

Q3 2020 GWR



December 1, 2020

Zach Stradling
Benson-Montin-Greer Drilling Corp.
4900 College Blvd.
Farmington, New Mexico 87401

Incident# nAUTOfWCO00437

Reviewed/RCVD by

CS 

Continue to remediate as previously Approved,
See Email

**RE: 3rd Quarter 2020 Groundwater Monitoring and Sampling Report
O-9 Pipeline Release
NMOCD Order Number: AP-31
Rio Arriba County, New Mexico**

Dear Mr. Stradling,

Animas Environmental Services, LLC (AES) has prepared this Groundwater Monitoring and Sampling Report detailing groundwater monitoring and sampling at the Benson-Montin Greer Drilling Corporation (BMG) O-9 release location in September 2020. A topographic site location map and an aerial site location map are included as Figures 1 and 2.

1.0 Site History

1.1 Initial Release and Investigation

Hydrocarbons were discovered in the vicinity of the O-9 pipeline in Santa Fe National Forest by BMG during the summer of 2000. BMG completed removal of approximately 2,800 cubic yards of hydrocarbon-impacted soils and backfilled the excavation with clean soil.

Philip Environmental Services Corporation (Philip) was contracted by BMG to perform a limited subsurface investigation of soil and groundwater from a crude oil pipeline spill. Ten soil borings were completed in August 2000 to assess environmental impacts from the O-9 Line Leak. Five of the borings were converted into monitoring wells (MW-1 through MW-5).

On September 20 and 21, 2001, AMEC Earth & Environmental, Inc. (AMEC) completed further site investigation activities. Seven soil borings were completed, of which three were converted into monitor wells (MW-6 through MW-8).

August 2000 to October 2001 depth to groundwater measurements and water quality data are summarized and presented in Table 1, and laboratory analytical results are presented in Table 2.

624 E. Comanche St.
Farmington, NM 87401
505-564-2281
animasenvironmental.com

From: [Smith, Cory, EMNRD](#)
To: "Karen Lupton"; [Zach Stradling](#)
Cc: larry.gore@usda.gov
Subject: RE: BMG O-9 3rd Quarter 2020 GW Monitoring Report; NMOCD Order # AP-31Rio Arriba County, New Mexico
Date: Tuesday, January 12, 2021 2:40:00 PM

Zach,

OCD has reviewed the Q3 report for the Ojito O-9 line leak incident# NAUTOFWCO00437 and have approved it with the following Conditions

- Sampling frequencies for MW-1, MW-2 and MW-3 can be reduce to annually
- There is no Standard for NAPL so if it is present then BMG needs to actively try and remediate it replacing absorbent socks once a quarter is most likely not enough to remediate the site in any efficient time.
- Please ensure that 8260 Full list is provided and not the short list (Starting in Q1 2021)

The 3QTR report will be scanned into the Incident file.

Thanks,

Cory Smith • Environmental Specialist
Environmental Bureau
EMNRD - Oil Conservation Division
1000 Rio Brazos | Aztec, NM 87410
505.334.6178 x115 | Cory.Smith@state.nm.us
<http://www.emnrd.state.nm.us/OCD/>

From: Karen Lupton <klupton@animasenvironmental.com>
Sent: Wednesday, December 2, 2020 8:50 AM
To: Zach Stradling <zstradling@bmgdrilling.com>
Cc: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; larry.gore@usda.gov
Subject: [EXT] BMG O-9 3rd Quarter 2020 GW Monitoring Report; NMOCD Order # AP-31Rio Arriba County, New Mexico

Dear Mr. Stradling:

Attached please find the 3rd Quarter Groundwater Monitoring Report for the BMG O-9 site.

A hard copy will be sent to you for your files.

Please give a call with any questions.

Best wishes –

1.2 Abatement Plan

BMG submitted a Stage 1 and Stage 2 abatement plan to New Mexico Oil Conservation Division (NMOCD) on November 28, 2001. Public notice requirements were completed by March 11, 2002. Further information required to complete the abatement plan was submitted to NMOCD on August 26, 2002.

1.3 Groundwater Monitoring and Sampling, April 2019 to June 2020

AES completed quarterly groundwater monitoring and sampling at the location between April 2019 and June 2020. Brief summaries are included below:

- **April 2019** - Groundwater was observed between 14.62 and 17.83 ft bgs, and groundwater elevations decreased by approximately 0.36 ft since the October 2001 sampling event. A slight sheen was detected in MW-5 and MW-7 but was bailed off, and both wells were subsequently sampled. Dissolved phase benzene, toluene, ethylbenzene, and total xylene (BTEX) concentrations did not exceed laboratory detection limits or New Mexico Water Quality Control Commission (WQCC) standards in any of the wells except MW-5 (5.7 µg/L total xylenes). Total petroleum hydrocarbons (TPH) as gasoline range organics (GRO) were also detected in MW-5, at 2.6 mg/L. TPH as diesel range organics (DRO) was detected in MW-5 (13 mg/L) and MW-7 (6.1 mg/L).
- **August 2019** – Shallow groundwater was observed to flow to the northeast, with an approximate gradient of 0.01 ft/ft which is indicative of seasonal gaining stream characteristics. A slight sheen was detected in MW-5 and MW-7 but was bailed off, and both wells were sampled. Dissolved phase BTEX concentrations were reported below applicable WQCC standards in all wells.
- **December 2019** - All samples were either below laboratory detection limits or well below WQCC standards for contaminants of concern. An oil absorbent sock was installed at 20 ft bgs within MW-5, which was observed to have a measurable residual NAPL sheen.
- **March 2020** - Groundwater was observed between 16.38 and 19.72 ft bgs. A slight sheen was detected in MW-5 and MW-7 but was bailed off, and both wells were sampled. Dissolved phase BTEX was detected at concentrations below WQCC standards in all wells. TPH as GRO (1.2 mg/L) and DRO (1.6 mg/L) were detected in MW-5 only.
- **June 2020** - All samples (MW-1 through MW-3 and MW-5 through MW-8) were either below laboratory detection limits or below WQCC standards for contaminants of concern. June 2020 was the eighth consecutive sampling event where samples

from MW-1, MW-2, and MW-3 were below laboratory detection limits for all constituents of concern.

2.0 Groundwater Monitoring and Sampling, September 2020

AES conducted groundwater monitoring of eight monitor wells (MW-1 through MW-8) and sampling of MW-5 through MW-8 during the September 16, 2020, sampling event. Monitor well MW-4 did not contain sufficient volume to facilitate sample collection.

Depth to groundwater was measured in each well at the site to calculate purge volumes, monitor season groundwater fluctuations and calculate approximate hydraulic gradient. Wells were purged of three well volumes or until nearly dry with new disposable bailers. Recharge rates at the site vary between very slow to steady production. The bailers were lowered slowly and carefully into the wells to minimize turbidity. Samples were collected with new disposable bailers and transferred into 40-mL vials, which were labeled and stored at less than 6°C in an insulated cooler until delivered to Hall Environmental Analysis Laboratory (Hall) in Albuquerque, New Mexico. Groundwater samples were analyzed for BTEX per U.S. Environmental Protection Agency (USEPA) Method 8260 as well as TPH as GRO and DRO per USEPA Method 8015.

2.1 *Groundwater Measurement and Water Quality Data*

On September 16, 2020, groundwater elevations had decreased by an average of approximately 1.40 ft since the June 2020 sampling event. Groundwater elevations ranged between 7,482.48 ft above mean sea level (AMSL) in MW-5 and 7,490.06 ft AMSL in MW-4. Groundwater was observed to flow to the northeast, with a magnitude of 0.01 ft/ft. A NAPL sheen was detected in MW-5 and MW-7. A groundwater elevation contour map is included as Figure 3.

Depth to groundwater measurements and water quality data are summarized on Table 1. Groundwater sample collection forms are attached.

2.2 *Groundwater Analytical Results*

September 2020 groundwater analytical results showed that dissolved phase BTEX concentrations were reported below applicable WQCC standards in all wells. TPH as GRO was detected in MW-5 (0.34 mg/L) and MW-7 (0.078 mg/L). TPH as DRO was also detected in MW-5 (4.5 mg/L) and MW-7 (5.7 mg/L). Laboratory analytical results are included on Table 2, and contaminant concentrations are presented on Figure 4. The laboratory analytical report is attached.

2.3 Discussion

All monitor wells at the site have remained below WQCC standards for BTEX since at least April 2019 (six consecutive quarters). Wells MW-4 through MW-8 have generally remained below WQCC standards since 2001, with the exception of benzene concentrations above the benzene standard (5 µg/L) in 2000 for MW-5 (400 µg/L), and in 2001 for MW-6 (69 µg/L) and MW-7 (350 µg/L). Generally, positive oxidation reduction potential (ORP) measurements and significant concentrations of dissolved oxygen indicate an aerobic environment that is conducive to natural attenuation of petroleum compounds.

