5.00
___	2. Declaration of Water Right	$ 10.00
___	3. Amended Declaration	$ 25.00
___	4. Application to Change Point of Diversion and Place and/or Purpose of Use from Surface Water to Surface Water	$ 200.00
___	5. Application to Change Point of Diversion and Place and/or Purpose of Use from Ground Water to Surface Water	$ 200.00
___	6. Application to Change Point of Diversion	$ 100.00
___	7. Application to Change Place and/or Purpose of Use	$ 100.00
___	8. Application to Appropriate	$ 25.00
___	9. Notice of Intent to Appropriate	$ 25.00
___	10. Application for Extension of Time	$ 50.00
___	11. Supplemental Well to a Surface Right	$ 100.00
___	12. Return Flow Credit	$ 100.00
___	13. Proof of Completion of Works	$ 25.00
___	14. Proof of Application of Water to Beneficial Use	$ 25.00
___	15. Water Development Plan	$ 100.00
___	16. Declaration of Livestock Water Impoundment	$ 10.00
___	17. Application for Livestock Water Impoundment	$ 10.00

All fees are non-refundable.

C. Well Driller Fees

___	1. Application for Well Driller's License	$ 50.00
___	2. Application for Renewal of Well Driller's License	$ 50.00

D. Reproduction of Documents

___ @ 25¢/copy $____

___ Map(s) $____

E. Certification $____

F. *Credit Card Convenience Fee $____

G. Other_____ $____

Comments: HWY 537 2008 site

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
SJ-4364 POD8 MW-9R BMG 366	NA	SJ-4364 POD 8 MW-9R

WELL OWNER NAME(S)	PHONE (OPTIONAL)
BENSON-MONTIN-GREER DRILLING CORP (SITE NAME HWY 537 2008)	505-325-8874

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
4900 COLLEGE BOULEVARD	FARMINGTON	NM	87401

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
LATITUDE	36.40338			N
LONGITUDE	-107.18423			W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE

SOUTH SIDE OF NM HIGHWAY 537

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD 1186	RODNEY HAMMER	ENVIRO-DRILL, INC.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
09/05/19	09/06/19	38'	40'	31.0'

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☑ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 32.0'

DRILLING FLUID: ☐ AIR ☐ MUD ADDITIVES – SPECIFY:

DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☑ OTHER – SPECIFY: HSA

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
38	28	8	SCREEN	FTJ	2	SCH 40	.020
28	Ø	8	RISER	FTJ	2	SCH 40	

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
40	26.1	8	10-20 SILICA SAND	5.5	TREMIE
26.	22.9	8	3/8" BENT. CHIPS	1.0	
22.9	Ø	8		30.0 GAL.	

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 06/30/17)

FILE NO.	POD NO.	TRN NO.
LOCATION	WELL TAG ID NO.	PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
				Y N	
				Y N	
			See attached boring log	Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

☑ PUMP ☐ AIR LIFT ☐ BAILER ☐ OTHER – SPECIFY: Monitor well

TOTAL ESTIMATED WELL YIELD (gpm): N.a 0.00

5. TEST; RIG SUPERVISION

WELL TEST — TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION:

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

6. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

[signature] JOHN AGUILLE — 9.6.19

SIGNATURE OF DRILLER / PRINT SIGNEE NAME — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 06/30/2017)

FILE NO.	POD NO.	TRN NO.	
LOCATION		WELL TAG ID NO.	PAGE 2 OF 2

SOIL BORING LOG

Animas Environmental Services
604 W. Piñon St., Farmington, NM 87401
Tel. (505) 564-2281 animasenvironmental.com

Soil Boring No:
Monitor Well No: MW-9R
Project: BMG Hwy 537 2018 Release
Client: BMG
Location:
Driller: Enviodrill
Drilling Method: #3A
Depth to Water (ft): ~ 31.4 (9-6-19) Time Recorded: ~~Start 1030 End 1300~~ 1336
Date: 9-5-19
Latitude/Longitude: 36.40337, 107.18423
Datum:
Elevation:
Logged by: CL
Total Depth (ft): 40'

Depth (ft)	Sample Interval	Sample Type (SPT, Grab, etc)	Sample Time	Blow Count (per 3x6" intervals)	Soil Description TYPE, density/consistency, color, grain size, moisture, other (i.e. odor, staining)	USCS Symbol	OVM (ppm)	OVM Time	MW Schematic and Description
					Brown Sandy clay, No Staining Dry				5' Stickup
5'	5-6	SPT	10:45	6,7,5	Tan Brown, Sand, Dry, No Odor, No Stain, Loose	SW	0.0	12:12	↓ Surface
					Tan Brown, Sand, No Stains, Dry				
10'	10-11	SPT	10:50	4,4,5	Tan Brown, Sand, Dry, Med-Gr Grained, No Stain, No Odor Loose	SW	0.0	12:13	GSWT 22.3 ↓
					Tan Brown Sand, Dry, No Odor, No Stain				
15'	15-16	SPT	10:55	5,6,11	Tan Brown, Clayey Sand, Loose to Med Dens No Stain No Odor (Lab)	SC	0.0	12:14	2" PVC to Surface + 3' above
20'	20-21	SPT	11:00	7,6,7	Tan Brown, Sand Clay Coarse, Loose, Dry, No Odor	SW	0.0	12:15	
					No Staining				
					~~Refusal~~				
25'	25-26	SPT	11:05	4,5,5	Tan Brown Sand, Med Grained, Loose, Dry No Odor No Stain	SW	0.0	12:16	Bentonite 25.8-22.3
30'	30-31	SPT	11:11	4,3,3	Tan, Sand, Gray @ 31, Moist, Stain @ 31, Odor (Lab)	SW	1058	12:17	38 to 28 Screen →
~~35'~~	~~35-36~~	~~SPT~~	11:14	3,3,3	Tan Sand, M Grained, Saturated, Some Stain, Odor	SW	31.2	12:18	40-25.8 Sand →
40'	40-41	SPT	11:30	3,3,4	Tan Sand, Med Grained, Saturated, Some Odor No Stain w/ Lense of Clayey Sand (lab)	SW	12.4	12:19	Sump
					Total Depth 40', Set screen @ 28-38'.				Bottom

Soil Boring Log

Soil Boring No:

Monitor Well No: MW-9R

Animas Environmental Services
604 W. Piñon St., Farmington, NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

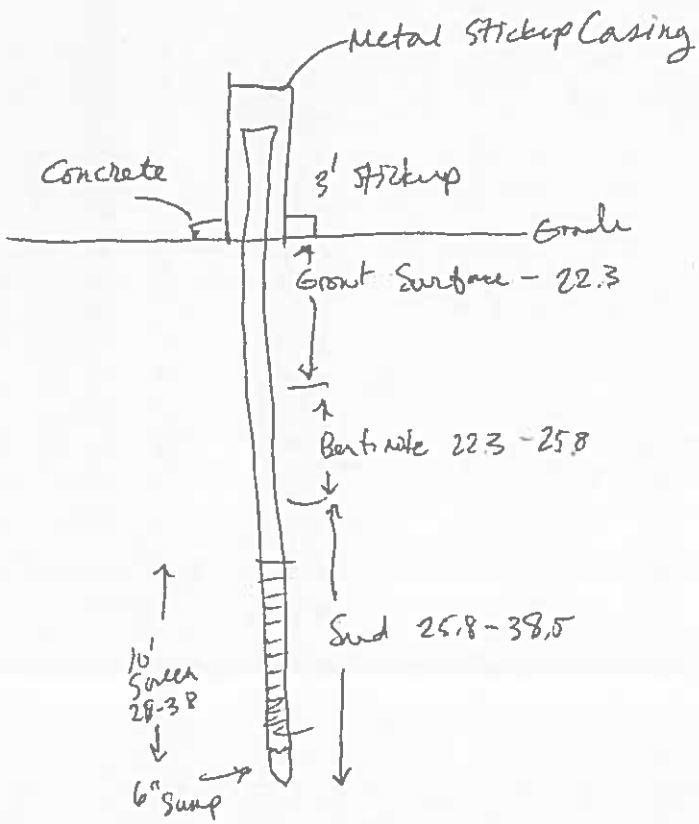
NOTES

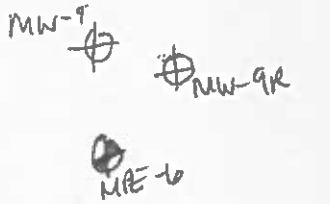
1625 - Mason Hawkins of Enterprise arrived on Location
1140 - Start MW Construction
1330 - MW Construction Complete

