

August 16, 2017

*By Email*

[dnr\\_cogccenforcement@state.co.us](mailto:dnr_cogccenforcement@state.co.us)

Secretary of the Commission  
Colorado Oil & Gas Conservation Commission  
1120 Lincoln Street  
Suite 801  
Denver, Colorado 80203

Re: Western Gas Resources, Inc. ("WGR") Answer to the *Notice of Alleged Violation No. 401343967*

Ladies and Gentlemen:

I am writing on behalf of Western Gas Resources, Inc. ("WGR") in response to the Colorado Oil & Gas Conservation Commission (COGCC or Commission) Notice of Alleged Violation No. 401343967 (the "NOAV"), which was received on July 24, 2017. Per the described Alleged Violations outlined in the NOAV, and at the request of COGCC staff, WGR has attached a timeline referencing past conversations with the landowner beginning in 2012. The document also includes WGR's previous conversations with COGCC staff and work that has been completed to-date. It is important to note that WGR has made contact with the current landowner and COGCC staff multiple times since 2012 in good faith to move this matter forward.

The NOAV states that penalties for violations will be calculated pursuant to Rule 523, with daily penalties accruing pursuant to Section 34-60-121(1) C.R.S. At the request of COGCC Enforcement Officer, Steven Mah, the attached timeline will assist in understanding historical efforts made, determining next steps in the enforcement process and laying the foundation for achieving a mutually agreeable path forward to addressing COGCC alleged non-compliance with Rule 1004.a.

Going forward, at the request of Mr. Mah, WGR will continue to work with COGCC staff and communicate progress on completion of the final reclamation activities. Please contact Lynna Scranton at 720-929-6317 if you have any questions regarding this information. Representatives of WGR will follow-up with the Commission to discuss resolution of this matter.

Sincerely,  
Anadarko E&P Onshore, LLC



Lynna Scranton  
HSE Manager

cc: attachments

WESTERN GAS RESOURCES, INC.

1099 18TH ST., SUITE 1800 • DENVER, COLORADO 80202  
P.O. BOX 173779 • DENVER, COLORADO 80217-3779

## WESTERN GAS RESOURCES, INC.

September 2, 2016

  
Red Mesa Ward Reservoir & Ditch Company  
7882 CR 100  
Hesperus, CO 81326

Re: Final Abandonment or Release of Road Reclamation  
North Alkali Gulch #14-22 located in:  
Township 34 North, Range 12 West  
Section 22: SW $\frac{1}{4}$ SW $\frac{1}{4}$

To Whom It May Concern,

As the Operator of the North Alkali Gulch #14-22 well located on the aforementioned lands, Western Gas Resources, Inc. (WGR) is seeking to complete the Plugging and Abandonment process for this well. This process includes reclamation of the well site and associated rights of way, such as pipelines and roads. As a part of the State of Colorado Final Inspection, it was noted the road to this location needed to be reclaimed, unless the Landowner has a specific use for it.

Per our conversation on September 19<sup>th</sup>, 2012, Jim Greer (President of Red Mesa Ward Reservoir & Ditch Company) stated that you, as the landowner, would like to retain the road for the purpose of maintaining access to the dam for the purposes of weed spraying. In order to do this, WGR needs to apply for a variance with the State of Colorado to leave the road. As a part of this process, WGR needs an acknowledgement from the landowner of their future use of the road.

To satisfy this requirement, please sign the acknowledgement below stating your desire to keep the road as-is so that we may submit this letter along with the necessary paperwork. I have included three copies, one for your records and two to return once you have read and signed.

Thank you again for your help in this matter and if you have any questions, please feel free to contact me at (720) 929-6395.

Very Truly Yours,  
  
Steve Fisher  
Contract Landman

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By signing below, Red Mesa Ward Reservoir & Ditch Company is stating they, as the surface landowner of the above mentioned well, desire to retain the access road to the North Alkali Gulch #14-22 well to remain as-is for the purpose of accessing the Mormon Reservoir dam for weed spraying purposes.