3.0 Additional Abatement Activities

MW-7 will continue to be monitored, and in the event a measurable thickness of residual NAPL is observed, AES will install an oil absorbent sock. Absorbent socks will be checked and maintained as part of each quarterly sampling event.

4.0 Conclusions

AES completed quarterly groundwater monitoring and sampling at the site on September 16, 2020. Depth to water was gauged in monitor wells MW-1 through MW-8. Groundwater samples were collected from monitor wells MW-5 through MW-8 for BTEX and TPH (GRO/DRO) analysis. All samples were either below laboratory detection limits or below WQCC standards for contaminants of concern. Note that samples from MW-8 have not exceeded laboratory detection limits for seven consecutive sampling events.

4.1 Scheduled Site Activities

The 4th Quarter groundwater monitoring event was completed in November 2020; additionally, two new monitor wells were installed at the site (MW-9 and MW-10) in order to confirm vertical and lateral delineation of the former release. The 4th Quarter 2020 Report will be submitted to NMOCD in January 2021.

1st Quarter 2021 Sampling will be conducted in February or March 2021, and project notification for field activities will be provided to NMOCD at least 2 days before work is initiated.

If you have any questions about this report, site conditions, or the scheduled work, please feel free to contact Eddie Hubbert at (505) 401-5323 or Elizabeth McNally at (505) 564-2281.

Respectfully Submitted,



David J. Reese
Environmental Scientist



Elizabeth McNally, P.E.

Attachments:

Table 1. Groundwater Measurements and Water Quality Data
Table 2. Groundwater Laboratory Analytical Results
Figure 1. Topographic Site Location Map
Figure 2. Aerial Site Location Map
Figure 3. Groundwater Elevations, September 2020
Figure 4. Groundwater Contaminant Concentrations, September 2020
Groundwater Sample Collection Forms
Laboratory Analytical Reports (Hall No. 2009989)

Cc: Cory Smith (cory.smith@state.nm.us)
New Mexico Oil Conservation Division
1000 Rio Brazos Road
Aztec, NM 87410

Larry D. Gore (larry.gore@usda.gov)
US Forest Service
Santa Fe National Forest
P.O. Box 130
Cuba, NM 87013

Attachments

TABLE 1
SUMMARY OF GROUNDWATER MEASUREMENT AND WATER QUALITY DATA
BMG Ojito Canyon (O-9) Release
Rio Arriba County, New Mexico

Well ID	Date Measured	TOC Elevation* (ft amsl)	Depth to NAPL (ft)	Depth to Water (ft)	NAPL Thickness (ft)	Water Level Elevation (ft amsl)	Corrected GW Elev. (ft)	Temp. (° C)	Specific Conduct. (mS)	Dissolved Oxygen (mg/L)	pH	ORP (mV)
MW-1	30-Aug-00	7507.22		16.69		7490.53		16.9	NM	NM	NM	NM
MW-1	06-Feb-01	7507.22		16.08		7491.14		7.6	0.862	NM	5.54	NM
MW-1	05-Oct-01	7507.22		16.15		7491.07		NM	NM	NM	NM	NM
MW-1	03-Apr-19	7507.22		16.74		7490.48		8.3	493.0	2.23	7.32	107.1
MW-1	16-Aug-19	7507.22		18.54		7488.68		10.1	0.77	2.22	7.52	70.6
MW-1	23-Dec-19	7507.22		20.56		7486.66		9.96	0.803	2.66	7.28	119.2
MW-1	24-Mar-20	7507.22		18.91		7488.31		8.5	0.707	3.54	7.14	136.4
MW-1	18-Jun-20	7507.22		19.98		7487.24		8.9	0.72	3.94	7.17	179.8
MW-1	16-Sep-20	7457.88		22.05		7435.83		NM	NM	NM	NM	NM
MW-2	30-Aug-00	7506.50		16.62		7489.88		15.2	NM	NM	NM	NM
MW-2	06-Feb-01	7506.50		15.91		7490.59		9.48	1.06	NM	5.9	NM
MW-2	05-Oct-01	7506.50		15.94		7490.56		NA	0.463	6.44	NM	226.7
MW-2	03-Apr-19	7506.50		16.30		7490.20		7.9	448.3	7.02	7.49	72.2
MW-2	16-Aug-19	7506.50		17.81		7488.69		10.8	0.84	1.47	7.40	-67.0
MW-2	23-Dec-19	7506.50		20.41		7486.09		10.16	1.035	2.25	7.13	-67.8
MW-2	24-Mar-20	7506.50		19.12		7487.38		8.5	0.830	3.02	6.97	5.3
MW-2	18-Jun-20	7506.50		19.87		7486.63		10.0	0.82	1.51	6.99	79.5
MW-2	16-Sep-20	7457.24		21.57		7435.67		NM	NM	NM	NM	NM
MW-3	30-Aug-00	7508.63		17.21		7491.42		14.3	NM	NM	NM	NM
MW-3	06-Feb-01	7508.63		16.88		7491.75		9.3	84.6	NM	4.97	NM
MW-3	05-Oct-01	7508.63		17.01		7491.62		NM	NM	NM	NM	NM
MW-3	03-Apr-19	7508.63		17.83		7490.80		8.6	446.3	1.55	7.25	134.9
MW-3	16-Aug-19	7508.63		20.69		7487.94		10.6	0.672	1.67	7.52	158.1
MW-3	23-Dec-19	7508.63		21.46		7487.17		9.75	0.729	2.18	7.34	156.7
MW-3	24-Mar-20	7508.63		19.72		7488.91		8.8	0.655	0.98	7.01	158.5
MW-3	18-Jun-20	7508.63		21.42		7487.21		8.9	0.658	1.56	7.04	174.6
MW-3	16-Sep-20	7460.72		22.90		7437.82		NM	NM	NM	NM	NM
MW-4	30-Aug-00	7507.10		15.51		7491.59		14.9	NM	NM	NM	NM

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SUMMARY OF GROUNDWATER MEASUREMENT AND WATER QUALITY DATA
BMG Ojito Canyon (O-9) Release
Rio Arriba County, New Mexico

Well ID	Date Measured	TOC Elevation* (ft amsl)	Depth to NAPL (ft)	Depth to Water (ft)	NAPL Thickness (ft)	Water Level Elevation (ft amsl)	Corrected GW Elev. (ft)	Temp. (°C)	Specific Conduct. (mS)	Dissolved Oxygen (mg/L)	pH	ORP (mV)
MW-4	06-Feb-01	7507.10		15.05		7492.05		7.02	0.77	NM	5.15	NM
MW-4	05-Oct-01	7507.10		15.14		7491.96		NM	NM	NM	NM	NM
MW-4	03-Apr-19	7507.10		14.62		7492.48		4.6	237.3	6.74	7.44	108.9
MW-4	16-Aug-19	7507.10		16.79		7490.31		NM - Insufficient Water				
MW-4	23-Dec-19	7507.10		16.97		7490.13		NM - Insufficient Water				
MW-4	24-Mar-20	7507.10		16.92		7490.18		NM - Insufficient Water				
MW-4	18-Jun-20	7507.10		16.80		7490.30		NM - Insufficient Water				
MW-4	16-Sep-20	7458.66		16.82		7441.84		NM - Insufficient Water				
MW-5	30-Aug-00	7503.22		16.66		7486.56		12.6	NM	NM	NM	NM
MW-5	06-Feb-01	7503.22	16.23	17.41	1.18	7485.81	7486.73	NM - NAPL PRESENT				
MW-5	05-Oct-01	7503.22	16.26	16.74	0.48	7486.48	7486.85	NM - NAPL PRESENT				
MW-5	03-Apr-19	7503.22	16.92	16.93	0.01	7486.29	7486.30	NM - NAPL SHEEN PRESENT				
MW-5	16-Aug-19	7503.22	17.74	17.74		7485.48		NM - NAPL SHEEN PRESENT				
MW-5	23-Dec-19	7503.22	19.25	19.25		7483.97		NM - NAPL SHEEN PRESENT				
MW-5	24-Mar-20	7503.22	17.83	17.83		7485.39		NM - NAPL SHEEN PRESENT				
MW-5	18-Jun-20	7503.22	18.40	18.40		7484.82		NM - NAPL SHEEN PRESENT				
MW-5	16-Sep-20	7456.42	20.13	20.13		7436.29		NM - NAPL SHEEN PRESENT				
MW-6	05-Oct-01	NS		15.81				NA	0.544	3.29	NM	213.9
MW-6	03-Apr-19	NS		16.04				7.3	209.5	8.09	7.63	140.5
MW-6	16-Aug-19	NS		17.02				10.6	0.618	6.22	7.61	125.7
MW-6	23-Dec-19	NS		18.28				9.32	0.719	1.77	7.22	48.6
MW-6	24-Mar-20	NS		17.21				7.8	0.437	6.14	7.40	154.2
MW-6	18-Jun-20	NS		17.77				9.0	0.580	2.50	7.30	130.2
MW-6	16-Sep-20	7454.18		19.09		7435.09		11.1	0.484	1.98	7.19	149.7
MW-7	05-Oct-01	NS		16.00				NA	0.547	3.10	NM	-65.9
MW-7	03-Apr-19	NS	16.67	16.68	0.01			NM - NAPL SHEEN PRESENT				
MW-7	16-Aug-19	NS		17.45				NM - NAPL SHEEN PRESENT				
MW-7	23-Dec-19	NS		18.93				NM - NAPL SHEEN PRESENT				