28-38 Screen 6" Sump
25.8 - 38 Sand
22.3 - 25.8 Bentonite Chips

9/6/19
Envirodrill returned and developed well for 1 hr.
- disposal into waste tank onsite.

SKETCH





East of MW-9 to maximize distance from Enterprise Buried Line

August 3, 2015

Appendix C

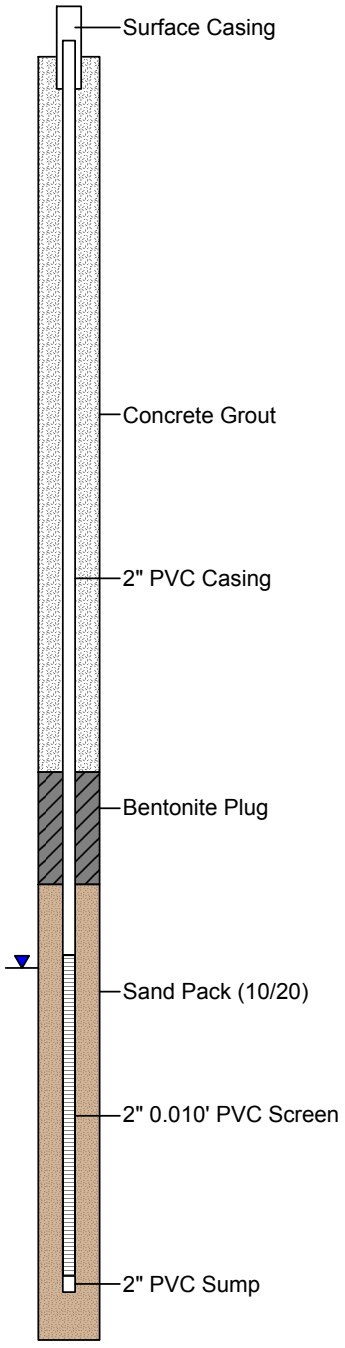
animas environmental services
Farmington, NM • Durango, CO
animasenvironmental.com

LOG OF: MW-9R

BENSON MONTIN GREER
HIGHWAY 537 2008 PIPELINE SPILL
RIO ARRIBA COUNTY, NEW MEXICO

Date Started	: 09/05/19	Latitude	: N36.40337°
Date Completed	: 09/05/19	Longitude	: W107.18423°
Hole Diameter	: 4.25 in.	Survey By	: GPS
Drilling Method	: H.S.A.	Logged By	: Corwin Lameman
Sampling Method	: Split Spoon		

Depth in Feet	Surf. Elev. 0	USCS	GRAPHIC	DESCRIPTION	Blow Count	PID (ppm)
0	0	SC		SANDY CLAY, very loose, well sorted, fine grained, brown, dry, no hydrocarbon odor or staining.		
2	-2					
4	-4				6 7 5	0.0
6	-6	SP		SAND, very loose to loose, well sorted, fine grained, brown, dry, no hydrocarbon odor or staining.		
8	-8					
10	-10	SC		SAND, very loose to loose, well sorted, fine grained, tan-brown, dry, no hydrocarbon odor or staining.	4 4 5	0.0
12	-12					
14	-14					
16	-16	SC		CLAYEY SAND, loose to medium dense, fine grained, tan-brown, dry, no hydrocarbon odor or staining.	5 6 11	0.0
18	-18					
20	-20	SP		SAND, loose, well sorted, fine grained, tan-brown, dry, no hydrocarbon odor or staining, lense of clay.	7 6 7	0.0
22	-22					
24	-24					
26	-26	SC		SAND, loose, well sorted, medium grained, tan-brown, dry, no hydrocarbon odor or staining.	4 5 5	0.0
28	-28					
30	-30	SP		SAND, very loose, well sorted, fine grained, tan-brown, dry, no hydrocarbon odor or staining. Gray Staining at 31 feet with odor.	4 3 3	1,058
32	-32					
34	-34					
36	-36	SP		SAND, loose, well sorted, fine grained, tan-brown, dry, some hydrocarbon odor and staining.	3 3 3	30.2
38	-38					
40	-40	SP		SAND, loose, well sorted, medium grained, tan-brown, wet, no hydrocarbon odor or staining, lense of clay.	3 3 4	12.4
42						



Appendix D

DEPTH TO GROUNDWATER MEASUREMENT FORM

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

Project: Groundwater Monitoring
Site: BMG
Location: Hwy 537 2008 Release
Tech: G. Broome & C. Lamerman

Project No.:
Date: 9-25-19
Time: 10:50 - 12:15
Form: 1 of 1

Well I.D.	Time	Depth to NAPL (ft.)	Depth to Water (ft.)	NAPL Thickness (ft.)	Notes / Observations
MW-2	11:48	—	DRY	—	0.75" well 30.98 Total Depth
MW-7	11:45	—	40.85	—	0.75" well
MW-9R	10:54	35.31	35.32	0.01	2" Well - Initial Bailer had NO NAPL! See Notes
MPE-1	11:36	36.19	38.11	1.92	2" Well
MPE-2	11:42	34.84	34.88	0.04	2" Well
MPE-3	11:29	34.66	36.57	1.91	2" Well
MPE-4	11:33	35.70	37.86	2.16	2" Well
MPE-5	~~11:39~~ 11:36	~~36.19~~ 37.43	~~38.11~~ 37.97	~~1.92~~ 0.54	2" Well
MPE-6	11:26	35.13	35.93	0.80	2" Well
MPE-7	11:32	—	33.12	—	2" Well

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

WATER SAMPLE COLLECTION FORM

Monitor Well No: MW-9R

Animas Environmental Services
624 E Comanche St., Farmington NM
Tel. (505) 564-2281 animasenvironmental.com

Site: Highway 537 2008 Spill
Location: Rio Arriba County, New Mexico
Project: Groundwater Monitoring and Sampling
Sampling Technician: CL/GB
Purge / No Purge:
Well Diameter (in): 2
Initial D.T.W. (ft): — **Time:** —
Confirm D.T.W. (ft): — **Time:** —
Final D.T.W. (ft): 36.84 **Time:** 11:19
If NAPL Present: **D.T.P.:** 35.31 **D.T.W.:** 35.32 **Thickness:** 0.01 **Time:** 10:54

Project No.: AES 080101
Date: 9-25-19
Arrival Time: 10:53
Air Temp:
T.O.C. Elev. (ft): TBS
Total Well Depth (ft): 38
(taken at initial gauging of all wells)
(taken prior to purging well)
(taken after sample collection)

Water Quality Parameters - Recorded During Well Purging See Notes!