By:  \_\_\_\_\_

As: Pres \_\_\_\_\_



North Alkali Gulch 14-22  
Reclamation Status Assessment  
May 17, 2017

Vegetation –

- No LPI transects surveyed during this assessment.
- Qualitative Assessment
  - $\geq 80\%$  vegetative cover based on ocular estimation comparing the vegetation on the pad to the vegetation surrounding the location.
- Noxious Weeds
  - Common mullein – Scattered across the location.
  - Musk thistle – Scattered across the location.
  - Leafy Spurge – Scattered along the south boundary of the location.
  - Downy broom – Scattered at a high concentration across the location.
  - Redstem filaree – Scattered across the location.
- Mature Desirable Vegetation
  - Juniper
  - Pinon pine
  - Rabbit brush
  - Yucca sp.
  - Basin Big Sagebrush
  - Broom snakeweed
  - Indian ricegrass
  - Western wheatgrass
  - Wyeth lupine
  - Alfalfa sp.
  - Vegetation is growing in the seeded areas.
  - Previous weed treatments are causing die off of noxious and invasive species at this location.
  - Desirable vegetation was not showing any signs of die off caused by previous herbicide applications.

Erosion –

- Cut banks and fill slopes showing slight erosion.
- BMP's are not in place.

Topography –

- This area has not been recontoured or decompacted. All cut and fill remains as it was following site construction. Pad does not blend into the surrounding area.

Pad Area –

- Pad is located in a dense, old growth, pinion juniper stand. Classified as Rangeland.
- ATV tire tracks were seen on the access road and the pad area suggesting use by the landowner.
- No trash, debris, equipment or facilities remain on location.
- Disturbance areas were delineated.
- No slash or debris were seen on this location.



- The soil in this area is very rocky and it is hard to tell if all of the rocks on site are natural or were placed on the location.

Access Road –

- The access road is still intact and usable. It is not an improved surface (dirt 2 track).
- One small culvert was seen on the south end of the location.
- No regrading or recontouring has taken place at this location.
- There is no gravel on the roadway. It is an unimproved surface 2 track.

Soil –

- No soil samples were collected at this location.
- The soil on this location does not appear to have been decompacted across the entirety of the site.

Other –

- Wildlife

- Mule deer tracks and scat seen on and around the location.
- A red-tailed hawk was seen circling high above the location.
- An adult bald eagle was seen perched in a snag to the east of the location near some large cottonwood trees.
- Several mallard ducks were seen flying overhead and landed on the reservoir to the east of the location.
- Coyote tracks and scat were seen on and around the location.
- Tree swallows were seen circling between the location and the reservoir to the east of the pad.
- A cottontail rabbit was seen on the location.
- Two Black-tailed jackrabbits was seen on and near the location.

Recommendations –

1. Treat the State of Colorado Noxious and Invasive weed species present on this location.
2. Seed the cut and fill slopes in areas where erosion is still slightly visible.
3. Consider implication of BMP's (biodegradable matting) on cut and fill slopes to allow seeds to germinate and to prevent an further erosion prior to seed germination in these areas.
4. Continue regular monitoring (spring and fall) at this location until appropriate conditions are met to request a Variance from the rules.