TABLE 1
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BMG Ojito Canyon (O-9) Release
Rio Arriba County, New Mexico

Well ID	Date Measured	TOC Elevation* (ft amsl)	Depth to NAPL (ft)	Depth to Water (ft)	NAPL Thickness (ft)	Water Level Elevation (ft amsl)	Corrected GW Elev. (ft)	Temp. (°C)	Specific Conduct. (mS)	Dissolved Oxygen (mg/L)	pH	ORP (mV)
MW-7	24-Mar-20	NS	17.62	17.62	0.00			7.7	1.02	4.52	7.11	112.1
MW-7	18-Jun-20	NS		18.17				NM - NAPL SHEEN PRESENT				
MW-7	16-Sep-20	7455.96		19.16		7436.80		NM - NAPL SHEEN PRESENT				
MW-8	05-Oct-01	NS		14.06				NM	NM	NM	NM	NM
MW-8	03-Apr-19	NS		14.69				8.8	485.7	4.19	7.36	130.6
MW-8	16-Aug-19	NS		16.71				11.2	0.72	1.44	6.08	85.3
MW-8	23-Dec-19	NS		17.47				10.41	0.798	1.89	7.13	-57.4
MW-8	24-Mar-20	NS		16.38				9.4	0.720	1.59	7.11	-49.8
MW-8	18-Jun-20	NS		17.45				10.2	0.70	1.58	7.18	-15.4
MW-8	16-Sep-20	7452.31		18.67		7433.64		11.6	0.545	1.60	6.97	-19.1

NOTES: NA NOT AVAILABLE
NM NOT MEASURED
NS NOT SURVEYED
TOC TOP OF CASING

*September 2020 TOCs were measured at MW-1 through MW-10 using UAS/drone mapping and were not professionally surveyed.

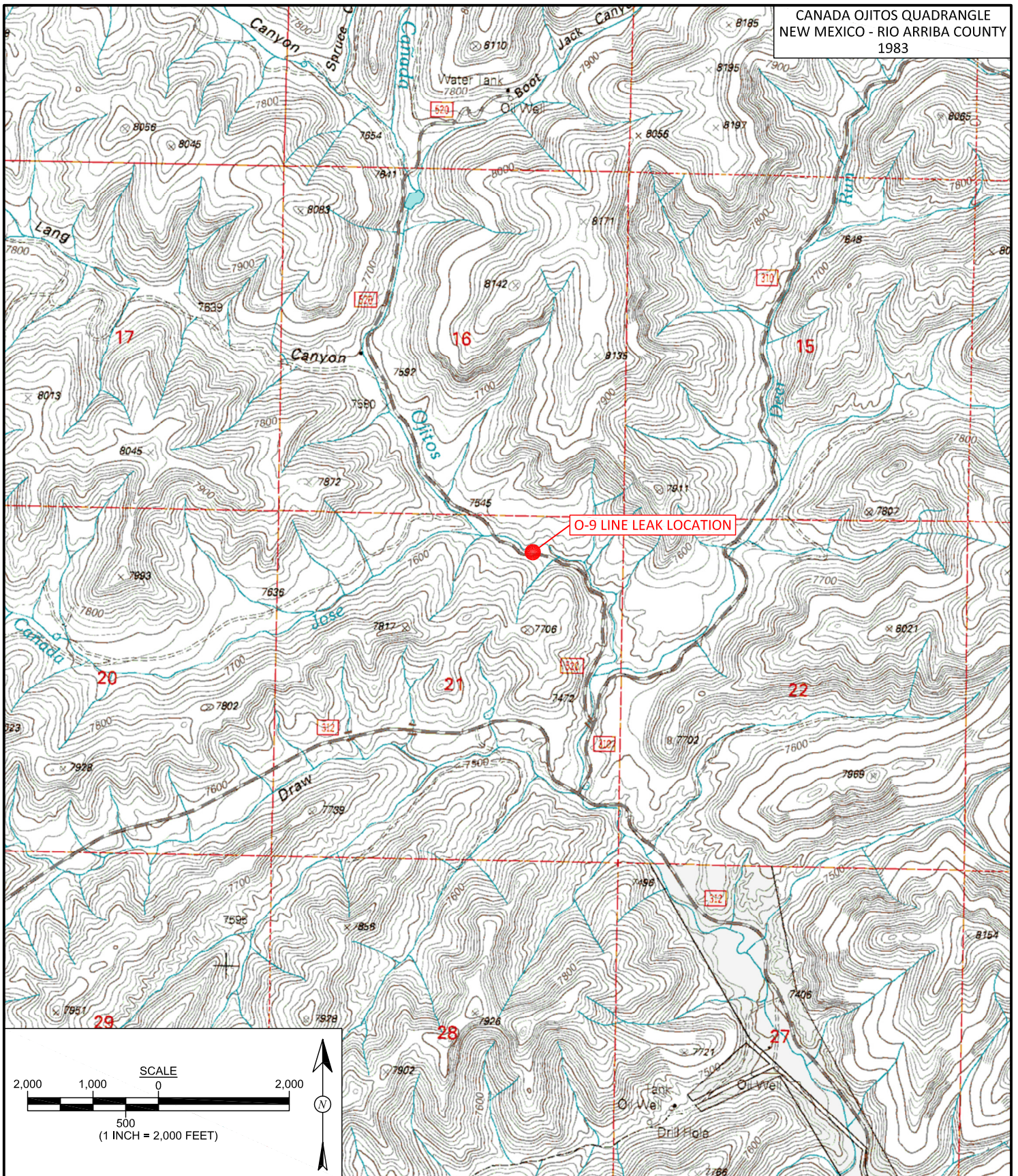
TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
BMG Ojito Canyon (O-9) Release
Rio Arriba County, New Mexico

Well ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	GRO (mg/L)	DRO (mg/L)	MRO (mg/L)
<i>Analytical Method</i>		8021B/ 8260B	8021B/ 8260B	8021B/ 8260B	8021B/ 8260B	8015B/ 8015D	8015B/ 8015M/D	8015B/ 8015M/D
<i>NM WQCC STANDARD</i>		5	1,000	700	620	NE	NE	NE
MW-1	30-Aug-00	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	<1.0
MW-1	06-Feb-01	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	<1.0
MW-1	25-Sep-01	<0.5	<0.5	<0.5	<0.5	NA	NA	NA
MW-1	03-Apr-19	<1.0	<1.0	<1.0	<1.5	<0.050	<1.0	NA
MW-1	16-Aug-19	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-1	23-Dec-19	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	NA
MW-1	24-Mar-20	<1.0	<1.0	<1.0	<1.5	<0.050	<1.0	NA
MW-1	18-Jun-20	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	NA
MW-2	30-Aug-00	<0.5	<0.5	<0.5	2.1	<2.0	<1.0	<1.0
MW-2	06-Feb-01	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	<1.0
MW-2	05-Oct-01	<0.5	<0.5	<0.5	<0.5	NA	NA	NA
MW-2	03-Apr-19	<1.0	<1.0	<1.0	<1.5	<0.050	<1.0	NA
MW-2	16-Aug-19	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-2	23-Dec-19	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	NA
MW-2	24-Mar-20	<1.0	<1.0	<1.0	<1.5	<0.050	<1.0	NA
MW-2	18-Jun-20	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	NA
MW-3	30-Aug-00	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	<1.0
MW-3	06-Feb-01	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	<1.0
MW-3	25-Sep-01	<0.5	<0.5	<0.5	<0.5	NA	NA	NA
MW-3	03-Apr-19	<1.0	<1.0	<1.0	<1.5	<0.050	<1.0	NA
MW-3	16-Aug-19	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-3	23-Dec-19	<2.0	<2.0	<2.0	<4.0	<0.10	<1.0	NA
MW-3	24-Mar-20	<1.0	<1.0	<1.0	<1.5	<0.050	<1.0	NA
MW-3	18-Jun-20	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	NA
MW-4	30-Aug-00	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	<1.0
MW-4	06-Feb-01	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	<1.0
MW-4	25-Sep-01	<0.5	<0.5	<0.5	<0.5	NA	NA	NA
MW-4	03-Apr-19	<1.0	<1.0	<1.0	<1.5	<0.050	<1.0	NA
MW-5	30-Aug-00	400	56	79	260	<2.0	1.6	<1.0
MW-5	03-Apr-19	<2.0	<2.0	<2.0	5.7	2.6	13	NA
MW-5	16-Aug-19	<1.0	<1.0	2.3	13	3.0	20	5.4

