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

State of New Mexico
Energy Minerals and Natural Resources Department

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

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party: Wapiti Operating, LLC	OGRID: 328741
Contact Name: Randy L. Madison	Contact Telephone: 575-445-6706
Contact email: rmadison@wapitienergy.com	Incident # *(assigned by OCD)* NRM2005230899
Contact mailing address: P.O. Box 190, 309 Silver St., Raton, NM 87740	

Location of Release Source

Latitude: N 36.97470 Longitude: W 104.81300
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: VPR A-47	Site Type: Gas Well
Date Release Discovered: 2/11/20	API# *(if applicable)*: 30-007-20197

Unit Letter	Section	Township	Range	County
P	28	32N	20E	Colfax

Surface Owner: ☐ State ☐ Federal ☐ Tribal ☒ Private (*Name:* Vermejo Park Ranch)

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☒ Produced Water	Volume Released (bbls): 356	Volume Recovered (bbls): 0
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☐ Yes ☒ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release: 2" water line froze and split along the length of the pipe. The length of the split was about 6 feet.

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State of New Mexico
Oil Conservation Division

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Was this a major release as defined by 19.15.29.7(A) NMAC? ☒ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release? We calculated the amount of produced water to be about 356 Barrels.
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)? A phone call was made to Cory Smith. A follow-up email was also sent to Cory. Randy Madison made the notification	

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

☒ The source of the release has been stopped.

☐ The impacted area has been secured to protect human health and the environment.

☐ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.

☐ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why:
The source was stopped by closing the valves on each end of the split pipe. The pipe was replaced. The water ran off the location and dissipated into the ground. The water presents no threat to humans or the environment. See the attached water analysis. See the attached map with GPS points showing the water did not get close to any water-ways or sources.

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

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

Printed Name: Randy L. Madison Title: HSE Specialist

Signature: Randy L Madison Date: 2/20/20

email: rmadison@wapitienergy.com Telephone: 575-445-6706

OCD Only

Received by: Date:

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State of New Mexico
Oil Conservation Division

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Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	17.88 ft.
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☒ Yes ☐ No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

Characterization Report Checklist: ***Each of the following items must be included in the report.***

☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
☒ Field data
☒ Data table of soil contaminant concentration data
☒ Depth to water determination
☒ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
☐ Boring or excavation logs
☐ Photographs including date and GIS information
☒ Topographic/Aerial maps
☒ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

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State of New Mexico
Oil Conservation Division

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

Printed Name: Randy L. Madison Title: HSE Specialist

Signature: Randy L Madison Date: 9/16/20

email: rmadison@wapitienergy.com Telephone: 575-445-6706

OCD Only

Received by: Date:

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State of New Mexico
Oil Conservation Division

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Remediation Plan

Remediation Plan Checklist: ***Each of the following items must be included in the plan.***

- ☐ Detailed description of proposed remediation technique
- ☐ Scaled sitemap with GPS coordinates showing delineation points
- ☐ Estimated volume of material to be remediated
- ☒ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- ☐ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

Deferral Requests Only: ***Each of the following items must be confirmed as part of any request for deferral of remediation.***

- ☐ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.
- ☐ Extents of contamination must be fully delineated.
- ☒ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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

Printed Name: Randy L. Madison Title: HSE Specialist

Signature: Randy L Madison Date: 9/16/20

email: rmadison@wapitienergy.com Telephone: 575-445-6706

OCD Only

Received by: Date:

☐ Approved ☐ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature: Date:

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State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
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Application ID	

Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

Closure Report Attachment Checklist: ***Each of the following items must be included in the closure report.***

☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC

☐ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)

☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)

☐ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: Randy L. Madison Title: HSE Specialist

Signature: Randy L Madison Date: 9/16/20

email: rmadison@wapitienergy.com Telephone: 575-445-6706

OCD Only

Received by: _____ Date: _____

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: Nelson Velez Date: 10/28/2022

Printed Name: Nelson Velez Title: Environmental Specialist - Adv

VPR A-47, API# 30-007-20197, Incident # NRM2005230899
Table of Contents

Executive Summary

On May 15, 2020 Wapiti Operating, LLC sampled major release VPR A-47, API#30-007-20197, Incident# NRM2005230899 per submitted sample plan. The samples did not pass with in the range of Table 1 of 19.15.29.12 NMAC. Due to the benign nature of the water that was released the results of the samples were questioned. Mr. Smith recommended 2 background sample be taken and analysis this was agreed upon.

The background samples were collected on 7/20/20 50 feet east of the release and 50 feet west of the release. These results were received on 8/3/20. The results were very high on the TPH and Mr. Smith questioned the results of the samples. Further consultation with Bryce Stearns, Corporate Technical Director of Eurofins Test America provide some technical information into the reason our results are what they are. Mr. Stearns explained that there are many Bio Genic Materials that can come back with in the range, on the scale that Total Petroleum Hydrocarbons read in that are not native to Petroleum.

The samples were taken in a wooded area with a lot of pine duff in-place. Some places I may have scrapped back 2 to 4 inches of duff back to get to soil. With me taking the samples 50 to 70 feet in each direction from the release I believe these are valid background samples. The soil is undisturbed with green vegetation in all areas.

When I subtract the average of the 2 background samples TPH it puts me well with in Table 1 range on the 4 original samples TPH. There is not vegetation kill with in the spill area. With all the documentation of soil sampling attached I am requesting closure of this spill.

See attached all documentation to support correspondence.

A-47 Spill of Produced Water GPS points

1. N. 36.9747
   W. 104.81300

2. N. 36.97482
   W. 104.81323

3. N. 36.97509
   W. 104.81324

4. N. 36.9750
   W. 104.81327

5. N 36.97552
   W. 104.81343

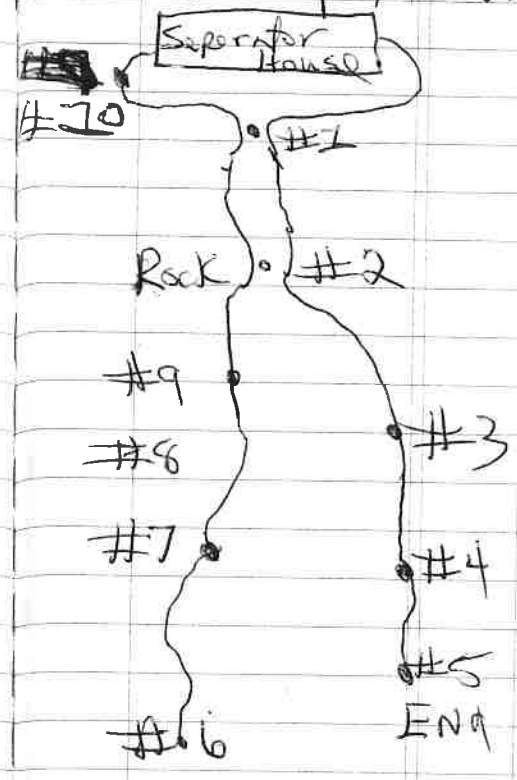
6. N. 36.97563
   W. 104.81329

7. N. 36.97547
   W. 104.81327

8. N 36.97551
   W. 104.8132

9. N. 36.97500
   W. 104.81323

A-47 Sp. 11 2/11/20



#1 N36.9747
W104.81300

#2 N36.97482
W104.81323

#3 N36.977490
W104.81324

#4 N36.97552
W 104.81343

A-47 Spill Cont.

#5 N 36.97552
W 104.81343

#6 N 36.97563
W 104.81329

#7 N 36.97547
W 104.81327

#8 N 36.97551
W 104.81327

#9 N 36.97506
W 104.81323

A-47 Single Grab
3/2/20

N. 36.97470
W. 104.81305

2/11/20

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BAKER HUGHES

Central Area Laboratory
12701 N. Santa Fe Ave, Suite 151
Oklahoma City, Oklahoma 73114

Upstream Chemicals

REPORT DATE: 2/18/2020

COMPLETE WATER ANALYSIS REPORT SSP v.2010

CUSTOMER:	WAPITI OPERATING	ACCOUNT REP:	TY L. CLINESMITH
DISTRICT:	OKLAHOMA	SAMPLE ID:	201910011049
AREA/LEASE:	VERMEJO PARK RANCH	SAMPLE DATE:	7/31/2019
SAMPLE POINT NAME	VPR A 47	ANALYSIS DATE:	11/21/2019
SITE TYPE:	WELL SITES	ANALYST:	BS
SAMPLE POINT DESCRIPTION:	WELL HEAD		

WAPITI OPERATING, VERMEJO PARK RANCH, VPR A 47

FIELD DATA		ANALYSIS OF SAMPLE					
		ANIONS:	mg/L	meq/L	CATIONS:	mg/L	meq/L
Initial Temperature (°F):	250	Chloride (Cl^-):	702.2	19.8	Sodium (Na^+):	928.6	40.4
Final Temperature (°F):	68	Sulfate (SO_4^{2-}):	0.0	0.0	Potassium (K^+):	3.2	0.1
Initial Pressure (psi):	100	Borate (H_3BO_3):	0.0	0.0	Magnesium (Mg^{2+}):	2.9	0.2
Final Pressure (psi):	15	Fluoride (F^-):	ND		Calcium (Ca^{2+}):	9.9	0.5
		Bromide (Br^-):	ND		Strontium (Sr^{2+}):	2.4	0.1
pH:		Nitrite (NO_2^-):	ND		Barium (Ba^{2+}):	2.3	0.0
pH at time of sampling:	8.0	Nitrate (NO_3^-):	ND		Iron (Fe^{2+}):	0.9	0.0
		Phosphate (PO_4^{3-}):	0.9	0.0	Manganese (Mn^{2+}):	0.0	0.0
		Silica (SiO_2):	ND		Lead (Pb^{2+}):	ND	
					Zinc (Zn^{2+}):	0.0	0.0

ALKALINITY BY TITRATION:	mg/L	meq/L
Bicarbonate (HCO_3^-):	815.0	13.4
Carbonate (CO_3^{2-}):	ND	
Hydroxide (OH^-):	ND	

		ORGANIC ACIDS:	mg/L	meq/L
aqueous CO_2 (ppm):	44.0	Formic Acid:	ND	
aqueous H_2S (ppm):	ND	Acetic Acid:	ND	
aqueous O2 (ppb):	ND	Propionic Acid:	ND	
		Butyric Acid:	ND	
Calculated TDS (mg/L):	2467	Valeric Acid:	ND	
Density/Specific Gravity (g/cm³):	0.9989			
Measured Specific Gravity	ND			
Conductivity (mmhos):	ND			
Resistivity:	ND			
MCF/D:	No Data			
BOPD:	No Data			
BWPD:	No Data			

Aluminum (Al^{3+}):	ND		
Chromium (Cr^{3+}):	ND		
Cobalt (Co^{2+}):	ND		
Copper (Cu^{2+}):	ND		
Molybdenum (Mo^{2+}):	ND		
Nickel (Ni^{2+}):	ND		
Tin (Sn^{2+}):	ND		
Titanium (Ti^{2+}):	ND		
Vanadium (V^{2+}):	ND		
Zirconium (Zr^{2+}):	ND		
Lithium (Li):	ND		
Total Hardness:	41	N/A	

Anion/Cation Ratio: 0.80 ND = Not Determined

SCALE PREDICTIONS BASED ON FIELD PROVIDED DATA; FUTHER MODELING MAY BE REQUIRED FOR VALIDATION OF SCALE PREDICTION RESULTS.

Conditions		Barite ($BaSO_4$)		Calcite ($CaCO_3$)		Gypsum ($CaSO_4 \cdot 2H_2O$)		Anhydrite ($CaSO_4$)	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
68°F	15 psi		0.000	0.24	3.034		0.000		0.000
88°F	24 psi		0.000	0.32	3.861		0.000		0.000
108°F	34 psi		0.000	0.43	4.840		0.000		0.000
129°F	43 psi		0.000	0.55	5.737		0.000		0.000
149°F	53 psi		0.000	0.69	6.484		0.000		0.000
169°F	62 psi		0.000	0.83	7.075		0.000		0.000
189°F	72 psi		0.000	0.98	7.524		0.000		0.000
210°F	81 psi		0.000	1.14	7.871		0.000		0.000
230°F	91 psi		0.000	1.30	8.117		0.000		0.000
250°F	100 psi		0.000	1.46	8.288		0.000		0.000

Conditions		Celestite ($SrSO_4$)		Halite (NaCl)		Iron Sulfide (FeS)		Iron Carbonate ($FeCO_3$)	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
68°F	15 psi		0.000	-4.82	0.000	-8.04	0.000	1.00	0.597
88°F	24 psi		0.000	-4.85	0.000	-8.15	0.000	1.16	0.618
108°F	34 psi		0.000	-4.87	0.000	-8.19	0.000	1.34	0.634
129°F	43 psi		0.000	-4.88	0.000	-8.20	0.000	1.52	0.645
149°F	53 psi		0.000	-4.88	0.000	-8.17	0.000	1.70	0.652
169°F	62 psi		0.000	-4.88	0.000	-8.13	0.000	1.87	0.656
189°F	72 psi		0.000	-4.87	0.000	-8.06	0.000	2.03	0.659
210°F	81 psi		0.000	-4.85	0.000	-7.97	0.000	2.19	0.661
230°F	91 psi		0.000	-4.84	0.000	-7.86	0.000	2.35	0.662
250°F	100 psi		0.000	-4.81	0.000	-7.75	0.000	2.49	0.663

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered
Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the eight (8) scales.
Note 3: Saturation Index predictions on this sheet use pH and alkalinity; $\%CO_2$ is not included in the calculations

ScaleSoftPitzer™ SSP2010

Comments:

BAKER HUGHES

Central Area Laboratory
12701 N. Santa Fe Ave, Suite 151
Oklahoma City, Oklahoma 73114

Upstream Chemicals

REPORT DATE: 2/18/2020

COMPLETE WATER ANALYSIS REPORT SSP v.2010

CUSTOMER:	WAPITI OPERATING	**ACCOUNT REP:**	TY L. CLINESMITH
DISTRICT:	OKLAHOMA	**SAMPLE ID:**	201910011048
AREA/LEASE:	VERMEJO PARK RANCH	**SAMPLE DATE:**	7/31/2019
SAMPLE POINT NAME	VPR A 48	**ANALYSIS DATE:**	11/21/2019
SITE TYPE:	WELL SITES	**ANALYST:**	BS
SAMPLE POINT DESCRIPTION:	WELL HEAD		

WAPITI OPERATING, VERMEJO PARK RANCH, VPR A 48

FIELD DATA		ANALYSIS OF SAMPLE					
		ANIONS:	mg/L	meq/L	CATIONS:	mg/L	meq/L
Initial Temperature (°F):	250	Chloride (Cl^-):	680.3	19.2	Sodium (Na^+):	903.0	39.3
Final Temperature (°F):	65	Sulfate (SO_4^{2-}):	0.0	0.0	Potassium (K^+):	2.8	0.1
Initial Pressure (psi):	100	Borate (H_3BO_3):	1.7	0.0	Magnesium (Mg^{2+}):	2.9	0.2
Final Pressure (psi):	15	Fluoride (F^-):	ND		Calcium (Ca^{2+}):	18.5	0.9
		Bromide (Br^-):	ND		Strontium (Sr^{2+}):	2.5	0.1
pH:		Nitrite (NO_2^-):	ND		Barium (Ba^{2+}):	1.8	0.0
pH at time of sampling:	7.7	Nitrate (NO_3^-):	ND		Iron (Fe^{2+}):	2.1	0.1
		Phosphate (PO_4^{3-}):	0.0	0.0	Manganese (Mn^{2+}):	0.0	0.0
		Silica (SiO_2):	ND		Lead (Pb^{2+}):	ND	
					Zinc (Zn^{2+}):	0.0	0.0

ALKALINITY BY TITRATION:	mg/L	meq/L
Bicarbonate (HCO_3^-):	835.0	13.7
Carbonate (CO_3^{2-}):	ND	
Hydroxide (OH^-):	ND	

		ORGANIC ACIDS:	mg/L	meq/L			
aqueous CO_2 (ppm):	33.0	Formic Acid:	ND		Aluminum (Al^{3+}):	ND	
aqueous H_2S (ppm):	ND	Acetic Acid:	ND		Chromium (Cr^{3+}):	ND	
aqueous O2 (ppb):	ND	Propionic Acid:	ND		Cobalt (Co^{2+}):	ND	
		Butyric Acid:	ND		Copper (Cu^{2+}):	ND	
Calculated TDS (mg/L):	2449	Valeric Acid:	ND		Molybdenum (Mo^{2+}):	ND	
Density/Specific Gravity (g/cm³):	0.9989				Nickel (Ni^{2+}):	ND	
Measured Specific Gravity	ND				Tin (Sn^{2+}):	ND	
Conductivity (mmhos):	ND				Titanium (Ti^{2+}):	ND	
Resistivity:	ND				Vanadium (V^{2+}):	ND	
MCF/D:	No Data				Zirconium (Zr^{2+}):	ND	
BOPD:	No Data				Lithium (Li):	ND	
BWPD:	No Data	Anion/Cation Ratio:		0.81	Total Hardness:	62	N/A

ND = Not Determined

SCALE PREDICTIONS BASED ON FIELD PROVIDED DATA; FUTHER MODELING MAY BE REQUIRED FOR VALIDATION OF SCALE PREDICTION RESULTS.

Conditions		Barite ($BaSO_4$)		Calcite ($CaCO_3$)		Gypsum ($CaSO_4 \cdot 2H_2O$)		Anhydrite ($CaSO_4$)	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
65°F	15 psi		0.000	0.23	5.292		0.000		0.000
86°F	24 psi		0.000	0.31	6.921		0.000		0.000
106°F	34 psi		0.000	0.43	8.847		0.000		0.000
127°F	43 psi		0.000	0.57	10.609		0.000		0.000
147°F	53 psi		0.000	0.71	12.076		0.000		0.000
168°F	62 psi		0.000	0.87	13.230		0.000		0.000
188°F	72 psi		0.000	1.03	14.103		0.000		0.000
209°F	81 psi		0.000	1.20	14.774		0.000		0.000
229°F	91 psi		0.000	1.37	15.242		0.000		0.000
250°F	100 psi		0.000	1.55	15.562		0.000		0.000

Conditions		Celestite ($SrSO_4$)		Halite ($NaCl$)		Iron Sulfide (FeS)		Iron Carbonate ($FeCO_3$)	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
65°F	15 psi		0.000	-4.84	0.000	-7.97	0.000	1.08	1.417
86°F	24 psi		0.000	-4.87	0.000	-8.07	0.000	1.25	1.460
106°F	34 psi		0.000	-4.89	0.000	-8.10	0.000	1.44	1.492
127°F	43 psi		0.000	-4.90	0.000	-8.09	0.000	1.63	1.513
147°F	53 psi		0.000	-4.90	0.000	-8.05	0.000	1.82	1.526
168°F	62 psi		0.000	-4.90	0.000	-7.99	0.000	2.00	1.534
188°F	72 psi		0.000	-4.89	0.000	-7.91	0.000	2.18	1.540
209°F	81 psi		0.000	-4.88	0.000	-7.80	0.000	2.35	1.543
229°F	91 psi		0.000	-4.86	0.000	-7.68	0.000	2.52	1.545
250°F	100 psi		0.000	-4.84	0.000	-7.55	0.000	2.68	1.547

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered

Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the eight (8) scales.

Note 3: Saturation Index predictions on this sheet use pH and alkalinity; $\%CO_2$ is not included in the calculations

ScaleSoftPitzer™ SSP2010

Comments:

BAKER HUGHES

Central Area Laboratory
12701 N. Santa Fe Ave, Suite 151
Oklahoma City, Oklahoma 73114

Upstream Chemicals

REPORT DATE: 2/18/2020

COMPLETE WATER ANALYSIS REPORT SSP v.2010

CUSTOMER:	WAPITI OPERATING	**ACCOUNT REP:**	TY L. CLINESMITH
DISTRICT:	OKLAHOMA	**SAMPLE ID:**	201910011621
AREA/LEASE:	VERMEJO PARK RANCH	**SAMPLE DATE:**	8/1/2019
SAMPLE POINT NAME	VPR A 49	**ANALYSIS DATE:**	11/25/2019
SITE TYPE:	WELL SITES	**ANALYST:**	BS
SAMPLE POINT DESCRIPTION:	WELL HEAD		

WAPITI OPERATING, VERMEJO PARK RANCH, VPR A 49

FIELD DATA		ANALYSIS OF SAMPLE					
		ANIONS:	mg/L	meq/L	CATIONS:	mg/L	meq/L
Initial Temperature (°F):	250	Chloride (Cl^-):	1423.7	40.2	Sodium (Na^+):	1135.1	49.4
Final Temperature (°F):	69	Sulfate (SO_4^{2-}):	0.0	0.0	Potassium (K^+):	4.0	0.1
Initial Pressure (psi):	100	Borate (H_3BO_3):	0.0	0.0	Magnesium (Mg^{2+}):	5.4	0.4
Final Pressure (psi):	15	Fluoride (F^-):	ND		Calcium (Ca^{2+}):	25.3	1.3
		Bromide (Br^-):	ND		Strontium (Sr^{2+}):	4.1	0.1
pH:		Nitrite (NO_2^-):	ND		Barium (Ba^{2+}):	3.9	0.1
pH at time of sampling:	8.0	Nitrate (NO_3^-):	ND		Iron (Fe^{2+}):	1.7	0.1
		Phosphate (PO_4^{3-}):	0.0	0.0	Manganese (Mn^{2+}):	0.0	0.0
		Silica (SiO_2):	ND		Lead (Pb^{2+}):	ND	
					Zinc (Zn^{2+}):	0.0	0.0
ALKALINITY BY TITRATION:	mg/L	meq/L					
Bicarbonate (HCO_3^-):	1086.0	17.8			Aluminum (Al^{3+}):	ND	
Carbonate (CO_3^{2-}):	ND				Chromium (Cr^{3+}):	ND	
Hydroxide (OH^-):	ND				Cobalt (Co^{2+}):	ND	
			ORGANIC ACIDS:	mg/L	meq/L	Copper (Cu^{2+}):	ND	
aqueous CO_2 (ppm):	0.0	Formic Acid:	ND		Molybdenum (Mo^{2+}):	ND	
aqueous H_2S (ppm):	0.5	Acetic Acid:	ND		Nickel (Ni^{2+}):	ND	
aqueous O2 (ppb):	ND	Propionic Acid:	ND		Tin (Sn^{2+}):	ND	
		Butyric Acid:	ND		Titanium (Ti^{2+}):	ND	
Calculated TDS (mg/L):	3689	Valeric Acid:	ND		Vanadium (V^{2+}):	ND	
Density/Specific Gravity (g/cm³):	0.9997				Zirconium (Zr^{2+}):	ND	
Measured Specific Gravity	ND				Lithium (Li):	ND	
Conductivity (mmhos):	ND						
Resistivity:	ND				Total Hardness:	93	N/A
MCF/D:	No Data						
BOPD:	No Data						
BWPD:	No Data	Anion/Cation Ratio:		1.13	ND = Not Determined		

SCALE PREDICTIONS BASED ON FIELD PROVIDED DATA; FUTHER MODELING MAY BE REQUIRED FOR VALIDATION OF SCALE PREDICTION RESULTS.

Conditions		Barite ($BaSO_4$)		Calcite ($CaCO_3$)		Gypsum ($CaSO_4 \cdot 2H_2O$)		Anhydrite ($CaSO_4$)	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
69°F	15 psi		0.000	0.73	15.910		0.000		0.000
89°F	24 psi		0.000	0.81	16.840		0.000		0.000
110°F	34 psi		0.000	0.92	17.941		0.000		0.000
130°F	43 psi		0.000	1.04	18.937		0.000		0.000
150°F	53 psi		0.000	1.17	19.759		0.000		0.000
170°F	62 psi		0.000	1.31	20.404		0.000		0.000
190°F	72 psi		0.000	1.45	20.892		0.000		0.000
210°F	81 psi		0.000	1.61	21.269		0.000		0.000
230°F	91 psi		0.000	1.77	21.537		0.000		0.000
250°F	100 psi		0.000	1.93	21.723		0.000		0.000

Conditions		Celestite ($SrSO_4$)		Halite ($NaCl$)		Iron Sulfide (FeS)		Iron Carbonate ($FeCO_3$)	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
69°F	15 psi		0.000	-4.45	0.000	1.90	0.492	1.38	1.171
89°F	24 psi		0.000	-4.48	0.000	1.79	0.488	1.53	1.187
110°F	34 psi		0.000	-4.50	0.000	1.74	0.486	1.71	1.199
130°F	43 psi		0.000	-4.51	0.000	1.73	0.486	1.88	1.207
150°F	53 psi		0.000	-4.51	0.000	1.75	0.487	2.05	1.212
170°F	62 psi		0.000	-4.51	0.000	1.80	0.488	2.22	1.216
190°F	72 psi		0.000	-4.50	0.000	1.87	0.491	2.38	1.218
210°F	81 psi		0.000	-4.49	0.000	1.96	0.493	2.54	1.220
230°F	91 psi		0.000	-4.47	0.000	2.06	0.496	2.69	1.221
250°F	100 psi		0.000	-4.45	0.000	2.17	0.498	2.83	1.222

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered.

Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the eight (8) scales.

Note 3: Saturation Index predictions on this sheet use pH and alkalinity; $\%CO_2$ is not included in the calculations.

ScaleSoftPitzer™ SSP2010

Comments:

BAKER HUGHES

Central Area Laboratory
12701 N. Santa Fe Ave, Suite 151
Oklahoma City, Oklahoma 73114

Upstream Chemicals

REPORT DATE: 2/18/2020

COMPLETE WATER ANALYSIS REPORT SSP v.2010

CUSTOMER:	WAPITI OPERATING	**ACCOUNT REP:**	TY L. CLINESMITH
DISTRICT:	OKLAHOMA	**SAMPLE ID:**	201910011623
AREA/LEASE:	VERMEJO PARK RANCH	**SAMPLE DATE:**	8/1/2019
SAMPLE POINT NAME	VPR A 57	**ANALYSIS DATE:**	11/25/2019
SITE TYPE:	WELL SITES	**ANALYST:**	BS
SAMPLE POINT DESCRIPTION:	WELL HEAD		

WAPITI OPERATING, VERMEJO PARK RANCH, VPR A 57

FIELD DATA		ANALYSIS OF SAMPLE					
		ANIONS:	mg/L	meq/L	CATIONS:	mg/L	meq/L
Initial Temperature (°F):	250	Chloride (Cl^-):	611.2	17.2	Sodium (Na^+):	737.2	32.1
Final Temperature (°F):	69	Sulfate (SO_4^{2-}):	0.0	0.0	Potassium (K^+):	2.3	0.1
Initial Pressure (psi):	100	Borate (H_3BO_3):	0.0	0.0	Magnesium (Mg^{2+}):	2.3	0.2
Final Pressure (psi):	15	Fluoride (F^-):	ND		Calcium (Ca^{2+}):	13.7	0.7
		Bromide (Br^-):	ND		Strontium (Sr^{2+}):	1.8	0.0
pH:		Nitrite (NO_2^-):	ND		Barium (Ba^{2+}):	1.7	0.0
pH at time of sampling:	8.2	Nitrate (NO_3^-):	ND		Iron (Fe^{2+}):	1.1	0.0
		Phosphate (PO_4^{3-}):	0.0	0.0	Manganese (Mn^{2+}):	0.0	0.0
		Silica (SiO_2):	ND		Lead (Pb^{2+}):	ND	
					Zinc (Zn^{2+}):	0.0	0.0
ALKALINITY BY TITRATION:	mg/L	meq/L					
Bicarbonate (HCO_3^-):	1146.0	18.8			Aluminum (Al^{3+}):	ND	
Carbonate (CO_3^{2-}):	ND				Chromium (Cr^{3+}):	ND	
Hydroxide (OH^-):	ND				Cobalt (Co^{2+}):	ND	
			ORGANIC ACIDS:	mg/L	meq/L	Copper (Cu^{2+}):	ND	
aqueous CO_2 (ppm):	0.0	Formic Acid:	ND		Molybdenum (Mo^{2+}):	ND	
aqueous H_2S (ppm):	0.5	Acetic Acid:	ND		Nickel (Ni^{2+}):	ND	
aqueous O2 (ppb):	ND	Propionic Acid:	ND		Tin (Sn^{2+}):	ND	
		Butyric Acid:	ND		Titanium (Ti^{2+}):	ND	
Calculated TDS (mg/L):	2517	Valeric Acid:	ND		Vanadium (V^{2+}):	ND	
Density/Specific Gravity (g/cm³):	0.9989				Zirconium (Zr^{2+}):	ND	
Measured Specific Gravity	ND				Lithium (Li^+):	ND	
Conductivity (mmhos):	ND						
Resistivity:	ND				Total Hardness:	47	N/A
MCF/D:	No Data						
BOPD:	No Data						
BWPD:	No Data	Anion/Cation Ratio:		1.09	ND = Not Determined		

SCALE PREDICTIONS BASED ON FIELD PROVIDED DATA; FUTHER MODELING MAY BE REQUIRED FOR VALIDATION OF SCALE PREDICTION RESULTS

Conditions		Barite ($BaSO_4$)		Calcite ($CaCO_3$)		Gypsum ($CaSO_4 \cdot 2H_2O$)		Anhydrite ($CaSO_4$)	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
69°F	15 psi		0.000	0.70	8.815		0.000		0.000
89°F	24 psi		0.000	0.77	9.301		0.000		0.000
109°F	34 psi		0.000	0.88	9.862		0.000		0.000
129°F	43 psi		0.000	1.00	10.364		0.000		0.000
149°F	53 psi		0.000	1.13	10.775		0.000		0.000
170°F	62 psi		0.000	1.27	11.095		0.000		0.000
190°F	72 psi		0.000	1.41	11.336		0.000		0.000
210°F	81 psi		0.000	1.56	11.521		0.000		0.000
230°F	91 psi		0.000	1.72	11.653		0.000		0.000
250°F	100 psi		0.000	1.88	11.744		0.000		0.000

Conditions		Celestite ($SrSO_4$)		Halite (NaCl)		Iron Sulfide (FeS)		Iron Carbonate ($FeCO_3$)	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
69°F	15 psi		0.000	-4.98	0.000	1.93	0.463	1.42	0.736
89°F	24 psi		0.000	-5.01	0.000	1.82	0.456	1.58	0.745
109°F	34 psi		0.000	-5.02	0.000	1.76	0.453	1.75	0.752
129°F	43 psi		0.000	-5.03	0.000	1.75	0.452	1.92	0.757
149°F	53 psi		0.000	-5.04	0.000	1.77	0.453	2.09	0.760
170°F	62 psi		0.000	-5.03	0.000	1.81	0.456	2.26	0.762
190°F	72 psi		0.000	-5.02	0.000	1.87	0.460	2.42	0.763
210°F	81 psi		0.000	-5.01	0.000	1.96	0.465	2.58	0.764
230°F	91 psi		0.000	-4.99	0.000	2.06	0.470	2.73	0.765
250°F	100 psi		0.000	-4.97	0.000	2.18	0.474	2.87	0.765

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered

Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the eight (8) scales.