**North Alkali Gulch 14-12**  
Field Visit May 17, 2017  
Lat: 37.171798° Long:-108.143944°

### Location and Disturbance

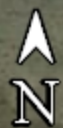
**Legend**

- North Alkali Gulch
- NorthAlkaliGulch14-22Disturbance



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North Alkali Gulch

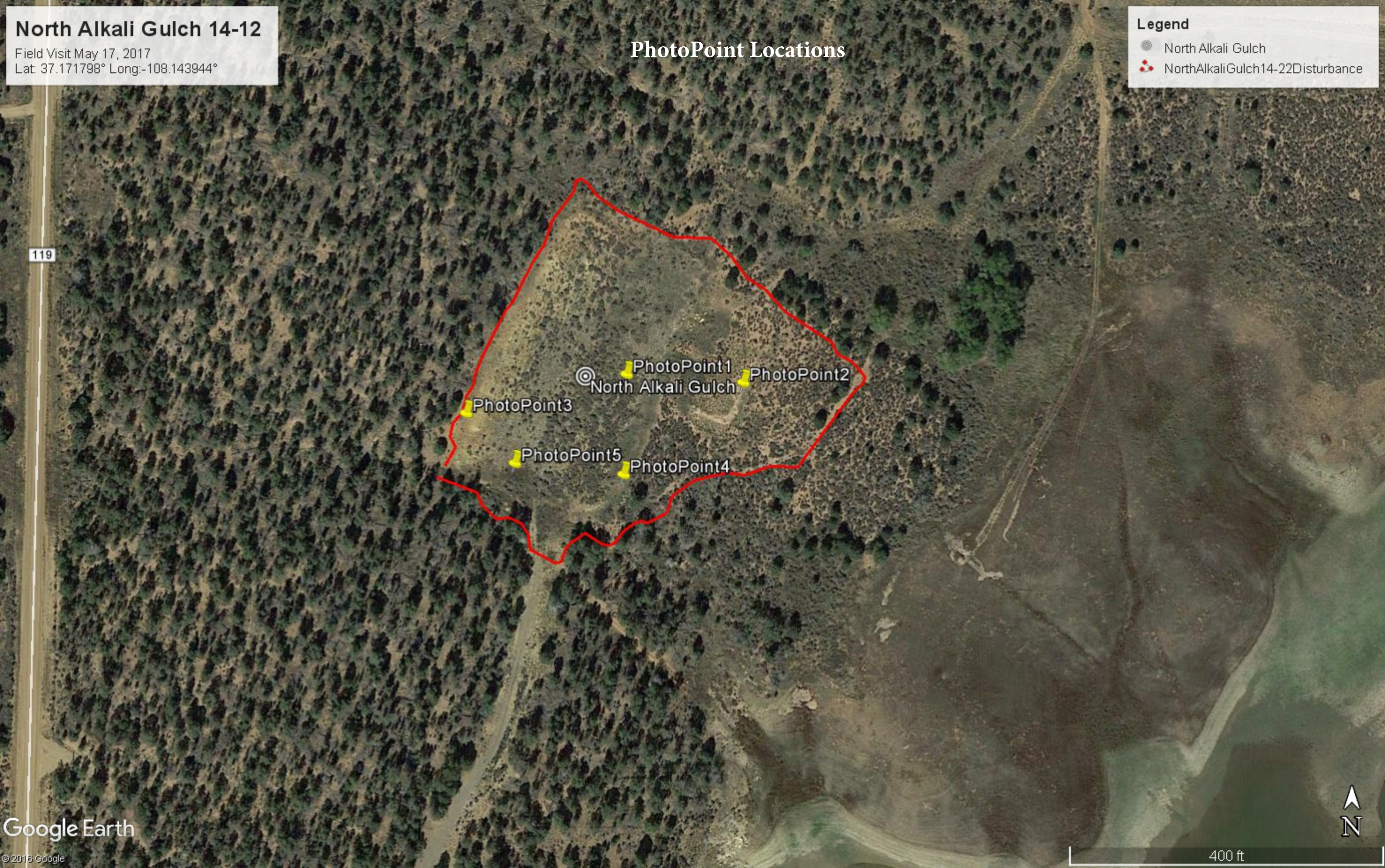


**North Alkali Gulch 14-12**  
Field Visit May 17, 2017  
Lat: 37.171798° Long:-108.143944°

### PhotoPoint Locations

**Legend**

- North Alkali Gulch
- NorthAlkaliGulch14-22Disturbance



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PhotoPoint1   PhotoPoint2  
North Alkali Gulch  
PhotoPoint3  
PhotoPoint5   PhotoPoint4





COMPLIANCE / ENGINEERING / REMEDIATION

*LT Environmental Inc.*

848 East 2<sup>nd</sup> Avenue  
Durango, Colorado 81301  
T 970.385.1096 / F 303.433.1432

# **North Alkali Gulch 14-22**

## **Reclamation Status Assessment**

### **Photographic Log**

**May 17, 2017**

Overview of location looking east



Overview of upper pad area below the cut bank.



Overview of lower pad area below the fill slope



View of Rabbit brush density on the north end of the upper pad area



View of desirable grass species below fill slope.



View of Downy broom (cheatgrass) on pad area below the fill slope



Overview of upper pad area and view of cut bank.



View of mature desirable species on site



Musk thistle present on site



Leafy spurge present on site.



## North Alkali Gulch 14-22 Reclamation Analysis

Legal Location: SWSW Section 22, Township 34 North, Range 12 West

Location: La Plata County, Colorado

Field Analysis Date: 12/15/2016

### Site Observations

Land Use: Rangeland

Photographs Taken: See attached Photographic Log

Access Road	Present	Notes
In use	Yes	In use by landowner
Re-contoured properly	No	
Road base or gravel present	Yes	
Culverts present	Yes	At pad entrance