YSI # 1 **Calibration Date:** 9-25-19 GB

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
10:59	14.5	1451	1.86	6.78	73.0	Initial	Clear / odor
11:01	13.6	1413	1.41	6.65	24.9	1.0 Gal	Tan Brown / odor
11:15	—	—	—	—	—	—	Samples Collected
							Low Recharge &
							Yield.

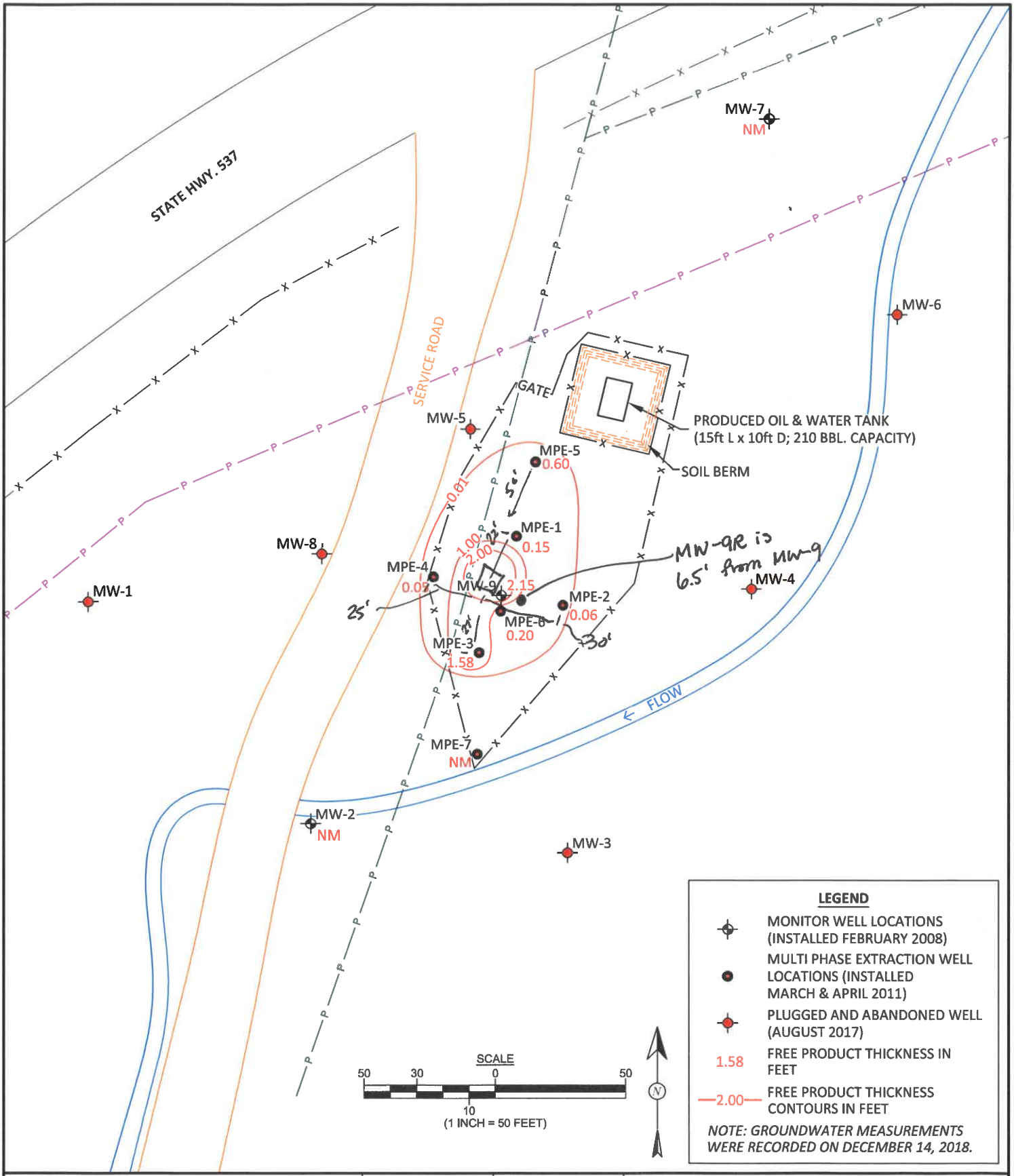
Analytical Parameters (include analysis method and number and type of sample containers)

See Abatement plan or Chain of Custody for Analytical Analysis and Containers

Disposal of Purged Water: Waste Tank onsite
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments: Calculated purge volume ≈ 4 Gallons. Initial Bailer had ~~Asbo~~ Absolutely NO CRUDE OIL or SHEEN!

revised: 08/10/09



animas environmental services
Farmington, NM • Durango, CO
animasenvironmental.com

DRAWN BY: C. Lameman	**DATE DRAWN:** March 6, 2017
REVISIONS BY: C. Lameman	**DATE REVISED:** February 19, 2019
CHECKED BY: E. McNally	**DATE CHECKED:** February 19, 2019
APPROVED BY: E. McNally	**DATE APPROVED:** February 19, 2019

FIGURE 3B

RESIDUAL NAPL THICKNESS CONTOURS
DECEMBER 2018
BMG HIGHWAY 537
LLAVES 2008 PIPELINE OIL RELEASE
NW¼ NE¼, SECTION 18, T25N, R3W
RIO ARRIBA COUNTY, NEW MEXICO
N36.40357, W107.18422

Appendix E

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

September 16, 2019

Elizabeth McNally

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

RE: BMG Hwy 537 2008 Release OrderNo.: 1909341

Dear Elizabeth McNally:

Hall Environmental Analysis Laboratory received 2 sample(s) on 9/7/2019 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 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 #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-9R@15'
Project: BMG Hwy 537 2008 Release
Collection Date: 9/5/2019 10:55:00 AM
Lab ID: 1909341-001 **Matrix:** SOIL
Received Date: 9/7/2019 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	15	9.8		mg/Kg	1	9/12/2019 9:28:54 AM	47410
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/12/2019 9:28:54 AM	47410
Surr: DNOP	107	70-130		%Rec	1	9/12/2019 9:28:54 AM	47410
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/11/2019 5:12:53 PM	47395
Surr: BFB	84.1	77.4-118		%Rec	1	9/11/2019 5:12:53 PM	47395
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	9/11/2019 5:12:53 PM	47395
Toluene	ND	0.049		mg/Kg	1	9/11/2019 5:12:53 PM	47395
Ethylbenzene	ND	0.049		mg/Kg	1	9/11/2019 5:12:53 PM	47395
Xylenes, Total	ND	0.097		mg/Kg	1	9/11/2019 5:12:53 PM	47395
Surr: 4-Bromofluorobenzene	89.6	80-120		%Rec	1	9/11/2019 5:12:53 PM	47395

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-9R@30'
Project: BMG Hwy 537 2008 Release
Collection Date: 9/5/2019 11:11:00 AM
Lab ID: 1909341-002 **Matrix:** SOIL
Received Date: 9/7/2019 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	2100	100		mg/Kg	10	9/12/2019 9:51:01 AM	47410
Motor Oil Range Organics (MRO)	880	520		mg/Kg	10	9/12/2019 9:51:01 AM	47410
Surr: DNOP	0	70-130	S	%Rec	10	9/12/2019 9:51:01 AM	47410
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	130	24		mg/Kg	5	9/12/2019 12:02:39 PM	47395
Surr: BFB	385	77.4-118	S	%Rec	5	9/12/2019 12:02:39 PM	47395
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.12		mg/Kg	5	9/12/2019 12:02:39 PM	47395
Toluene	ND	0.24		mg/Kg	5	9/12/2019 12:02:39 PM	47395
Ethylbenzene	ND	0.24		mg/Kg	5	9/12/2019 12:02:39 PM	47395
Xylenes, Total	1.6	0.47		mg/Kg	5	9/12/2019 12:02:39 PM	47395
Surr: 4-Bromofluorobenzene	100	80-120		%Rec	5	9/12/2019 12:02:39 PM	47395