Note 3: Saturation Index predictions on this sheet use pH and alkalinity; $\%CO_2$ is not included in the calculations.

ScaleSoftPitzer™ SSP2010

Comments:

BAKER HUGHES

Central Area Laboratory
12701 N. Santa Fe Ave, Suite 151
Oklahoma City, Oklahoma 73114

Upstream Chemicals

REPORT DATE: 2/18/2020

COMPLETE WATER ANALYSIS REPORT SSP v.2010

CUSTOMER:	WAPITI OPERATING	**ACCOUNT REP:**	TY L. CLINESMITH
DISTRICT:	OKLAHOMA	**SAMPLE ID:**	201910011622
AREA/LEASE:	VERMEJO PARK RANCH	**SAMPLE DATE:**	8/1/2019
SAMPLE POINT NAME	VPR A 59	**ANALYSIS DATE:**	11/25/2019
SITE TYPE:	WELL SITES	**ANALYST:**	BS
SAMPLE POINT DESCRIPTION:	WELL HEAD		

WAPITI OPERATING, VERMEJO PARK RANCH, VPR A 59

FIELD DATA		ANALYSIS OF SAMPLE					
		ANIONS:	mg/L	meq/L	CATIONS:	mg/L	meq/L
Initial Temperature (°F):	250	Chloride (Cl^-):	2767.4	78.1	Sodium (Na^+):	1630.8	71.0
Final Temperature (°F):	69	Sulfate (SO_4^{2-}):	0.0	0.0	Potassium (K^+):	4.7	0.1
Initial Pressure (psi):	100	Borate (H_3BO_3):	1.4	0.0	Magnesium (Mg^{2+}):	12.7	1.0
Final Pressure (psi):	15	Fluoride (F^-):	ND		Calcium (Ca^{2+}):	50.6	2.5
		Bromide (Br^-):	ND		Strontium (Sr^{2+}):	9.5	0.2
pH:		Nitrite (NO_2^-):	ND		Barium (Ba^{2+}):	7.4	0.1
pH at time of sampling:	7.7	Nitrate (NO_3^-):	ND		Iron (Fe^{2+}):	1.0	0.0
		Phosphate (PO_4^{3-}):	0.0	0.0	Manganese (Mn^{2+}):	0.0	0.0
		Silica (SiO_2):	ND		Lead (Pb^{2+}):	ND	
					Zinc (Zn^{2+}):	0.0	0.0

ALKALINITY BY TITRATION:	mg/L	meq/L
Bicarbonate (HCO_3^-):	848.0	13.9
Carbonate (CO_3^{2-}):	ND	
Hydroxide (OH^-):	ND	

		ORGANIC ACIDS:	mg/L	meq/L
aqueous CO_2 (ppm):	0.0	Formic Acid:	ND	
aqueous H_2S (ppm):	0.5	Acetic Acid:	ND	
aqueous O2 (ppb):	ND	Propionic Acid:	ND	
		Butyric Acid:	ND	
Calculated TDS (mg/L):	5332	Valeric Acid:	ND	
Density/Specific Gravity (g/cm³):	1.0008			
Measured Specific Gravity	ND			
Conductivity (mmhos):	ND			
Resistivity:	ND			
MCF/D:	No Data			
BOPD:	No Data			
BWPD:	No Data			

Aluminum (Al^{3+}):	ND				
Chromium (Cr^{3+}):	ND				
Cobalt (Co^{2+}):	ND				
Copper (Cu^{2+}):	ND				
Molybdenum (Mo^{2+}):	ND				
Nickel (Ni^{2+}):	ND				
Tin (Sn^{2+}):	ND				
Titanium (Ti^{2+}):	ND				
Vanadium (V^{2+}):	ND				
Zirconium (Zr^{2+}):	ND				
Lithium (Li):	ND				
Total Hardness:	195	N/A			

Anion/Cation Ratio: 1.23 ND = Not Determined

SCALE PREDICTIONS BASED ON FIELD PROVIDED DATA; FUTHER MODELING MAY BE REQUIRED FOR VALIDATION OF SCALE PREDICTION RESULTS.

Conditions		Barite ($BaSO_4$)		Calcite ($CaCO_3$)		Gypsum ($CaSO_4 \cdot 2H_2O$)		Anhydrite ($CaSO_4$)	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
69°F	15 psi		0.000	0.58	24.115		0.000		0.000
89°F	24 psi		0.000	0.66	26.625		0.000		0.000
109°F	34 psi		0.000	0.77	29.791		0.000		0.000
130°F	43 psi		0.000	0.90	32.852		0.000		0.000
150°F	53 psi		0.000	1.04	35.540		0.000		0.000
170°F	62 psi		0.000	1.18	37.766		0.000		0.000
190°F	72 psi		0.000	1.33	39.532		0.000		0.000
210°F	81 psi		0.000	1.49	40.952		0.000		0.000
230°F	91 psi		0.000	1.66	41.989		0.000		0.000
250°F	100 psi		0.000	1.82	42.723		0.000		0.000

Conditions		Celestite ($SrSO_4$)		Halite (NaCl)		Iron Sulfide (FeS)		Iron Carbonate ($FeCO_3$)	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
69°F	15 psi		0.000	-4.03	0.000	1.25	0.410	0.65	0.544
89°F	24 psi		0.000	-4.06	0.000	1.16	0.395	0.81	0.592
109°F	34 psi		0.000	-4.08	0.000	1.12	0.390	0.99	0.629
130°F	43 psi		0.000	-4.09	0.000	1.12	0.390	1.16	0.654
150°F	53 psi		0.000	-4.09	0.000	1.16	0.396	1.34	0.670
170°F	62 psi		0.000	-4.09	0.000	1.21	0.404	1.51	0.681
190°F	72 psi		0.000	-4.08	0.000	1.28	0.415	1.67	0.688
210°F	81 psi		0.000	-4.07	0.000	1.38	0.428	1.83	0.692
230°F	91 psi		0.000	-4.06	0.000	1.49	0.441	1.99	0.695
250°F	100 psi		0.000	-4.04	0.000	1.60	0.454	2.13	0.698

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered

Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the eight (8) scales.

Note 3: Saturation Index predictions on this sheet use pH and alkalinity; $\%CO_2$ is not included in the calculations.

ScaleSoftPitzer™ SSP2010

Comments:

Randy Madison

From: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Sent: Thursday, February 20, 2020 9:30 AM
To: Randy Madison
Subject: RE: Emailing: VPR A-59, VPR A-47, VPR A-48, VPR A-49, VPR A-57

Randy,

Right away please, just a grab of the area directly around the cracked pipe

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

-----Original Message-----
From: Randy Madison <RMadison@WapitiEnergy.com>
Sent: Thursday, February 20, 2020 9:29 AM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Subject: [EXT] RE: Emailing: VPR A-59, VPR A-47, VPR A-48, VPR A-49, VPR A-57

Do you want that right away or in the spring. Also is a grab ok on each leg of the run off or do you want a number of samples along the 314 feet.
Randy

-----Original Message-----
From: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Sent: Thursday, February 20, 2020 9:23 AM
To: Randy Madison <RMadison@WapitiEnergy.com>
Subject: RE: Emailing: VPR A-59, VPR A-47, VPR A-48, VPR A-49, VPR A-57

Randy,

I was just following up with Brandon Powell District III/IV Supervisor in addition the below requirements we also need a soil grab sample at the Release point analyzed for TPH, BTEX, and Chlorides.

Thank you,

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

-----Original Message-----
From: Smith, Cory, EMNRD
Sent: Thursday, February 20, 2020 9:05 AM
To: 'Randy Madison' <RMadison@WapitiEnergy.com>
Subject: RE: Emailing: VPR A-59, VPR A-47, VPR A-48, VPR A-49, VPR A-57

Randy,

Our GIS doesn't allow operators to do that, I would recommend using Google Earth.

Other than the 3 month hold time on the water analysis the water doesn't look drastically bad as we previously discussed. I wouldn't have any issues waiting until the spring.

Please include the water results, a map of the impacted area, and a timeline for remediation or sampling in the spring.

Thanks for the quick follow up.

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

-----Original Message-----
From: Randy Madison <RMadison@WapitiEnergy.com>
Sent: Thursday, February 20, 2020 8:53 AM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Subject: [EXT] Emailing: VPR A-59, VPR A-47, VPR A-48, VPR A-49, VPR A-57

Cory,
Here is a representation of the water that spilled. The A-47 is where the leak was in the separator house. There was a bad check valve. I have Lats and Longs. I have went to the NMOCD GIS and tried to create a map. In Colorado I use there map to draw the area and submit it. If NM GIS has that capability would you be able to show me how to use it. I have been doing these for 6 years here as Atlas and now as Wapiti. All of the people in Santa Fe never saw a need for a map. They looked at the water samples and closed the incident with the C-141. I have no problem submitting anything you want, just need help as to what is acceptable and wanted with this incident.
Randy

Randy L. Madison, HSE Specialist
Wapiti Operating, LLC
P.O. Box 190
309 Silver St.
Raton, NM 87740
Office 575-445-6706
Cell 575-420-1120
rmadison@wapitienergy.com

Your message is ready to be sent with the following file or link attachments:

VPR A-59
VPR A-47
VPR A-48
VPR A-49
VPR A-57

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ANALYTICAL REPORT

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Tel: (303)736-0100

Laboratory Job ID: 280-134318-1
Client Project/Site: Produced Water Spill

For:
Wapiti Operating, LLC
PO BOX 190
309 Silver Street
Raton, New Mexico 87740

Attn: Mr. Randy Madison

Shelby Turner

Authorized for release by:
3/17/2020 10:55:47 AM

Shelby Turner, Project Manager I
(303)736-0100
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Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Laboratory Job ID: 280-134318-1

Table of Contents

Definitions/Glossary

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-134318-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-134318-1

Job ID: 280-134318-1

Laboratory: Eurofins TestAmerica, Denver

Narrative

CASE NARRATIVE

Client: Wapiti Operating, LLC

Project: Produced Water Spill

Report Number: 280-134318-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 3/5/2020 12:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.1° C.

VOLATILE ORGANIC COMPOUNDS (GC-MS)
Samples Gachupin (D-137/D-138) (280-134318-1) and VPR A-47 (280-134318-2) were analyzed for volatile organic compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 03/10/2020.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GASOLINE RANGE ORGANICS (GRO)
Samples Gachupin (D-137/D-138) (280-134318-1) and VPR A-47 (280-134318-2) were analyzed for Gasoline Range Organics (GRO) in accordance with EPA SW-846 Method 8015B - GRO. The samples were prepared and analyzed on 03/13/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

DIESEL RANGE ORGANICS
Samples Gachupin (D-137/D-138) (280-134318-1) and VPR A-47 (280-134318-2) were analyzed for diesel range organics in accordance with EPA SW-846 Method 8015B - DRO. The samples were prepared on 03/06/2020 and analyzed on 03/10/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ANIONS (28 DAYS)
Samples Gachupin (D-137/D-138) (280-134318-1) and VPR A-47 (280-134318-2) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were leached on 03/06/2020 and analyzed on 03/06/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERCENT SOLIDS
Samples Gachupin (D-137/D-138) (280-134318-1) and VPR A-47 (280-134318-2) were analyzed for percent solids in accordance with ASTM D2216-90. The samples were analyzed on 03/11/2020.

Case Narrative

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-134318-1

Job ID: 280-134318-1 (Continued)

Laboratory: Eurofins TestAmerica, Denver (Continued)

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-134318-1

Client Sample ID: Gachupin (D-137/D-138) — Lab Sample ID: 280-134318-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Diesel Range Organics [C10-C28]	23		8.0		mg/Kg	1		8015B	Total/NA
Motor Oil (C20-C38)	38		24		mg/Kg	1		8015B	Total/NA
Chloride	110		29		mg/Kg	1		9056A	Soluble

Client Sample ID: VPR A-47 — Lab Sample ID: 280-134318-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Gasoline Range Organics (GRO) -C6-C10	1.8		1.5		mg/Kg	1		8015B	Total/NA
Diesel Range Organics [C10-C28]	66		7.7		mg/Kg	1		8015B	Total/NA
Motor Oil (C20-C38)	130		23		mg/Kg	1		8015B	Total/NA
Chloride	340		28		mg/Kg	1		9056A	Soluble

This Detection Summary does not include radiochemical test results.

Method Summary

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-134318-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL DEN
8015B	Gasoline Range Organics - (GC)	SW846	TAL DEN
8015B	Diesel Range Organics (DRO) (GC)	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
Moisture	Percent Moisture	EPA	TAL DEN
3546	Microwave Extraction	SW846	TAL DEN
5030B	Purge and Trap	SW846	TAL DEN
5035	Closed System Purge and Trap	SW846	TAL DEN
DI Leach	Deionized Water Leaching Procedure	ASTM	TAL DEN

Protocol References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Sample Summary

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-134318-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
280-134318-1	Gachupin (D-137/D-138)	Solid	03/02/20 11:22	03/05/20 12:45	
280-134318-2	VPR A-47	Solid	03/02/20 13:40	03/05/20 12:45	

Client Sample Results

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-134318-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: Gachupin (D-137/D-138)
Date Collected: 03/02/20 11:22
Date Received: 03/05/20 12:45

Lab Sample ID: 280-134318-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0044		mg/Kg		03/10/20 11:00	03/10/20 14:52	1
Ethylbenzene	ND		0.0044		mg/Kg		03/10/20 11:00	03/10/20 14:52	1
Toluene	ND		0.0044		mg/Kg		03/10/20 11:00	03/10/20 14:52	1
m-Xylene & p-Xylene	ND		0.0022		mg/Kg		03/10/20 11:00	03/10/20 14:52	1
o-Xylene	ND		0.0022		mg/Kg		03/10/20 11:00	03/10/20 14:52	1
Xylenes, Total	ND		0.0044		mg/Kg		03/10/20 11:00	03/10/20 14:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*58 - 140*	*03/10/20 11:00*	*03/10/20 14:52*	*1*
Toluene-d8 (Surr)	*102*		*80 - 126*	*03/10/20 11:00*	*03/10/20 14:52*	*1*
4-Bromofluorobenzene (Surr)	*112*		*76 - 127*	*03/10/20 11:00*	*03/10/20 14:52*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 121*	*03/10/20 11:00*	*03/10/20 14:52*	*1*

Client Sample ID: VPR A-47
Date Collected: 03/02/20 13:40
Date Received: 03/05/20 12:45

Lab Sample ID: 280-134318-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0049		mg/Kg		03/10/20 11:00	03/10/20 15:15	1
Ethylbenzene	ND		0.0049		mg/Kg		03/10/20 11:00	03/10/20 15:15	1
Toluene	ND		0.0049		mg/Kg		03/10/20 11:00	03/10/20 15:15	1
m-Xylene & p-Xylene	ND		0.0025		mg/Kg		03/10/20 11:00	03/10/20 15:15	1
o-Xylene	ND		0.0025		mg/Kg		03/10/20 11:00	03/10/20 15:15	1
Xylenes, Total	ND		0.0049		mg/Kg		03/10/20 11:00	03/10/20 15:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*58 - 140*	*03/10/20 11:00*	*03/10/20 15:15*	*1*
Toluene-d8 (Surr)	*101*		*80 - 126*	*03/10/20 11:00*	*03/10/20 15:15*	*1*
4-Bromofluorobenzene (Surr)	*107*		*76 - 127*	*03/10/20 11:00*	*03/10/20 15:15*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 121*	*03/10/20 11:00*	*03/10/20 15:15*	*1*

Method: 8015B - Gasoline Range Organics - (GC)

Client Sample ID: Gachupin (D-137/D-138)
Date Collected: 03/02/20 11:22
Date Received: 03/05/20 12:45

Lab Sample ID: 280-134318-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	ND		1.8		mg/Kg		03/13/20 10:23	03/13/20 14:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
a,a,a-Trifluorotoluene	*91*		*77 - 123*	*03/13/20 10:23*	*03/13/20 14:53*	*1*

Client Sample ID: VPR A-47
Date Collected: 03/02/20 13:40
Date Received: 03/05/20 12:45

Lab Sample ID: 280-134318-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	**1.8**		1.5		mg/Kg		03/13/20 10:23	03/13/20 15:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
a,a,a-Trifluorotoluene	*91*		*77 - 123*	*03/13/20 10:23*	*03/13/20 15:18*	*1*

Client Sample Results

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-134318-1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Client Sample ID: Gachupin (D-137/D-138)
Date Collected: 03/02/20 11:22
Date Received: 03/05/20 12:45

Lab Sample ID: 280-134318-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	23		8.0		mg/Kg		03/06/20 14:11	03/10/20 17:13	1
Motor Oil (C20-C38)	38		24		mg/Kg		03/06/20 14:11	03/10/20 17:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*71*		*49 - 115*	*03/06/20 14:11*	*03/10/20 17:13*	*1*

Client Sample ID: VPR A-47
Date Collected: 03/02/20 13:40
Date Received: 03/05/20 12:45

Lab Sample ID: 280-134318-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	66		7.7		mg/Kg		03/06/20 14:11	03/10/20 17:36	1
Motor Oil (C20-C38)	130		23		mg/Kg		03/06/20 14:11	03/10/20 17:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*75*		*49 - 115*	*03/06/20 14:11*	*03/10/20 17:36*	*1*

General Chemistry

Client Sample ID: Gachupin (D-137/D-138)
Date Collected: 03/02/20 11:22
Date Received: 03/05/20 12:45

Lab Sample ID: 280-134318-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	12.4		0.1		%			03/11/20 16:05	1
Percent Solids	87.6		0.1		%			03/11/20 16:05	1

Client Sample ID: VPR A-47
Date Collected: 03/02/20 13:40
Date Received: 03/05/20 12:45

Lab Sample ID: 280-134318-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	9.6		0.1		%			03/11/20 16:05	1
Percent Solids	90.4		0.1		%			03/11/20 16:05	1

General Chemistry - Soluble

Client Sample ID: Gachupin (D-137/D-138)
Date Collected: 03/02/20 11:22
Date Received: 03/05/20 12:45

Lab Sample ID: 280-134318-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	110		29		mg/Kg			03/06/20 19:09	1

Client Sample ID: VPR A-47
Date Collected: 03/02/20 13:40
Date Received: 03/05/20 12:45

Lab Sample ID: 280-134318-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	340		28		mg/Kg			03/06/20 19:26	1

Surrogate Summary

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-134318-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	TOL	BFB	DBFM
Lab Sample ID	Client Sample ID	(58-140)	(80-126)	(76-127)	(75-121)
280-134318-1	Gachupin (D-137/D-138)	101	102	112	100
280-134318-2	VPR A-47	99	101	107	101
LCS 280-488264/1-A	Lab Control Sample	96	99	101	100
LCSD 280-488264/2-A	Lab Control Sample Dup	95	100	102	101
MB 280-488264/3-A	Method Blank	95	101	102	101

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8015B - Gasoline Range Organics - (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		TFT1
Lab Sample ID	Client Sample ID	(77-123)
280-134318-1	Gachupin (D-137/D-138)	91
280-134318-2	VPR A-47	91
LCS 280-488619/2-A	Lab Control Sample	92
LCSD 280-488619/3-A	Lab Control Sample Dup	90
MB 280-488619/1-A	Method Blank	91

Surrogate Legend

TFT = a,a,a-Trifluorotoluene

Method: 8015B - Diesel Range Organics (DRO) (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		OTPH1
Lab Sample ID	Client Sample ID	(49-115)
280-134318-1	Gachupin (D-137/D-138)	71
280-134318-2	VPR A-47	75
280-134318-2 MS	VPR A-47	81
280-134318-2 MS	VPR A-47	79
280-134318-2 MSD	VPR A-47	83
280-134318-2 MSD	VPR A-47	79
LCS 280-487907/2-A	Lab Control Sample	86
LCS 280-487907/3-A	Lab Control Sample	95
MB 280-487907/1-A	Method Blank	76

Surrogate Legend

OTPH = o-Terphenyl

QC Sample Results

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-134318-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 280-488264/3-A
Matrix: Solid
Analysis Batch: 488243

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 488264

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0050		mg/Kg		03/10/20 11:00	03/10/20 12:10	1
Ethylbenzene	ND		0.0050		mg/Kg		03/10/20 11:00	03/10/20 12:10	1
Toluene	ND		0.0050		mg/Kg		03/10/20 11:00	03/10/20 12:10	1
m-Xylene & p-Xylene	ND		0.0025		mg/Kg		03/10/20 11:00	03/10/20 12:10	1
o-Xylene	ND		0.0025		mg/Kg		03/10/20 11:00	03/10/20 12:10	1
Xylenes, Total	ND		0.0050		mg/Kg		03/10/20 11:00	03/10/20 12:10	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*58 - 140*	*03/10/20 11:00*	*03/10/20 12:10*	*1*
Toluene-d8 (Surr)	*101*		*80 - 126*	*03/10/20 11:00*	*03/10/20 12:10*	*1*
4-Bromofluorobenzene (Surr)	*102*		*76 - 127*	*03/10/20 11:00*	*03/10/20 12:10*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 121*	*03/10/20 11:00*	*03/10/20 12:10*	*1*

Lab Sample ID: LCS 280-488264/1-A
Matrix: Solid
Analysis Batch: 488243

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 488264

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.0500	0.0436		mg/Kg		87	75 - 135
Ethylbenzene	0.0500	0.0448		mg/Kg		90	73 - 125
Toluene	0.0500	0.0415		mg/Kg		83	77 - 122
m-Xylene & p-Xylene	0.0500	0.0431		mg/Kg		86	77 - 135
o-Xylene	0.0500	0.0438		mg/Kg		88	75 - 135
Xylenes, Total	0.100	0.0869		mg/Kg		87	76 - 135

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*58 - 140*
Toluene-d8 (Surr)	*99*		*80 - 126*
4-Bromofluorobenzene (Surr)	*101*		*76 - 127*
Dibromofluoromethane (Surr)	*100*		*75 - 121*

Lab Sample ID: LCSD 280-488264/2-A
Matrix: Solid
Analysis Batch: 488243

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 488264

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	0.0500	0.0481		mg/Kg		96	75 - 135	10	20
Ethylbenzene	0.0500	0.0499		mg/Kg		100	73 - 125	11	20
Toluene	0.0500	0.0453		mg/Kg		91	77 - 122	9	20
m-Xylene & p-Xylene	0.0500	0.0483		mg/Kg		97	77 - 135	11	20
o-Xylene	0.0500	0.0480		mg/Kg		96	75 - 135	9	20
Xylenes, Total	0.100	0.0963		mg/Kg		96	76 - 135	10	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*58 - 140*
Toluene-d8 (Surr)	*100*		*80 - 126*
4-Bromofluorobenzene (Surr)	*102*		*76 - 127*

QC Sample Results

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-134318-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 280-488264/2-A
Matrix: Solid
Analysis Batch: 488243

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 488264

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Dibromofluoromethane (Surr)	101		75 - 121

Method: 8015B - Gasoline Range Organics - (GC)

Lab Sample ID: MB 280-488619/1-A
Matrix: Solid
Analysis Batch: 488643

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 488619

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	ND		2.0		mg/Kg		03/13/20 09:31	03/13/20 11:16	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	91		77 - 123	03/13/20 09:31	03/13/20 11:16	1

Lab Sample ID: LCS 280-488619/2-A
Matrix: Solid
Analysis Batch: 488643

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 488619

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline Range Organics (GRO) -C6-C10	4.48	4.90		mg/Kg		109	75 - 135

Surrogate	LCS %Recovery	LCS Qualifier	Limits
a,a,a-Trifluorotoluene	92		77 - 123

Lab Sample ID: LCSD 280-488619/3-A
Matrix: Solid
Analysis Batch: 488643

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 488619

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline Range Organics (GRO) -C6-C10	4.48	4.89		mg/Kg		109	75 - 135	0	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
a,a,a-Trifluorotoluene	90		77 - 123

Method: 8015B - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 280-487907/1-A
Matrix: Solid
Analysis Batch: 488279

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 487907

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.0		mg/Kg		03/06/20 14:11	03/10/20 16:07	1
Motor Oil (C20-C38)	ND		24		mg/Kg		03/06/20 14:11	03/10/20 16:07	1

QC Sample Results

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-134318-1

Method: 8015B - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: MB 280-487907/1-A
Matrix: Solid
Analysis Batch: 488279

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 487907

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	76		49 - 115	03/06/20 14:11	03/10/20 16:07	1

Lab Sample ID: LCS 280-487907/2-A
Matrix: Solid
Analysis Batch: 488279

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 487907

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Diesel Range Organics [C10-C28]	132	110		mg/Kg		83	53 - 115

Surrogate	LCS %Recovery	LCS Qualifier	Limits
o-Terphenyl	86		49 - 115

Lab Sample ID: LCS 280-487907/3-A
Matrix: Solid
Analysis Batch: 488279

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 487907

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Motor Oil (C20-C38)	334	311		mg/Kg		93	57 - 115

Surrogate	LCS %Recovery	LCS Qualifier	Limits
o-Terphenyl	95		49 - 115

Lab Sample ID: 280-134318-2 MS
Matrix: Solid
Analysis Batch: 488279

Client Sample ID: VPR A-47
Prep Type: Total/NA
Prep Batch: 487907

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Diesel Range Organics [C10-C28]	66		117	150		mg/Kg		72	56 - 115

Surrogate	MS %Recovery	MS Qualifier	Limits
o-Terphenyl	81		49 - 115

Lab Sample ID: 280-134318-2 MS
Matrix: Solid
Analysis Batch: 488279

Client Sample ID: VPR A-47
Prep Type: Total/NA
Prep Batch: 487907

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Motor Oil (C20-C38)	130		315	422		mg/Kg		92	57 - 115

Surrogate	MS %Recovery	MS Qualifier	Limits
o-Terphenyl	79		49 - 115

QC Sample Results

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-134318-1

Method: 8015B - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: 280-134318-2 MSD
Matrix: Solid
Analysis Batch: 488279

Client Sample ID: VPR A-47
Prep Type: Total/NA
Prep Batch: 487907

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]	66		128	155		mg/Kg		70	56 - 115	3	23

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
o-Terphenyl	*83*		*49 - 115*

Lab Sample ID: 280-134318-2 MSD
Matrix: Solid
Analysis Batch: 488279

Client Sample ID: VPR A-47
Prep Type: Total/NA
Prep Batch: 487907

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Motor Oil (C20-C38)	130		299	399		mg/Kg		90	57 - 115	6	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
o-Terphenyl	*79*		*49 - 115*

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MRL 280-487947/3
Matrix: Solid
Analysis Batch: 487947