Pad	Present	Notes
Debris or trash onsite	Yes	Small pieces scattered throughout site
Equipment onsite (culverts, pipes, etc.)	Yes	Above ground utility line crosses over pad
Livestock grazing or disturbances	No	
Wildlife disturbances or signs	No	
Vehicle disturbances	No	
Seed germination	Yes	
Plants vigorous	Yes	Plants flowering and spreading
Uniform growth (height and density)	No	Some areas thin and/or weedy
Undesirable Species (non-noxious weeds)	Yes	Kochia
Noxious weeds	Yes	List B and C species
Weed control success	NA	Unable to determine at time of inspection
Stormwater issues (erosion)	No	
Stormwater BMPs onsite	No	
Subsidence	No	
Slash or soil stockpiles present	No	
Site Re-contoured properly	No	cut and fill slopes evident
Road base/gravel on site	Yes	
Compaction alleviation (18" depth)		Plant growth as evidence of compaction alleviation. Areas with sparse growth may benefit from additional alleviation
Reclamation area fenced	No	



# North Alkali Gulch 14-22 Reclamation Analysis

## Qualitative Analysis

Noxious Weeds Observed: Visually estimated at less than 15% total vegetative canopy cover. These results were not consistent with the findings from the COGCC field inspection on August 11, 2016 (Document Number: 680600884) in which Approximately 2,000 spotted knapweed, 500 musk thistle, 100 leafy spurge, and 50 yellow toadflax were observed on the well pad.

USDA* Code	Common Name	Latin Name	Colorado Noxious Weed List**
BRTE	Cheatgrass	<i>Bromus tectorum</i>	C
CANU4	Musk thistle	<i>Carduus nutans</i>	B
CESTM	Spotted knapweed	<i>Centaurea stoebe</i>	B
ERIC16	Redstem filaree	<i>Erodium cicutarium</i>	B
LIVU2	Yellow toadflax	<i>Linaria vulgaris</i>	B
VETH	Common mullein	<i>Verbascum thapsus</i>	C

\* United States Department of Agriculture

\*\*Colorado Noxious Weeds are categorized by the State into three separate Lists; A, B, and C. List A plants are designated for elimination on all lands. List B includes plants whose continued spread should be stopped. List C plants are selected for recommended control methods.

Dominant Species Observed:

USDA Code	Common Name	Latin Name	% Onsite	% Offsite
ACHY	Indian ricegrass	<i>Achnatherum hymenoides</i>	Observed*	14
ARTEM	Sagebrush	<i>Artemisia l.</i>	Observed*	1
BASC5	Kochia	<i>Bassia scoparia</i>	0.5	0
BOGR2	Blue grama	<i>Bouteloua gracilis</i>	Observed*	Observed*
BRIN2	Smooth brome	<i>Bromus inermis</i>	7	1
ELEL5	Squirreltail grass	<i>Elymus elymoides</i>	0.5	Observed*
ERNAC3	Rabbitbrush	<i>Ericameria nauseosa</i>	28	Observed*
GUSA2	Broom snakeweed	<i>Gutierrezia sarothrae</i>	3	2
JUSC2	Rocky Mountain juniper	<i>Juniperus scopulorum</i>	Observed*	14
OPPO	Prickly pear	<i>Opuntia polyacantha</i>	Observed*	5
PIED	Piñon pine	<i>Pinus edulis</i>	0	5
QUGA	Gambel oak	<i>Quercus gambelii</i>	0	Observed*
PF1	Unknown perennial forb		2.5	4
PG1	Unknown perennial grass		8.5	8

\*Observed on location but not recorded on line-point intercepts

## Quantitative Analysis

Quantitative data were collected using a line-point intercept (LPI) methodology entailing a 50 foot transect length and a data point collected every foot. Four transect locations were chosen on the site in an effort to represent the overall site conditions. Two transects were used to collect data offsite as controls for comparison. See the attached Site Map for transect locations. These



## North Alkali Gulch 14-22 Reclamation Analysis

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data were compiled and used to calculate the vegetation cover percentage excluding weedy species (LPI data sheets attached).

	% Total Canopy	% Noxious/Invasive Weeds	% Non-Target/Native Vegetation
Onsite	57.5	8	49.5
Offsite	54	0	54

Results of the December 2016 vegetation survey may not be representative of spring/summer growing conditions due to the timing of the survey. In addition, it is likely that extensive weed dieback occurred prior to the survey due to the fact that noxious weeds were sprayed with Perspective® Herbicide on October 20, 2016. The October 2016 weed treatment targeted spotted knapweed, musk thistle, leafy spurge, and yellow toadflax on the well pad while avoiding non-target species.

### Soil Sample Results

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Soil samples were collected from three different locations within the reclamation area on December 15, 2016. Upon collection it was determined that the moisture content in each soil sample was too high to be sent for testing and the samples were held until appropriate soil conditions were met. On January 15, 2017 the samples were sent to the CSU Extension Laboratory for analysis and the results were received on January 26, 2017. In general, the results were consistent between the three samples and did not indicate any particular areas of concern. The pH levels were high, however this is typical of Colorado soils. If fertilizers are to be used on this site their effectiveness will directly depend on the availability of moisture after application. It is also important to note that plant growth will not be hindered by the salt and SAR levels due to the relatively low concentrations found in the soil samples (results attached).