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1909341**

16-Sep-19

Client: Animas Environmental Services

Project: BMG Hwy 537 2008 Release

Sample ID: **LCS-47410**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **47410**	RunNo: **62854**
Prep Date: **9/11/2019**	Analysis Date: **9/12/2019**	SeqNo: **2141591** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.00	0	93.3	63.9	124			
Surr: DNOP	4.6		5.000		91.6	70	130			

Sample ID: **MB-47410**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **47410**	RunNo: **62854**
Prep Date: **9/11/2019**	Analysis Date: **9/12/2019**	SeqNo: **2141592** 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	9.2		10.00		91.7	70	130			

Sample ID: **LCS-47446**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **47446**	RunNo: **62893**
Prep Date: **9/12/2019**	Analysis Date: **9/13/2019**	SeqNo: **2143741** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.6		5.000		112	70	130			

Sample ID: **MB-47446**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **47446**	RunNo: **62893**
Prep Date: **9/12/2019**	Analysis Date: **9/13/2019**	SeqNo: **2143742** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	12		10.00		118	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1909341**

16-Sep-19

Client: Animas Environmental Services

Project: BMG Hwy 537 2008 Release

Sample ID: **MB-47395**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **47395**	RunNo: **62824**
Prep Date: **9/10/2019**	Analysis Date: **9/11/2019**	SeqNo: **2141121** 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	900		1000		90.1	77.4	118			

Sample ID: **LCS-47395**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **47395**	RunNo: **62824**
Prep Date: **9/10/2019**	Analysis Date: **9/11/2019**	SeqNo: **2141122** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	5.0	25.00	0	86.0	80	120			
Surr: BFB	920		1000		91.8	77.4	118			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1909341**

16-Sep-19

Client: Animas Environmental Services

Project: BMG Hwy 537 2008 Release

Sample ID: **MB-47395**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **47395**	RunNo: **62824**
Prep Date: **9/10/2019**	Analysis Date: **9/11/2019**	SeqNo: **2141150** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.99		1.000		99.5	80	120			

Sample ID: **LCS-47395**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **47395**	RunNo: **62824**
Prep Date: **9/10/2019**	Analysis Date: **9/11/2019**	SeqNo: **2141151** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.91	0.025	1.000	0	90.9	80	120			
Toluene	0.95	0.050	1.000	0	95.1	80	120			
Ethylbenzene	0.96	0.050	1.000	0	95.7	80	120			
Xylenes, Total	2.9	0.10	3.000	0	95.7	80	120			
Surr: 4-Bromofluorobenzene	0.87		1.000		87.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: Animas Environmental Work Order Number: 1909341 RcptNo: 1

Received By: Yazmine Garduno 9/7/2019 1:30:00 PM Yazmine Garduno

Completed By: Yazmine Garduno 9/9/2019 9:48:00 AM Yazmine Garduno

Reviewed By: LB 9/9/19

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☐ No ☐ NA ☑
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☐ No ☑ NA ☐
5. Sample(s) in proper container(s)? Not required Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. 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: DAD 9/9/19

Special Handling (if applicable)

15. 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: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	7.3	Good				

Chain-of-Custody Record

Client: Animas Environmental Services

Mailing Address: 624 E. Comanche St.
Farmington NM 87401

Phone #: 505.564.2281

email or Fax#: emcnally@animasenvironmental.com

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: BMG HWY 537 2008 Release

Project #:

Project Manager: E. McNally

Sampler: CL

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 7.0 +0.3 = 7.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 1909341	BTEX (8021)	TPH (GRO, DRO, MRO) (8015)
9-5-19	10:55	Soil	~~MW-9~~ MW-9R @ 15'	2-4ozjars	Cool	-001	X	X
9-5-19	11:11	Soil	MW-9R @ 30'	2-4ozjars	Cool	-002	X	X

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
9/6/19	1703				9/10/19	1703
9/6/19	1746			Courier	9/7/19	0930

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

October 21, 2019

Elizabeth McNally

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

RE: BMG Hwy 537 -2008 OrderNo.: 1909E81

Dear Elizabeth McNally:

Hall Environmental Analysis Laboratory received 1 sample(s) on 9/26/2019 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 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 #NM0901

Sincerely,

Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-9R
Project: BMG Hwy 537 -2008
Collection Date: 9/25/2019 11:15:00 AM
Lab ID: 1909E81-001
Matrix: AQUEOUS
Received Date: 9/26/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 200.8: METALS						Analyst: **ELS**	
Antimony	ND	0.0010		mg/L	1	10/9/2019 10:40:31 AM	47918
Arsenic	0.0016	0.0010		mg/L	1	10/9/2019 10:40:31 AM	47918
Copper	0.0057	0.0010		mg/L	1	10/11/2019 12:27:31 PM	47918
Lead	0.0015	0.00050		mg/L	1	10/9/2019 10:40:31 AM	47918
Selenium	0.0011	0.0010		mg/L	1	10/9/2019 10:40:31 AM	47918
Thallium	ND	0.00050		mg/L	1	10/9/2019 10:40:31 AM	47918
Uranium	0.0061	0.00050		mg/L	1	10/9/2019 10:40:31 AM	47918
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Fluoride	ND	0.50		mg/L	5	10/10/2019 5:39:06 PM	R63603
Chloride	110	10		mg/L	20	9/27/2019 3:45:26 AM	R63250
Nitrogen, Nitrite (As N)	ND	0.50		mg/L	5	9/27/2019 3:33:05 AM	R63250
Nitrogen, Nitrate (As N)	ND	0.50		mg/L	5	9/27/2019 3:33:05 AM	R63250
Sulfate	76	2.5		mg/L	5	9/27/2019 3:33:05 AM	R63250
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	1040	200	*D	mg/L	1	10/2/2019 5:37:00 PM	47856
SM4500-H+B / 9040C: PH						Analyst: **JRR**	
pH	7.44		H	pH units	1	10/1/2019 10:48:09 AM	R63331
EPA METHOD 200.7: METALS						Analyst: **bcv**	
Aluminum	3.7	0.10	*	mg/L	5	10/7/2019 7:24:35 PM	47918
Barium	0.31	0.0020		mg/L	1	10/7/2019 6:22:47 PM	47918
Beryllium	ND	0.0020		mg/L	1	10/7/2019 6:22:47 PM	47918
Boron	0.078	0.040		mg/L	1	10/7/2019 6:22:47 PM	47918
Cadmium	ND	0.0020		mg/L	1	10/7/2019 6:22:47 PM	47918
Chromium	ND	0.0060		mg/L	1	10/7/2019 6:22:47 PM	47918
Cobalt	ND	0.0060		mg/L	1	10/7/2019 6:22:47 PM	47918
Iron	4.2	0.10	*	mg/L	5	10/7/2019 7:24:35 PM	47918
Manganese	3.3	0.010	*	mg/L	5	10/7/2019 7:24:35 PM	47918
Molybdenum	ND	0.0080		mg/L	1	10/7/2019 6:22:47 PM	47918
Nickel	ND	0.010		mg/L	1	10/7/2019 6:22:47 PM	47918
Silver	ND	0.0050		mg/L	1	10/7/2019 6:22:47 PM	47918
Zinc	0.017	0.010		mg/L	1	10/7/2019 6:22:47 PM	47918
EPA METHOD 245.1: MERCURY						Analyst: **rde**	
Mercury	ND	0.00020		mg/L	1	9/30/2019 4:23:30 PM	47813
EPA METHOD 8015M/D: DIESEL RANGE						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	10/1/2019 9:53:56 PM	47812
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	10/1/2019 9:53:56 PM	47812