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.56		mg/L		91	50 - 150

Lab Sample ID: MB 280-487972/3-A
Matrix: Solid
Analysis Batch: 487947

Client Sample ID: Method Blank
Prep Type: Soluble

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		30		mg/Kg			03/06/20 17:41	1

Lab Sample ID: LCS 280-487972/1-A
Matrix: Solid
Analysis Batch: 487947

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	1000	987		mg/Kg		99	90 - 110

Lab Sample ID: LCSD 280-487972/2-A
Matrix: Solid
Analysis Batch: 487947

Client Sample ID: Lab Control Sample Dup
Prep Type: Soluble

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	1000	988		mg/Kg		99	90 - 110	0	10

QC Association Summary

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-134318-1

GC/MS VOA

Analysis Batch: 488243

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-134318-1	Gachupin (D-137/D-138)	Total/NA	Solid	8260B	488264
280-134318-2	VPR A-47	Total/NA	Solid	8260B	488264
MB 280-488264/3-A	Method Blank	Total/NA	Solid	8260B	488264
LCS 280-488264/1-A	Lab Control Sample	Total/NA	Solid	8260B	488264
LCSD 280-488264/2-A	Lab Control Sample Dup	Total/NA	Solid	8260B	488264

Prep Batch: 488264

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-134318-1	Gachupin (D-137/D-138)	Total/NA	Solid	5030B	
280-134318-2	VPR A-47	Total/NA	Solid	5030B	
MB 280-488264/3-A	Method Blank	Total/NA	Solid	5030B	
LCS 280-488264/1-A	Lab Control Sample	Total/NA	Solid	5030B	
LCSD 280-488264/2-A	Lab Control Sample Dup	Total/NA	Solid	5030B	

GC VOA

Prep Batch: 488619

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 280-488619/1-A	Method Blank	Total/NA	Solid	5030B	
LCS 280-488619/2-A	Lab Control Sample	Total/NA	Solid	5030B	
LCSD 280-488619/3-A	Lab Control Sample Dup	Total/NA	Solid	5030B	

Prep Batch: 488632

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-134318-1	Gachupin (D-137/D-138)	Total/NA	Solid	5035	
280-134318-2	VPR A-47	Total/NA	Solid	5035	

Analysis Batch: 488643

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-134318-1	Gachupin (D-137/D-138)	Total/NA	Solid	8015B	488632
280-134318-2	VPR A-47	Total/NA	Solid	8015B	488632
MB 280-488619/1-A	Method Blank	Total/NA	Solid	8015B	488619
LCS 280-488619/2-A	Lab Control Sample	Total/NA	Solid	8015B	488619
LCSD 280-488619/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B	488619

GC Semi VOA

Prep Batch: 487907

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-134318-1	Gachupin (D-137/D-138)	Total/NA	Solid	3546	
280-134318-2	VPR A-47	Total/NA	Solid	3546	
MB 280-487907/1-A	Method Blank	Total/NA	Solid	3546	
LCS 280-487907/2-A	Lab Control Sample	Total/NA	Solid	3546	
LCS 280-487907/3-A	Lab Control Sample	Total/NA	Solid	3546	
280-134318-2 MS	VPR A-47	Total/NA	Solid	3546	
280-134318-2 MS	VPR A-47	Total/NA	Solid	3546	
280-134318-2 MSD	VPR A-47	Total/NA	Solid	3546	
280-134318-2 MSD	VPR A-47	Total/NA	Solid	3546	

Analysis Batch: 488279

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-134318-1	Gachupin (D-137/D-138)	Total/NA	Solid	8015B	487907

QC Association Summary

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-134318-1

GC Semi VOA (Continued)

Analysis Batch: 488279 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-134318-2	VPR A-47	Total/NA	Solid	8015B	487907
MB 280-487907/1-A	Method Blank	Total/NA	Solid	8015B	487907
LCS 280-487907/2-A	Lab Control Sample	Total/NA	Solid	8015B	487907
LCS 280-487907/3-A	Lab Control Sample	Total/NA	Solid	8015B	487907
280-134318-2 MS	VPR A-47	Total/NA	Solid	8015B	487907
280-134318-2 MS	VPR A-47	Total/NA	Solid	8015B	487907
280-134318-2 MSD	VPR A-47	Total/NA	Solid	8015B	487907
280-134318-2 MSD	VPR A-47	Total/NA	Solid	8015B	487907

General Chemistry

Analysis Batch: 487947

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-134318-1	Gachupin (D-137/D-138)	Soluble	Solid	9056A	487972
280-134318-2	VPR A-47	Soluble	Solid	9056A	487972
MB 280-487972/3-A	Method Blank	Soluble	Solid	9056A	487972
LCS 280-487972/1-A	Lab Control Sample	Soluble	Solid	9056A	487972
LCSD 280-487972/2-A	Lab Control Sample Dup	Soluble	Solid	9056A	487972
MRL 280-487947/3	Lab Control Sample	Total/NA	Solid	9056A	

Leach Batch: 487972

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-134318-1	Gachupin (D-137/D-138)	Soluble	Solid	DI Leach	
280-134318-2	VPR A-47	Soluble	Solid	DI Leach	
MB 280-487972/3-A	Method Blank	Soluble	Solid	DI Leach	
LCS 280-487972/1-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 280-487972/2-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	

Analysis Batch: 488435

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-134318-1	Gachupin (D-137/D-138)	Total/NA	Solid	Moisture	
280-134318-2	VPR A-47	Total/NA	Solid	Moisture	

Lab Chronicle

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-134318-1

Client Sample ID: Gachupin (D-137/D-138)

Lab Sample ID: 280-134318-1
Matrix: Solid
Date Collected: 03/02/20 11:22
Date Received: 03/05/20 12:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			5.673 g	5 mL	488264	03/10/20 11:00	GPM	TAL DEN
Total/NA	Analysis	8260B		1	5 g	5 mL	488243	03/10/20 14:52	GPM	TAL DEN
Total/NA	Prep	5035			5.465 g	5 mL	488632	03/13/20 10:23	CAS	TAL DEN
Total/NA	Analysis	8015B		1	1 mL	50 mL	488643	03/13/20 14:53	CAS	TAL DEN
Total/NA	Prep	3546			15.0 g	1 mL	487907	03/06/20 14:11	MB	TAL DEN
Total/NA	Analysis	8015B		1			488279	03/10/20 17:13	MAM	TAL DEN
Soluble	Leach	DI Leach			10.19 g	100 mL	487972	03/06/20 13:02	JAP	TAL DEN
Soluble	Analysis	9056A		1	5 mL	5 mL	487947	03/06/20 19:09	BWH	TAL DEN
Total/NA	Analysis	Moisture		1			488435	03/11/20 16:05	BWH	TAL DEN

Client Sample ID: VPR A-47

Lab Sample ID: 280-134318-2
Matrix: Solid
Date Collected: 03/02/20 13:40
Date Received: 03/05/20 12:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			5.076 g	5 mL	488264	03/10/20 11:00	GPM	TAL DEN
Total/NA	Analysis	8260B		1	5 g	5 mL	488243	03/10/20 15:15	GPM	TAL DEN
Total/NA	Prep	5035			6.745 g	5 mL	488632	03/13/20 10:23	CAS	TAL DEN
Total/NA	Analysis	8015B		1	1 mL	50 mL	488643	03/13/20 15:18	CAS	TAL DEN
Total/NA	Prep	3546			15.5 g	1 mL	487907	03/06/20 14:11	MB	TAL DEN
Total/NA	Analysis	8015B		1			488279	03/10/20 17:36	MAM	TAL DEN
Soluble	Leach	DI Leach			10.59 g	100 mL	487972	03/06/20 13:02	JAP	TAL DEN
Soluble	Analysis	9056A		1	5 mL	5 mL	487947	03/06/20 19:26	BWH	TAL DEN
Total/NA	Analysis	Moisture		1			488435	03/11/20 16:05	BWH	TAL DEN

Laboratory References:

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Accreditation/Certification Summary

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-134318-1

Laboratory: Eurofins TestAmerica, Denver

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	2907.01	10-31-21
A2LA	ISO/IEC 17025	2907.01	10-31-21
Alabama	State Program	40730	09-30-12 *
Alaska (UST)	State	18-001	01-08-20 *
Arizona	State	AZ0713	12-20-20
Arkansas DEQ	State	19-047-0	06-01-20
California	State	2513	01-08-21
Connecticut	State	PH-0686	09-30-20
Florida	NELAP	E87667-57	06-30-20
Illinois	NELAP	2000172019-1	04-30-20
Iowa	State	IA#370	12-01-20
Kansas	NELAP	E-10166	04-30-20
Louisiana	NELAP	30785	06-30-20
Maine	State	2019011 (231)	03-03-21
Minnesota	NELAP	1788752	12-31-20
Nevada	State	CO000262020-1	07-31-20
New Hampshire	NELAP	205319	04-28-20
New Jersey	NELAP	190002	06-30-20
New York	NELAP	59923	04-01-20
North Carolina (WW/SW)	State	358	12-31-20
North Dakota	State	R-034	01-08-21
Oklahoma	State	2018-006	08-31-20
Oregon	NELAP	4025-011	01-08-21
Pennsylvania	NELAP	013	08-01-20
South Carolina	State	72002001	01-08-20 *
Texas	NELAP	T104704183-19-17	09-30-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-18-00099	03-26-21
Utah	NELAP	CO000262019-11	07-31-20
Virginia	NELAP	10490	06-14-20
Washington	State	C583-19	08-05-20
West Virginia DEP	State	354	11-30-20
Wisconsin	State	999615430	08-31-20
Wyoming (UST)	A2LA	2907.01	10-31-21

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

Denver #280

eurofins Environment Testing TestAmerica

Client Information	Sampler: Randy L. Madison	Lab PM: Turner, Shelby R	Carrier Tracking No(s):	COC No:
Client Contact: Mr. Randy Madison	Phone: 575-420-1120	E-Mail: shelby.turner@testamericainc.com		Page:
Company: Wapiti Operating, LLC				Job #:
Address: P.O. Box 190 309 Silver Street	Due Date Requested:	Analysis Requested		Preservation Codes:
City: Raton	TAT Requested (days):			A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Z - other (specify) Other:
State, Zip: NM, 87740				
Phone: 575-445-6706(Tel)	PO #: Pay by Credit Card			
Email: rmadison@wapitienergy.com	WO #:			
Project Name: Produced Water Spill	Project #: 28020400			
Site:	SSOW#:			

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9056A_28D - (MOD) Local Method	8015B_DRO - (MOD) Standard 8015 list	8015B_GRO - (MOD) Standard 8015 list	8260B - (MOD) BTEX by GC/MS	% Moisture	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	N	F	N	N		
Gachupin (D-132 /D-138)	3/2/20	1122	G	Solid			N	N	F	N	N		
VPR (A-4)	3/2/20	1345	G	Solid			N	N	F	N	N		

280-134318 Chain of Custody

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Randy L Madison	3/3/20 at 1120	Wapiti		3/5/20 0910	TADEN
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 12:45	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time: ST 3-20	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 4.2 to 0.4, IR4, 87a 3/5/20

Ver: 01/16/2019

Page 1 of 1

FROM (575) 420-1120
Randy Madison
309 Silver St
RATON NM 87740
US

TO Shelby Turner
TestAmerica Denver Lab.
4955 Yarrow St.

ARVADA CO 80002
(303) 736-0100

REF
INV
PO
DEPT

DENV 0806 BLDR
Door V201
77791069845
03/06/20 00:58

TRK# 7779 1069 3845

80002

9632 0019 6 (000 000 0000) 0 00 7779 1069 3845

280-134318 Waybill

Login Sample Receipt Checklist

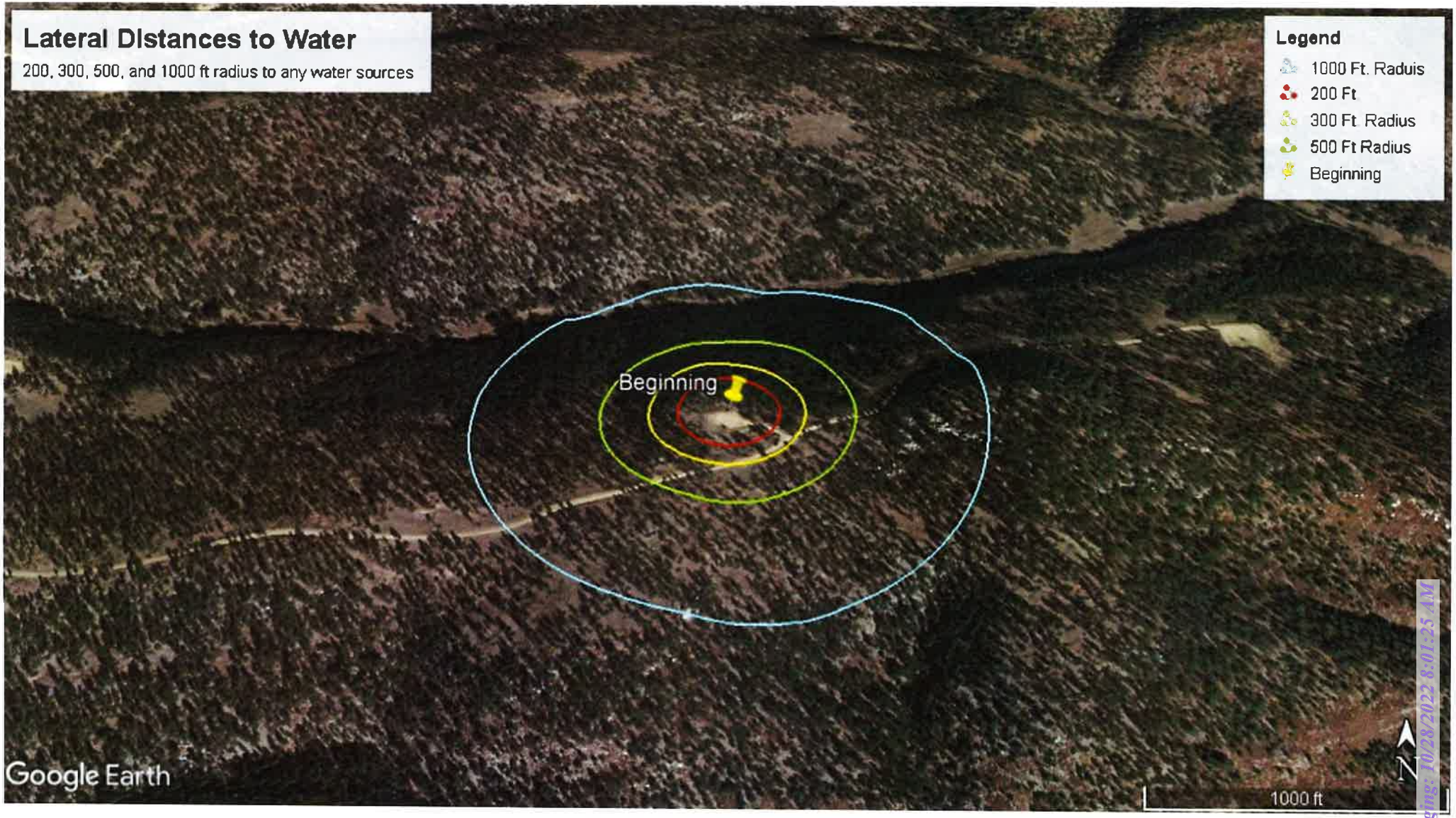
Client: Wapiti Operating, LLC

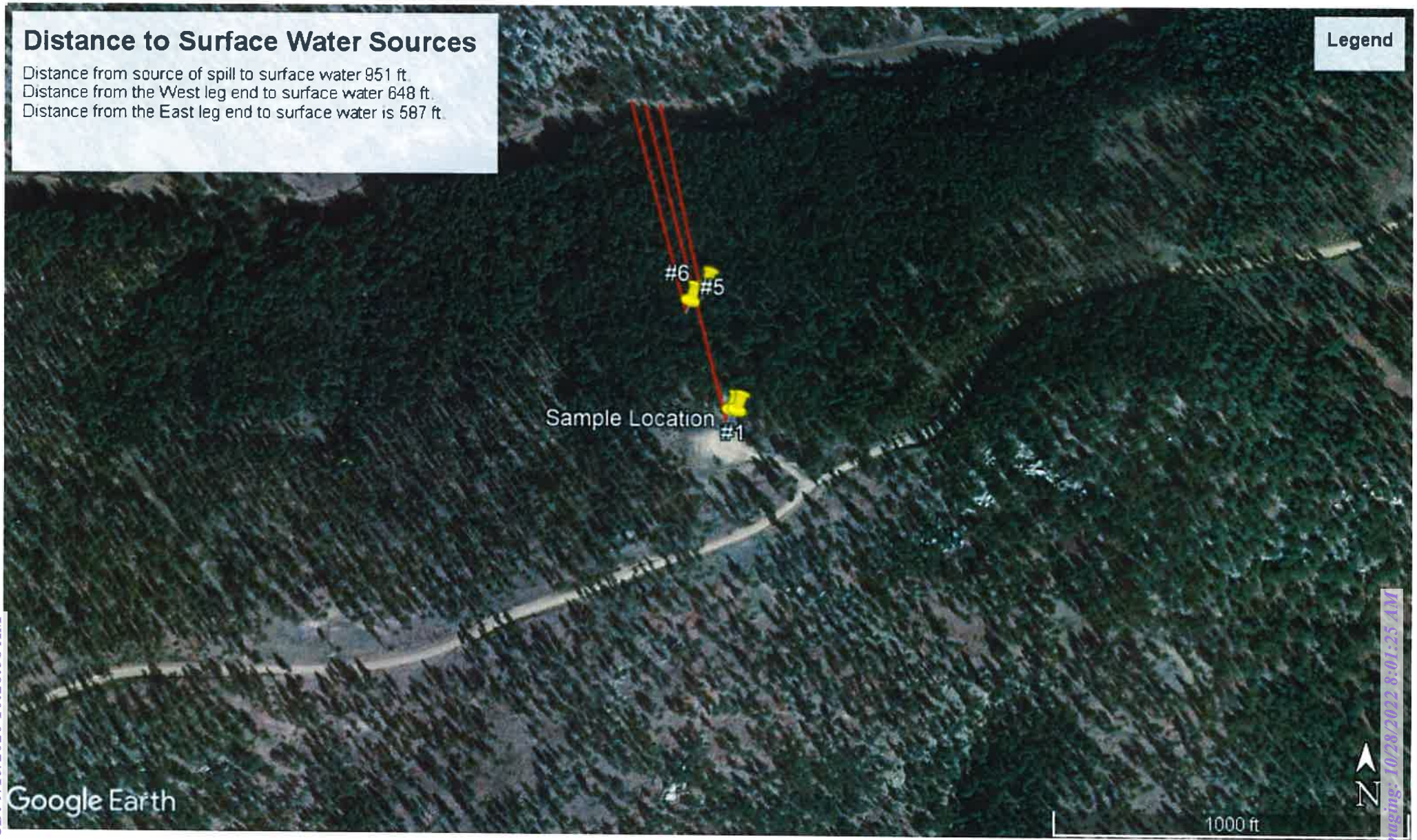
Job Number: 280-134318-1

Login Number: 134318
List Number: 1
Creator: Lubin, Julius C

List Source: Eurofins TestAmerica, Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	





Vermejo Park Ranch

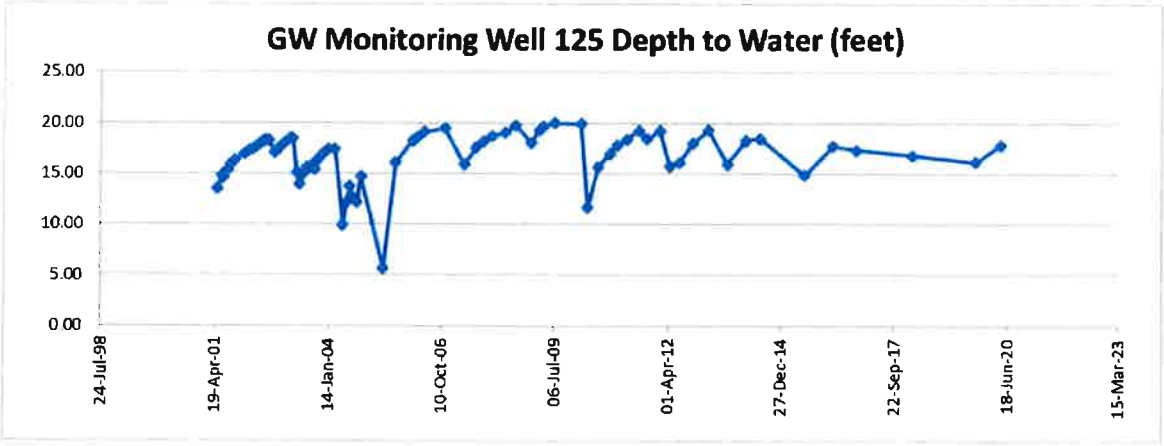
August 13, 2020

Randy L. Madison, HSE Specialist
Wapiti Operating, LLC
P.O. Box 190
Raton, NM 87740

Re: Groundwater Monitoring Well 125

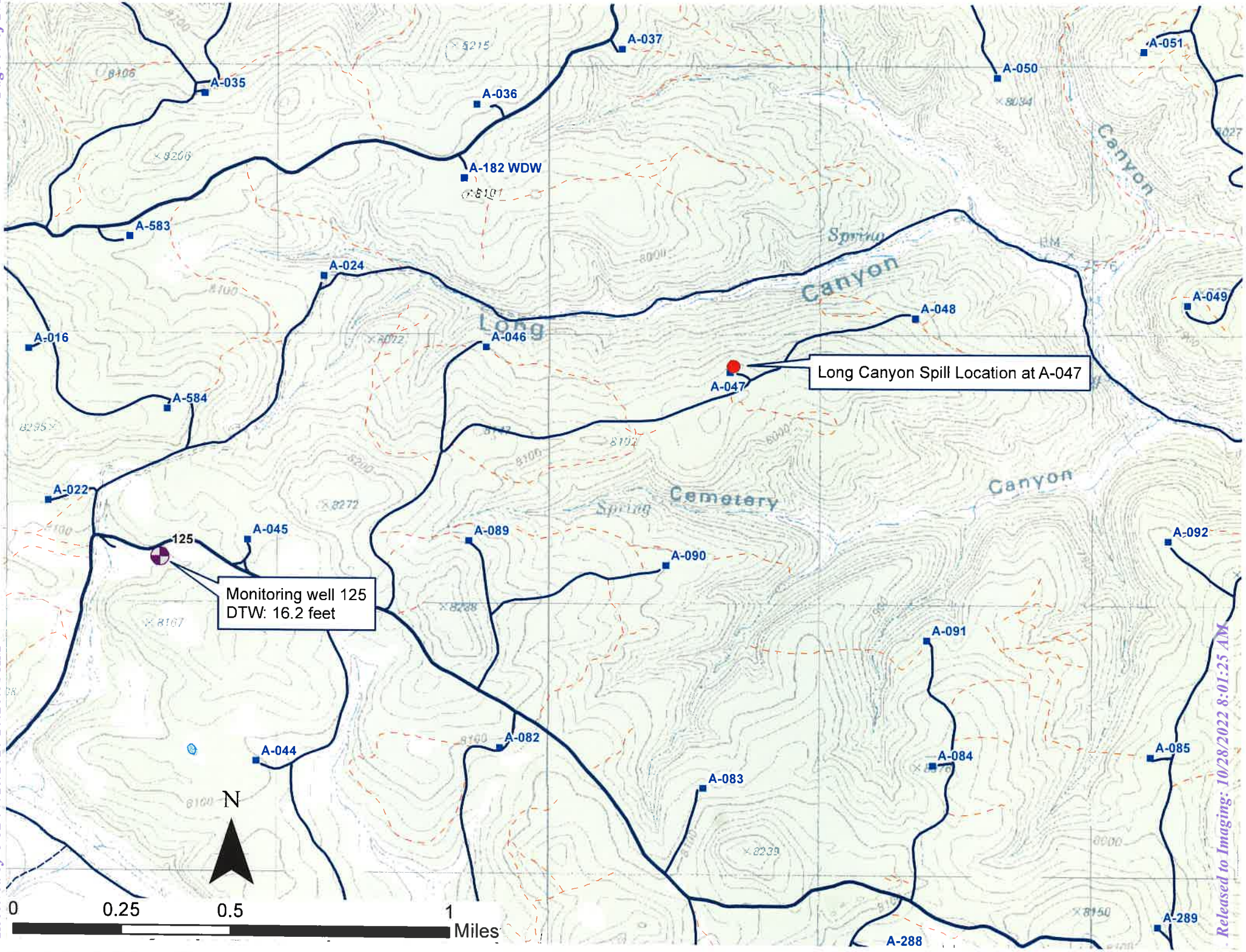
Mr. Madison,

Vermejo Park Ranch's Natural Resource Division has depth-to-water measurements for the Groundwater Monitoring Well #125 dating back to May of 2001. The estimated total depth of the well is 30 feet with the most recent depth-to-water measurement (April 30th, 2020) reading 17.88 feet. A chart of the depth-to-water readings is included below.



Regards,

Sara Holm
GIS Specialist
Vermejo Park Ranch | Natural Resources Division
sara.holm@vermejo.com



Randall Brenner

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well Vermejo Park Corporation 76 FEB 23 AM 11 20 Owner's Well No. AM 11 20

Street or Post Office Address Rt 1 Box 68

City and State Cimarron N M 87714

STATE ENGINEER OFFICE

Well was drilled under Permit No. File No CR-210 and is located in the:

a. ____ ¼ ____ ¼ ____ ¼ ____ ¼ of Section ____ Township ____ Range ____ N.M.P.M.

b. Tract No. ____ of Map No. ____ of the ____

c. Lot No. ____ of Block No. ____ of the ____

Subdivision, recorded in ____ County.

d. X= 321900 feet, Y= 2167100 feet, N.M. Coordinate System East Zone in the Maxwell Grant.

(B) Drilling Contractor Selves License No. WD 639

Address Same

Drilling Began 5-30-75 Completed 6-12-75 Type tools Cable tool Size of hole 6 in.

Elevation of land surface or Appx at well is Appx 6400 ft. Total depth of well 56.66 ft.

Completed well is ☒ shallow ☐ artesian. Depth to water upon completion of well 56.66 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
56	53		Shale	8 gal

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
5"	9	Welded	0	56	56		56	18

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

Section 5. PLUGGING RECORD

Plugging Contractor ____

Address ____

Plugging Method ____

Date Well Plugged ____

Plugging approved by:

____

State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received

Quad ____ FWL ____ FSL ____

File No. ____ Use ____ Location No. ____

Brinson

Section 6. LOG OF HOLE

Depth in Feet From	Depth in Feet To	Thickness in Feet	Color and Type of Material Encountered
0	10 FT		DRIT SAND MIX
11	20		SAND - GRAVEL
30	40		11 11
40	50		11 11
50 TO	56		SHALE
56 TO	64		SHALE 11FT SHALE BASE

Section 7. REMARKS AND ADDITIONAL INFORMATION

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Everett Kirk
Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1(a) and Section 5 need be completed.

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

'76 FEB 23 AM 11 20

STATE ENGINEER OFFICE

Section 1. GENERAL INFORMATION

(A) Owner of well Vermejo Park Corporation Owner's Well No.
Street or Post Office Address Rt 1 Box 68
City and State Cimarron N M 87714

Well was drilled under Permit No. File No CR 238 and is located in the:

a. ___ ¼ ___ ¼ ___ ¼ ___ ¼ of Section ___ Township ___ Range ___ N.M.P.M.

b. Tract No. ___ of Map No. ___ of the ___

c. Lot No. ___ of Block No. ___ of the ___
Subdivision, recorded in ___ County.

d. X= 326.000 feet, Y= 2,128,500 feet, N.M. Coordinate System East Zone in the Maxwell Grant, Cas Grande Grant.

(B) Drilling Contractor Selva License No. WD 639

Address Same

Drilling Began 21 JULY 75 Completed 19 Sept. 75 Type tools Cable Size of hole 6 ¼ in.

Elevation of land surface or ___ at well is ___ ft. Total depth of well 209 ft.