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
BMG Ojito Canyon (O-9) Release
Rio Arriba County, New Mexico

Well ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	GRO (mg/L)	DRO (mg/L)	MRO (mg/L)
<i>Analytical Method</i>		8021B/ 8260B	8021B/ 8260B	8021B/ 8260B	8021B/ 8260B	8015B/ 8015D	8015B/ 8015M/D	8015B/ 8015M/D
<i>NM WQCC STANDARD</i>		5	1,000	700	620	NE	NE	NE
MW-5	23-Dec-19	<5.0	<5.0	10	64	12	1,100	NA
MW-5	24-Mar-20	<2.0	<2.0	<2.0	<3.0	1.2	1.6	NA
MW-5	18-Jun-20	<1.0	<1.0	<1.0	<2.0	1.6	15	<5.0
MW-5	16-Sep-20	<1.0	<1.0	<1.0	<1.5	0.34	4.5	NA
MW-6	05-Oct-01	69	<0.5	23	41	NA	NA	NA
MW-6	03-Apr-19	<1.0	<1.0	<1.0	<1.5	<0.050	<1.0	NA
MW-6	16-Aug-19	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-6	23-Dec-19	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	NA
MW-6	24-Mar-20	<1.0	<1.0	<1.0	<1.5	<0.050	<1.0	NA
MW-6	18-Jun-20	<2.0	<2.0	<2.0	<4.0	<0.10	<1.0	NA
MW-6	16-Sep-20	<1.0	<1.0	<1.0	<1.5	<0.10	<1.0	NA
MW-7	05-Oct-01	350	47	87	310	NA	NA	NA
MW-7	03-Apr-19	<1.0	<1.0	<1.0	<1.5	<0.050	6.1	NA
MW-7	16-Aug-19	<1.0	<1.0	<1.0	<2.0	<0.050	8.1	<5.0
MW-7	23-Dec-19	<2.0	<2.0	<2.0	<4.0	<0.10	4.2	NA
MW-7	24-Mar-20	<1.0	<1.0	<1.0	<1.5	<0.050	<1.0	NA
MW-7	18-Jun-20	<1.0	<1.0	<1.0	<2.0	<0.050	6.7	<5.0
MW-7	16-Sep-20	<1.0	<1.0	<1.0	<1.5	0.078	5.7	NA
MW-8	25-Sep-01	<0.5	<0.5	<0.5	<0.5	NA	NA	NA
MW-8	03-Apr-19	<1.0	<1.0	<1.0	<1.5	<0.050	<1.0	NA
MW-8	16-Aug-19	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	<5.0
MW-8	23-Dec-19	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	NA
MW-8	24-Mar-20	<1.0	<1.0	<1.0	<1.5	<0.050	<1.0	NA
MW-8	18-Jun-20	<1.0	<1.0	<1.0	<2.0	<0.050	<1.0	NA
MW-8	16-Sep-20	<1.0	<1.0	<1.0	<1.5	<0.050	<1.0	NA

NOTES: NA = Not Analyzed
NE = Not Established
NS = Not Sampled
GRO = Gasoline Range Organics
DRO = Diesel Range Organics
MRO = Motor Oil Range Organics



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services**
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animasenvironmental.com

DRAWN BY:
C. Lameman

DATE DRAWN:
June 3, 2019

REVISIONS BY:
C. Lameman

DATE REVISED:
September 29, 2020

CHECKED BY:
D. Reese

DATE CHECKED:
September 29, 2020

APPROVED BY:
E. McNally

DATE APPROVED:
September 29, 2020

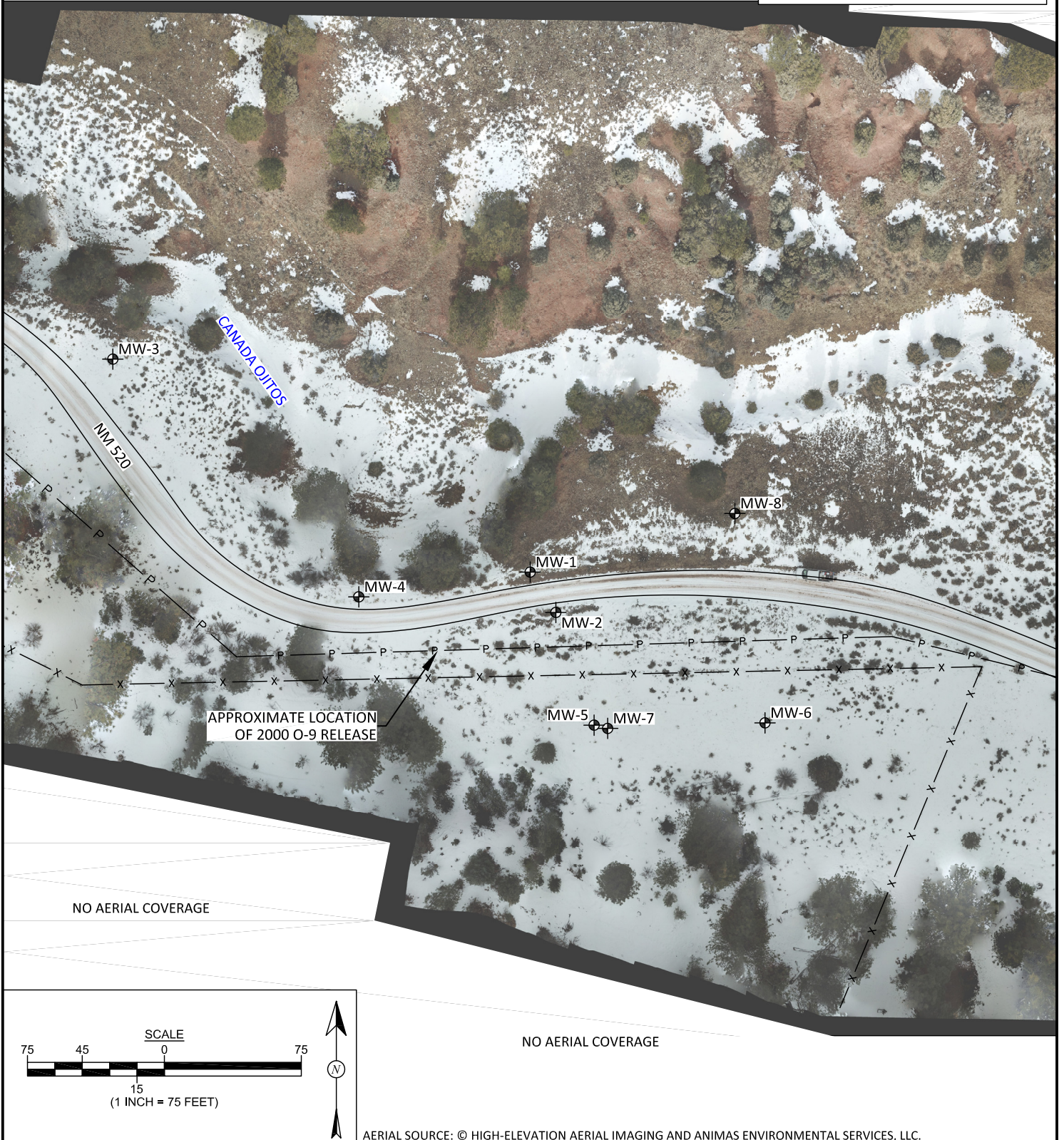
FIGURE 1

TOPOGRAPHIC SITE LOCATION MAP
BENSON-MONTIN-GREER
O-9 LINE LEAK LOCATION
N½ OF NE¼, SECTION 21, T26N, R1W
RIO ARriba COUNTY, NEW MEXICO

NO AERIAL COVERAGE

LEGEND

- ⊕ MONITOR WELL LOCATION
— P — APPROXIMATE BURIED PIPELINE



DRAWN BY:

C. Lameman

DATE DRAWN:

June 3, 2019

REVISIONS BY:

C. Lameman

DATE REVISED:

September 29, 2020

CHECKED BY:

D. Reese

DATE CHECKED:

September 29, 2020

APPROVED BY:

E. McNally

DATE APPROVED:

September 29, 2020

FIGURE 2

**AERIAL SITE LOCATION MAP
AND MONITOR WELL LOCATIONS**

BENSON-MONTIN-GREER
O-9 LINE LEAK LOCATION

N½ OF NE¼, SECTION 21, T26N, R1W
RIO ARriba COUNTY, NEW MEXICO



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MONITOR WELL LOCATION

P

APPROXIMATE BURIED PIPELINE

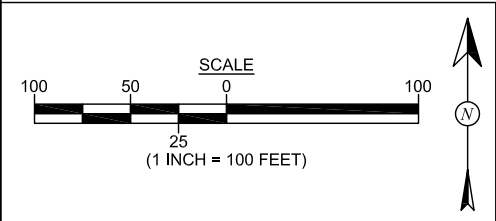
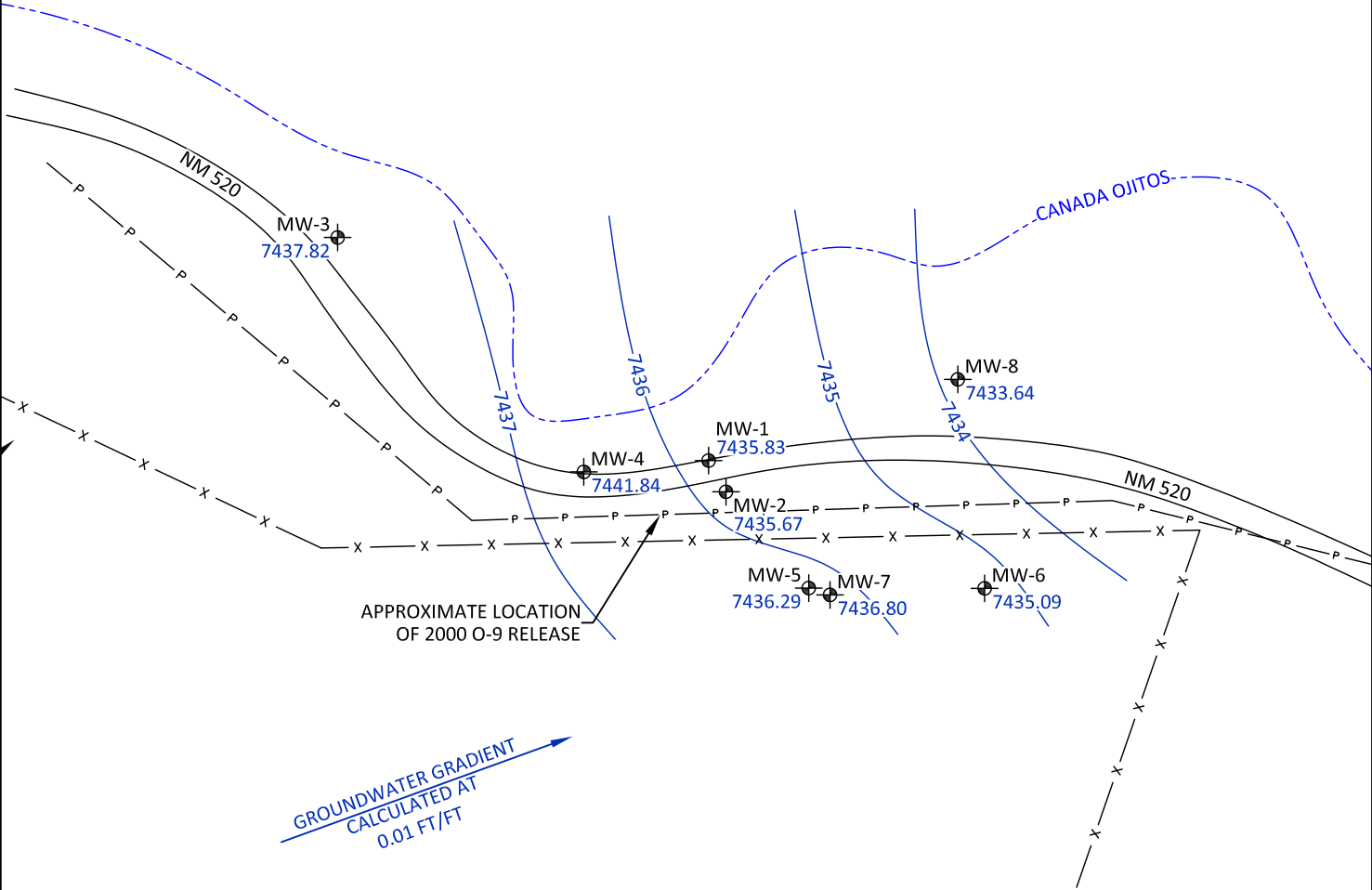
7433.64

GROUNDWATER ELEVATION IN FEET (AMSL)

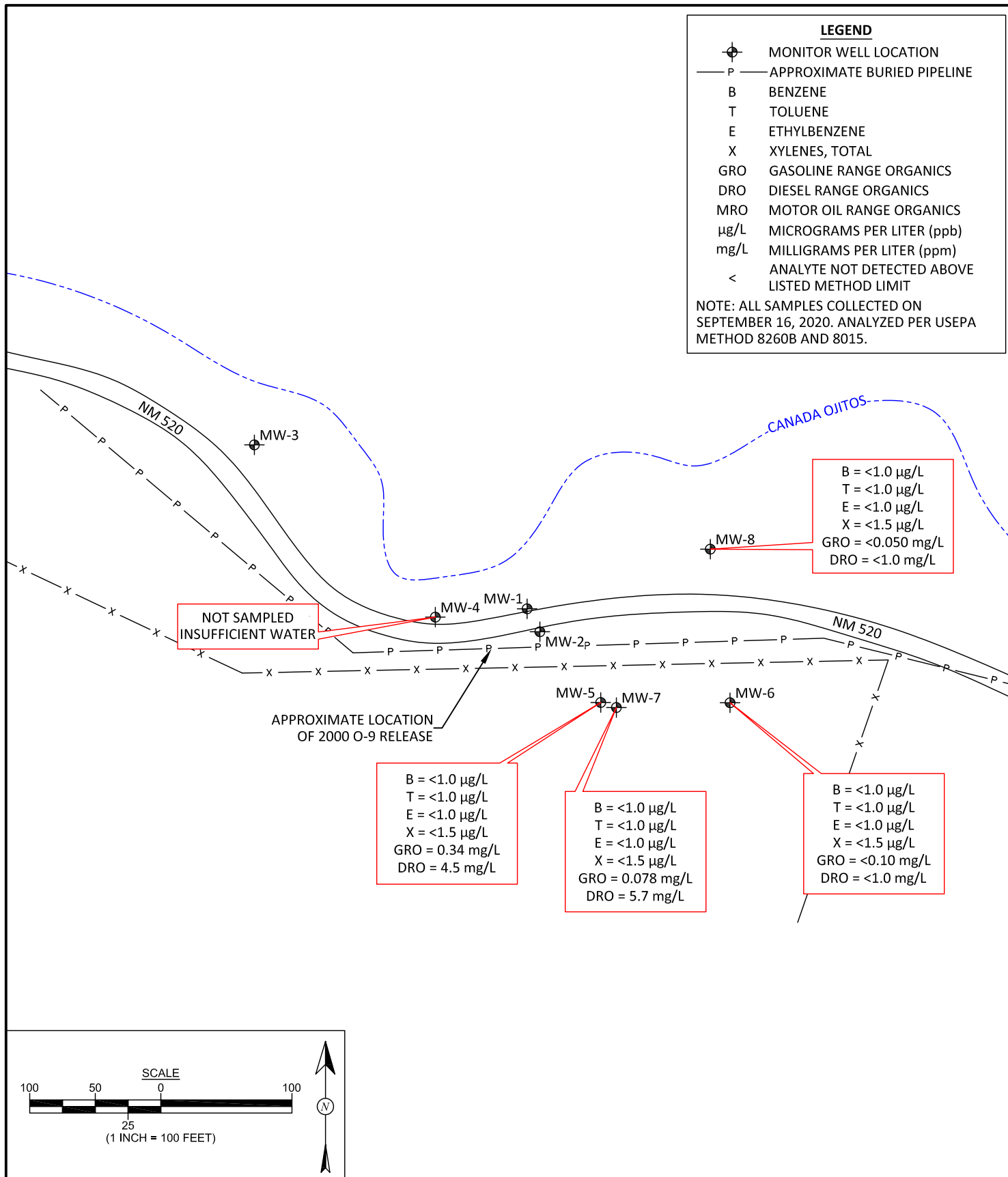
7434


GROUNDWATER CONTOUR IN FEET (AMSL)

NOTE: ALL MEASUREMENTS WERE MADE ON SEPTEMBER 16, 2020. MW-4 NOT INCLUDED.