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-9R
Project: BMG Hwy 537 -2008
Collection Date: 9/25/2019 11:15:00 AM
Lab ID: 1909E81-001
Matrix: AQUEOUS
Received Date: 9/26/2019 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE						Analyst:	**BRM**
Surr: DNOP	115	70-130		%Rec	1	10/1/2019 9:53:56 PM	47812
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	0.87	0.050		mg/L	1	9/30/2019 8:53:13 PM	G63313
Surr: BFB	289	65.8-143	S	%Rec	1	9/30/2019 8:53:13 PM	G63313
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	1.0		µg/L	1	10/1/2019 2:09:58 PM	B63336
Toluene	ND	1.0		µg/L	1	10/1/2019 2:09:58 PM	B63336
Ethylbenzene	56	1.0		µg/L	1	10/1/2019 2:09:58 PM	B63336
Xylenes, Total	80	2.0		µg/L	1	10/1/2019 2:09:58 PM	B63336
Surr: 4-Bromofluorobenzene	146	80-120	S	%Rec	1	10/1/2019 2:09:58 PM	B63336
TOTAL PHENOLICS BY SW-846 9067						Analyst:	**CFC**
Phenolics	4.2	2.5		µg/L	1	10/14/2019	48115

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

October 03, 2019

09E81

Hall Environmental Analysis Laboratory

Sample Delivery Group: L1144075

Samples Received: 09/27/2019

Project Number:

Description:

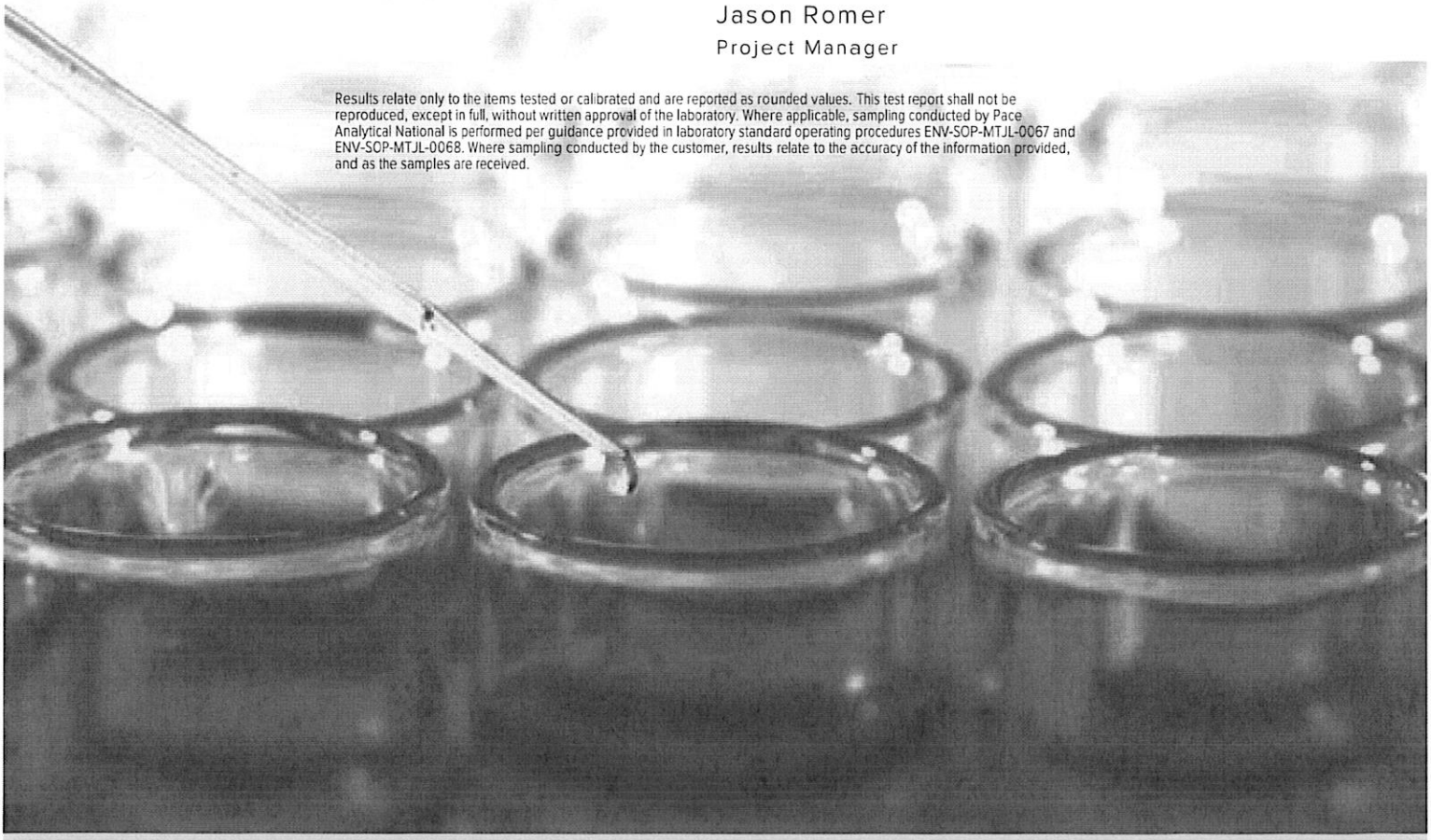
Report To:

4901 Hawkins NE

Albuquerque, NM 87109

Entire Report Reviewed By:

Jason Romer
Project Manager



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ONE LAB. NATIONWIDE.

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1909E81-001F MW-9R L1144075-01 WW			Collected by	Collected date/time 09/25/19 11:15	Received date/time 09/27/19 08:45	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500CN E-2011	WG1354837	1	10/01/19 15:00	10/02/19 11:59	SDL	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Jason Romer
Project Manager

Wet Chemistry by Method 4500CN E-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Cyanide	ND		0.00500	1	10/02/2019 11:59	WG1354837

Method Blank (MB)

(MB) R3456795-1 10/02/19 11:47

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Cyanide	U		0.00180	0.00500

L1144706-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1144706-04 10/02/19 12:16 • (DUP) R3456795-8 10/02/19 12:17

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Cyanide	0.00520	0.00339	1	42.1	J P1	20

Laboratory Control Sample (LCS)

(LCS) R3456795-2 10/02/19 11:48

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cyanide	0.100	0.105	105	85.0-115	

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 5]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

D038

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

SUB CONTRATOR: ESC PACE	COMPANY: ESC PACE	PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Mt. Juliet, TN 37122			

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	1909E81-001F	MW-9R	500AMBHDP F-NAOH	Aqueous	9/25/2019 11:15:00 AM	1	Total Cyanide >12

L1144675-01

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
[signature]	9/26/2019	9:30 AM	[signature]	9/27/19	8:56
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples 1.4/2.2/2.2 Attempt to Cool ?
Comments: COC RAD SCREEN: <0.5 mR/hr

4510 1268 9852 Total 1=1

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: HALLENVANM	L1144675	
Cooler Received/Opened On: 9/27/19 Temperature:	1.6	
Received By: Cole Medley		
Signature:		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?		✓	
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