Completed well is ☑ shallow ☐ artesian. Depth to water upon completion of well 125 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
103	104	— 1 —	GREY SANDY SHALE	1 (ONE) GPM
195	209		GREY SANDY SHALE	4 GPM

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
5 9/16 OD	6	WLD			208		204	150

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement
65	68	6 7/8"	½ = 50lb	—	BENTONITE & SOIL 3:1
72	74	6 7/8"	⅓ = 30lb	—	MUD & SOIL 2:1

Section 5. PLUGGING RECORD

Plugging Contractor ___
Address ___
Plugging Method ___
Date Well Plugged ___
Plugging approved by:
___
State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received

Quad ___ FWL ___ FSL ___

File No. ___ Use ___ Location No. ___

Section 6. LOG OF HOLE

Depth in Feet From	Depth in Feet To	Thickness in Feet	Color and Type of Material Encountered
0	3	3	PACKED CLAY, GRAVEL
3	12	9	HARD SUGAR SAND STONE, INTER. GREY SHALE
12	34	22	BROWN CLAY W/LAYERED SAND STONE
34	38	4	HARD SURFACE SEDIMENT, SOME SHALE
38	56	18	HARD SHALE, COAL LAYER
56	58	2	HEAVEY GRAVEL, SLOW LOSS OF CIRCULATION (SECT. 4)
58	65	7	DARK GREY SHALE, HARD STONE
65	68	3	LOSS OF CIR., SOFT DRILLING, NO SAMPLES (SECT. 4)
68	72	4	HARD SHALE 1-2', LAYERED COAL 8-10"
72	74	2	LOSS CIRCULATION, NO SAMPLE (SECT. 4)
74	88	14	HARD SAND SEDIMENT, W/GREY SHALE & COAL
88	92	4	GREY SHALE, LARGE LAYERED COAL 16-18"
92	118	26	GREY SHALE, SAND
118	146	28	HARD WHITE LIME NO SAMPLES
146	151	5	COAL
151	207	56	SHALE, BROWN CLAY, MIXED COAL

Section 7. REMARKS AND ADDITIONAL INFORMATION

NO BENTONITE USED, HOLE PACKED W/ DRAGGINGS

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Everett Kile
Driller

INSTRUCTIONS: This form should be [illegible]ted in triplicate, preferably typewritten, and [illegible]mitted to the appropriate district office of the State Engineer. All sections, exc[illegible]ection 5, shall be answered as completely [illegible]ccurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1(a) and Section 5 need be completed.

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well Vermejo Park Ranch Owner's Well No. MIne Shop
Street or Post Office Address P.O. Drawer E
City and State Raton, NM 87740

Well was drilled under Permit No. CR-4363 and is located in the:

a. ____ ¼ ____ ¼ ____ ¼ ____ ¼ of Section ____ Township ____ Range ____ N.M.P.M.

b. Tract No. ____ of Map No. ____ of the ____

c. Lot No. ____ of Block No. ____ of the ____
Subdivision, recorded in Colfax County.

d. X= 328023 feet, Y= 2129326 feet, N.M. Coordinate System East Zone in
the Maxwell Grant

(B) Drilling Contractor Mack's Drilling, Inc. License No. WD-916

Address P.O. Box 1061, Raton, NM 87740

Drilling Began 05-24-05 Completed 05-25-05 Type tools Air Rotary Size of hole 7 7/8 in

Elevation of land surface or Casing at well is 2 ft. Total depth of well 80 ft

Completed well is ☒ shallow ☐ artesian. Depth to water upon completion of well 16 ft

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
25	33	8	Gravel	20

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
6"	.188	Weld	2	80	80		40	60

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

2005

Section 6. LOG OF HOLE

Depth in Feet From	Depth in Feet To	Thickness in Feet	Color and Type of Material Encountered
0	13	13	Black Fill
13	15	2	Coal
15	25	10	Black Shale
25	33	8	Gravel (Water)
33	39	6	Gray Shale
39	52	13	Tan Sandstone
52	54	2	Coal
54	83	29	Tan Sandstone
83	85	2	Coal

Section 7. REMARKS AND ADDITIONAL INFORMATION

Set 25' 8 5/8" Steel at surface

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

Received

SEP 11 2015

Office of the State Engineer
District VII Cimarron Office

TWF

1. GENERAL AND WELL LOCATION

OSE POD NUMBER (WELL NUMBER): Pod 4 CA-5742	OSE FILE NUMBER(S): CR-05742 POD4
WELL OWNER NAME(S): ARP Production Company LLC	PHONE (OPTIONAL): (724) 561-8129 work (412) 489-0311 cell
WELL OWNER MAILING ADDRESS: 1000 Commerce Drive, 4th Floor	CITY: Pittsburg, STATE: PA ZIP: 15275

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
LATITUDE	36	55	37.6	N
LONGITUDE	104	52	31.6	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

Near A-262 PH3R TOWNSHIP 31 NORTH
SW¼ NE¼ SW¼ NW¼, SECTION 15, RANGE 19 EAST, N.M.P.M.

2. DRILLING & CASING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD-916	Wesley B. Mack	Mack's Drilling, Inc.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
09-03-15	09-03-15	9	108	None

COMPLETED WELL IS: ○ ARTESIAN ◉ DRY HOLE ○ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): None

DRILLING FLUID: ○ AIR ○ MUD ADDITIVES – SPECIFY:

DRILLING METHOD: ◉ ROTARY ○ HAMMER ○ CABLE TOOL ○ OTHER – SPECIFY:

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	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
0	105	6 1/8	Steel	Weld	4	.200	

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
0	108	6 1/8	12 sacks cement/ 8 gallons of water	9	Pour

FOR OSE INTERNAL USE: MONITOR WELL

WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	CA-5742	POD NUMBER	POD4	TRN NUMBER	574435
LOCATION	31N. 19E. 15. 1323				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)
0	29	29	Tan Siltstone	O Y ◉ N	
29	108	79	Gray Sandstone	O Y ◉ N	
				O Y O N	
				O Y O N	
				O Y O N	
				O Y O N	
				O Y O N	
				O Y O N	
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				O Y O N	
				O Y O N	
				O Y O N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: O PUMP O AIR LIFT O BAILER O OTHER – SPECIFY:

TOTAL ESTIMATED WELL YIELD (gpm):

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:
Atlas Resources Seismic Monitoring Well

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

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:

Robert E. Mack — Robert E. Mack — 9-4-15

SIGNATURE OF DRILLER / PRINT SIGNEE NAME — DATE

FOR OSE INTERNAL USE: MONITOR WELL — WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	CR-5742	POD NUMBER	POD4	TRN NUMBER	574435
LOCATION	31N. 19E. 15. 1323				PAGE 2 OF 2

Locator Tool Report

General Information:

Application ID: 72 Date: 09-14-2015 Time: 11:29:33

WR File Number: CR
Purpose: POINT OF DIVERSION

Applicant First Name: ARP PRODUCTION CO.
Applicant Last Name: CR-5742 POD4

GW Basin: CANADIAN RIVER
County: COLFAX

Critical Management Area Name(s): NONE
Special Condition Area Name(s): NONE
Land Grant Name: BEAUBIEN AND MIRANDA

PLSS Description (New Mexico Principal Meridian):

PLSS description is not available for this location.

Coordinate System Details:

Geographic Coordinates:

Latitude:	36 Degrees	55 Minutes	37.6 Seconds	N
Longitude:	104 Degrees	52 Minutes	31.6 Seconds	W

Universal Transverse Mercator Zone: 13N

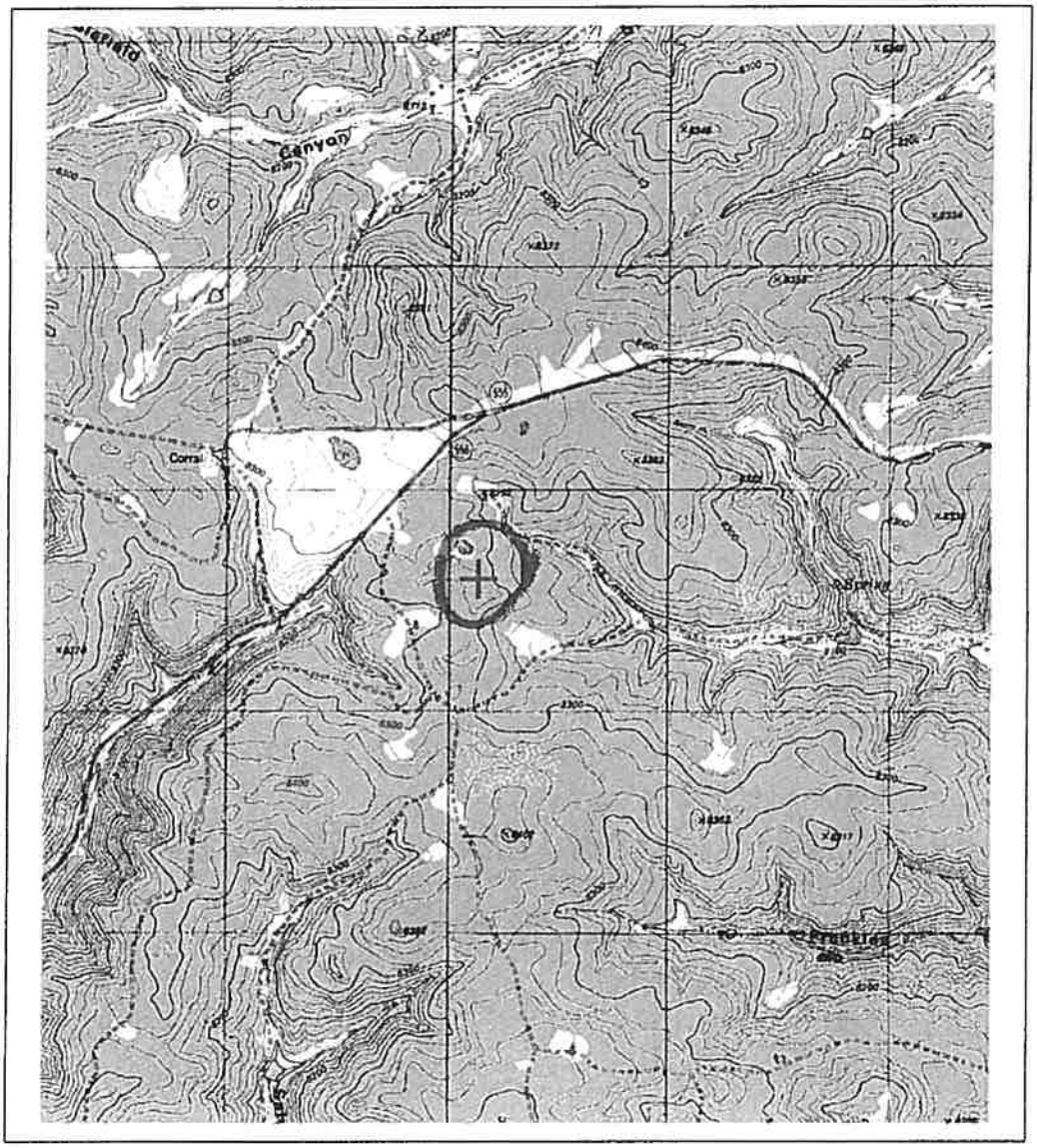
NAD 1983(92) (Meters)	N: 4,086,794	E: 511,093
NAD 1983(92) (Survey Feet)	N: 13,408,090	E: 1,676,811
NAD 1927 (Meters)	N: 4,086,588	E: 511,142
NAD 1927 (Survey Feet)	N: 13,407,414	E: 1,676,973

State Plane Coordinate System Zone: New Mexico East

NAD 1983(92) (Meters)	N: 657,525	E: 116,704
NAD 1983(92) (Survey Feet)	N: 2,157,230	E: 382,886
NAD 1927 (Meters)	N: 657,503	E: 104,152
NAD 1927 (Survey Feet)	N: 2,157,157	E: 341,706

NEW MEXICO OFFICE OF STATE ENGINEER

Locator Tool Report



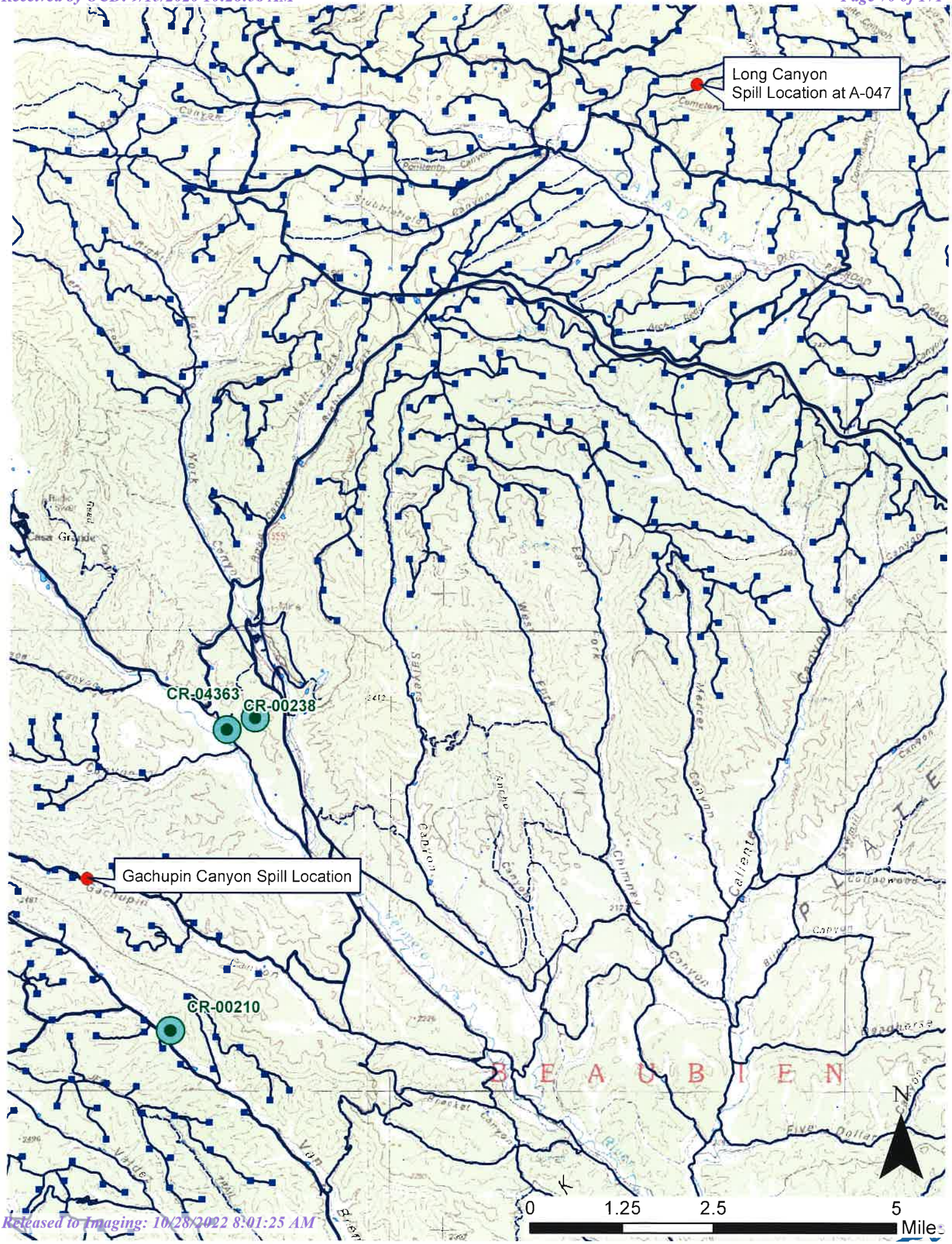
WR File Number: CR Scale: 1:32,342

Northing/Easting: UTM83(92) (Meter): N: 4,086,794 E: 511,093

Northing/Easting: SPCS83(92) (Feet): N: 2,157,230 E: 382,886

GW Basin: Canadian River

Print Date: 09/14/2015


Long Canyon
Spill Location at A-047
CR-04363
CR-00238
Gachupin Canyon Spill Location
CR-00210
BEAUBIEN
N
0
1.25
2.5
5
Miles

Randy Madison

From: OCDOnline@state.nm.us
Sent: Wednesday, June 17, 2020 2:09 PM
To: Randy Madison
Subject: New Mexico OCD Application Submission was Rejected by the OCD

The Oil Conservation Division (OCD) has rejected the application PO: AG5HP-200403-C-1410.
The original application was submitted by Randy Madison for Wapiti Operating, LLC.

The user added the additional comment:

" To whom it may concern The OCD has denied the submitted Closure Plan C-141 for incident # NRM2005230899 for the following reasons: Does not follow Approved plan (submitted after this report) . The Denied C-141 can be found in the online image file. Please review and make the required correction prior to resubmitting though the fee portal. If you have any questions or believe this denial is in error, please contact me prior to submitting an additional C-141. Thank you, Cory Smith Environmental Specialist Oil Conservation Division Energy, Minerals, & Natural Resources 1000 Rio Brazos, Aztec, NM 87410 (505)334-6178 ext 115 cory.smith@state.nm.us ".

If you are concerned about receiving this email or have any other questions,
please feel free to contact our Santa Fe OCD office.

New Mexico Energy, Minerals and Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505

WAPITI OPERATING, LLC

April 23, 2020

TO: Cory Smith, Environmental Specialist
NMOCD District 3 & 4
1000 Rio Brazos Rd.
Aztec, NM 87410

FR: Randy Madison, HSE Specialist

REF: Major Spill VPR A-47 API # 30-00720197, Incident # NRM2005230899
Major Spill 2" Vent on Mainline, Incident #NRM2006661276

Mr. Smith,
Per our recent conversations and the associated timeline, I am requesting a time extension until 8/1/20 to close out the referenced spill incidents per 19.15.29.8, E(1). With the additional discussed soil sampling on both of the referenced incidents, as well as the limitations in resource caused by the pandemic, it is unlikely Wapiti will meet 90 day deadlines; (A-47 due 5/10/20 and Mainline due 6/1/20).
We are continuing to make every effort to gather the additional information and provide closure. Thank you for your consideration in this matter.

Kinds Regards,

Randy L. Madison, HSE Specialist

WAPITI OPERATING, LLC

May 4, 2020

TO: Cory Smith, Environmental Specialist
NMOCD District 3 & 4
1000 Rio Brazos Rd.
Aztec, NM 87410

FR: Randy Madison, HSE Specialist

REF: Major Spill VPR A-47 API # 30-00720197, Incident # NRM2005230899

Wapiti Operating Sampling Plan in reference to above stated incidents

The area reference in the incident reports contains two drainage paths that released down a canyon from the location. Wapiti Operating is not the landowner, and only has ROW access in the referenced location area. The following is planned to be conducted:

- One composite sample on each drainage path (Total of 2) consisting of five points with lengths varying from linear 60 to 70 ft. between points.
- The sampling will be conducted by hand (There is no access for heavy machinery, and the sample will be off of Wapiti's designated ROW)

A grab sample was collected at the source of the release on 3/2/20 and was submitted at the time of the release highlighting that remediation not believed to be required. The TPH came back out of the limits of Table 1. This additional testing should show that no remediation is needed.

Kinds Regards,

Randy L. Madison, HSE Specialist

WAPITI OPERATING, LLC

May 13, 2020

TO: Cory Smith, Environmental Specialist
NMOCD District 3 & 4
1000 Rio Brazos Rd.
Aztec, NM 87410

FR: Randy Madison, HSE Specialist

REF: Major Spill VPR A-47 API # 30-00720197, Incident # NRM2005230899

Wapiti Operating Sampling Plan in reference to above stated incidents

The area reference in the incident reports contains two drainage paths that released down a canyon from the location. Wapiti Operating is not the landowner, and only has ROW access in the referenced location area. The following is planned to be conducted:

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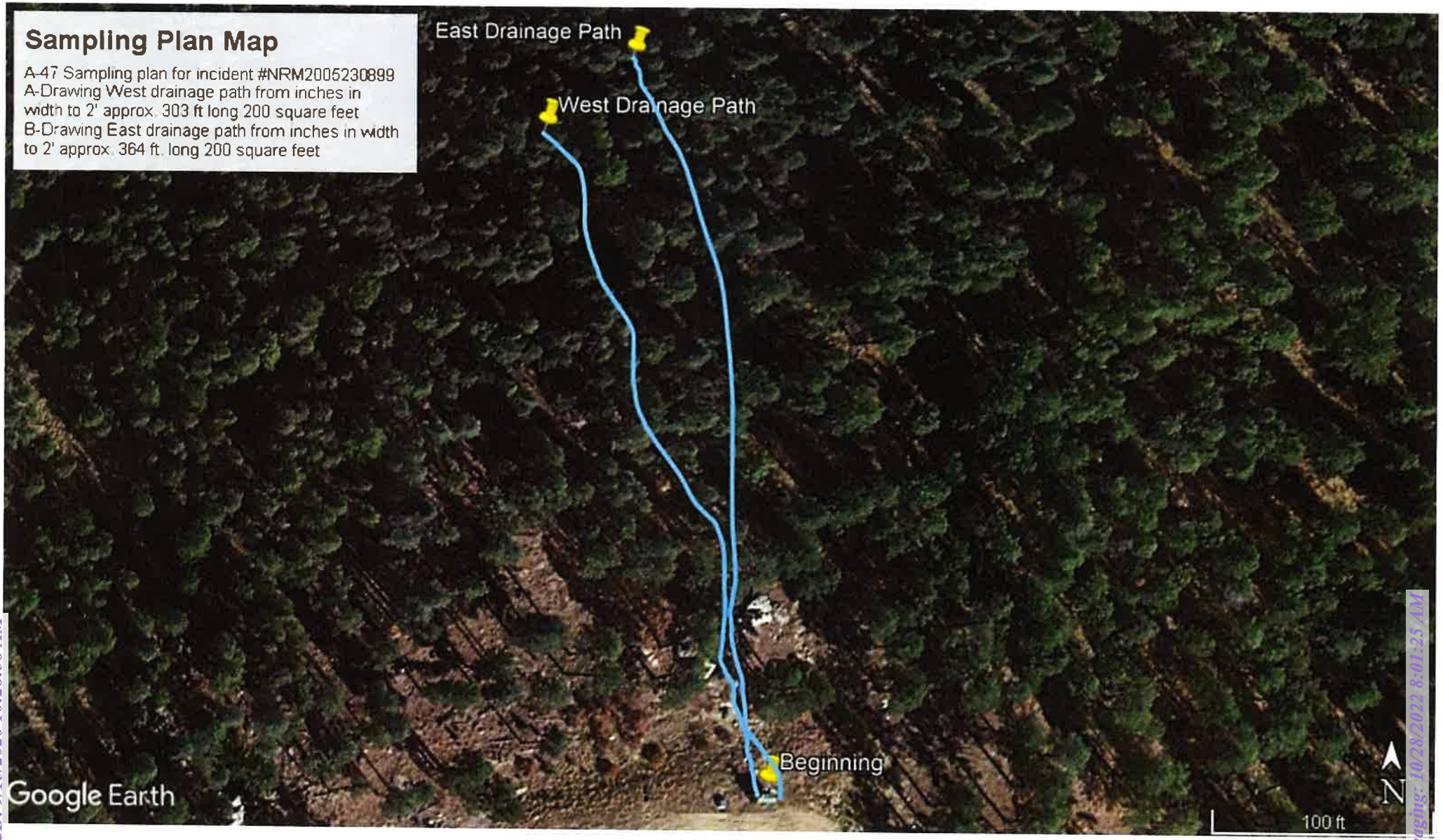
A grab sample was collected at the source of the release on 3/2/20 and was submitted at the time of the release highlighting that remediation not believed to be required. The TPH came back out of the limits of Table 1. This additional testing should show that no remediation is needed.

Kinds Regards,

Randy L. Madison, HSE Specialist



Randy Madison

From: Randy Madison
Sent: Monday, May 4, 2020 2:48 PM
To: 'Smith, Cory, EMNRD'
Cc: Ian Johnston
Subject: RE: Emailing: RE Emailing Request for Extension Signed

Cory,
The PDF was attached with the incident number and my plan for the additional sampling or did you not get it.. Can you go ahead and look that final closure report that I submitted on 3/30/20 for the A-47 NRM2005230899. This has maps and sample results submitted with it. When you reject this you will probably tell me how many more samples you are requiring. We spoke about the fact that there has to be one for about every 200 square feet. We talked about the fact that where this had two drainage paths ranges in width from inches to about 2', and one being 303 ft. long and the other 364 feet that we could use linear feet which I did. The ground was froze at the time so there was very little penetration into what little top soil there is. I worked off the 2 examples that you sent to me. When I have this one submitted how you want it I will then work on the Mainline NRM2006661276. I want to have this all put together so you only have to make one trip over here to witness the sampling.

-----Original Message-----
From: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Sent: Monday, May 4, 2020 1:43 PM
To: Randy Madison <RMadison@WapitiEnergy.com>
Cc: Ian Johnston <IJohnston@WapitiEnergy.com>
Subject: RE: Emailing: RE Emailing Request for Extension Signed

Randy,

I need more information to approved an alternative sampling plan. Specifically I need the size of the impacts, the area of the impacts, specifically on a map where Wapiti plans to collect samples from etc.

Also please use the incident# in all request so that I can quickly find all related information to this release.

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

-----Original Message-----
From: Randy Madison <RMadison@WapitiEnergy.com>
Sent: Monday, May 4, 2020 12:46 PM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Cc: Ian Johnston <IJohnston@WapitiEnergy.com>

Subject: [EXT] Emailing: RE Emailing Request for Extension Signed

Cory,
Please find attached my sample plan on the 2" vent on the mainline.
Thanks
Randy

Randy L. Madison, HSE Specialist
Wapiti Operating, LLC
P.O. Box 190
309 Silver St.
Raton, NM 87740
Office 575-445-6706
Cell 575-420-1120
rmadison@wapitienergy.com

Your message is ready to be sent with the following file or link attachments:

RE Emailing Request for Extension Signed

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.

Randy Madison

From: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Sent: Thursday, April 16, 2020 8:22 AM
To: Randy Madison
Subject: RE: Emailing: A-47 Final Report

Randy,

1. You are correct the table it based on depth to ground water, and distances to certain factors. However in part 19.15.29.13 NMAC reclamation and revegation, the top 4' of a release most contain less than 600 mg/kg chlorides or back ground levels and non waste containing soils. None waste containing soils is considered to be soils that are less than 100 mg/kg TPH, 50 mg/kg BTEX, 10 mg/kg Benzene. This document discuss the revegation/reclaim requirements
2. I would go ahead and start getting the work scheduled.. and prepared.

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

From: Randy Madison <RMadison@WapitiEnergy.com>
Sent: Wednesday, April 15, 2020 11:43 AM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Subject: [EXT] RE: Emailing: A-47 Final Report

Cory,
After our phone conversation yesterday I have a couple of more questions:
1. I have went back and looked at the Soil analysis the TPH is 130. I have submitted a map showing the distance to the nearest "Significant Watercourse" is between 500 and 600 feet. With that being said that would allow me to use the Criteria of table 1 at greater than 100 feet. The other side of this is that I cannot determine the vertical depth to ground water with great accuracy. If I take the elevation of the origin of the release and look at the drop in elevation to my nearest well showing ground water that would still put me greater than 50' and less than 100' which give me a higher TPH. I am just trying to see what criteria you are using on Table 1. If you are saying 50" or less because of lack of good information for vertical depth then I understand.

2. I am able to get sampling supplies and do additional sampling. Should I begin working on my sample plan and get it to you or should I wait till you deny my closure and work from those time limits per the rule. By me submitting my request for closure on 4/3/20 I have meet the criteria for the 90 days.

I will wait to hear back from you. Once I do I will continue.
Thanks
Randy

-----Original Message-----
From: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Sent: Tuesday, April 14, 2020 2:00 PM

To: Randy Madison <RMadison@WapitiEnergy.com>
Subject: RE: Emailing: A-47 Final Report

Randy,

Sorry for the Delay getting back to you with all the Craziness.

No this would not be sufficient for closure as Wapiti only collected 1 grab sample from the source area which does not meeting the Sampling requirements of 19.15.29 NMAC. Viewing the results it looks like there is some elevated TPH levels, northing that cant wait until Spring like we previously discussed.

All of the requirements of what would be required in a closure report is Detailed in 19.15.29.12 NMAC. In Addition all of the OCD spills information is public so you may search through other incidents to see reports generated from other operators.

Here are two examples

https://wwwapps.emnrd.state.nm.us/OCD/OCDPermitting/SupportingDocuments/APP/APP2735.pdf
https://wwwapps.emnrd.state.nm.us/OCD/OCDPermitting/SupportingDocuments/APP/APP2598.pdf

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

-----Original Message-----
From: Randy Madison <RMadison@WapitiEnergy.com>
Sent: Tuesday, March 31, 2020 7:36 AM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Subject: [EXT] Emailing: A-47 Final Report

Cory,
Here is what I plan to submit for a final report. I was wandering if where this is the first one that I am submitting if you could look at it and make recommendations. I have searched NMOGC site and cannot find an example of everything the state wants. When you read the form it says I need to check every box on required information. Because I have nothing that needs remediated I do not have a remediation plan. I am requesting closure due to the lab results. Should I attach a sheet saying why I am requesting closure.
Thanks
Randy
Your message is ready to be sent with the following file or link attachments:

A-47 Final Report

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.

Randy Madison

From: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Sent: Wednesday, May 13, 2020 9:36 AM
To: Randy Madison
Cc: Ian Johnston
Subject: RE: Incident #NRM2005230899 Sampling Plan and Drawing

Mr. Madison.