<div> <div> <div> <div>animas</div> <div>environmental</div> <div>services</div> </div> </div> <div> <div>Farmington, NM • Durango, CO</div> <div>animasenvironmental.com</div> </div> </div>	<div>DRAWN BY:</div> <div>C. Lameman</div>	<div>DATE DRAWN:</div> <div>June 3, 2019</div>	<div>FIGURE 3</div> <div>GROUNDWATER ELEVATIONS</div> <div>SEPTEMBER 2020</div> <div>BENSON-MONTIN-GREER</div> <div>O-9 LINE LEAK LOCATION</div> <div>N½ OF NE¼, SECTION 21, T26N, R1W</div> <div>RIO ARriba COUNTY, NEW MEXICO</div>
	<div>REVISIONS BY:</div> <div>C. Lameman</div>	<div>DATE REVISED:</div> <div>September 29, 2020</div>	
	<div>CHECKED BY:</div> <div>D. Reese</div>	<div>DATE CHECKED:</div> <div>September 29, 2020</div>	
	<div>APPROVED BY:</div> <div>E. McNally</div>	<div>DATE APPROVED:</div> <div>September 29, 2020</div>	



 <p>animas environmental services Farmington, NM • Durango, CO animasenvironmental.com</p>	DRAWN BY: C. Lameman	DATE DRAWN: June 3, 2019	<p style="text-align: center;">FIGURE 4</p> <p style="text-align: center;">GROUNDWATER CONTAMINANT CONCENTRATIONS, SEPTEMBER 2020 BENSON-MONTIN-GREER O-9 LINE LEAK LOCATION N½ OF NE¼, SECTION 21, T26N, R1W RIO ARriba COUNTY, NEW MEXICO</p>
	REVISIONS BY: C. Lameman	DATE REVISED: September 29, 2020	
	CHECKED BY: D. Reese	DATE CHECKED: September 29, 2020	
	APPROVED BY: E. McNally	DATE APPROVED: September 29, 2020	

[illegible]

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

MONITORING WELL SAMPLING RECORD

Monitor Well No: **MW-4**

Animas Environmental Services

624 E Comanche St., Farmington NM 87401

Tel. (505) 564-2281 Fax (505) 324-2022

Site: BMG

Project No.:

Location: O-9

Date: 9-16-20

Project: Groundwater Monitoring and Sampling

Arrival Time: 10:26

Sampling Technician: CL/GG

Air Temp:

Purge / No Purge: Purge

T.O.C. Elev. (ft): 7507.1

Well Diameter (in): 2

Total Well Depth (ft):	17.12
------------------------	-------

Initial D.T.W. (ft): 16.82 **Time:** 10:27 *(taken at initial gauging of all wells)*

Confirm D.T.W. (ft): 16.82 **Time:** 10:29 (taken prior to purging well)

Final D.T.W. (ft): 17.04 **Time:** 10:33 (taken after sample collection)

If NAPL Present: D.T.P.: D.T.W.: Thickness: Time:

Water Quality Parameters - Recorded During Well Purging

YSI # 1 Calibrated by: 9-16-70 GJB

[illegible]**Analytical Parameters (include analysis method and number and type of sample containers)**

BTEX per EPA Method 8021 (3 - 40 mL Vials w/ HgCl₂ preserve)

GRO + DRO per EPA Method 8015M (250 mL Amber Glass)

Disposal of Purged Water: *No Wafer*

Collected Samples Stored on Ice in Cooler: *N/A*

Chain of Custody Record Complete: *N/A*

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: Attempted to purge and collect sample. Immediately ran out of water. NO SAMPLES COLLECTED DUE TO INSUFFICIENT WATER.

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-5

Animas Environmental Services

624 E Comanche St., Farmington NM 87401

Tel. (505) 564-2281 Fax (505) 324-2022

Site: BMG

Location: O-9

Project: Groundwater Monitoring and Sampling

Sampling Technician: *U'BB*

Purge / No Purge:	Purge
-------------------	-------

Well Diameter (in): 2

Initial D.T.W. (ft): 20.13

Time: 12:32

Project No.:

Date: 9-16-20

Arrival Time: 12:31

Air Temp: 75° Sunny & Breezy & Hazy

T.O.C. Elev. (ft): 7503.22

Total Well Depth (ft): 22.90

Confirm D.T.W. (ft): 20.13

Time: 12:34

(taken prior to purging well)

Final D.T.W. (ft): 20.67

Time: 12:46

(taken after sample collection)

If NAPL Present: D.T.P.:

D.T.W.: _____

Thickness: _____ Time: _____

Water Quality Parameters - Recorded During Well Purging

YSI # / Calibrated by: 9-16-20 GB

Time	Temp (deg C)	Conductivity (μS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
12:44							Collected Samples After Attempting to Bail off Sheen

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

BTEX per EPA Method 8021 (3 - 40 mL Vials w/ HgCl₂ preserve)

GRO + DRO per EPA Method 8015M (250 mL Amber Glass)

Disposal of Purged Water: On ground - No drainage to Wash

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 ≈ 1.25 Gallons

Casing = 2.49 ABS

Sock Absorbant Replaced.

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-6

Animas Environmental Services

624 E Comanche St., Farmington NM 87401

Tel. (505) 564-2281 Fax (505) 324-2022

Site: BMG

Location: O-9

Project: Groundwater Monitoring and Sampling

Sampling Technician: CL & GB

Purge / No Purge: Purge

Well Diameter (in): 4

Initial D.T.W. (ft): 19.09

Confirm D.T.W. (ft): 19.09

Final D.T.W. (ft): 22.23

If NAPL Present: D.T.P.: —

Project No.:

Date: 9-16-20

Arrival Time: 11:09

Air Temp: 75° Sunny & Breezy & Hazy

T.O.C. Elev. (ft):

Total Well Depth (ft): 23.41

Time: 11:41 (taken at initial gauging of all wells)

Time: 11:43 (taken prior to purging well)

Time: 12:00 (taken after sample collection)

D.T.W.: — Thickness: — Time: —

Water Quality Parameters - Recorded During Well Purging

YSI # 1 Calibrated by: 4-16-20 GB

Time	Temp (deg C)	Conductivity (uS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
11:49	12.2	501	2.12	7.47	147.7	Initial	Clear / No odor
11:51	11.5	445.9	2.09	7.33	148.3	2.0	Turbid Brown Sol / No Odor
11:53	11.2	465.4	2.05	7.26	150.7	4.0	Turbid Brown Sol / No Odor
11:56	11.1	483.5	1.98	7.19	149.7	6.0	V-Turbid Brown Sol / No Odor
11:59						7.0	Samples Collected
							Low Yield and
							Recharge

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

BTEX per EPA Method 8021 (3 - 40 mL Vials w/ HgCl2 preserve)

GRO + DRO per EPA Method 8015M (250 mL Amber Glass)

Disposal of Purged Water: On Ground - No drainage to Wash

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 ≈ 8.5 Gallons

Casing = 3.14 AGS

MONITORING WELL SAMPLING RECORD

Monitor Well No: **MW-7**

Animas Environmental Services

624 E Comanche St., Farmington NM 87401

Tel. (505) 564-2281 Fax (505) 324-2022

Site: BMG

Location: O-9

Project: Groundwater Monitoring and Sampling

Sampling Technician: *CL & CB*

Purge / No Purge:	Purge
-------------------	-------

Well Diameter (in): 4

Initial D.T.W. (ft): 19.6

Time: 19 12:14

(taken at initial gauging of all wells) Sheen?

Confirm D.T.W. (ft): 19.16

Time: 12:16

(taken prior to purging well)

Final D.T.W. (ft): 21.01

Time: 12:28

(taken after sample collection)

If NAPL Present: D.T.P.:

D.T.W.:

Thickness: _____ **Time:** _____

Water Quality Parameters - Recorded During Well Purging

YSI # 1 Calibrated by: 9-16-20 GB

[illegible]**Analytical Parameters (include analysis method and number and type of sample containers)**

BTEX per EPA Method 8021 (3 - 40 mL Vials w/ HgCl₂ preserve)

GRO + DRO per EPA Method 8015M (250 mL Amber Glass)

Disposal of Purged Water: On Ground- No Drainage to Wash

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 ≈ 5 Gallons.