Pace Analytical®
www.pacelabs.com

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

October 18, 2019

Ms. Anne Thorne
Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109

RE: Project: 1909E81
Pace Project No.: 30327369

Dear Ms. Thorne:
Enclosed are the analytical results for sample(s) received by the laboratory on October 02, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jacquelyn Collins
jacquelyn.collins@pacelabs.com
(724)850-5612
Project Manager

Enclosures

cc: Ms. Jackie Ball, Hall Environmental Analysis Laboratory
Felicia Candelario, Hall Environmental Analysis Laboratory
Michelle Garcia, Hall Environmental Analysis Laboratory

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 1909E81
Pace Project No.: 30327369

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 1909E81
Pace Project No.: 30327369

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30327369001	1909E81-001G MW-9R	Water	09/25/19 11:15	10/02/19 09:30

Pace Analytical Services, LLC
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Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 1909E81
Pace Project No.: 30327369

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30327369001	1909E81-001G MW-9R	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA

Pace Analytical Services, LLC
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Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1909E81
Pace Project No.: 30327369

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: Hall Environmental Analysis Laboratory
Date: October 18, 2019

General Information:
1 sample was analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1909E81
Pace Project No.: 30327369

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: Hall Environmental Analysis Laboratory
Date: October 18, 2019

General Information:
1 sample was analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, LLC
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Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1909E81
Pace Project No.: 30327369

Sample: 1909E81-001G MW-9R **Lab ID: 30327369001** Collected: 09/25/19 11:15 Received: 10/02/19 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.12 ± 0.705 (0.926) C:NA T:81%**	pCi/L	10/16/19 14:35	13982-63-3	
Radium-228	EPA 904.0	**1.99 ± 0.621 (0.807) C:70% T:86%**	pCi/L	10/17/19 11:50	15262-20-1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1909E81
Pace Project No.: 30327369

QC Batch: 364876 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30327369001

METHOD BLANK: 1770158 Matrix: Water
Associated Lab Samples: 30327369001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.0445 ± 0.203 (0.414) C:NA T:89%	pCi/L	10/16/19 14:14	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1909E81
Pace Project No.: 30327369

QC Batch: 364880 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30327369001

METHOD BLANK: 1770165 Matrix: Water
Associated Lab Samples: 30327369001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.274 ± 0.396 (0.853) C:71% T:81%	pCi/L	10/17/19 11:50	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 1909E81
Pace Project No.: 30327369

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. Is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.
Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

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

SUB CONTRATOR: Pace Analytical-PA	COMPANY: Pace Analytical Services, Inc.	PHONE: (724) 850-5600	FAX: (724) 850-5601
ADDRESS: 1638 Roseytown Rd Ste 2,3,4		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Greensburg, PA 15601			

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	1909E81-001G	MW-9R	1LHDPEHNO 3	Aqueous	9/25/2019 11:15:00 AM	2	Radium 226/228 GW Ac 09/26/19 GC

WO# : 30327369

30327369

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By:	Date: 9/26/2019	Time: 9:30 AM	Received By:	Date: 10-2-19	Time: 0930
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples _____ °C Attempt to Cool? _____
Comments: _____

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Hall Env. Project # # 30327369

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label ET
LIMS Login ET

Tracking #: 7744 3192 9133

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Thermometer Used N/A Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp _____ °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# 1003581 / Date and Initials of person examining contents: ET 10-2-19
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:		✓		
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pH<2
All containers meet method preservation requirements.	✓			Initial when completed ET / Date/time of preservation / Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present		✓		
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: ET / Date: 10-2-19

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1909E81**

21-Oct-19

Client: Animas Environmental Services

Project: BMG Hwy 537 -2008

Sample ID: **MB-47918**	SampType: **MBLK**	TestCode: **EPA Method 200.7: Metals**
Client ID: **PBW**	Batch ID: **47918**	RunNo: **63483**
Prep Date: **10/3/2019**	Analysis Date: **10/7/2019**	SeqNo: **2168828** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020								
Barium	ND	0.0020								
Beryllium	ND	0.0020								
Cadmium	ND	0.0020								
Iron	ND	0.020								
Zinc	ND	0.010								

Sample ID: **LLLCS-47918**	SampType: **LCSLL**	TestCode: **EPA Method 200.7: Metals**
Client ID: **BatchQC**	Batch ID: **47918**	RunNo: **63483**
Prep Date: **10/3/2019**	Analysis Date: **10/7/2019**	SeqNo: **2168830** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020	0.01000	0	121	50	150			
Barium	0.0023	0.0020	0.002000	0	113	50	150			
Beryllium	ND	0.0020	0.002000	0	95.2	50	150			
Cadmium	ND	0.0020	0.002000	0	94.3	50	150			
Iron	ND	0.020	0.02000	0	81.7	50	150			
Zinc	0.014	0.010	0.01000	0	140	50	150			

Sample ID: **LCS-47918**	SampType: **LCS**	TestCode: **EPA Method 200.7: Metals**
Client ID: **LCSW**	Batch ID: **47918**	RunNo: **63483**
Prep Date: **10/3/2019**	Analysis Date: **10/7/2019**	SeqNo: **2168832** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.54	0.020	0.5000	0	108	85	115			
Barium	0.47	0.0020	0.5000	0	94.4	85	115			
Beryllium	0.49	0.0020	0.5000	0	98.4	85	115			
Cadmium	0.49	0.0020	0.5000	0	98.5	85	115			
Iron	0.49	0.020	0.5000	0	98.4	85	115			
Zinc	0.49	0.010	0.5000	0	98.1	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1909E81**

21-Oct-19

Client: Animas Environmental Services

Project: BMG Hwy 537 -2008

Sample ID: **MB-47918**	SampType: **MBLK**	TestCode: **EPA 200.8: Metals**
Client ID: **PBW**	Batch ID: **47918**	RunNo: **63536**
Prep Date: **10/3/2019**	Analysis Date: **10/9/2019**	SeqNo: **2170779** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010								
Arsenic	ND	0.0010								
Lead	ND	0.00050								
Selenium	ND	0.0010								
Thallium	ND	0.00050								
Uranium	ND	0.00050								

Sample ID: **LLLCS-47918**	SampType: **LCSLL**	TestCode: **EPA 200.8: Metals**
Client ID: **BatchQC**	Batch ID: **47918**	RunNo: **63536**
Prep Date: **10/3/2019**	Analysis Date: **10/9/2019**	SeqNo: **2170781** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.0010	0.001000	0	89.3	50	150			
Arsenic	0.0011	0.0010	0.001000	0	109	50	150			
Lead	0.00052	0.00050	0.0005000	0	104	50	150			
Selenium	0.0011	0.0010	0.001000	0	107	50	150			
Thallium	ND	0.00050	0.0005000	0	85.9	50	150			
Uranium	0.00051	0.00050	0.0005000	0	101	50	150			

Sample ID: **LCS-47918**	SampType: **LCS**	TestCode: **EPA 200.8: Metals**
Client ID: **LCSW**	Batch ID: **47918**	RunNo: **63536**
Prep Date: **10/3/2019**	Analysis Date: **10/9/2019**	SeqNo: **2170783** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.026	0.0010	0.02500	0	103	85	115			
Arsenic	0.023	0.0010	0.02500	0	92.0	85	115			
Lead	0.012	0.00050	0.01250	0	95.4	85	115			
Selenium	0.022	0.0010	0.02500	0	89.3	85	115			
Thallium	0.012	0.00050	0.01250	0	93.0	85	115			
Uranium	0.012	0.00050	0.01250	0	94.2	85	115			