OCD approves the following sampling plan.

For areas on the Wellpad Wapiti will collect a 5pt composite sample every 200 sqft.

For areas that are designated as "East/West drainages" Wapiti will collect a 5pt composite sample for every 200 linear Ft with aliquots every 40' ie 2 samples for West Draining and 2 samples for East drainage.

All samples will be analyzed for TPH,BTEX, and Chlorides

Please include this approval in your Final C-141 as no paper copy will be sent to you.

IF you have any additional questions please give me a call.

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

-----Original Message-----
From: Randy Madison <RMadison@WapitiEnergy.com>
Sent: Wednesday, May 13, 2020 7:48 AM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Cc: Ian Johnston <IJohnston@WapitiEnergy.com>
Subject: [EXT] Incident #NRM2005230899 Sampling Plan and Drawing

Mr. Smith,
Please find attached an explanation Soil Sampling plan and a Map/Drawing Thanks Randy

Randy L. Madison, HSE Specialist
Wapiti Operating, LLC
P.O. Box 190
309 Silver St.
Raton, NM 87740
Office 575-445-6706
Cell 575-420-1120
rmadison@wapitienergy.com

Your message is ready to be sent with the following file or link attachments:

Sampling Plan 5-11-20
Sample Plan 5-13-20

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.

WAPITI OPERATING, LLC

May 26, 2020

TO: Cory Smith, Environmental Specialist
NMOCD District 3 & 4
1000 Rio Brazos Rd.
Aztec, NM 87410

FR: Randy Madison, HSE Specialist

REF: Major Spill VPR A-47 API # 30-00720197, Incident # NRM2005230899
Major Spill 2" Vent on Mainline, Incident #NRM 2006661276

Mr. Smith,
This is written notification of the final sampling at the above 2 locations. I will sample the NRM 2005230899 at 1000 hrs. on 6/1/20. Upon completion of this sampling I will travel to the NRM 2006661276, this will be about 1200 hrs. I will then sample this spill. This is a follow up to our phone conversation this morning.

Kinds Regards,
Randy L. Madison, HSE Specialist

Randy Madison

From: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Sent: Tuesday, May 26, 2020 11:13 AM
To: Randy Madison
Subject: RE: Sampling Notification

Randy,

In the future you can just send it via email doesn't have to be on letter head etc..

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

From: Randy Madison <RMadison@WapitiEnergy.com>
Sent: Tuesday, May 26, 2020 10:55 AM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Subject: [EXT] Sampling Notification

Cory,
Here you go.
Randy

Randy L. Madison, HSE Specialist
Wapiti Operating, LLC
P.O. Box 190
309 Silver St.
Raton, NM 87740
Office 575-445-6706
Cell 575-420-1120
rmadison@wapitienergy.com

Randy Madison

From: Randy Madison
Sent: Friday, June 5, 2020 9:43 AM
To: 'Smith, Cory, EMNRD'
Subject: Sampling on Incident #NRM2005230899 & NRM2006661276

Cory,
This is to notify you that I will not be sampling NRM 2006661276 on June 8, 2020. I will be sampling NRM 2005230899 and NRM 2006661276 on 6/15/20 starting at 0900. There were temperature issues with the last sample so they were no good.
Randy

Randy L. Madison, HSE Specialist
Wapiti Operating, LLC
P.O. Box 190
309 Silver St.
Raton, NM 87740
Office 575-445-6706
Cell 575-420-1120
rmadison@wapitienergy.com

Randy Madison

From: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Sent: Monday, June 8, 2020 7:22 AM
To: Randy Madison
Subject: RE: Sampling on Incident #NRM2005230899 & NRM2006661276

Randy,

No problem unfortunately I cannot make the sampling event as they still don't want us traveling if possible. Please make sure to keep the samples on ice.. and retake photos etc.

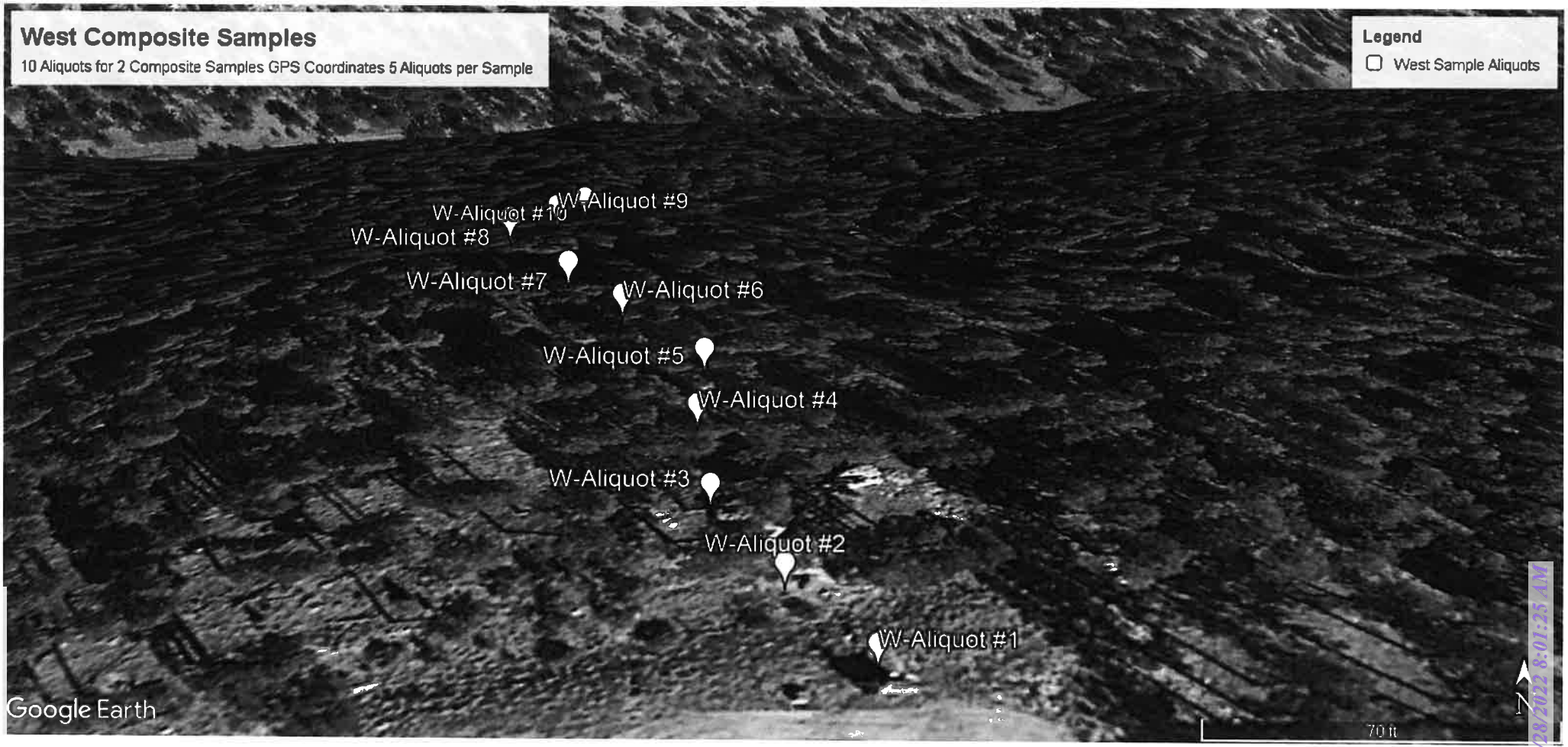
If you want to sample before the 15th please let me know.

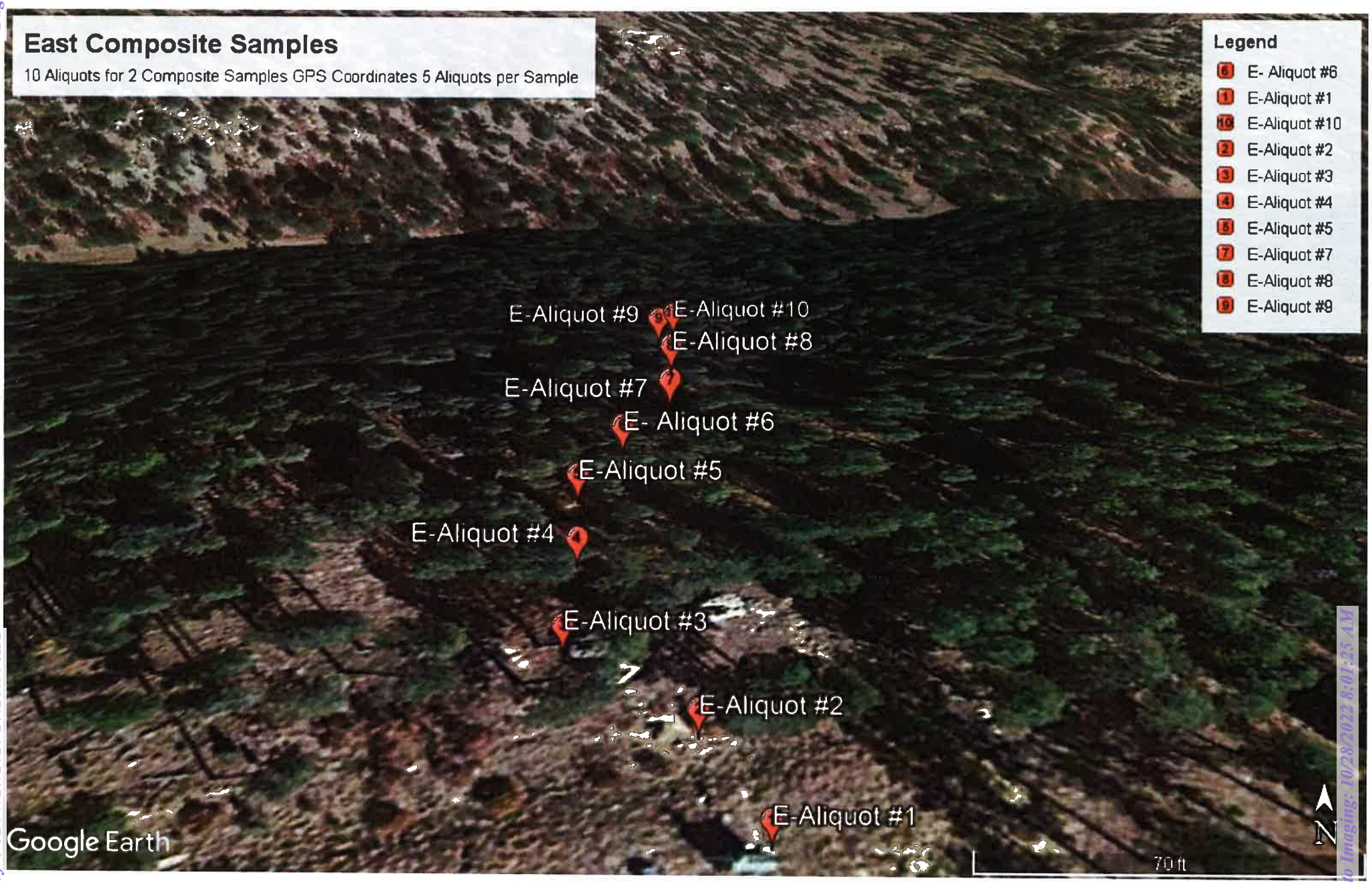
Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

From: Randy Madison <RMadison@WapitiEnergy.com>
Sent: Friday, June 5, 2020 9:43 AM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Subject: [EXT] Sampling on Incident #NRM2005230899 & NRM2006661276

Cory,
This is to notify you that I will not be sampling NRM 2006661276 on June 8, 2020. I will be sampling NRM 2005230899 and NRM 2006661276 on 6/15/20 starting at 0900. There were temperature issues with the last sample so they were no good.
Randy

Randy L. Madison, HSE Specialist
Wapiti Operating, LLC
P.O. Box 190
309 Silver St.
Raton, NM 87740
Office 575-445-6706
Cell 575-420-1120
rmadison@wapitienergy.com





A-47 Composite Sample Aliquot GPS Coordinates and Picture Locations

A-47 East Sample Aliquots

1. N 36.97468 Picture #E1
   W 104.81305
2. N 36.97477 Picture #E2
   W 104.813100
3. N 36.97485 Picture #E3
   W 104.81321
4. N 36.97496 Picture #E4
   W 104.81321
5. N 36.97506 Picture #E5
   W 104.81322

All Aliquots mixed together to make Composite Sample A-47 West Leg C-1 (ELC1)

6. N 36.97515 Picture #E6
   W 104.81318
7. N 36.97528 No Picture
   W 104.81313
8. N 36.97538 Picture #E7
   W 104.81313
9. N 36.97549 No Picture
   W 104.81315
10. N 36.97557 Picture #8

All Aliquots mixed together to make Composite Sample A-47 West Leg C-2 (ELC-2)

A-47 West Sample Aliquots

1. N 36.97469 Picture #W1
   W 104.81308
2. N 36.97477 Picture #W2
   W 104.81314
3. N 36.97486 Picture #W3
   W 104.81321
4. N 36.97498 Picture #W4
   W 104.81323
5. N 36.97508 Picture #W5
   W 104.81323

All Aliquots mixed together to make Composite Sample A-47 West Leg C-1 (WLC1)

6. N 36.97518 Picture #W6
   W 104.91329
7. N 36.97524 Picture #W7
   W 104.81340
8. N 36.97534 Picture #W8
   W 104.81345

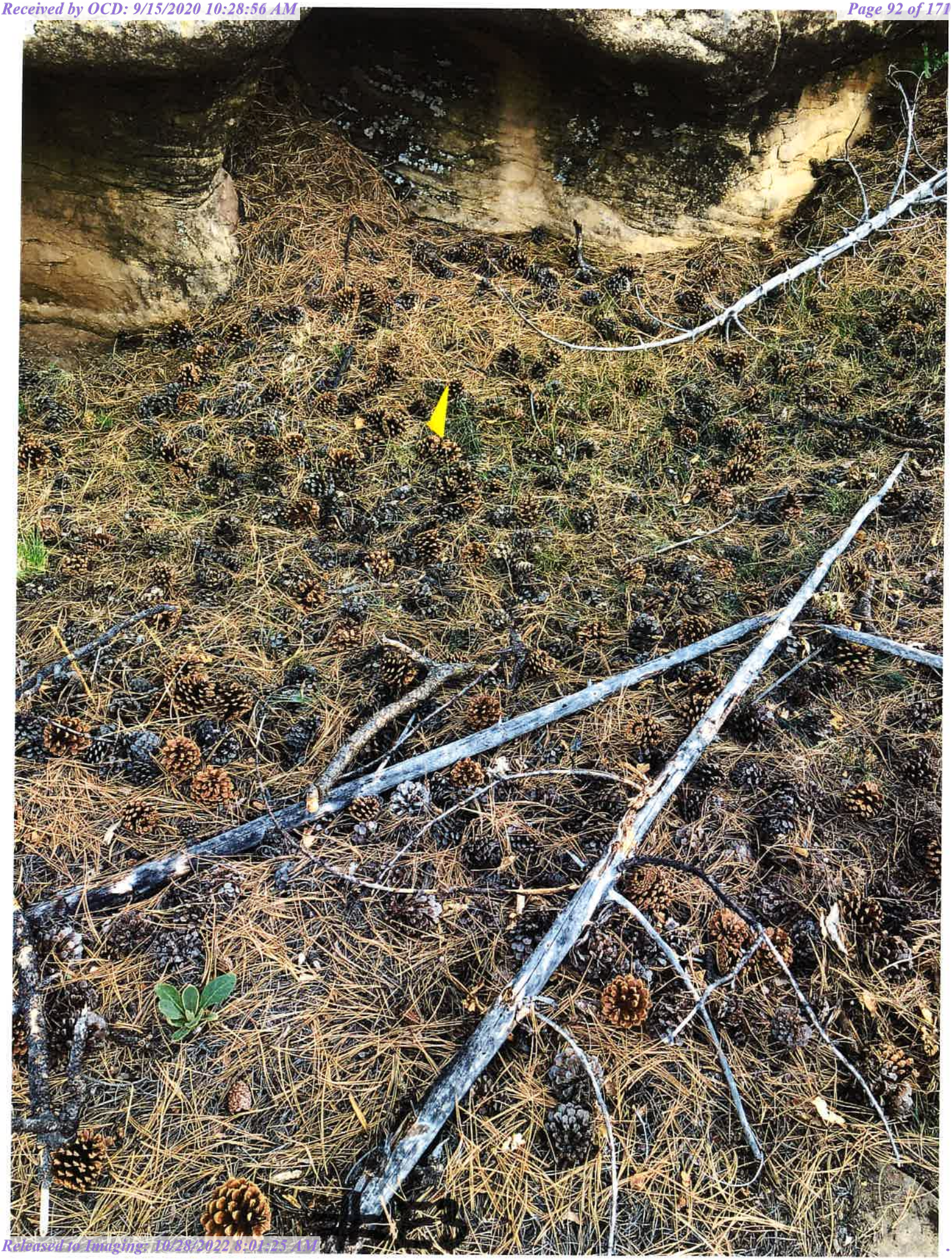
9. N 36.97543 Picture #W9
   W 104.81345
10. N 36.97552 Picture #W10
    W 104.81343

All Aliquots mixed together to make Composite Sample A-47 West Leg C-2 (WLC2)

Note: There is an error between the COC and the Detection Summary due to the fact the jars were labeled different.


SHEET


#E2




E4


Weatherford
#W1


#W2

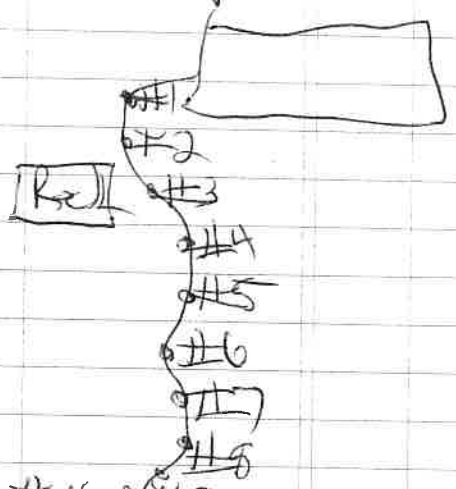

#W3


#W6


#108


#W9

A-47 Sagles East



~~#1~~ N 36.97468 Pic 1
W 104.81305
~~#2~~ N 36.97477 Pic 2
W 104.81300
~~#3~~ N 36.97485 Pic 3
W 104.81321
#4 N 36.97496 Pic 4
W 104.81321
~~#5~~ N 36.97506 Pic 5
W 104.81322
East Longoodike
#6 N 36.97515
W 104.81318
~~#7~~
#7 N 36.97528
W 104.81313

A-47 Sample East

#8 N36.97538
W104.81313

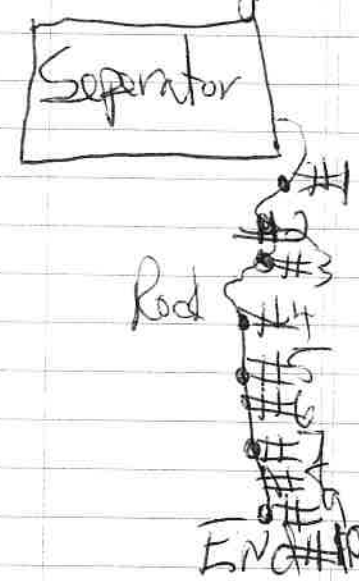
#9 N36.97549
W104.81315

#10 N36.97557
W104.81313

Composite Sample #1

6/15/20

A-47 Samples West



Samples Taken at 40'
Aliquots 5pts per
composit Sample

#1 N 36.97469 Pic #1
W 104.81 308 On
#2 N 36.97477 Pic #2
W 104.81 314 On
#3 N 36.97486 Pic #3
W 104.8132
#4 N 36.97498 Pic #4
W 104.81323
#5 N 36.97508 Pic #5
W 104.8132
Composite #1

A-47 Scales West

#6 N 36.97518 - Pic 6
W 104.91357 29

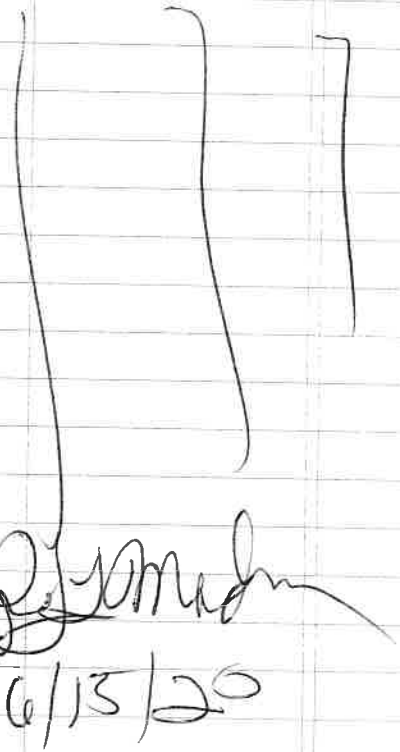
#7 N 36.97524 Pic 7
W 104.81340

#8 N 36.97534 Pic 8
W 104.81345

#9 N 36.97543 Pic 9
W 104.81345

#10 N. 36.97552 Pic 10
W 104.81343

Consolte #2



6/15/20

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Tel: (303)736-0100

Laboratory Job ID: 280-137696-1
Client Project/Site: Produced Water Spill

For:
Wapiti Operating, LLC
PO BOX 190
309 Silver Street
Raton, New Mexico 87740

Attn: Mr. Randy Madison

Shelby Turner

Authorized for release by:
7/9/2020 1:58:48 PM

Shelby Turner, Project Manager I
(303)736-0100
Shelby.Turner@Eurofinset.com

The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Laboratory Job ID: 280-137696-1

Table of Contents

Definitions/Glossary

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-137696-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.

GC Semi VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
X	Surrogate recovery exceeds control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-137696-1

Job ID: 280-137696-1

Laboratory: Eurofins TestAmerica, Denver

Narrative

CASE NARRATIVE

Client: Wapiti Operating, LLC

Project: Produced Water Spill

Report Number: 280-137696-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 6/16/2020 9:58 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.9° C.

VOLATILE ORGANIC COMPOUNDS (GC-MS)
Samples A-47 WEST LEG C-1 (WLC1) (280-137696-1), A-47 WEST LEG C-2 (WLC2) (280-137696-2), A-47 WEST LEG C-1 (ELC1) (280-137696-3) and A-47 WEST LEG C-2 (ELC-2) (280-137696-4) were analyzed for volatile organic compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 06/21/2020.

Several analytes failed the recovery criteria low for the MS of sample A-47 WEST LEG C-1 (WLC1)MS (280-137696-1) in batch 280-499551. Several analytes failed the recovery criteria low for the MSD of sample A-47 WEST LEG C-1 (WLC1)MSD (280-137696-1) in batch 280-499551. The LCS and LCSD were within control limits; therefore, data has been reported. Refer to the QC report for details.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GASOLINE RANGE ORGANICS (GRO)
Samples A-47 WEST LEG C-1 (WLC1) (280-137696-1), A-47 WEST LEG C-2 (WLC2) (280-137696-2), A-47 WEST LEG C-1 (ELC1) (280-137696-3) and A-47 WEST LEG C-2 (ELC-2) (280-137696-4) were analyzed for Gasoline Range Organics (GRO) in accordance with EPA SW-846 Method 8015B - GRO. The samples were prepared on 06/15/2020 and analyzed on 06/26/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

DIESEL RANGE ORGANICS
Samples A-47 WEST LEG C-1 (WLC1) (280-137696-1), A-47 WEST LEG C-2 (WLC2) (280-137696-2), A-47 WEST LEG C-1 (ELC1) (280-137696-3) and A-47 WEST LEG C-2 (ELC-2) (280-137696-4) were analyzed for diesel range organics in accordance with EPA SW-846 Method 8015B - DRO. The samples were prepared on 06/23/2020 and analyzed on 07/07/2020.

o-Terphenyl failed the surrogate recovery criteria low for LCS 280-499774/2-A. Diesel Range Organics [C10-C28] failed the recovery criteria low for LCS 280-499774/2-A. The associated samples are out of hold; therefore, re-extraction was not performed and the data has been reported. Refer to the QC report for details.
Associated samples: A-47 WEST LEG C-1 (WLC1) (280-137696-1), A-47 WEST LEG C-2 (WLC2) (280-137696-2), A-47 WEST LEG C-1 (ELC1) (280-137696-3), and A-47 WEST LEG C-2 (ELC-2) (280-137696-4).

Case Narrative

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-137696-1

Job ID: 280-137696-1 (Continued)

Laboratory: Eurofins TestAmerica, Denver (Continued)

The peak profile present in the following samples is atypical of a hydrocarbon pattern and consists of several discrete peaks: A-47 WEST LEG C-1 (WLC1) (280-137696-1), A-47 WEST LEG C-2 (WLC2) (280-137696-2) and A-47 WEST LEG C-2 (ELC-2) (280-137696-4).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ANIONS (28 DAYS)

Samples A-47 WEST LEG C-1 (WLC1) (280-137696-1), A-47 WEST LEG C-2 (WLC2) (280-137696-2), A-47 WEST LEG C-1 (ELC1) (280-137696-3) and A-47 WEST LEG C-2 (ELC-2) (280-137696-4) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were leached on 06/25/2020 and analyzed on 06/26/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERCENT SOLIDS

Samples A-47 WEST LEG C-1 (WLC1) (280-137696-1), A-47 WEST LEG C-2 (WLC2) (280-137696-2), A-47 WEST LEG C-1 (ELC1) (280-137696-3) and A-47 WEST LEG C-2 (ELC-2) (280-137696-4) were analyzed for percent solids in accordance with ASTM D2216-90. The samples were analyzed on 06/17/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-137696-1

Client Sample ID: A-47 WEST LEG C-1 (WLC1) — Lab Sample ID: 280-137696-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Diesel Range Organics [C10-C28]	140	*	7.5		mg/Kg	1		8015B	Total/NA
Motor Oil (C20-C38)	230		23		mg/Kg	1		8015B	Total/NA
Chloride	540		30		mg/Kg	1		9056A	Soluble

Client Sample ID: A-47 WEST LEG C-2 (WLC2) — Lab Sample ID: 280-137696-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Diesel Range Organics [C10-C28]	140	*	7.8		mg/Kg	1		8015B	Total/NA
Motor Oil (C20-C38)	240		24		mg/Kg	1		8015B	Total/NA
Chloride	690		29		mg/Kg	1		9056A	Soluble

Client Sample ID: A-47 WEST LEG C-1 (ELC1) — Lab Sample ID: 280-137696-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Diesel Range Organics [C10-C28]	150	*	7.7		mg/Kg	1		8015B	Total/NA
Motor Oil (C20-C38)	220		23		mg/Kg	1		8015B	Total/NA
Chloride	670		29		mg/Kg	1		9056A	Soluble

Client Sample ID: A-47 WEST LEG C-2 (ELC-2) — Lab Sample ID: 280-137696-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Gasoline Range Organics (GRO) -C6-C10	0.087		0.051		mg/Kg	1		8015B	Total/NA
Diesel Range Organics [C10-C28]	71	*	7.5		mg/Kg	1		8015B	Total/NA
Motor Oil (C20-C38)	110		23		mg/Kg	1		8015B	Total/NA
Chloride	1200		27		mg/Kg	1		9056A	Soluble

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Denver

Method Summary

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-137696-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL DEN
8015B	Gasoline Range Organics - (GC)	SW846	TAL DEN
8015B	Diesel Range Organics (DRO) (GC)	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
Moisture	Percent Moisture	EPA	TAL DEN
3546	Microwave Extraction	SW846	TAL DEN
5030B	Purge and Trap	SW846	TAL DEN
5035	Closed System Purge and Trap	SW846	TAL DEN
DI Leach	Deionized Water Leaching Procedure	ASTM	TAL DEN

Protocol References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Sample Summary

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-137696-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
280-137696-1	A-47 WEST LEG C-1 (WLC1)	Solid	06/15/20 09:50	06/16/20 09:58	
280-137696-2	A-47 WEST LEG C-2 (WLC2)	Solid	06/15/20 10:10	06/16/20 09:58	
280-137696-3	A-47 WEST LEG C-1 (ELC1)	Solid	06/15/20 10:30	06/16/20 09:58	
280-137696-4	A-47 WEST LEG C-2 (ELC-2)	Solid	06/15/20 10:50	06/16/20 09:58	

Client Sample Results

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-137696-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: A-47 WEST LEG C-1 (WLC1)
Date Collected: 06/15/20 09:50
Date Received: 06/16/20 09:58