Caseing = 2.32 AGS

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-8

Animas Environmental Services

624 E Comanche St., Farmington NM 87401

Tel. (505) 564-2281 Fax (505) 324-2022

Site: BMG

Location: O-9

Project: Groundwater Monitoring and Sampling

Sampling Technician: CL & GB

Purge / No Purge: Purge

Well Diameter (in): 4

Initial D.T.W. (ft): 18.67

Confirm D.T.W. (ft): 18.67

Final D.T.W. (ft): 21.28

If NAPL Present: D.T.P.: -

Project No.:

Date: 9-16-20

Arrival Time: 10:44

Air Temp: 75° Sunny & Breezy & Hazy

T.O.C. Elev. (ft):

Total Well Depth (ft): 22.68

Time: 10:45 (taken at initial gauging of all wells)

Time: 10:47 (taken prior to purging well)

Time: 11:06 (taken after sample collection)

D.T.W.: - Thickness: - Time: -

Water Quality Parameters - Recorded During Well Purging

YSI # 1 Calibrated by: 9-16-20 GB

Time	Temp (deg C)	Conductivity (μ S) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
10:51	12.5	566	1.07	7.49	25.0	Initial	Clear / No odor
10:53	11.5	545	1.48	7.18	3.4	1.0	Some Turbid / Tan Sed / No Odor
10:55	11.3	542	1.62	7.01	-3.0	2.0	Some Turbid / Tan Sed / No Odor
10:57	11.4	546	1.45	7.01	-11.5	3.0	Some Turbid / Tan Sed / No Odor
10:59	11.3	543	1.52	6.94	-20.3	4.0	Turbid / Brown Sed / No Odor
11:01	11.6	545	1.60	6.97	-19.1	5.0	Turbid / Brown Sed / No Odor
11:05							Samples Collected
							Low Recharge

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

BTEX per EPA Method 8021 (3 - 40 mL Vials w/ HgCl2 preserve)

GRO + DRO per EPA Method 8015M (250 mL Amber Glass)

Disposal of Purged Water: on Ground - No Drainage to Wash

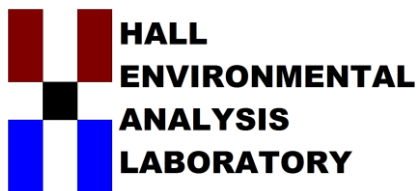
Collected Samples Stored on Ice in Cooler: Yes

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: Casing: 2.25 ABS Calculated purge Volume \approx 8.0 barrels.



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

September 22, 2020

Elizabeth McNally
Animas Environmental
624 E. Comanche
Farmington, NM 87401
TEL:
FAX:

RE: BMG 0 9

OrderNo.: 2009989

Dear Elizabeth McNally:

Hall Environmental Analysis Laboratory received 5 sample(s) on 9/17/2020 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,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a white background.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 2009989

Date Reported: 9/22/2020

CLIENT: Animas Environmental

Client Sample ID: MW-5

Project: BMG 0 9

Collection Date: 9/16/2020 12:44:00 PM

Lab ID: 2009989-001

Matrix: AQUEOUS

Received Date: 9/17/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE							Analyst: CCM
Gasoline Range Organics (GRO)	0.34	0.050		mg/L	1	9/19/2020 4:05:00 PM	G71977
Surr: BFB	78.6	70-130		%Rec	1	9/19/2020 4:05:00 PM	G71977
EPA METHOD 8015M/D: DIESEL RANGE							Analyst: mb
Diesel Range Organics (DRO)	4.5	1.0		mg/L	1	9/19/2020 7:07:39 PM	55274
Surr: DNOP	120	70-130		%Rec	1	9/19/2020 7:07:39 PM	55274
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: CCM
Benzene	ND	1.0		µg/L	1	9/19/2020 4:05:00 PM	SL71977
Toluene	ND	1.0		µg/L	1	9/19/2020 4:05:00 PM	SL71977
Ethylbenzene	ND	1.0		µg/L	1	9/19/2020 4:05:00 PM	SL71977
Xylenes, Total	ND	1.5		µg/L	1	9/19/2020 4:05:00 PM	SL71977
Surr: 1,2-Dichloroethane-d4	102	70-130		%Rec	1	9/19/2020 4:05:00 PM	SL71977
Surr: Dibromofluoromethane	101	70-130		%Rec	1	9/19/2020 4:05:00 PM	SL71977
Surr: Toluene-d8	99.5	70-130		%Rec	1	9/19/2020 4:05:00 PM	SL71977

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **2009989**Date Reported: **9/22/2020****CLIENT:** Animas Environmental**Client Sample ID:** MW-6**Project:** BMG 0 9**Collection Date:** 9/16/2020 11:59:00 AM**Lab ID:** 2009989-002**Matrix:** AQUEOUS**Received Date:** 9/17/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE							Analyst: CCM
Gasoline Range Organics (GRO)	ND	0.10		mg/L	2	9/19/2020 1:30:00 AM	R71951
Surr: BFB	80.4	70-130		%Rec	2	9/19/2020 1:30:00 AM	R71951
EPA METHOD 8015M/D: DIESEL RANGE							Analyst: mb
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	9/19/2020 7:37:40 PM	55274
Surr: DNOP	127	70-130		%Rec	1	9/19/2020 7:37:40 PM	55274
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: CCM
Benzene	ND	1.0		µg/L	1	9/20/2020 1:26:00 PM	SL71986
Toluene	ND	1.0		µg/L	1	9/20/2020 1:26:00 PM	SL71986
Ethylbenzene	ND	1.0		µg/L	1	9/20/2020 1:26:00 PM	SL71986
Xylenes, Total	ND	1.5		µg/L	1	9/20/2020 1:26:00 PM	SL71986
Surr: 1,2-Dichloroethane-d4	98.7	70-130		%Rec	1	9/20/2020 1:26:00 PM	SL71986
Surr: Dibromofluoromethane	102	70-130		%Rec	1	9/20/2020 1:26:00 PM	SL71986
Surr: Toluene-d8	100	70-130		%Rec	1	9/20/2020 1:26:00 PM	SL71986

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 2009989

Date Reported: 9/22/2020

CLIENT: Animas Environmental

Client Sample ID: MW-7

Project: BMG 0 9

Collection Date: 9/16/2020 12:26:00 PM

Lab ID: 2009989-003

Matrix: AQUEOUS

Received Date: 9/17/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE							Analyst: CCM
Gasoline Range Organics (GRO)	0.078	0.050		mg/L	1	9/19/2020 1:53:00 AM	R71951
Surr: BFB	77.4	70-130		%Rec	1	9/19/2020 1:53:00 AM	R71951
EPA METHOD 8015M/D: DIESEL RANGE							Analyst: mb
Diesel Range Organics (DRO)	5.7	1.0		mg/L	1	9/19/2020 7:47:45 PM	55274
Surr: DNOP	114	70-130		%Rec	1	9/19/2020 7:47:45 PM	55274
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: CCM
Benzene	ND	1.0		µg/L	1	9/20/2020 1:50:00 PM	SL71986
Toluene	ND	1.0		µg/L	1	9/20/2020 1:50:00 PM	SL71986
Ethylbenzene	ND	1.0		µg/L	1	9/20/2020 1:50:00 PM	SL71986
Xylenes, Total	ND	1.5		µg/L	1	9/20/2020 1:50:00 PM	SL71986
Surr: 1,2-Dichloroethane-d4	96.1	70-130		%Rec	1	9/20/2020 1:50:00 PM	SL71986
Surr: Dibromofluoromethane	101	70-130		%Rec	1	9/20/2020 1:50:00 PM	SL71986
Surr: Toluene-d8	96.4	70-130		%Rec	1	9/20/2020 1:50:00 PM	SL71986

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 2009989

Date Reported: 9/22/2020

CLIENT: Animas Environmental

Client Sample ID: MW-8

Project: BMG 0 9

Collection Date: 9/16/2020 11:05:00 AM

Lab ID: 2009989-004

Matrix: AQUEOUS

Received Date: 9/17/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE							Analyst: CCM
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	9/19/2020 2:17:00 AM	R71951
Surr: BFB	81.0	70-130		%Rec	1	9/19/2020 2:17:00 AM	R71951
EPA METHOD 8015M/D: DIESEL RANGE							Analyst: mb
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	9/19/2020 7:57:42 PM	55274
Surr: DNOP	118	70-130		%Rec	1	9/19/2020 7:57:42 PM	55274
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: CCM
Benzene	ND	1.0		µg/L	1	9/20/2020 2:13:00 PM	SL71986
Toluene	ND	1.0		µg/L	1	9/20/2020 2:13:00 PM	SL71986
Ethylbenzene	ND	1.0		µg/L	1	9/20/2020 2:13:00 PM	SL71986
Xylenes, Total	ND	1.5		µg/L	1	9/20/2020 2:13:00 PM	SL71986
Surr: 1,2-Dichloroethane-d4	102	70-130		%Rec	1	9/20/2020 2:13:00 PM	SL71986
Surr: Dibromofluoromethane	103	70-130		%Rec	1	9/20/2020 2:13:00 PM	SL71986
Surr: Toluene-d8	96.7	70-130		%Rec	1	9/20/2020 2:13:00 PM	SL71986

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **2009989**

Date Reported: **9/22/2020**

CLIENT: Animas Environmental

Client Sample ID: Trip Blank

Project: BMG 0 9

Collection Date:

Lab ID: 2009989-005

Matrix: TRIP BLANK

Received Date: 9/17/2020 8:05:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: CCM
Benzene	ND	1.0		µg/L	1	9/20/2020 2:37:00 PM	SL71986
Toluene	ND	1.0		µg/L	1	9/20/2020 2:37:00 PM	SL71986
Ethylbenzene	ND	1.0		µg/L	1	9/20/2020 2:37:00 PM	SL71986
Xylenes, Total	ND	1.5		µg/L	1	9/20/2020 2:37:00 PM	SL71986
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	1	9/20/2020 2:37:00 PM	SL71986
Surr: Dibromofluoromethane	103	70-130		%Rec	1	9/20/2020 2:37:00 PM	SL71986
Surr: Toluene-d8	97.8	70-130		%Rec	1	9/20/2020 2:37:00 PM	SL71986

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2009989

22-Sep-20

Client: Animas Environmental

Project: BMG 0 9

Sample ID: 2009989-001BMS	SampType: MS	TestCode: EPA Method 8015M/D: Diesel Range
Client ID: MW-5	Batch ID: 55274	RunNo: 71994
Prep Date: 9/18/2020	Analysis Date: 9/19/2020	SeqNo: 2520682 Units: mg/L
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Diesel Range Organics (DRO)	9.9	1.0 5.000 4.487 108 70 130
Surr: DNOP	0.57	0.5000 114 70 130

Sample ID: 2009989-001BMSD	SampType: MSD	TestCode: EPA Method 8015M/D: Diesel Range
Client ID: MW-5	Batch ID: 55274	RunNo: 71994
Prep Date: 9/18/2020	Analysis Date: 9/19/2020	SeqNo: 2520683 Units: mg/L
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Diesel Range Organics (DRO)	11	1.0 5.000 4.487 126 70 130 8.42 20
Surr: DNOP	0.71	0.5000 142 70 130 0 0 S

Sample ID: LCS-55274	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range
Client ID: LCSW	Batch ID: 55274	RunNo: 71994
Prep Date: 9/18/2020	Analysis Date: 9/19/2020	SeqNo: 2520952 Units: mg/L
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Diesel Range Organics (DRO)	5.1	1.0 5.000 0 102 70 130
Surr: DNOP	0.55	0.5000 110 70 130

Sample ID: MB-55274	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range
Client ID: PBW	Batch ID: 55274	RunNo: 71994
Prep Date: 9/18/2020	Analysis Date: 9/19/2020	SeqNo: 2520953 Units: mg/L
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Diesel Range Organics (DRO)	ND	1.0
Surr: DNOP	1.2	1.000 119 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 Quantitative 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#: 2009989

22-Sep-20

Client: Animas Environmental

Project: BMG 0 9

Sample ID: 100ng 8260 lcs	SampType: LCS		TestCode: EPA Method 8260: Volatiles Short List							
Client ID: LCSW	Batch ID: SL71977		RunNo: 71977							
Prep Date:	Analysis Date: 9/19/2020		SeqNo: 2519849		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	109	70	130			
Toluene	21	1.0	20.00	0	105	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		104	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		99.9	70	130			
Surr: Dibromofluoromethane	10		10.00		100	70	130			
Surr: Toluene-d8	9.9		10.00		99.0	70	130			

Sample ID: mb	SampType: MBLK		TestCode: EPA Method 8260: Volatiles Short List							
Client ID: PBW	Batch ID: SL71977		RunNo: 71977							
Prep Date:	Analysis Date: 9/19/2020		SeqNo: 2519855		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	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		99.8	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.2	70	130			
Surr: Dibromofluoromethane	10		10.00		100	70	130			
Surr: Toluene-d8	9.5		10.00		94.8	70	130			

Sample ID: 100ng 8260 lcs	SampType: LCS		TestCode: EPA Method 8260: Volatiles Short List							
Client ID: LCSW	Batch ID: SL71986		RunNo: 71986							
Prep Date:	Analysis Date: 9/20/2020		SeqNo: 2520223		Units: µg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	109	70	130			
Toluene	21	1.0	20.00	0	106	70	130			
Surr: 1,2-Dichloroethane-d4	9.8		10.00		98.2	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130			
Surr: Dibromofluoromethane	9.9		10.00		99.0	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			

Sample ID: mb	SampType: MBLK		TestCode: EPA Method 8260: Volatiles Short List							
Client ID: PBW	Batch ID: SL71986		RunNo: 71986							
Prep Date:	Analysis Date: 9/20/2020		SeqNo: 2520224		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								

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 Quantitative 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#: 2009989

22-Sep-20

Client: Animas Environmental

Project: BMG 0 9

Sample ID: mb	SampType: MBLK	TestCode: EPA Method 8260: Volatiles Short List									
Client ID: PBW	Batch ID: SL71986	RunNo: 71986									
Prep Date:	Analysis Date: 9/20/2020	SeqNo: 2520224 Units: µg/L									
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Ethylbenzene	ND	1.0									
Xylenes, Total	ND	1.5									
Surr: 1,2-Dichloroethane-d4	10		10.00		103	70	130				
Surr: 4-Bromofluorobenzene	9.9		10.00		99.1	70	130				
Surr: Dibromofluoromethane	10		10.00		103	70	130				
Surr: Toluene-d8	10		10.00		101	70	130				

Sample ID: 2009989-004ams	SampType: MS	TestCode: EPA Method 8260: Volatiles Short List									
Client ID: MW-8	Batch ID: SL71986	RunNo: 71986									
Prep Date:	Analysis Date: 9/20/2020	SeqNo: 2520717 Units: µg/L									
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	23	1.0	20.00	0	115	70	130				
Toluene	22	1.0	20.00	0	109	70	130				
Surr: 1,2-Dichloroethane-d4	11		10.00		108	70	130				
Surr: 4-Bromofluorobenzene	10		10.00		99.5	70	130				
Surr: Dibromofluoromethane	10		10.00		101	70	130				
Surr: Toluene-d8	10		10.00		99.6	70	130				

Sample ID: 2009989-004amsd	SampType: MSD	TestCode: EPA Method 8260: Volatiles Short List									
Client ID: MW-8	Batch ID: SL71986	RunNo: 71986									
Prep Date:	Analysis Date: 9/20/2020	SeqNo: 2520718 Units: µg/L									
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	22	1.0	20.00	0	109	70	130	6.06	20		
Toluene	20	1.0	20.00	0	101	70	130	8.05	20		
Surr: 1,2-Dichloroethane-d4	9.9		10.00		98.9	70	130	0	0		
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130	0	0		
Surr: Dibromofluoromethane	10		10.00		100	70	130	0	0		
Surr: Toluene-d8	9.6		10.00		96.4	70	130	0	0		

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 Quantitative 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#: 2009989

22-Sep-20

Client: Animas Environmental

Project: BMG 0 9

Sample ID: 2.5 ug gro lcs2	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSW	Batch ID: G71951		RunNo: 71951							
Prep Date:	Analysis Date: 9/18/2020		SeqNo: 2519673		Units: %Rec					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	7.7		10.00		77.2	70	130			

Sample ID: mb2	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBW	Batch ID: G71951		RunNo: 71951							
Prep Date:	Analysis Date: 9/18/2020		SeqNo: 2519674		Units: %Rec					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	7.6		10.00		76.0	70	130			

Sample ID: 2.5 ug gro lcs	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSW	Batch ID: G71977		RunNo: 71977							
Prep Date:	Analysis Date: 9/19/2020		SeqNo: 2519873		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.44	0.050	0.5000	0	87.2	70	130			
Surr: BFB	8.3		10.00		82.5	70	130			

Sample ID: mb	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBW	Batch ID: G71977		RunNo: 71977							
Prep Date:	Analysis Date: 9/19/2020		SeqNo: 2519874		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	7.7		10.00		77.4	70	130			

Sample ID: 2009989-003ams	SampType: MS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: MW-7	Batch ID: G71951		RunNo: 71977							
Prep Date:	Analysis Date: 9/19/2020		SeqNo: 2519876		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.39	0.050	0.5000	0	78.8	70	130			
Surr: BFB	7.9		10.00		78.9	70	130			

Sample ID: 2009989-003amsd	SampType: MSD		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: MW-7	Batch ID: G71951		RunNo: 71977							
Prep Date:	Analysis Date: 9/19/2020		SeqNo: 2519877		Units: %Rec					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	7.7		10.00		77.1	70	130	0	0	

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 Quantitative 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



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

Sample Log-In Check List

Client Name: **Animas Environmental Services**

Work Order Number: **2009989**

RcptNo: 1

Received By: **Scott Anderson**

9/17/2020 8:05:00 AM

Completed By: **Emily Mocho**

9/17/2020 9:50:30 AM

Reviewed By: *CNC*

9/17/20

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 $>0^{\circ}\text{C}$ 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. Received at least 1 vial with headspace $<1/4"$ for AQ VOA? Yes ☒ No ☐ NA ☐
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: *JR 9/17/20*

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	5.6	Good	Not Present			