Sample ID: **MB-47918**	SampType: **MBLK**	TestCode: **EPA 200.8: Metals**
Client ID: **PBW**	Batch ID: **47918**	RunNo: **63621**
Prep Date: **10/3/2019**	Analysis Date: **10/11/2019**	SeqNo: **2173469** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Copper	ND	0.0010								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1909E81**
21-Oct-19

Client: Animas Environmental Services
Project: BMG Hwy 537 -2008

Sample ID: **LLLCS-47918**	SampType: **LCSLL**	TestCode: **EPA 200.8: Metals**
Client ID: **BatchQC**	Batch ID: **47918**	RunNo: **63621**
Prep Date: **10/3/2019**	Analysis Date: **10/11/2019**	SeqNo: **2173491** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Copper	0.0010	0.0010	0.001000	0	102	50	150			

Sample ID: **LCS-47918**	SampType: **LCS**	TestCode: **EPA 200.8: Metals**
Client ID: **LCSW**	Batch ID: **47918**	RunNo: **63621**
Prep Date: **10/3/2019**	Analysis Date: **10/11/2019**	SeqNo: **2173493** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Copper	0.024	0.0010	0.02500	0	95.2	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1909E81**

21-Oct-19

Client: Animas Environmental Services

Project: BMG Hwy 537 -2008

Sample ID: **MB-47813**	SampType: **MBLK**	TestCode: **EPA Method 245.1: Mercury**
Client ID: **PBW**	Batch ID: **47813**	RunNo: **63308**
Prep Date: **9/30/2019**	Analysis Date: **9/30/2019**	SeqNo: **2160440** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID: **LCS-47813**	SampType: **LCS**	TestCode: **EPA Method 245.1: Mercury**
Client ID: **LCSW**	Batch ID: **47813**	RunNo: **63308**
Prep Date: **9/30/2019**	Analysis Date: **9/30/2019**	SeqNo: **2160441** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	103	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1909E81**

21-Oct-19

Client: Animas Environmental Services

Project: BMG Hwy 537 -2008

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R63250**	RunNo: **63250**
Prep Date:	Analysis Date: **9/26/2019**	SeqNo: **2158467** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R63250**	RunNo: **63250**
Prep Date:	Analysis Date: **9/26/2019**	SeqNo: **2158468** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.7	0.50	5.000	0	94.4	90	110			
Nitrogen, Nitrite (As N)	0.96	0.10	1.000	0	96.0	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	98.6	90	110			
Sulfate	9.8	0.50	10.00	0	98.1	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R63603**	RunNo: **63603**
Prep Date:	Analysis Date: **10/10/2019**	SeqNo: **2173172** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R63603**	RunNo: **63603**
Prep Date:	Analysis Date: **10/10/2019**	SeqNo: **2173173** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.54	0.10	0.5000	0	109	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1909E81**
21-Oct-19

Client: Animas Environmental Services
Project: BMG Hwy 537 -2008

Sample ID: **MB-47812**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **PBW**	Batch ID: **47812**	RunNo: **63328**
Prep Date: **9/30/2019**	Analysis Date: **10/1/2019**	SeqNo: **2161909** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	1.0		1.000		104	70	130			

Sample ID: **LCS-47812**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **LCSW**	Batch ID: **47812**	RunNo: **63328**
Prep Date: **9/30/2019**	Analysis Date: **10/1/2019**	SeqNo: **2161973** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.7	1.0	5.000	0	114	71.8	135			
Surr: DNOP	0.50		0.5000		101	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1909E81**

21-Oct-19

Client: Animas Environmental Services

Project: BMG Hwy 537 -2008

Sample ID: **RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW**	Batch ID: **G63313**	RunNo: **63313**
Prep Date:	Analysis Date: **9/30/2019**	SeqNo: **2160630** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	19		20.00		97.0	65.8	143			

Sample ID: **2.5UG GRO LCS**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSW**	Batch ID: **G63313**	RunNo: **63313**
Prep Date:	Analysis Date: **9/30/2019**	SeqNo: **2160631** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.49	0.050	0.5000	0	98.7	73.6	119			
Surr: BFB	22		20.00		112	65.8	143			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1909E81**

21-Oct-19

Client: Animas Environmental Services

Project: BMG Hwy 537 -2008

Sample ID: **RB**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBW**	Batch ID: **B63313**	RunNo: **63313**
Prep Date:	Analysis Date: **9/30/2019**	SeqNo: **2160656** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	19		20.00		96.3	80	120			

Sample ID: **100NG BTEX LCS**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSW**	Batch ID: **B63313**	RunNo: **63313**
Prep Date:	Analysis Date: **9/30/2019**	SeqNo: **2160657** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	20		20.00		101	80	120			

Sample ID: **RB**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBW**	Batch ID: **B63336**	RunNo: **63336**
Prep Date:	Analysis Date: **10/1/2019**	SeqNo: **2162464** 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	20		20.00		98.8	80	120			

Sample ID: **100NG BTEX LCS**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSW**	Batch ID: **B63336**	RunNo: **63336**
Prep Date:	Analysis Date: **10/1/2019**	SeqNo: **2162465** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	97.0	80	120			
Toluene	20	1.0	20.00	0	98.8	80	120			
Ethylbenzene	20	1.0	20.00	0	98.9	80	120			
Xylenes, Total	59	2.0	60.00	0	97.7	80	120			
Surr: 4-Bromofluorobenzene	21		20.00		103	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1909E81**

21-Oct-19

Client: Animas Environmental Services

Project: BMG Hwy 537 -2008

Sample ID: **MB-48115**	SampType: **MBLK**	TestCode: **Total Phenolics by SW-846 9067**
Client ID: **PBW**	Batch ID: **48115**	RunNo: **63666**
Prep Date: **10/14/2019**	Analysis Date: **10/14/2019**	SeqNo: **2175491** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics	ND	2.5								

Sample ID: **LCS-48115**	SampType: **LCS**	TestCode: **Total Phenolics by SW-846 9067**
Client ID: **LCSW**	Batch ID: **48115**	RunNo: **63666**
Prep Date: **10/14/2019**	Analysis Date: **10/14/2019**	SeqNo: **2175492** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics	18	2.5	20.00	0	90.5	57.7	149			

Sample ID: **LCSD-48115**	SampType: **LCSD**	TestCode: **Total Phenolics by SW-846 9067**
Client ID: **LCSS02**	Batch ID: **48115**	RunNo: **63666**
Prep Date: **10/14/2019**	Analysis Date: **10/14/2019**	SeqNo: **2175493** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phenolics	19	2.5	20.00	0	94.5	57.7	149	4.28	21.7	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1909E81**

21-Oct-19

Client: Animas Environmental Services

Project: BMG Hwy 537 -2008

Sample ID: **MB-47856**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **47856**	RunNo: **63371**
Prep Date: **10/1/2019**	Analysis Date: **10/2/2019**	SeqNo: **2163681** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: **LCS-47856**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **47856**	RunNo: **63371**
Prep Date: **10/1/2019**	Analysis Date: **10/2/2019**	SeqNo: **2163682** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	999	20.0	1000	0	99.9	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: Animas Environmental Work Order Number: 1909E81 RcptNo: 1

Received By: **Desiree Dominguez** 9/26/2019 8:15:00 AM DD

Completed By: **Michelle Garcia** 9/26/2019 9:29:33 AM Michelle Garcia

Reviewed By: ENM 9/26/19

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

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

# of preserved bottles checked for pH: 5 (1) (<2 or >12 unless noted)
Adjusted? yes
Checked by: DM 9/26/19

Special Handling (if applicable)