Lab Sample ID: 280-137696-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND	F1	0.0048		mg/Kg		06/21/20 09:37	06/21/20 12:09	1
Ethylbenzene	ND	F1	0.0048		mg/Kg		06/21/20 09:37	06/21/20 12:09	1
Toluene	ND	F1	0.0048		mg/Kg		06/21/20 09:37	06/21/20 12:09	1
m-Xylene & p-Xylene	ND	F1	0.0024		mg/Kg		06/21/20 09:37	06/21/20 12:09	1
o-Xylene	ND	F1	0.0024		mg/Kg		06/21/20 09:37	06/21/20 12:09	1
Xylenes, Total	ND	F1	0.0048		mg/Kg		06/21/20 09:37	06/21/20 12:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*58 - 140*	*06/21/20 09:37*	*06/21/20 12:09*	*1*
Toluene-d8 (Surr)	*103*		*80 - 126*	*06/21/20 09:37*	*06/21/20 12:09*	*1*
4-Bromofluorobenzene (Surr)	*105*		*76 - 127*	*06/21/20 09:37*	*06/21/20 12:09*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 121*	*06/21/20 09:37*	*06/21/20 12:09*	*1*

Client Sample ID: A-47 WEST LEG C-2 (WLC2)
Date Collected: 06/15/20 10:10
Date Received: 06/16/20 09:58

Lab Sample ID: 280-137696-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0047		mg/Kg		06/21/20 09:37	06/21/20 13:18	1
Ethylbenzene	ND		0.0047		mg/Kg		06/21/20 09:37	06/21/20 13:18	1
Toluene	ND		0.0047		mg/Kg		06/21/20 09:37	06/21/20 13:18	1
m-Xylene & p-Xylene	ND		0.0024		mg/Kg		06/21/20 09:37	06/21/20 13:18	1
o-Xylene	ND		0.0024		mg/Kg		06/21/20 09:37	06/21/20 13:18	1
Xylenes, Total	ND		0.0047		mg/Kg		06/21/20 09:37	06/21/20 13:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*58 - 140*	*06/21/20 09:37*	*06/21/20 13:18*	*1*
Toluene-d8 (Surr)	*104*		*80 - 126*	*06/21/20 09:37*	*06/21/20 13:18*	*1*
4-Bromofluorobenzene (Surr)	*104*		*76 - 127*	*06/21/20 09:37*	*06/21/20 13:18*	*1*
Dibromofluoromethane (Surr)	*103*		*75 - 121*	*06/21/20 09:37*	*06/21/20 13:18*	*1*

Client Sample ID: A-47 WEST LEG C-1 (ELC1)
Date Collected: 06/15/20 10:30
Date Received: 06/16/20 09:58

Lab Sample ID: 280-137696-3
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0046		mg/Kg		06/21/20 09:37	06/21/20 13:40	1
Ethylbenzene	ND		0.0046		mg/Kg		06/21/20 09:37	06/21/20 13:40	1
Toluene	ND		0.0046		mg/Kg		06/21/20 09:37	06/21/20 13:40	1
m-Xylene & p-Xylene	ND		0.0023		mg/Kg		06/21/20 09:37	06/21/20 13:40	1
o-Xylene	ND		0.0023		mg/Kg		06/21/20 09:37	06/21/20 13:40	1
Xylenes, Total	ND		0.0046		mg/Kg		06/21/20 09:37	06/21/20 13:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*58 - 140*	*06/21/20 09:37*	*06/21/20 13:40*	*1*
Toluene-d8 (Surr)	*99*		*80 - 126*	*06/21/20 09:37*	*06/21/20 13:40*	*1*
4-Bromofluorobenzene (Surr)	*102*		*76 - 127*	*06/21/20 09:37*	*06/21/20 13:40*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 121*	*06/21/20 09:37*	*06/21/20 13:40*	*1*

Client Sample Results

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-137696-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: A-47 WEST LEG C-2 (ELC-2)
Date Collected: 06/15/20 10:50
Date Received: 06/16/20 09:58

Lab Sample ID: 280-137696-4
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0046		mg/Kg		06/21/20 09:37	06/21/20 14:03	1
Ethylbenzene	ND		0.0046		mg/Kg		06/21/20 09:37	06/21/20 14:03	1
Toluene	ND		0.0046		mg/Kg		06/21/20 09:37	06/21/20 14:03	1
m-Xylene & p-Xylene	ND		0.0023		mg/Kg		06/21/20 09:37	06/21/20 14:03	1
o-Xylene	ND		0.0023		mg/Kg		06/21/20 09:37	06/21/20 14:03	1
Xylenes, Total	ND		0.0046		mg/Kg		06/21/20 09:37	06/21/20 14:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*58 - 140*	*06/21/20 09:37*	*06/21/20 14:03*	*1*
Toluene-d8 (Surr)	*100*		*80 - 126*	*06/21/20 09:37*	*06/21/20 14:03*	*1*
4-Bromofluorobenzene (Surr)	*99*		*76 - 127*	*06/21/20 09:37*	*06/21/20 14:03*	*1*
Dibromofluoromethane (Surr)	*97*		*75 - 121*	*06/21/20 09:37*	*06/21/20 14:03*	*1*

Method: 8015B - Gasoline Range Organics - (GC)

Client Sample ID: A-47 WEST LEG C-1 (WLC1)
Date Collected: 06/15/20 09:50
Date Received: 06/16/20 09:58

Lab Sample ID: 280-137696-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	ND		2.3		mg/Kg		06/15/20 09:50	06/26/20 22:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
a,a,a-Trifluorotoluene	*96*		*77 - 123*	*06/15/20 09:50*	*06/26/20 22:35*	*1*

Client Sample ID: A-47 WEST LEG C-2 (WLC2)
Date Collected: 06/15/20 10:10
Date Received: 06/16/20 09:58

Lab Sample ID: 280-137696-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	ND		0.055		mg/Kg		06/15/20 10:10	06/26/20 02:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
a,a,a-Trifluorotoluene	*100*		*77 - 123*	*06/15/20 10:10*	*06/26/20 02:01*	*1*

Client Sample ID: A-47 WEST LEG C-1 (ELC1)
Date Collected: 06/15/20 10:30
Date Received: 06/16/20 09:58

Lab Sample ID: 280-137696-3
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	ND		0.047		mg/Kg		06/15/20 10:30	06/26/20 02:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
a,a,a-Trifluorotoluene	*100*		*77 - 123*	*06/15/20 10:30*	*06/26/20 02:21*	*1*

Client Sample ID: A-47 WEST LEG C-2 (ELC-2)
Date Collected: 06/15/20 10:50
Date Received: 06/16/20 09:58

Lab Sample ID: 280-137696-4
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	**0.087**		0.051		mg/Kg		06/15/20 10:50	06/26/20 02:41	1

Client Sample Results

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-137696-1

Method: 8015B - Gasoline Range Organics - (GC) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	98		77 - 123	06/15/20 10:50	06/26/20 02:41	1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Client Sample ID: A-47 WEST LEG C-1 (WLC1)
Date Collected: 06/15/20 09:50
Date Received: 06/16/20 09:58

Lab Sample ID: 280-137696-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	140	*	7.5		mg/Kg		06/23/20 15:02	07/07/20 04:13	1
Motor Oil (C20-C38)	230		23		mg/Kg		06/23/20 15:02	07/07/20 04:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	68		49 - 115	06/23/20 15:02	07/07/20 04:13	1

Client Sample ID: A-47 WEST LEG C-2 (WLC2)
Date Collected: 06/15/20 10:10
Date Received: 06/16/20 09:58

Lab Sample ID: 280-137696-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	140	*	7.8		mg/Kg		06/23/20 15:02	07/07/20 04:35	1
Motor Oil (C20-C38)	240		24		mg/Kg		06/23/20 15:02	07/07/20 04:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	69		49 - 115	06/23/20 15:02	07/07/20 04:35	1

Client Sample ID: A-47 WEST LEG C-1 (ELC1)
Date Collected: 06/15/20 10:30
Date Received: 06/16/20 09:58

Lab Sample ID: 280-137696-3
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	150	*	7.7		mg/Kg		06/23/20 15:02	07/07/20 04:58	1
Motor Oil (C20-C38)	220		23		mg/Kg		06/23/20 15:02	07/07/20 04:58	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	71		49 - 115	06/23/20 15:02	07/07/20 04:58	1

Client Sample ID: A-47 WEST LEG C-2 (ELC-2)
Date Collected: 06/15/20 10:50
Date Received: 06/16/20 09:58

Lab Sample ID: 280-137696-4
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	71	*	7.5		mg/Kg		06/23/20 15:02	07/07/20 05:19	1
Motor Oil (C20-C38)	110		23		mg/Kg		06/23/20 15:02	07/07/20 05:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	70		49 - 115	06/23/20 15:02	07/07/20 05:19	1

General Chemistry

Client Sample ID: A-47 WEST LEG C-1 (WLC1)
Date Collected: 06/15/20 09:50
Date Received: 06/16/20 09:58

Lab Sample ID: 280-137696-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	5.1		0.1		%			06/17/20 15:20	1
Percent Solids	94.9		0.1		%			06/17/20 15:20	1

Client Sample Results

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-137696-1

General Chemistry

Client Sample ID: A-47 WEST LEG C-2 (WLC2)
Date Collected: 06/15/20 10:10
Date Received: 06/16/20 09:58

Lab Sample ID: 280-137696-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	4.5		0.1		%			06/17/20 15:20	1
Percent Solids	95.5		0.1		%			06/17/20 15:20	1

Client Sample ID: A-47 WEST LEG C-1 (ELC1)
Date Collected: 06/15/20 10:30
Date Received: 06/16/20 09:58

Lab Sample ID: 280-137696-3
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	16.5		0.1		%			06/17/20 15:20	1
Percent Solids	83.5		0.1		%			06/17/20 15:20	1

Client Sample ID: A-47 WEST LEG C-2 (ELC-2)
Date Collected: 06/15/20 10:50
Date Received: 06/16/20 09:58

Lab Sample ID: 280-137696-4
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	24.3		0.1		%			06/17/20 15:20	1
Percent Solids	75.7		0.1		%			06/17/20 15:20	1

General Chemistry - Soluble

Client Sample ID: A-47 WEST LEG C-1 (WLC1)
Date Collected: 06/15/20 09:50
Date Received: 06/16/20 09:58

Lab Sample ID: 280-137696-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	540		30		mg/Kg			06/26/20 16:02	1

Client Sample ID: A-47 WEST LEG C-2 (WLC2)
Date Collected: 06/15/20 10:10
Date Received: 06/16/20 09:58

Lab Sample ID: 280-137696-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	690		29		mg/Kg			06/26/20 16:19	1

Client Sample ID: A-47 WEST LEG C-1 (ELC1)
Date Collected: 06/15/20 10:30
Date Received: 06/16/20 09:58

Lab Sample ID: 280-137696-3
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	670		29		mg/Kg			06/26/20 16:35	1

Client Sample ID: A-47 WEST LEG C-2 (ELC-2)
Date Collected: 06/15/20 10:50
Date Received: 06/16/20 09:58

Lab Sample ID: 280-137696-4
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1200		27		mg/Kg			06/26/20 16:52	1

Surrogate Summary

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-137696-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	DCA (58-140)	TOL (80-126)	BFB (76-127)	DBFM (75-121)
280-137696-1	A-47 WEST LEG C-1 (WLC1)	103	103	105	100
280-137696-1 MS	A-47 WEST LEG C-1 (WLC1)	103	102	101	103
280-137696-1 MSD	A-47 WEST LEG C-1 (WLC1)	101	102	102	102
280-137696-2	A-47 WEST LEG C-2 (WLC2)	107	104	104	103
280-137696-3	A-47 WEST LEG C-1 (ELC1)	102	99	102	101
280-137696-4	A-47 WEST LEG C-2 (ELC-2)	98	100	99	97
LCS 280-499552/1-A	Lab Control Sample	99	99	96	100
LCSD 280-499552/2-A	Lab Control Sample Dup	101	100	95	102
MB 280-499552/3-A	Method Blank	100	100	95	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8015B - Gasoline Range Organics - (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	TFT1 (77-123)
280-137696-1	A-47 WEST LEG C-1 (WLC1)	96
280-137696-2	A-47 WEST LEG C-2 (WLC2)	100
280-137696-3	A-47 WEST LEG C-1 (ELC1)	100
280-137696-4	A-47 WEST LEG C-2 (ELC-2)	98
LCS 280-500144/1-A	Lab Control Sample	106
LCS 280-500144/1-A	Lab Control Sample	101
LCSD 280-500144/2-A	Lab Control Sample Dup	106
LCSD 280-500144/2-A	Lab Control Sample Dup	101
MB 280-500003/3-A	Method Blank	99
MB 280-500144/3-A	Method Blank	104
MB 280-500144/3-A	Method Blank	99

Surrogate Legend

TFT = a,a,a-Trifluorotoluene

Method: 8015B - Diesel Range Organics (DRO) (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	OTPH1 (49-115)
280-137696-1	A-47 WEST LEG C-1 (WLC1)	68
280-137696-2	A-47 WEST LEG C-2 (WLC2)	69
280-137696-3	A-47 WEST LEG C-1 (ELC1)	71
280-137696-4	A-47 WEST LEG C-2 (ELC-2)	70
LCS 280-499774/2-A	Lab Control Sample	32 X
LCS 280-499774/3-A	Lab Control Sample	78
MB 280-499774/1-A	Method Blank	73

Surrogate Legend

Surrogate Summary

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-137696-1

OTPH = o-Terphenyl

QC Sample Results

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-137696-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 280-499552/3-A
Matrix: Solid
Analysis Batch: 499551

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 499552

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0050		mg/Kg		06/21/20 09:37	06/21/20 11:24	1
Ethylbenzene	ND		0.0050		mg/Kg		06/21/20 09:37	06/21/20 11:24	1
Toluene	ND		0.0050		mg/Kg		06/21/20 09:37	06/21/20 11:24	1
m-Xylene & p-Xylene	ND		0.0025		mg/Kg		06/21/20 09:37	06/21/20 11:24	1
o-Xylene	ND		0.0025		mg/Kg		06/21/20 09:37	06/21/20 11:24	1
Xylenes, Total	ND		0.0050		mg/Kg		06/21/20 09:37	06/21/20 11:24	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*58 - 140*	*06/21/20 09:37*	*06/21/20 11:24*	*1*
Toluene-d8 (Surr)	*100*		*80 - 126*	*06/21/20 09:37*	*06/21/20 11:24*	*1*
4-Bromofluorobenzene (Surr)	*95*		*76 - 127*	*06/21/20 09:37*	*06/21/20 11:24*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 121*	*06/21/20 09:37*	*06/21/20 11:24*	*1*

Lab Sample ID: LCS 280-499552/1-A
Matrix: Solid
Analysis Batch: 499551

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 499552

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.0500	0.0445		mg/Kg		89	75 - 135
Ethylbenzene	0.0500	0.0470		mg/Kg		94	73 - 125
Toluene	0.0500	0.0442		mg/Kg		88	77 - 122
m-Xylene & p-Xylene	0.0500	0.0461		mg/Kg		92	77 - 135
o-Xylene	0.0500	0.0466		mg/Kg		93	75 - 135
Xylenes, Total	0.100	0.0927		mg/Kg		93	76 - 135

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*58 - 140*
Toluene-d8 (Surr)	*99*		*80 - 126*
4-Bromofluorobenzene (Surr)	*96*		*76 - 127*
Dibromofluoromethane (Surr)	*100*		*75 - 121*

Lab Sample ID: LCSD 280-499552/2-A
Matrix: Solid
Analysis Batch: 499551

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 499552

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	0.0500	0.0468		mg/Kg		94	75 - 135	5	20
Ethylbenzene	0.0500	0.0488		mg/Kg		98	73 - 125	4	20
Toluene	0.0500	0.0465		mg/Kg		93	77 - 122	5	20
m-Xylene & p-Xylene	0.0500	0.0491		mg/Kg		98	77 - 135	6	20
o-Xylene	0.0500	0.0489		mg/Kg		98	75 - 135	5	20
Xylenes, Total	0.100	0.0980		mg/Kg		98	76 - 135	6	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*58 - 140*
Toluene-d8 (Surr)	*100*		*80 - 126*
4-Bromofluorobenzene (Surr)	*95*		*76 - 127*

QC Sample Results

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-137696-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 280-499552/2-A
Matrix: Solid
Analysis Batch: 499551

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 499552

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Dibromofluoromethane (Surr)	*102*		*75 - 121*

Lab Sample ID: 280-137696-1 MS
Matrix: Solid
Analysis Batch: 499551

Client Sample ID: A-47 WEST LEG C-1 (WLC1)
Prep Type: Total/NA
Prep Batch: 499552

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	ND	F1	0.0488	0.0362	F1	mg/Kg		74	75 - 135
Ethylbenzene	ND	F1	0.0488	0.0281	F1	mg/Kg		57	73 - 125
Toluene	ND	F1	0.0488	0.0316	F1	mg/Kg		64	77 - 122
m-Xylene & p-Xylene	ND	F1	0.0488	0.0265	F1	mg/Kg		54	77 - 135
o-Xylene	ND	F1	0.0488	0.0272	F1	mg/Kg		56	75 - 135
Xylenes, Total	ND	F1	0.0976	0.0537	F1	mg/Kg		55	76 - 135

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*103*		*58 - 140*
Toluene-d8 (Surr)	*102*		*80 - 126*
4-Bromofluorobenzene (Surr)	*101*		*76 - 127*
Dibromofluoromethane (Surr)	*103*		*75 - 121*

Lab Sample ID: 280-137696-1 MSD
Matrix: Solid
Analysis Batch: 499551

Client Sample ID: A-47 WEST LEG C-1 (WLC1)
Prep Type: Total/NA
Prep Batch: 499552

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	ND	F1	0.0488	0.0336	F1	mg/Kg		69	75 - 135	7	20
Ethylbenzene	ND	F1	0.0488	0.0252	F1	mg/Kg		52	73 - 125	11	20
Toluene	ND	F1	0.0488	0.0288	F1	mg/Kg		58	77 - 122	9	20
m-Xylene & p-Xylene	ND	F1	0.0488	0.0241	F1	mg/Kg		49	77 - 135	9	20
o-Xylene	ND	F1	0.0488	0.0241	F1	mg/Kg		49	75 - 135	12	20
Xylenes, Total	ND	F1	0.0977	0.0482	F1	mg/Kg		49	76 - 135	11	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*101*		*58 - 140*
Toluene-d8 (Surr)	*102*		*80 - 126*
4-Bromofluorobenzene (Surr)	*102*		*76 - 127*
Dibromofluoromethane (Surr)	*102*		*75 - 121*

Method: 8015B - Gasoline Range Organics - (GC)

Lab Sample ID: MB 280-500003/3-A
Matrix: Solid
Analysis Batch: 500261

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 500003

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	ND		2.0		mg/Kg		06/24/20 16:05	06/26/20 19:37	1

QC Sample Results

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-137696-1

Method: 8015B - Gasoline Range Organics - (GC) (Continued)

Lab Sample ID: MB 280-500003/3-A
Matrix: Solid
Analysis Batch: 500261

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 500003

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	99		77 - 123	06/24/20 16:05	06/26/20 19:37	1

Lab Sample ID: MB 280-500144/3-A
Matrix: Solid
Analysis Batch: 500158

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 500144

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	ND		2.0		mg/Kg		06/25/20 15:21	06/25/20 21:03	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	104		77 - 123	06/25/20 15:21	06/25/20 21:03	1

Lab Sample ID: MB 280-500144/3-A
Matrix: Solid
Analysis Batch: 500261

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 500144

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	ND		2.0		mg/Kg		06/25/20 15:21	06/26/20 21:36	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	99		77 - 123	06/25/20 15:21	06/26/20 21:36	1

Lab Sample ID: LCS 280-500144/1-A
Matrix: Solid
Analysis Batch: 500158

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 500144

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline Range Organics (GRO) -C6-C10	8.54	8.90		mg/Kg		104	75 - 135

Surrogate	LCS %Recovery	LCS Qualifier	Limits
a,a,a-Trifluorotoluene	106		77 - 123

Lab Sample ID: LCS 280-500144/1-A
Matrix: Solid
Analysis Batch: 500261

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 500144

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline Range Organics (GRO) -C6-C10	8.54	9.50		mg/Kg		111	75 - 135

Surrogate	LCS %Recovery	LCS Qualifier	Limits
a,a,a-Trifluorotoluene	101		77 - 123

QC Sample Results

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-137696-1

Method: 8015B - Gasoline Range Organics - (GC) (Continued)

Lab Sample ID: LCSD 280-500144/2-A
Matrix: Solid
Analysis Batch: 500158

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 500144

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline Range Organics (GRO) -C6-C10	8.54	8.63		mg/Kg		101	75 - 135	3	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
a,a,a-Trifluorotoluene	*106*		*77 - 123*

Lab Sample ID: LCSD 280-500144/2-A
Matrix: Solid
Analysis Batch: 500261

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 500144

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline Range Organics (GRO) -C6-C10	8.54	8.80		mg/Kg		103	75 - 135	8	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
a,a,a-Trifluorotoluene	*101*		*77 - 123*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 280-499774/1-A
Matrix: Solid
Analysis Batch: 500853

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 499774

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.0		mg/Kg		06/23/20 15:02	07/02/20 04:48	1
Motor Oil (C20-C38)	ND		24		mg/Kg		06/23/20 15:02	07/02/20 04:48	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*73*		*49 - 115*	*06/23/20 15:02*	*07/02/20 04:48*	*1*

Lab Sample ID: LCS 280-499774/2-A
Matrix: Solid
Analysis Batch: 500853

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 499774

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Diesel Range Organics [C10-C28]	132	41.6	*	mg/Kg		31	53 - 115

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*32*	*X*	*49 - 115*

Lab Sample ID: LCS 280-499774/3-A
Matrix: Solid
Analysis Batch: 500853

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 499774

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Motor Oil (C20-C38)	334	282		mg/Kg		84	57 - 115

QC Sample Results

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-137696-1

Method: 8015B - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCS 280-499774/3-A
Matrix: Solid
Analysis Batch: 500853

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 499774

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*78*		*49 - 115*

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MRL 280-500256/3
Matrix: Solid
Analysis Batch: 500256

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.18		mg/L		84	50 - 150

Lab Sample ID: MB 280-500118/2-A
Matrix: Solid
Analysis Batch: 500256

Client Sample ID: Method Blank
Prep Type: Soluble

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		30		mg/Kg			06/26/20 13:02	1

Lab Sample ID: LCS 280-500118/1-A
Matrix: Solid
Analysis Batch: 500256

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	1000	985		mg/Kg		98	90 - 110

QC Association Summary

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-137696-1

GC/MS VOA

Analysis Batch: 499551

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-137696-1	A-47 WEST LEG C-1 (WLC1)	Total/NA	Solid	8260B	499552
280-137696-2	A-47 WEST LEG C-2 (WLC2)	Total/NA	Solid	8260B	499552
280-137696-3	A-47 WEST LEG C-1 (ELC1)	Total/NA	Solid	8260B	499552
280-137696-4	A-47 WEST LEG C-2 (ELC-2)	Total/NA	Solid	8260B	499552
MB 280-499552/3-A	Method Blank	Total/NA	Solid	8260B	499552
LCS 280-499552/1-A	Lab Control Sample	Total/NA	Solid	8260B	499552
LCSD 280-499552/2-A	Lab Control Sample Dup	Total/NA	Solid	8260B	499552
280-137696-1 MS	A-47 WEST LEG C-1 (WLC1)	Total/NA	Solid	8260B	499552
280-137696-1 MSD	A-47 WEST LEG C-1 (WLC1)	Total/NA	Solid	8260B	499552

Prep Batch: 499552

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-137696-1	A-47 WEST LEG C-1 (WLC1)	Total/NA	Solid	5030B	
280-137696-2	A-47 WEST LEG C-2 (WLC2)	Total/NA	Solid	5030B	
280-137696-3	A-47 WEST LEG C-1 (ELC1)	Total/NA	Solid	5030B	
280-137696-4	A-47 WEST LEG C-2 (ELC-2)	Total/NA	Solid	5030B	
MB 280-499552/3-A	Method Blank	Total/NA	Solid	5030B	
LCS 280-499552/1-A	Lab Control Sample	Total/NA	Solid	5030B	
LCSD 280-499552/2-A	Lab Control Sample Dup	Total/NA	Solid	5030B	
280-137696-1 MS	A-47 WEST LEG C-1 (WLC1)	Total/NA	Solid	5030B	
280-137696-1 MSD	A-47 WEST LEG C-1 (WLC1)	Total/NA	Solid	5030B	

GC VOA

Prep Batch: 500003

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 280-500003/3-A	Method Blank	Total/NA	Solid	5035	

Prep Batch: 500144

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-137696-1	A-47 WEST LEG C-1 (WLC1)	Total/NA	Solid	5035	
280-137696-2	A-47 WEST LEG C-2 (WLC2)	Total/NA	Solid	5035	
280-137696-3	A-47 WEST LEG C-1 (ELC1)	Total/NA	Solid	5035	
280-137696-4	A-47 WEST LEG C-2 (ELC-2)	Total/NA	Solid	5035	
MB 280-500144/3-A	Method Blank	Total/NA	Solid	5035	
LCS 280-500144/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 280-500144/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	

Analysis Batch: 500158

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-137696-2	A-47 WEST LEG C-2 (WLC2)	Total/NA	Solid	8015B	500144
280-137696-3	A-47 WEST LEG C-1 (ELC1)	Total/NA	Solid	8015B	500144
280-137696-4	A-47 WEST LEG C-2 (ELC-2)	Total/NA	Solid	8015B	500144
MB 280-500144/3-A	Method Blank	Total/NA	Solid	8015B	500144
LCS 280-500144/1-A	Lab Control Sample	Total/NA	Solid	8015B	500144
LCSD 280-500144/2-A	Lab Control Sample Dup	Total/NA	Solid	8015B	500144

Analysis Batch: 500261

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-137696-1	A-47 WEST LEG C-1 (WLC1)	Total/NA	Solid	8015B	500144
MB 280-500003/3-A	Method Blank	Total/NA	Solid	8015B	500003

QC Association Summary

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-137696-1

GC VOA (Continued)

Analysis Batch: 500261 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 280-500144/3-A	Method Blank	Total/NA	Solid	8015B	500144
LCS 280-500144/1-A	Lab Control Sample	Total/NA	Solid	8015B	500144
LCSD 280-500144/2-A	Lab Control Sample Dup	Total/NA	Solid	8015B	500144

GC Semi VOA

Prep Batch: 499774

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-137696-1	A-47 WEST LEG C-1 (WLC1)	Total/NA	Solid	3546	
280-137696-2	A-47 WEST LEG C-2 (WLC2)	Total/NA	Solid	3546	
280-137696-3	A-47 WEST LEG C-1 (ELC1)	Total/NA	Solid	3546	
280-137696-4	A-47 WEST LEG C-2 (ELC-2)	Total/NA	Solid	3546	
MB 280-499774/1-A	Method Blank	Total/NA	Solid	3546	
LCS 280-499774/2-A	Lab Control Sample	Total/NA	Solid	3546	
LCS 280-499774/3-A	Lab Control Sample	Total/NA	Solid	3546	

Analysis Batch: 500853

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 280-499774/1-A	Method Blank	Total/NA	Solid	8015B	499774
LCS 280-499774/2-A	Lab Control Sample	Total/NA	Solid	8015B	499774
LCS 280-499774/3-A	Lab Control Sample	Total/NA	Solid	8015B	499774

Analysis Batch: 501099

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-137696-1	A-47 WEST LEG C-1 (WLC1)	Total/NA	Solid	8015B	499774
280-137696-2	A-47 WEST LEG C-2 (WLC2)	Total/NA	Solid	8015B	499774
280-137696-3	A-47 WEST LEG C-1 (ELC1)	Total/NA	Solid	8015B	499774
280-137696-4	A-47 WEST LEG C-2 (ELC-2)	Total/NA	Solid	8015B	499774

General Chemistry

Analysis Batch: 499151

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-137696-1	A-47 WEST LEG C-1 (WLC1)	Total/NA	Solid	Moisture	
280-137696-2	A-47 WEST LEG C-2 (WLC2)	Total/NA	Solid	Moisture	
280-137696-3	A-47 WEST LEG C-1 (ELC1)	Total/NA	Solid	Moisture	
280-137696-4	A-47 WEST LEG C-2 (ELC-2)	Total/NA	Solid	Moisture	

Leach Batch: 500118

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-137696-1	A-47 WEST LEG C-1 (WLC1)	Soluble	Solid	DI Leach	
280-137696-2	A-47 WEST LEG C-2 (WLC2)	Soluble	Solid	DI Leach	
280-137696-3	A-47 WEST LEG C-1 (ELC1)	Soluble	Solid	DI Leach	
280-137696-4	A-47 WEST LEG C-2 (ELC-2)	Soluble	Solid	DI Leach	
MB 280-500118/2-A	Method Blank	Soluble	Solid	DI Leach	
LCS 280-500118/1-A	Lab Control Sample	Soluble	Solid	DI Leach	

Analysis Batch: 500256

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-137696-1	A-47 WEST LEG C-1 (WLC1)	Soluble	Solid	9056A	500118
280-137696-2	A-47 WEST LEG C-2 (WLC2)	Soluble	Solid	9056A	500118
280-137696-3	A-47 WEST LEG C-1 (ELC1)	Soluble	Solid	9056A	500118

QC Association Summary

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-137696-1

General Chemistry (Continued)

Analysis Batch: 500256 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-137696-4	A-47 WEST LEG C-2 (ELC-2)	Soluble	Solid	9056A	500118
MB 280-500118/2-A	Method Blank	Soluble	Solid	9056A	500118
LCS 280-500118/1-A	Lab Control Sample	Soluble	Solid	9056A	500118
MRL 280-500256/3	Lab Control Sample	Total/NA	Solid	9056A	

Lab Chronicle

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-137696-1

Client Sample ID: A-47 WEST LEG C-1 (WLC1)

Lab Sample ID: 280-137696-1
Matrix: Solid
Date Collected: 06/15/20 09:50
Date Received: 06/16/20 09:58

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			5.260 g	5 mL	499552	06/21/20 09:37	GPM	TAL DEN
Total/NA	Analysis	8260B		1	5 g	5 mL	499551	06/21/20 12:09	GPM	TAL DEN
Total/NA	Prep	5035			4.42 g	5 mL	500144	06/15/20 09:50	AAR	TAL DEN
Total/NA	Analysis	8015B		1	0.1 mL	5 mL	500261	06/26/20 22:35	CAS	TAL DEN
Total/NA	Prep	3546			16.0 g	1 mL	499774	06/23/20 15:02	MB	TAL DEN
Total/NA	Analysis	8015B		1			501099	07/07/20 04:13	MAM	TAL DEN
Soluble	Leach	DI Leach			10.13 g	100 mL	500118	06/25/20 12:13	JAP	TAL DEN
Soluble	Analysis	9056A		1	5 mL	5 mL	500256	06/26/20 16:02	JAP	TAL DEN
Total/NA	Analysis	Moisture		1			499151	06/17/20 15:20	FRG	TAL DEN

Client Sample ID: A-47 WEST LEG C-2 (WLC2)

Lab Sample ID: 280-137696-2
Matrix: Solid
Date Collected: 06/15/20 10:10
Date Received: 06/16/20 09:58

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			5.280 g	5 mL	499552	06/21/20 09:37	GPM	TAL DEN
Total/NA	Analysis	8260B		1	5 g	5 mL	499551	06/21/20 13:18	GPM	TAL DEN
Total/NA	Prep	5035			3.641 g	5 mL	500144	06/15/20 10:10	AAR	TAL DEN
Total/NA	Analysis	8015B		1	5 mL	5 mL	500158	06/26/20 02:01	CAS	TAL DEN
Total/NA	Prep	3546			15.3 g	1 mL	499774	06/23/20 15:02	MB	TAL DEN
Total/NA	Analysis	8015B		1			501099	07/07/20 04:35	MAM	TAL DEN
Soluble	Leach	DI Leach			10.38 g	100 mL	500118	06/25/20 12:13	JAP	TAL DEN
Soluble	Analysis	9056A		1	5 mL	5 mL	500256	06/26/20 16:19	JAP	TAL DEN
Total/NA	Analysis	Moisture		1			499151	06/17/20 15:20	FRG	TAL DEN

Client Sample ID: A-47 WEST LEG C-1 (ELC1)

Lab Sample ID: 280-137696-3
Matrix: Solid
Date Collected: 06/15/20 10:30
Date Received: 06/16/20 09:58

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			5.488 g	5 mL	499552	06/21/20 09:37	GPM	TAL DEN
Total/NA	Analysis	8260B		1	5 g	5 mL	499551	06/21/20 13:40	GPM	TAL DEN
Total/NA	Prep	5035			4.214 g	5 mL	500144	06/15/20 10:30	AAR	TAL DEN
Total/NA	Analysis	8015B		1	5 mL	5 mL	500158	06/26/20 02:21	CAS	TAL DEN
Total/NA	Prep	3546			15.5 g	1 mL	499774	06/23/20 15:02	MB	TAL DEN
Total/NA	Analysis	8015B		1			501099	07/07/20 04:58	MAM	TAL DEN
Soluble	Leach	DI Leach			10.18 g	100 mL	500118	06/25/20 12:13	JAP	TAL DEN
Soluble	Analysis	9056A		1	5 mL	5 mL	500256	06/26/20 16:35	JAP	TAL DEN
Total/NA	Analysis	Moisture		1			499151	06/17/20 15:20	FRG	TAL DEN

Lab Chronicle

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-137696-1

Client Sample ID: A-47 WEST LEG C-2 (ELC-2)

Date Collected: 06/15/20 10:50
Date Received: 06/16/20 09:58

Lab Sample ID: 280-137696-4

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			5.407 g	5 mL	499552	06/21/20 09:37	GPM	TAL DEN
Total/NA	Analysis	8260B		1	5 g	5 mL	499551	06/21/20 14:03	GPM	TAL DEN
Total/NA	Prep	5035			3.885 g	5 mL	500144	06/15/20 10:50	AAR	TAL DEN
Total/NA	Analysis	8015B		1	5 mL	5 mL	500158	06/26/20 02:41	CAS	TAL DEN
Total/NA	Prep	3546			16.0 g	1 mL	499774	06/23/20 15:02	MB	TAL DEN
Total/NA	Analysis	8015B		1			501099	07/07/20 05:19	MAM	TAL DEN
Soluble	Leach	DI Leach			10.91 g	100 mL	500118	06/25/20 12:13	JAP	TAL DEN
Soluble	Analysis	9056A		1	5 mL	5 mL	500256	06/26/20 16:52	JAP	TAL DEN
Total/NA	Analysis	Moisture		1			499151	06/17/20 15:20	FRG	TAL DEN

Laboratory References:

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Accreditation/Certification Summary

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-137696-1

Laboratory: Eurofins TestAmerica, Denver

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	2907.01	10-31-21
A2LA	ISO/IEC 17025	2907.01	10-31-21
Alabama	State Program	40730	09-30-12 *
Alaska (UST)	State	18-001	02-08-21
Arizona	State	AZ0713	12-20-20
Arkansas DEQ	State	19-047-0	06-01-21
California	State	2513	01-08-21
Connecticut	State	PH-0686	09-30-20
Florida	NELAP	E87667-57	07-01-21
Georgia	State	4025-011	01-09-21
Illinois	NELAP	2000172019-1	04-30-21
Iowa	State	IA#370	12-01-20
Kansas	NELAP	E-10166	04-30-21
Louisiana	NELAP	30785	06-30-14 *
Louisiana	NELAP	30785	06-30-21
Maine	State	2019011 (231)	03-03-21
Minnesota	NELAP	1788752	12-31-20
Nevada	State	CO000262020-1	07-31-20
New Hampshire	NELAP	205319	04-29-21
New Jersey	NELAP	190002	06-30-21
New York	NELAP	59923	04-01-21
North Carolina (WW/SW)	State	358	12-31-20
North Dakota	State	R-034	01-08-21
Oklahoma	State	2018-006	08-31-20
Oregon	NELAP	4025-011	01-08-21
Pennsylvania	NELAP	013	08-01-20
South Carolina	State	72002001	01-08-21
Texas	NELAP	T104704183-19-17	09-30-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-18-00099	03-26-21
Utah	NELAP	CO000262019-11	07-31-20
Virginia	NELAP	10490	06-14-21
Washington	State	C583-19	08-05-20
West Virginia DEP	State	354	11-30-20
Wisconsin	State	999615430	08-31-20
Wyoming (UST)	A2LA	2907.01	10-31-21

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

Denver #280

eurofins

Client Information	Sampler: Randy L Madison	Lab PM: Turner, Shelby R	Carrier Tracking No(s):	COC No: 280-99869-29968.1
Client Contact: Mr. Randy Madison	Phone: 575-420-1120	E-Mail: shelby.turner@testamericainc.com		Page: Page 1 of 1
Company: Wapiti Operating, LLC				Job #:
Address: PO BOX 190 309 Silver Street	Due Date Requested:			
City: Raton	TAT Requested (days):			
State, Zip: NM, 87740				
Phone: 575-445-6706(Tel)	PO #: Pay by Credit Card			
Email: rmadison@wapitienergy.com	WO #:			
Project Name: Produced Water Spill	Project #: 28020400			
Site: A-47	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL; B - NaOH; C - Zn Acetate; D - Nitric Acid; E - NaHSO4; F - MeOH; G - Amchlor; H - Ascorbic Acid; I - Ice; J - DI Water; K - EDTA; L - EDA; M - Hexane; N - None; O - AsNaO2; P - Na2O4S; Q - Na2SO3; R - Na2S2O3; S - H2SO4; T - TSP Dodecahydrate; U - Acetone; V - MCAA; W - pH 4-5; Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9056A_28D - (MOD) Local Method	8015B_DRO - (MOD) Standard 8015 list	8015B_GRO - (MOD) Standard 8015 list	8260B - (MOD) BTEX by GC/MS	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	N	F	N		
A-47 West Leg C-1 (WLC1)	6/15/20	0950	C	Solid	N	N	X	X	X	X		
A-47 West Leg C-2 (WLC2)	6/15/20	1010	C	Solid	N	N	X	X	X	X		
A-47 East Leg C-1 (ELC1)	6/15/20	1030	C	Solid	N	N	X	X	X	X		
A-47 East Leg C-2 (ELC2)	6/15/20	1050	C	Solid	N	N	X	X	X	X		

280-137696 Chain of Custody

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Randy L Madison	6/16/20 0900	W.O.I.	M Shannon	6-16-20 0955	ETA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 2.3, IR 8, +0.6, ms, 6-16-20

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Wapiti Operating, LLC

Job Number: 280-137696-1

Login Number: 137696
List Number: 1
Creator: Lubin, Julius C

List Source: Eurofins TestAmerica, Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Randy Madison

From: Randy Madison
Sent: Wednesday, July 15, 2020 6:44 AM
To: 'Smith, Cory, EMNRD'
Subject: Emailing: J137696-1 UDS Level 2 Report Final Report, J134318-1 UDS Level 2 Report Final Report
Attachments: J137696-1 UDS Level 2 Report Final Report.pdf; J134318-1 UDS Level 2 Report Final Report.pdf

Cory,
Find attached the lab results for the initial grab and the composites done on 6/15/20. There is a great difference between the 2 analysis's. I want to do a third so we are sure we have a good representation of the area. I also want to do a back ground sample to see if something is naturally there giving us the higher reading.
Randy

Randy L. Madison, HSE Specialist
Wapiti Operating, LLC
P.O. Box 190
309 Silver St.
Raton, NM 87740
Office 575-445-6706
Cell 575-420-1120
rmadison@wapitienergy.com

Your message is ready to be sent with the following file or link attachments:

J137696-1 UDS Level 2 Report Final Report
J134318-1 UDS Level 2 Report Final Report

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.

Randy Madison

From: Randy Madison
Sent: Friday, July 10, 2020 9:06 AM
To: 'Smith, Cory, EMNRD'
Subject: Extension Request Incident # NRM 2005230899
Attachments: 2nd Extension Request Signed.pdf

Mr. Smith,
I am requesting a 2nd extension on Major Release NRM 2005230899. See attachment Thanks Randy

Randy L. Madison, HSE Specialist
Wapiti Operating, LLC
P.O. Box 190
309 Silver St.
Raton, NM 87740
Office 575-445-6706
Cell 575-420-1120
rmadison@wapitienergy.com

Your message is ready to be sent with the following file or link attachments:

2nd Extension Request Signed

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.

WAPITI OPERATING, LLC

July 10, 2020

TO: Cory Smith, Environmental Specialist
NMOCD District 3 & 4
1000 Rio Brazos
Aztec, NM 87410

FR: Randy Madison, HSE Specialist

REF: Major Spill VPR A-47, API# 30-007-20197, Incident #NRM2005230899

Mr. Smith,

I had previously requested a time extension on the closure report for this incident until 8/1/20. It is unlikely Wapiti will meet the 8/1/20 dead line, which you had approve. I am requesting an additional 30 days (9-1-20) to complete the closure report. We are continuing to make every effort to gather the additional information and provide closure. Thank you for your consideration in this matter.

Kinds Regards,

Randy L. Madison, HSE Specialist

Randy Madison

From: Randy Madison
Sent: Tuesday, July 14, 2020 3:29 PM
To: 'Smith, Cory, EMNRD'
Cc: Ian Johnston
Subject: RE: Extension Request Incident # NRM 2005230899

Cory,
I requested the first the extension on 4/23/20 and you approved it on 4/30/20 I submitted my Sample plan on 5/4/20 and you requested more information.
I submitted the 2nd Sample plan on 5/13/20 and you approved it.
I requested sampling supplies and scheduled the sampling for 6/1/20 because of Memorial Day weekend. Notified you 48 hrs. prior.
Conducted samples on 6/1/20 and they got to the lab on 6/5/20 at 17 degrees Celsius. They were no good.
Re-scheduled the sampling for 6/15/20 and notified you prior. Conducted the samples and this time they go to the lab within temperature range.
Got the results of the tests on the NRM 2005230899 on 7/9/20. The results of the test came back all over the place. I do not know if this is due to shipping or something in the lab. I contacted the lab and asked that they run them again. They requested additional samples. I plan to sample again on 7/20/20. I do not believe I will have the results back by 8/1/20. I want to get you the most accurate results, that is the reason for my request.
Randy

-----Original Message-----
From: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Sent: Tuesday, July 14, 2020 2:38 PM
To: Randy Madison <RMadison@WapitiEnergy.com>
Subject: RE: Extension Request Incident # NRM 2005230899

Randy,

I need a reason why Wapiti is requesting a 2nd extension, also please include what has been done since the last extension.

Thanks,

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

-----Original Message-----
From: Randy Madison <RMadison@WapitiEnergy.com>
Sent: Friday, July 10, 2020 9:06 AM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Subject: [EXT] Extension Request Incident # NRM 2005230899

Mr. Smith,
I am requesting a 2nd extension on Major Release NRM 2005230899. See attachment Thanks Randy

Randy L. Madison, HSE Specialist
Wapiti Operating, LLC
P.O. Box 190
309 Silver St.
Raton, NM 87740
Office 575-445-6706
Cell 575-420-1120
rmadison@wapitienergy.com

Your message is ready to be sent with the following file or link attachments:

2nd Extension Request Signed

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.

Randy Madison

From: Randy Madison
Sent: Thursday, July 16, 2020 10:30 AM
To: 'Smith, Cory, EMNRD'
Cc: Ian Johnston
Subject: Sampling A-47 NRM2005230899

Mr. Smith,
I agree with you recommendation of do a grab sample. I will do 2 samples approx. 50' to the east of the spill area and 50' to the west of the spill this should get a good representation of the area. The reason I will be going east and west is I do not have an un-disturbed area above. I will still need an 2nd extension (8-1-20) to get this done and turned around. Once I have the results in my hand I will move this along as quickly as possible. I am also including in this e-mail my notification of Sampling on 7/20/20 at 1100 hrs. This gives you your 48 hrs. per NMAC .

I have also been in contact with Shelby Turner from Eurofins TestAmerica. This is the lab that I use and I quote her "I think doing a background sample to see if there are any natural occurring contaminates is a good idea. Regarding the high DRO results, our analyst indicated that there may be high organic materials in the soil causing high DRO readings:" To do my samples I have to scrap the duff away anywhere from 2" to 4" to get to soil.

Thanks
Randy

Randy L. Madison, HSE Specialist
Wapiti Operating, LLC
P.O. Box 190
309 Silver St.
Raton, NM 87740
Office 575-445-6706
Cell 575-420-1120
rmadison@wapitienergy.com

Randy Madison

From: Randy Madison
Sent: Thursday, July 16, 2020 7:40 AM
To: 'Smith, Cory, EMNRD'
Subject: Sampling at A-47 Incident # NRM2005230899

Mr. Smith,
At the present time I plan to Sample the A-47 on 7/20/20 at 1000 hrs. This will serve as you 48 hour notification.
Thank you
Randy

Randy L. Madison, HSE Specialist
Wapiti Operating, LLC
P.O. Box 190
309 Silver St.
Raton, NM 87740
Office 575-445-6706
Cell 575-420-1120
rmadison@wapitienergy.com

Randy Madison

From: Randy Madison
Sent: Tuesday, August 4, 2020 11:01 AM
To: 'Smith, Cory, EMNRD'
Subject: Emailing: J138764-1 UDS Level 2 Report Final Report Back Ground Samples 8-3-20
Attachments: J138764-1 UDS Level 2 Report Final Report Back Ground Samples 8-3-20.pdf; J137696-1 UDS Level 2 Report Final Report Spill Samples 7-9-20.pdf

Cory,
Take a look at these reports there is no vegetation dead in the area. The area is covered in pine duff which keeps the weeds down as you walk through the area.
Randy
Your message is ready to be sent with the following file or link attachments:

J138764-1 UDS Level 2 Report Final Report Back Ground Samples 8-3-20

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.

Randy Madison

From: Randy Madison
Sent: Tuesday, August 4, 2020 1:54 PM
To: 'Smith, Cory, EMNRD'
Subject: RE: Emailing: J138764-1 UDS Level 2 Report Final Report Back Ground Samples 8-3-20

Cory,
There is a typo in the East Background it should be N 36.975313, W -104.81285.
Randy

-----Original Message-----
From: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Sent: Tuesday, August 4, 2020 1:13 PM
To: Randy Madison <RMadison@WapitiEnergy.com>
Subject: RE: Emailing: J138764-1 UDS Level 2 Report Final Report Back Ground Samples 8-3-20

Randy,

Hard to determine if the background samples are any good without some kind of reference to sample locations. Just as a reminder background samples should not have any TPH, the EPA method 8015B is segregates out carbon ranges that are typically associated with organics.

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

-----Original Message-----
From: Randy Madison <RMadison@WapitiEnergy.com>
Sent: Tuesday, August 4, 2020 11:01 AM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Subject: [EXT] Emailing: J138764-1 UDS Level 2 Report Final Report Back Ground Samples 8-3-20

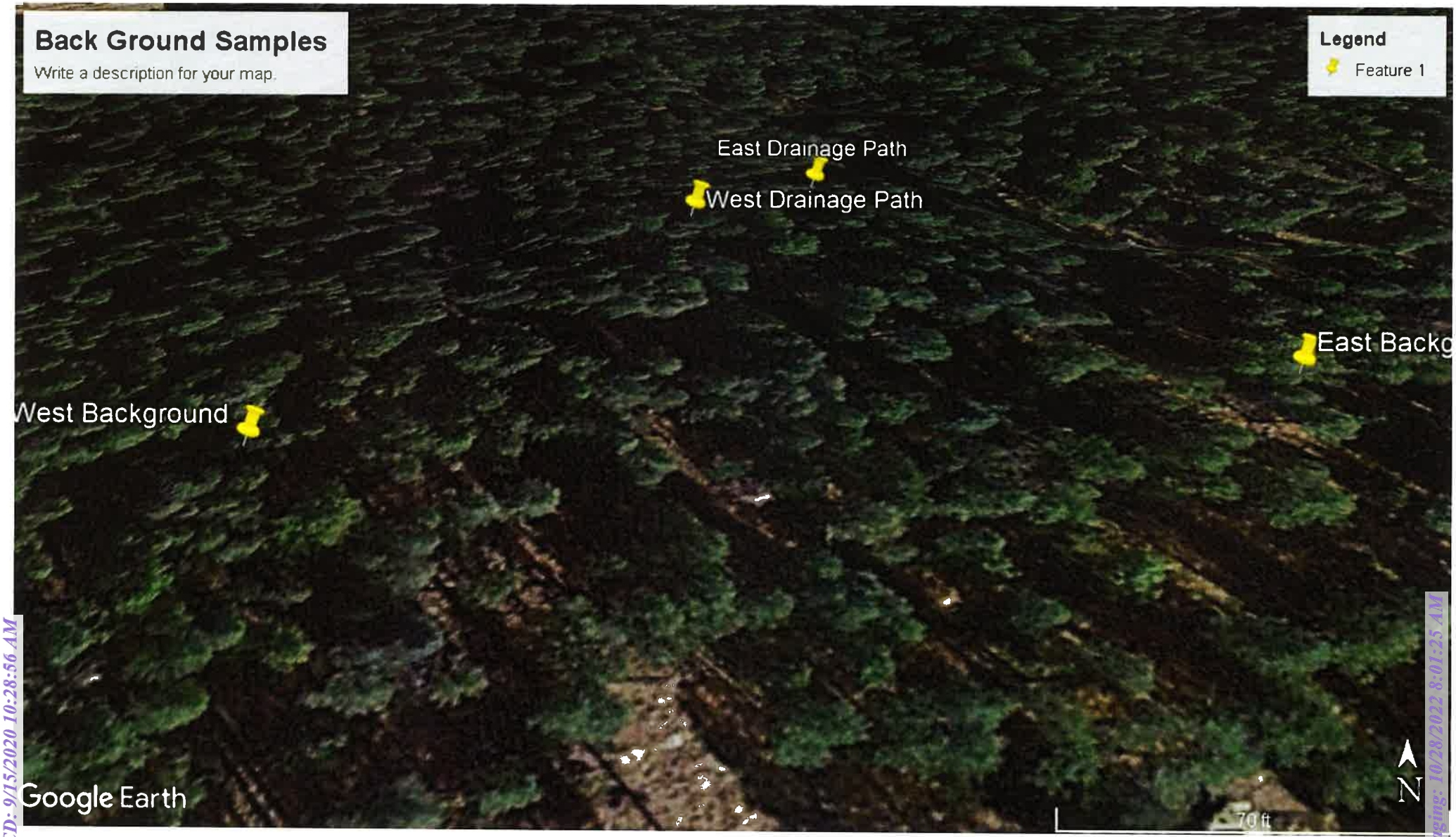
Cory,
Take a look at these reports there is no vegetation dead in the area. The area is covered in pine duff which keeps the weeds down as you walk through the area.
Randy
Your message is ready to be sent with the following file or link attachments:

J138764-1 UDS Level 2 Report Final Report Back Ground Samples 8-3-20

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.

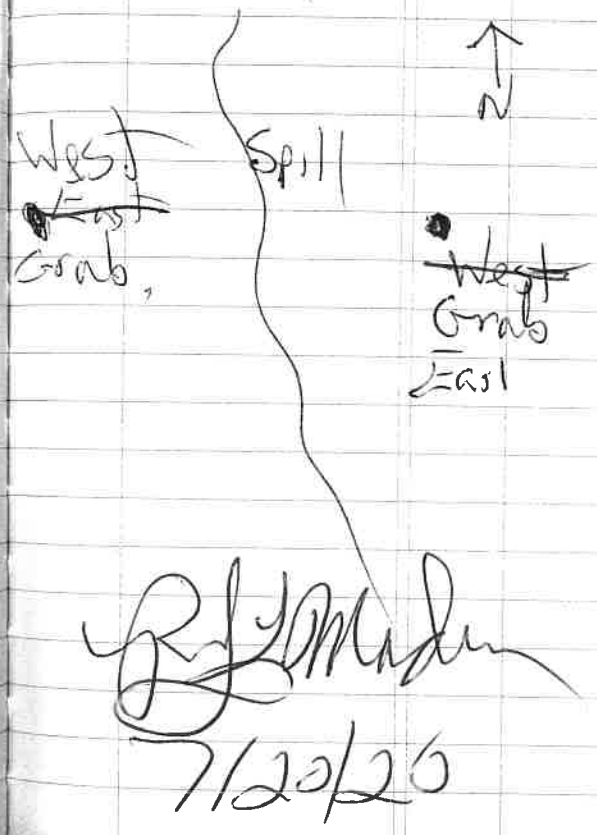
West Back Ground Samples GPS
N 36.97518
W 104.81378

East Back Ground Samples GPS
N 36.97513
W 104.81285



A-47 Spills Background
7/20/20 @ 0956
East Back Ground
Sample Grab
N 36.~~97313~~ 97533
W 104.81285

7/20/20 @ 1008hrs
West ~~E~~ Back Ground
Sample Grab
N 36.97518
W 104.81378



7/20/20

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Tel: (303)736-0100

Laboratory Job ID: 280-138764-1
Client Project/Site: Produced Water Spill

For:
Wapiti Operating, LLC
PO BOX 190
309 Silver Street
Raton, New Mexico 87740

Attn: Mr. Randy Madison

Shelby Turner

Authorized for release by:
8/3/2020 12:13:27 PM

Shelby Turner, Project Manager I
(303)736-0100
Shelby.Turner@Eurofinset.com

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Laboratory Job ID: 280-138764-1

Table of Contents

Definitions/Glossary

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-138764-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*3	ISTD response or retention time outside acceptable limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-138764-1

Job ID: 280-138764-1

Laboratory: Eurofins TestAmerica, Denver

Narrative

CASE NARRATIVE

Client: Wapiti Operating, LLC

Project: Produced Water Spill

Report Number: 280-138764-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 7/22/2020 9:00 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 0.5° C.

Receipt Exceptions

The container labels for the following samples did not match the information listed on the Chain-of-Custody (COC): A-47 WEST BACKGROUND SAMPLE (280-138764-1) and A-47 EAST BACKGROUND SAMPLE (280-138764-2). The container labels do not list "SAMPLE" at the end of the IDs, while the COC lists IDs "A-47 WEST BACKGROUND SAMPLE" and "A-47 EAST BACKGROUND SAMPLE" The samples were logged per the IDs listed on the COC.

Sample A-47 EAST BACKGROUND SAMPLE (280-138764-2) was received with the MeOH (methanol) preservative dried up in the 2 x 40mLTared Vials for GRO analysis. It is assumed the 5mL of MeOH preservative was absorbed in the dry soil sample. Therefore, the lab will document the final MeOH volume for analysis as 10mL since they will need to add 5mL to dissolve in water as part of the GRO test.

The Chain-of-Custody (COC) does not list the sample matrix type. The samples were logged as solid volume per observation of volume received. No corrective action is necessary.

VOLATILE ORGANIC COMPOUNDS (GC-MS)

Samples A-47 WEST BACKGROUND SAMPLE (280-138764-1) and A-47 EAST BACKGROUND SAMPLE (280-138764-2) were analyzed for volatile organic compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 07/27/2020.

Internal standard (ISTD) response for 1,4-Dichlorobenzene-d4 for the following sample was outside acceptance criteria: A-47 EAST BACKGROUND SAMPLE (280-138764-2). This ISTD does not correspond to any of the requested target compounds; therefore, the data has been flagged and reported.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GASOLINE RANGE ORGANICS (GRO)

Samples A-47 WEST BACKGROUND SAMPLE (280-138764-1) and A-47 EAST BACKGROUND SAMPLE (280-138764-2) were analyzed for Gasoline Range Organics (GRO) in accordance with EPA SW-846 Method 8015B - GRO. The samples were prepared on 07/20/2020 and analyzed on 07/27/2020.

Case Narrative

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-138764-1

Job ID: 280-138764-1 (Continued)

Laboratory: Eurofins TestAmerica, Denver (Continued)

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

DIESEL RANGE ORGANICS

Samples A-47 WEST BACKGROUND SAMPLE (280-138764-1) and A-47 EAST BACKGROUND SAMPLE (280-138764-2) were analyzed for diesel range organics in accordance with EPA SW-846 Method 8015B - DRO. The samples were prepared on 07/29/2020 and analyzed on 07/31/2020.

The following samples could not be thoroughly homogenized before sub-sampling was performed due to sample matrix: A-47 WEST BACKGROUND SAMPLE (280-138764-1) and A-47 EAST BACKGROUND SAMPLE (280-138764-2). Sample 280-138764-1 contained rocks and vegetation. Sample 280-138764-2 contained vegetation.

The peak profile present in the following sample is atypical of a hydrocarbon pattern and consists of several discrete peaks: A-47 WEST BACKGROUND SAMPLE (280-138764-1).