15. 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: ____

16. Additional remarks: ~~For~~ DM added ~ 2.0 mL of HNO_3 to sample 0016. for acceptable PH. DM 9/26/19
17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.4	Good	Yes			
2	0.7	Good	Yes			
3	1.1	Good	Yes			

Chain-of-Custody Record

Client: Animas Environmental Services

Mailing Address: P.O. Box 8
Farmington, NM 87499-0008

Phone #: 505-564-2281

Email or Fax#: emcnally@animasenvironmental.com

QA/QC Package:

X Standard ☐ Level 4 (Full Validation)

Accreditation:

☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:

X Standard ☐ Rush

Project Name:
BMG Hwy 537 - 2008

Project #:

Project Manager:
Elizabeth McNally

Sampler: GB / CL

On Ice: ☒ Yes ☐ No 1.1±0.3=1.4°c

Sample Temperature: 0.4±0.3=0.7°c, 0.8±0.3=1.1°c

HALL ENVIRONMENTAL ANALYSIS LABORATORY

4901 Hawkins NE - Albuquerque, NM 8710[illegible]

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	Metals	Anions	Cyanide	Nitrates/Nitrite	Radium 226 & 228	Phenols	BTEX 8021	TPH (GRO, DRO, MRO) 8015	SEE NOTE BELOW NOTE			Air Bubbles (Y or N)
						1909E81												
9-25-19	11:15	H2O	MW-9R	(6) 40 mL VOAs (1) 250 mL Amber (1) 250 mL plast (1) 500mL plastic (1) 250 mL Amber plas (1) 500mL plastic (2) 1 L plastic (1) 1L Amber Glass	(6) HCl (1) non (1) HN03 (1) non (1) NaOH (1) H2S04 (2) HN03 (1) H2S04	-001	X	X	X	X	X	X	X	X	X			

Date:	Time:	Relinquished by:	Received by:	Date	Time
9/25/19	1536	[signature]	[signature]	9/25/19	1636
Date:	Time:	Relinquished by:	Received by:	Date	Time
9/25/19	1840	Christen Waelz	[signature] courier	9/26/19	8:15

NOTE: sample for all parameters listed in 20.6.2.3103 Parts A, B, and C (**ATTACHMENT**).

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the an[illegible]

Appendix F

geotech
Environmental Equipment, Inc.

February 1, 2019

Ms. Beth NcNally
Animas Environmental Services
604 West Pinon
Farmington, NM 87401
(505) 564-2281

RE: Geotech Quote #JAS 020119-02
Solar Sipper

Dear Beth:

As the premier supplier of environmental sampling, monitoring and remediation equipment since 1978, Geotech Environmental Equipment is pleased to provide you with the following quotation for our Solar Sipper.

Geotech Solar Sipper – Multi- Well System
The Geotech Solar Sipper is a solar powered remediation system, designed for remote applications where electrical power is either not available or not economically feasible to provide. The compact, easy to install features make this unit an industry favorite! Unlike other solar powered pumping systems, which use a standard bladder pump operated by an air compressor, the Solar Sipper uses a unique vacuum/pressure canister pump to recover hydrocarbons through a floating oleophilic/hydrophobic intake filter. The pump canister is filled under vacuum. Once the fill cycle is finished the system reverses, pressurizes the canister and pushes the recovered fluid to the surface and into a storage vessel.

The Geotech Solar Sipper can effectively extract fluids from depths up to 150-180 feet below ground surface and recover viscous hydrocarbons such as 90 weight gear oil, when a fixed intake is utilized. The Geotech Solar Sipper recovers floating hydrocarbons LNAPL) from wells using a solar powered pumping system.
The system utilizes a density float skimmer with an integral 60, or 100 mesh screen, or specific gravity float with an adjustable intake, depending on the LNAPL application.

The skimmer floats just above the oil/water interface to collect and remove hydrocarbons from the well into the optional above ground storage tank.

The Solar Sipper is also available for recovery of sinking product (DNAPL) from wells when using a fixed intake. Additionally, fixed intakes with conductivity sensors for water over ride are available for applications with extremely low re-charge rates prohibiting the use of oleophilic/hydrophobic screen technology.

Multi- Well Controller

The Solar Sipper multi-well controller is designed to operate between 1 and 8 down well canister pumps/ skimmer assemblies. The controller is programmable for each recovery wells specific vacuum, pressure and delay (time between on/ off) cycle requirements based on the type of product and recharge rate of the well. We quote and build the controller to meet our customer's site specific needs.

Because the controller operates multiple down well assemblies, the priority programming is to start with pump # 1, run through the vacuum cycle, pressure cycle and delay cycle. Once the delay cycle is completed, the controller switches to the next (pump #2) down well assembly. This process continues for the complete number of pumps the controller is programmed to control.

In general, Geotech recommends a maximum distance of 500 feet (including the well depth) between the Sipper controller and the pump. Longer runs can be accommodated but are not recommended. Careful consideration must be given to additional power requirements as well as protecting the tubing from damage. In certain situations, multiple controllers with separate solar panels and batteries may be a better solution on sites of a relatively larger area The optional AC Sipper is designed for locations where line voltage is readily available.

Installation Precautions (LNAPL)

The specific gravity of the product to be recovered must be less than 1.0 and its viscosity is less than 100 SSU for use with the "light" oil filter (100 mesh) , and 400 SSU for use with the "heavy" oil filter (60 mesh) Geotech application engineers should be consulted for product recovery operations with viscosities outside that range. The Solar Sipper is designed to be used in wells with free product of at least 1/8 inch thickness. The presence of surfactants or detergents in the product requires careful application of the Solar Sipper by consulting with Geotech engineers.

General Specifications:

Applications	2" (5.8cm) or larger recovery wells
Recovery Rate	.2 gallons (.750 ml) per cycle per pump assembly
Max. Operating Depth	150 – 180 feet
Max. Pressure	100 PSIG
Max. Vacuum	20" HggV @ MSL
Oil/Water Separation	Oleophilic/hydrophobic mesh screen
Power Usage	90-105 Watts
Recovered Product Storage	Customer Supplied
Voltage	12-14 VDC
Over Current Protection	15 AMPS

Fill Timer Range	0-99 Minutes
Discharge Timer Range	0-99 Minutes
Control Panel	NEMA 4X, Weather Resistant
Solar Panel Output	Approx. 50-100 Watts
Duty Cycle	40% On / 60% Off
Operating Temperature	32 ºF to 104 ºF

Multi – Well Controller
Size: 18” H x 16" W x 10.5" D
Approximate Weight: 50 lbs.
Rating: NEMA 4

Down Well Collection Canister
Size: 23.5" L x 1.75" OD
Weight: 4.5 lbs.
Materials: 303 and 304 Stainless Steel,
Flexible tubing, PVC and Brass

Skimmer Assembly
2" Model
Effective travel range: 12"
Size: 35.5" L x 1.75"
Weight: 1.75 lbs.
Operating Temperature: 32º to 104º F
Materials: 304 - Stainless Steel, Polyethylene, PVC, Polypropylene, Brass
Minimum fluid level to activate skimmer = 15”

Tubing Sizes:
Air: .17" ID x .25" OD, PE
Discharge: 3/8" ID x 1/2" OD, Rubber

Standard Configuration includes Control Panel with:
• Tank full shut off switch (2-inch NPT bung-fitting)
• Microprocessor controller with alpha-numeric vacuum fluorescent display
• On/Off switch
• Pressure/Vacuum Pump
  - Vacuum Cycle timer range: 0- 30 seconds
  - Pressure Cycle timer range: 30 seconds to 4 minutes
  - Delay Cycle timer range: 30 seconds to 24 hours
• Pressure/Vacuum Gauge