The following samples needed to be re-digested/re-extracted due to missing RRO spike: A-47 WEST BACKGROUND SAMPLE (280-138764-1) and A-47 EAST BACKGROUND SAMPLE (280-138764-2). The samples were re-prepped within holding time and data has been reported.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ANIONS (28 DAYS)

Samples A-47 WEST BACKGROUND SAMPLE (280-138764-1) and A-47 EAST BACKGROUND SAMPLE (280-138764-2) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A. The samples were leached on 07/28/2020 and analyzed on 07/30/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERCENT SOLIDS

Samples A-47 WEST BACKGROUND SAMPLE (280-138764-1) and A-47 EAST BACKGROUND SAMPLE (280-138764-2) were analyzed for percent solids in accordance with ASTM D2216-90. The samples were analyzed on 07/23/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-138764-1

Client Sample ID: A-47 WEST BACKGROUND SAMPLE — Lab Sample ID: 280-138764-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Diesel Range Organics [C10-C28]	69		8.0		mg/Kg	1		8015B	Total/NA
Motor Oil (C20-C38)	120		24		mg/Kg	1		8015B	Total/NA

Client Sample ID: A-47 EAST BACKGROUND SAMPLE — Lab Sample ID: 280-138764-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Gasoline Range Organics (GRO) -C6-C10	18		2.9		mg/Kg	1		8015B	Total/NA
Diesel Range Organics [C10-C28]	510		7.9		mg/Kg	1		8015B	Total/NA
Motor Oil (C20-C38)	610		24		mg/Kg	1		8015B	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-138764-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL DEN
8015B	Gasoline Range Organics - (GC)	SW846	TAL DEN
8015B	Diesel Range Organics (DRO) (GC)	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
Moisture	Percent Moisture	EPA	TAL DEN
3546	Microwave Extraction	SW846	TAL DEN
5030B	Purge and Trap	SW846	TAL DEN
5035	Closed System Purge and Trap	SW846	TAL DEN
DI Leach	Deionized Water Leaching Procedure	ASTM	TAL DEN

Protocol References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Sample Summary

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-138764-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
280-138764-1	A-47 WEST BACKGROUND SAMPLE	Solid	07/20/20 10:05	07/22/20 09:00	
280-138764-2	A-47 EAST BACKGROUND SAMPLE	Solid	07/20/20 09:50	07/22/20 09:00	

Client Sample Results

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-138764-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: A-47 WEST BACKGROUND SAMPLE
Date Collected: 07/20/20 10:05
Date Received: 07/22/20 09:00

Lab Sample ID: 280-138764-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0047		mg/Kg		07/27/20 10:00	07/27/20 13:51	1
Ethylbenzene	ND		0.0047		mg/Kg		07/27/20 10:00	07/27/20 13:51	1
Toluene	ND		0.0047		mg/Kg		07/27/20 10:00	07/27/20 13:51	1
m-Xylene & p-Xylene	ND		0.0024		mg/Kg		07/27/20 10:00	07/27/20 13:51	1
o-Xylene	ND		0.0024		mg/Kg		07/27/20 10:00	07/27/20 13:51	1
Xylenes, Total	ND		0.0047		mg/Kg		07/27/20 10:00	07/27/20 13:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*58 - 140*	*07/27/20 10:00*	*07/27/20 13:51*	*1*
Toluene-d8 (Surr)	*101*		*80 - 126*	*07/27/20 10:00*	*07/27/20 13:51*	*1*
4-Bromofluorobenzene (Surr)	*101*		*76 - 127*	*07/27/20 10:00*	*07/27/20 13:51*	*1*
Dibromofluoromethane (Surr)	*97*		*75 - 121*	*07/27/20 10:00*	*07/27/20 13:51*	*1*

Client Sample ID: A-47 EAST BACKGROUND SAMPLE
Date Collected: 07/20/20 09:50
Date Received: 07/22/20 09:00

Lab Sample ID: 280-138764-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0075		mg/Kg		07/27/20 10:00	07/27/20 14:59	1
Ethylbenzene	ND		0.0075		mg/Kg		07/27/20 10:00	07/27/20 14:59	1
Toluene	ND		0.0075		mg/Kg		07/27/20 10:00	07/27/20 14:59	1
m-Xylene & p-Xylene	ND		0.0037		mg/Kg		07/27/20 10:00	07/27/20 14:59	1
o-Xylene	ND		0.0037		mg/Kg		07/27/20 10:00	07/27/20 14:59	1
Xylenes, Total	ND		0.0075		mg/Kg		07/27/20 10:00	07/27/20 14:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*58 - 140*	*07/27/20 10:00*	*07/27/20 14:59*	*1*
Toluene-d8 (Surr)	*119*		*80 - 126*	*07/27/20 10:00*	*07/27/20 14:59*	*1*
4-Bromofluorobenzene (Surr)	*124*	**3*	*76 - 127*	*07/27/20 10:00*	*07/27/20 14:59*	*1*
Dibromofluoromethane (Surr)	*102*		*75 - 121*	*07/27/20 10:00*	*07/27/20 14:59*	*1*

Method: 8015B - Gasoline Range Organics - (GC)

Client Sample ID: A-47 WEST BACKGROUND SAMPLE
Date Collected: 07/20/20 10:05
Date Received: 07/22/20 09:00

Lab Sample ID: 280-138764-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	ND		2.4		mg/Kg		07/20/20 10:05	07/27/20 17:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
a,a,a-Trifluorotoluene	*86*		*77 - 123*	*07/20/20 10:05*	*07/27/20 17:16*	*1*

Client Sample ID: A-47 EAST BACKGROUND SAMPLE
Date Collected: 07/20/20 09:50
Date Received: 07/22/20 09:00

Lab Sample ID: 280-138764-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	**18**		2.9		mg/Kg		07/20/20 09:50	07/27/20 17:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
a,a,a-Trifluorotoluene	*84*		*77 - 123*	*07/20/20 09:50*	*07/27/20 17:36*	*1*

Client Sample Results

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-138764-1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Client Sample ID: A-47 WEST BACKGROUND SAMPLE
Date Collected: 07/20/20 10:05
Date Received: 07/22/20 09:00

Lab Sample ID: 280-138764-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	69		8.0		mg/Kg		07/29/20 16:35	07/31/20 19:07	1
Motor Oil (C20-C38)	120		24		mg/Kg		07/29/20 16:35	07/31/20 19:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*73*		*49 - 115*	*07/29/20 16:35*	*07/31/20 19:07*	*1*

Client Sample ID: A-47 EAST BACKGROUND SAMPLE
Date Collected: 07/20/20 09:50
Date Received: 07/22/20 09:00

Lab Sample ID: 280-138764-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	510		7.9		mg/Kg		07/29/20 16:35	07/31/20 19:29	1
Motor Oil (C20-C38)	610		24		mg/Kg		07/29/20 16:35	07/31/20 19:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*70*		*49 - 115*	*07/29/20 16:35*	*07/31/20 19:29*	*1*

General Chemistry

Client Sample ID: A-47 WEST BACKGROUND SAMPLE
Date Collected: 07/20/20 10:05
Date Received: 07/22/20 09:00

Lab Sample ID: 280-138764-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	13.7		0.1		%			07/23/20 15:17	1
Percent Solids	86.3		0.1		%			07/23/20 15:17	1

Client Sample ID: A-47 EAST BACKGROUND SAMPLE
Date Collected: 07/20/20 09:50
Date Received: 07/22/20 09:00

Lab Sample ID: 280-138764-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	15.4		0.1		%			07/23/20 15:17	1
Percent Solids	84.6		0.1		%			07/23/20 15:17	1

General Chemistry - Soluble

Client Sample ID: A-47 WEST BACKGROUND SAMPLE
Date Collected: 07/20/20 10:05
Date Received: 07/22/20 09:00

Lab Sample ID: 280-138764-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		29		mg/Kg			07/30/20 02:57	1

Client Sample ID: A-47 EAST BACKGROUND SAMPLE
Date Collected: 07/20/20 09:50
Date Received: 07/22/20 09:00

Lab Sample ID: 280-138764-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		28		mg/Kg			07/30/20 03:14	1

Surrogate Summary

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-138764-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	DCA (58-140)	TOL (80-126)	BFB (76-127)	DBFM (75-121)
280-138764-1	A-47 WEST BACKGROUND SA	103	101	101	97
280-138764-1 MS	A-47 WEST BACKGROUND SAMPLE	102	99	96	97
280-138764-1 MSD	A-47 WEST BACKGROUND SAMPLE	104	98	96	100
280-138764-2	A-47 EAST BACKGROUND SAMPLE	108	119	124 *3	102
LCS 280-503545/1-A	Lab Control Sample	101	98	94	97
LCSD 280-503545/2-A	Lab Control Sample Dup	101	98	94	98
MB 280-503545/3-A	Method Blank	104	99	94	98

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8015B - Gasoline Range Organics - (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	TFT1 (77-123)
280-138764-1	A-47 WEST BACKGROUND SA	86
280-138764-2	A-47 EAST BACKGROUND SAMPLE	84
LCS 280-503581/1-A	Lab Control Sample	88
LCSD 280-503581/2-A	Lab Control Sample Dup	90
MB 280-503581/3-A	Method Blank	89

Surrogate Legend

TFT = a,a,a-Trifluorotoluene

Method: 8015B - Diesel Range Organics (DRO) (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	OTPH1 (49-115)
280-138764-1	A-47 WEST BACKGROUND SA	73
280-138764-2	A-47 EAST BACKGROUND SAMPLE	70
LCS 280-503887/2-A	Lab Control Sample	83
LCS 280-503887/4-A	Lab Control Sample	91
LCSD 280-503887/3-A	Lab Control Sample Dup	88
LCSD 280-503887/5-A	Lab Control Sample Dup	89
MB 280-503887/1-A	Method Blank	76

Surrogate Legend

OTPH = o-Terphenyl

QC Sample Results

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-138764-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 280-503545/3-A
Matrix: Solid
Analysis Batch: 503511

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 503545

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.0050		mg/Kg		07/27/20 10:00	07/27/20 11:57	1
Ethylbenzene	ND		0.0050		mg/Kg		07/27/20 10:00	07/27/20 11:57	1
Toluene	ND		0.0050		mg/Kg		07/27/20 10:00	07/27/20 11:57	1
m-Xylene & p-Xylene	ND		0.0025		mg/Kg		07/27/20 10:00	07/27/20 11:57	1
o-Xylene	ND		0.0025		mg/Kg		07/27/20 10:00	07/27/20 11:57	1
Xylenes, Total	ND		0.0050		mg/Kg		07/27/20 10:00	07/27/20 11:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*58 - 140*	*07/27/20 10:00*	*07/27/20 11:57*	*1*
Toluene-d8 (Surr)	*99*		*80 - 126*	*07/27/20 10:00*	*07/27/20 11:57*	*1*
4-Bromofluorobenzene (Surr)	*94*		*76 - 127*	*07/27/20 10:00*	*07/27/20 11:57*	*1*
Dibromofluoromethane (Surr)	*98*		*75 - 121*	*07/27/20 10:00*	*07/27/20 11:57*	*1*

Lab Sample ID: LCS 280-503545/1-A
Matrix: Solid
Analysis Batch: 503511

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 503545

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.0500	0.0435		mg/Kg		87	75 - 135
Ethylbenzene	0.0500	0.0458		mg/Kg		92	73 - 125
Toluene	0.0500	0.0434		mg/Kg		87	77 - 122
m-Xylene & p-Xylene	0.0500	0.0466		mg/Kg		93	77 - 135
o-Xylene	0.0500	0.0459		mg/Kg		92	75 - 135
Xylenes, Total	0.100	0.0925		mg/Kg		93	76 - 135

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*58 - 140*
Toluene-d8 (Surr)	*98*		*80 - 126*
4-Bromofluorobenzene (Surr)	*94*		*76 - 127*
Dibromofluoromethane (Surr)	*97*		*75 - 121*

Lab Sample ID: LCSD 280-503545/2-A
Matrix: Solid
Analysis Batch: 503511

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 503545

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	0.0500	0.0434		mg/Kg		87	75 - 135	0	20
Ethylbenzene	0.0500	0.0451		mg/Kg		90	73 - 125	2	20
Toluene	0.0500	0.0434		mg/Kg		87	77 - 122	0	20
m-Xylene & p-Xylene	0.0500	0.0457		mg/Kg		91	77 - 135	2	20
o-Xylene	0.0500	0.0458		mg/Kg		92	75 - 135	0	20
Xylenes, Total	0.100	0.0915		mg/Kg		92	76 - 135	1	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*58 - 140*
Toluene-d8 (Surr)	*98*		*80 - 126*
4-Bromofluorobenzene (Surr)	*94*		*76 - 127*

QC Sample Results

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-138764-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 280-503545/2-A
Matrix: Solid
Analysis Batch: 503511

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 503545

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Dibromofluoromethane (Surr)	98		75 - 121

Lab Sample ID: 280-138764-1 MS
Matrix: Solid
Analysis Batch: 503511

Client Sample ID: A-47 WEST BACKGROUND SAMPLE
Prep Type: Total/NA
Prep Batch: 503545

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	ND		0.0452	0.0405		mg/Kg		89	75 - 135
Ethylbenzene	ND		0.0452	0.0400		mg/Kg		88	73 - 125
Toluene	ND		0.0452	0.0388		mg/Kg		86	77 - 122
m-Xylene & p-Xylene	ND		0.0452	0.0388		mg/Kg		86	77 - 135
o-Xylene	ND		0.0452	0.0394		mg/Kg		87	75 - 135
Xylenes, Total	ND		0.0904	0.0782		mg/Kg		86	76 - 135

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	102		58 - 140
Toluene-d8 (Surr)	99		80 - 126
4-Bromofluorobenzene (Surr)	96		76 - 127
Dibromofluoromethane (Surr)	97		75 - 121

Lab Sample ID: 280-138764-1 MSD
Matrix: Solid
Analysis Batch: 503511

Client Sample ID: A-47 WEST BACKGROUND SAMPLE
Prep Type: Total/NA
Prep Batch: 503545

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	ND		0.0476	0.0441		mg/Kg		93	75 - 135	9	20
Ethylbenzene	ND		0.0476	0.0427		mg/Kg		90	73 - 125	7	20
Toluene	ND		0.0476	0.0424		mg/Kg		89	77 - 122	9	20
m-Xylene & p-Xylene	ND		0.0476	0.0413		mg/Kg		87	77 - 135	6	20
o-Xylene	ND		0.0476	0.0411		mg/Kg		86	75 - 135	4	20
Xylenes, Total	ND		0.0953	0.0824		mg/Kg		86	76 - 135	5	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	104		58 - 140
Toluene-d8 (Surr)	98		80 - 126
4-Bromofluorobenzene (Surr)	96		76 - 127
Dibromofluoromethane (Surr)	100		75 - 121

Method: 8015B - Gasoline Range Organics - (GC)

Lab Sample ID: MB 280-503581/3-A
Matrix: Solid
Analysis Batch: 503543

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 503581

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	ND		2.0		mg/Kg		07/27/20 13:27	07/27/20 15:57	1

QC Sample Results

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-138764-1

Method: 8015B - Gasoline Range Organics - (GC) (Continued)

Lab Sample ID: MB 280-503581/3-A
Matrix: Solid
Analysis Batch: 503543

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 503581

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	89		77 - 123	07/27/20 13:27	07/27/20 15:57	1

Lab Sample ID: LCS 280-503581/1-A
Matrix: Solid
Analysis Batch: 503543

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 503581

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline Range Organics (GRO) -C6-C10	8.54	6.85		mg/Kg		80	75 - 135

Surrogate	LCS %Recovery	LCS Qualifier	Limits
a,a,a-Trifluorotoluene	88		77 - 123

Lab Sample ID: LCSD 280-503581/2-A
Matrix: Solid
Analysis Batch: 503543

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 503581

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline Range Organics (GRO) -C6-C10	8.54	7.32		mg/Kg		86	75 - 135	7	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
a,a,a-Trifluorotoluene	90		77 - 123

Method: 8015B - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 280-503887/1-A
Matrix: Solid
Analysis Batch: 504172

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 503887

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.0		mg/Kg		07/29/20 16:35	07/31/20 16:33	1
Motor Oil (C20-C38)	ND		24		mg/Kg		07/29/20 16:35	07/31/20 16:33	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	76		49 - 115	07/29/20 16:35	07/31/20 16:33	1

Lab Sample ID: LCS 280-503887/2-A
Matrix: Solid
Analysis Batch: 504172

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 503887

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Diesel Range Organics [C10-C28]	132	105		mg/Kg		80	53 - 115

Surrogate	LCS %Recovery	LCS Qualifier	Limits
o-Terphenyl	83		49 - 115

QC Sample Results

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-138764-1

Method: 8015B - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCS 280-503887/4-A
Matrix: Solid
Analysis Batch: 504172

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 503887

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Motor Oil (C20-C38)	334	326		mg/Kg		97	57 - 115

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*91*		*49 - 115*

Lab Sample ID: LCSD 280-503887/3-A
Matrix: Solid
Analysis Batch: 504172

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 503887

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]	132	116		mg/Kg		88	53 - 115	12	23

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o-Terphenyl	*88*		*49 - 115*

Lab Sample ID: LCSD 280-503887/5-A
Matrix: Solid
Analysis Batch: 504172

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 503887

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Motor Oil (C20-C38)	334	318		mg/Kg		95	57 - 115	2	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o-Terphenyl	*89*		*49 - 115*

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MRL 280-503847/3
Matrix: Solid
Analysis Batch: 503847

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.48		mg/L		90	50 - 150

Lab Sample ID: MB 280-503718/2-A
Matrix: Solid
Analysis Batch: 503847

Client Sample ID: Method Blank
Prep Type: Soluble

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		30		mg/Kg			07/30/20 00:54	1

Lab Sample ID: LCS 280-503718/1-A
Matrix: Solid
Analysis Batch: 503847

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	1000	969		mg/Kg		97	90 - 110

QC Association Summary

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-138764-1

GC/MS VOA

Analysis Batch: 503511

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-138764-1	A-47 WEST BACKGROUND SAMPLE	Total/NA	Solid	8260B	503545
280-138764-2	A-47 EAST BACKGROUND SAMPLE	Total/NA	Solid	8260B	503545
MB 280-503545/3-A	Method Blank	Total/NA	Solid	8260B	503545
LCS 280-503545/1-A	Lab Control Sample	Total/NA	Solid	8260B	503545
LCSD 280-503545/2-A	Lab Control Sample Dup	Total/NA	Solid	8260B	503545
280-138764-1 MS	A-47 WEST BACKGROUND SAMPLE	Total/NA	Solid	8260B	503545
280-138764-1 MSD	A-47 WEST BACKGROUND SAMPLE	Total/NA	Solid	8260B	503545

Prep Batch: 503545

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-138764-1	A-47 WEST BACKGROUND SAMPLE	Total/NA	Solid	5030B	
280-138764-2	A-47 EAST BACKGROUND SAMPLE	Total/NA	Solid	5030B	
MB 280-503545/3-A	Method Blank	Total/NA	Solid	5030B	
LCS 280-503545/1-A	Lab Control Sample	Total/NA	Solid	5030B	
LCSD 280-503545/2-A	Lab Control Sample Dup	Total/NA	Solid	5030B	
280-138764-1 MS	A-47 WEST BACKGROUND SAMPLE	Total/NA	Solid	5030B	
280-138764-1 MSD	A-47 WEST BACKGROUND SAMPLE	Total/NA	Solid	5030B	

GC VOA

Analysis Batch: 503543

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-138764-1	A-47 WEST BACKGROUND SAMPLE	Total/NA	Solid	8015B	503581
280-138764-2	A-47 EAST BACKGROUND SAMPLE	Total/NA	Solid	8015B	503581
MB 280-503581/3-A	Method Blank	Total/NA	Solid	8015B	503581
LCS 280-503581/1-A	Lab Control Sample	Total/NA	Solid	8015B	503581
LCSD 280-503581/2-A	Lab Control Sample Dup	Total/NA	Solid	8015B	503581

Prep Batch: 503581

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-138764-1	A-47 WEST BACKGROUND SAMPLE	Total/NA	Solid	5035	
280-138764-2	A-47 EAST BACKGROUND SAMPLE	Total/NA	Solid	5035	
MB 280-503581/3-A	Method Blank	Total/NA	Solid	5035	
LCS 280-503581/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 280-503581/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	

GC Semi VOA

Prep Batch: 503887

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-138764-1	A-47 WEST BACKGROUND SAMPLE	Total/NA	Solid	3546	
280-138764-2	A-47 EAST BACKGROUND SAMPLE	Total/NA	Solid	3546	
MB 280-503887/1-A	Method Blank	Total/NA	Solid	3546	
LCS 280-503887/2-A	Lab Control Sample	Total/NA	Solid	3546	
LCS 280-503887/4-A	Lab Control Sample	Total/NA	Solid	3546	
LCSD 280-503887/3-A	Lab Control Sample Dup	Total/NA	Solid	3546	
LCSD 280-503887/5-A	Lab Control Sample Dup	Total/NA	Solid	3546	

Analysis Batch: 504172

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-138764-1	A-47 WEST BACKGROUND SAMPLE	Total/NA	Solid	8015B	503887
280-138764-2	A-47 EAST BACKGROUND SAMPLE	Total/NA	Solid	8015B	503887

QC Association Summary

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-138764-1

GC Semi VOA (Continued)

Analysis Batch: 504172 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 280-503887/1-A	Method Blank	Total/NA	Solid	8015B	503887
LCS 280-503887/2-A	Lab Control Sample	Total/NA	Solid	8015B	503887
LCS 280-503887/4-A	Lab Control Sample	Total/NA	Solid	8015B	503887
LCSD 280-503887/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B	503887
LCSD 280-503887/5-A	Lab Control Sample Dup	Total/NA	Solid	8015B	503887

General Chemistry

Analysis Batch: 503267

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-138764-1	A-47 WEST BACKGROUND SAMPLE	Total/NA	Solid	Moisture	
280-138764-2	A-47 EAST BACKGROUND SAMPLE	Total/NA	Solid	Moisture	

Leach Batch: 503718

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-138764-1	A-47 WEST BACKGROUND SAMPLE	Soluble	Solid	DI Leach	
280-138764-2	A-47 EAST BACKGROUND SAMPLE	Soluble	Solid	DI Leach	
MB 280-503718/2-A	Method Blank	Soluble	Solid	DI Leach	
LCS 280-503718/1-A	Lab Control Sample	Soluble	Solid	DI Leach	

Analysis Batch: 503847

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-138764-1	A-47 WEST BACKGROUND SAMPLE	Soluble	Solid	9056A	503718
280-138764-2	A-47 EAST BACKGROUND SAMPLE	Soluble	Solid	9056A	503718
MB 280-503718/2-A	Method Blank	Soluble	Solid	9056A	503718
LCS 280-503718/1-A	Lab Control Sample	Soluble	Solid	9056A	503718
MRL 280-503847/3	Lab Control Sample	Total/NA	Solid	9056A	

Lab Chronicle

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-138764-1

Client Sample ID: A-47 WEST BACKGROUND SAMPLE

Lab Sample ID: 280-138764-1
Matrix: Solid
Date Collected: 07/20/20 10:05
Date Received: 07/22/20 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			5.264 g	5 mL	503545	07/27/20 10:00	GPM	TAL DEN
Total/NA	Analysis	8260B		1	5 g	5 mL	503511	07/27/20 13:51	GPM	TAL DEN
Total/NA	Prep	5035			4.162 g	5 mL	503581	07/20/20 10:05	AAR	TAL DEN
Total/NA	Analysis	8015B		1	0.1 mL	5 mL	503543	07/27/20 17:16	CAS	TAL DEN
Total/NA	Prep	3546			15.0 g	1 mL	503887	07/29/20 16:35	DCL	TAL DEN
Total/NA	Analysis	8015B		1			504172	07/31/20 19:07	MAM	TAL DEN
Soluble	Leach	DI Leach			10.23 g	100 mL	503718	07/28/20 12:24	JAP	TAL DEN
Soluble	Analysis	9056A		1	5 mL	5 mL	503847	07/30/20 02:57	JAP	TAL DEN
Total/NA	Analysis	Moisture		1			503267	07/23/20 15:17	DLB	TAL DEN

Client Sample ID: A-47 EAST BACKGROUND SAMPLE

Lab Sample ID: 280-138764-2
Matrix: Solid
Date Collected: 07/20/20 09:50
Date Received: 07/22/20 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			3.347 g	5 mL	503545	07/27/20 10:00	GPM	TAL DEN
Total/NA	Analysis	8260B		1	5 g	5 mL	503511	07/27/20 14:59	GPM	TAL DEN
Total/NA	Prep	5035			3.445 g	5 mL	503581	07/20/20 09:50	AAR	TAL DEN
Total/NA	Analysis	8015B		1	0.1 mL	5 mL	503543	07/27/20 17:36	CAS	TAL DEN
Total/NA	Prep	3546			15.2 g	1 mL	503887	07/29/20 16:35	DCL	TAL DEN
Total/NA	Analysis	8015B		1			504172	07/31/20 19:29	MAM	TAL DEN
Soluble	Leach	DI Leach			10.54 g	100 mL	503718	07/28/20 12:24	JAP	TAL DEN
Soluble	Analysis	9056A		1	5 mL	5 mL	503847	07/30/20 03:14	JAP	TAL DEN
Total/NA	Analysis	Moisture		1			503267	07/23/20 15:17	DLB	TAL DEN

Laboratory References:
TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Accreditation/Certification Summary

Client: Wapiti Operating, LLC
Project/Site: Produced Water Spill

Job ID: 280-138764-1

Laboratory: Eurofins TestAmerica, Denver

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	2907.01	10-31-21
A2LA	ISO/IEC 17025	2907.01	10-31-21
Alabama	State Program	40730	09-30-12 *
Alaska (UST)	State	18-001	02-08-21
Arizona	State	AZ0713	12-20-20
Arkansas DEQ	State	19-047-0	06-01-21
California	State	2513	01-08-21
Connecticut	State	PH-0686	09-30-20
Florida	NELAP	E87667-57	07-01-21
Georgia	State	4025-011	01-09-21
Illinois	NELAP	2000172019-1	04-30-21
Iowa	State	IA#370	12-01-20
Kansas	NELAP	E-10166	04-30-21
Louisiana	NELAP	30785	06-30-14 *
Louisiana	NELAP	30785	06-30-21
Maine	State	2019011 (231)	03-03-21
Minnesota	NELAP	1788752	12-31-20
Nevada	State	CO000262020-1	07-31-20
New Hampshire	NELAP	205319	04-29-21
New Jersey	NELAP	190002	06-30-21
New York	NELAP	59923	04-01-21
North Carolina (WW/SW)	State	358	12-31-20
North Dakota	State	R-034	01-08-21
Oklahoma	State	2018-006	08-31-20
Oregon	NELAP	4025-011	01-08-21
Pennsylvania	NELAP	013	07-31-21
South Carolina	State	72002001	01-08-21
Texas	NELAP	T104704183-19-17	09-30-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-18-00099	03-26-21
Utah	NELAP	CO000262019-11	07-31-20
Virginia	NELAP	10490	06-14-21
Washington	State	C583-19	08-05-20
West Virginia DEP	State	354	11-30-20
Wisconsin	State	999615430	08-31-20
Wyoming (UST)	A2LA	2907.01	10-31-21

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

Denver #280

eurofins

Environment Testing TestAmerica

Client Information	Sampler: Randy L Madison	Lab PM: Turner, Shelby R	Carrier Tracking No(s):	COC No:
Client Contact: Mr. Randy Madison	Phone: 575-420-1125	E-Mail: shelby.turner@testamericainc.com		Page:
Company: Wapiti Operating, LLC				Job #:
Address: P.O. Box 190 309 Silver Street	Due Date Requested:			
City: Raton	TAT Requested (days):			
State, Zip: NM, 87740				
Phone: 575-445-6706(Tel)	PO #: Pay by Credit Card			
Email: rmadison@wapitienergy.com	WO #:			
Project Name: Produced Water Spill	Project #: 28020400			
Site: A-47	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL; B - NaOH; C - Zn Acetate; D - Nitric Acid; E - NaHSO4; F - MeOH; G - Amchlor; H - Ascorbic Acid; I - Ice; J - DI Water; K - EDTA; L - EDA; M - Hexane; N - None; O - AsNaO2; P - Na2O4S; Q - Na2SO3; R - Na2S2O3; S - H2SO4; T - TSP Dodecahydrate; U - Acetone; V - MCAA; W - pH 4-5; Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9056A_28D - (MOD) Local Method	8015B_DRO - (MOD) Standard 8015 list	8015B_GRO - (MOD) Standard 8015 list	8260B - (MOD) BTEX by GC/MS	% Moisture	Total Number of containers	Special Instructions/Note:
Preservation Code:							N	N	F	N	N		
A-47 West Background Sample	7/22/20	0955	G				X	X	X	X	X		
A-47 East Background Sample	7/22/20	0950	G				X	X	X	X	X		

280-138764 Waybill

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Randy L Madison	7/21/20 at 1120	Wapiti		07/22/2020 @ 0900	ETA Run
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 0.6°C (-0.1) IR#10 KL 07/22/2020

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Wapiti Operating, LLC

Job Number: 280-138764-1

Login Number: 138764
List Number: 1
Creator: Lubin, Julius C

List Source: Eurofins TestAmerica, Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	Refer to Job Narrative for details.
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Operator: Wapiti Operating, LLC 1310 W Sam Houston PKWY N Houston, TX 77043	OGRID: 328741
	Action Number: 10192
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
nvelez	Due to the natural conditions of where the release occurred, Paragraph 1 of Subsection D of 19.15.29.13 NMAC requirement should not be considered as stringently. Therefore, the report content is satisfactory and approved. Release resolved.	10/28/2022