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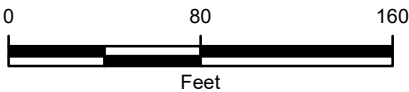




IMAGE COURTESY OF ESRI

**LEGEND**

- SOIL SAMPLE
- ONSITE TRANSECT
- OFFSITE TRANSECT
- RECLAMATION AREA



**FIGURE 2**  
**SITE MAP**  
 NORTH ALKALI GULCH 14-22  
 SWSW SEC 22-T34N-R12W  
 LA PLATA COUNTY, COLORADO  
 KERR-MCGEE OIL & GAS ONSHORE LP



# Line-Point Intercept Onsite Transects

Site North Alikali Gulch 14-22  
 Date 12/15/16  
 Inspector LT Environmental, Inc.

Direction S to N Line on site  
 Line Length 50 m or ft? ft  
 Intercept (Point) Spacing Interval 1 Units ft

Transect 1				Transect 2				Transect 3				Transect 4			
Pt.	Top Canopy	Lower Canopy	Soil Surface	Pt.	Top Canopy	Lower Canopy	Soil Surface	Pt.	Top Canopy	Lower Canopy	Soil Surface	Pt.	Top Canopy	Lower Canopy	Soil Surface
1	NONE	L	S	1	NONE		S	1	NONE	L	S	1	NONE	L	S
2	PG1	L	S	2	NONE		R	2	BRIN2	L	S	2	NONE	L	S
3	NONE		R	3	NONE	L	R	3	NONE	L	R	3	PG1	L	S
4	NONE	L	S	4	ERNAC3		S	4	NONE	L	S	4	GUSA2	L	S
5	NONE	L	R	5	PG1	L	S	5	NONE	L	S	5	BRIN2		BRIN2
6	NONE	L	S	6	PG1		PG1	6	BRTE		R	6	BRIN2	L	S
7	NONE		R	7	PG1	L	S	7	BRTE	L	S	7	ELEL5	L	S
8	NONE		R	8	BASC5	L	S	8	BRTE	L	S	8	NONE		R
9	NONE		R	9	ERNAC3	L	S	9	BRTE	L	S	9	BRTE	L	S
10	NONE		R	10	ERNAC3		R	10	BRTE	L	S	10	NONE		R
11	NONE		R	11	ERNAC3		R	11	BRTE	L	S	11	ERNAC3	L	S
12	NONE	L	R	12	ERNAC3		R	12	CESTM	L	S	12	ERNAC3	L	R
13	NONE	L	R	13	ERNAC3	L	S	13	NONE	L	S	13	CESTM	L	R
14	PG1	L	S	14	NONE		R	14	GUSA2	L	S	14	NONE		R
15	NONE		R	15	NONE	L	S	15	NONE		R	15	ERNAC3	VETH	R
16	NONE		S	16	ERNAC3		ERNAC3	16	NONE	L	S	16	ERNAC3		R
17	NONE	L	S	17	ERNAC3	L	S	17	NONE	L	S	17	NONE	L	R
18	PG1	L	S	18	NONE	L	S	18	NONE	L	S	18	BRTE	L	S
19	PG1	L	S	19	NONE	L	S	19	NONE	L	S	19	ERNAC3	L	R
20	GUSA2	L	S	20	NONE	L	S	20	PG1	L	S	20	PG1		PG1
21	NONE		S	21	NONE		R	21	NONE	L	S	21	ERNAC3	L	S
22	ERNAC3		ERNAC3	22	ERNAC3		S	22	NONE	L	S	22	ERNAC3	L	S
23	BRIN2	L	S	23	NONE		R	23	NONE	L	S	23	ERNAC3	L	S
24	ERNAC3	L	S	24	NONE	L	S	24	ERNAC3	L	S	24	ERNAC3	L	S
25	ERNAC3	BRIN2	S	25	ERNAC3		ERNAC3	25	ERNAC3	L	S	25	ERNAC3		ERNAC3
26	CESTM		S	26	ERNAC3	L	S	26	ERNAC3	L	S	26	ERNAC3		R
27	ERNAC3	L	S	27	ERNAC3	L	S	27	NONE	L	S	27	NONE		R
28	NONE		R	28	ERNAC3	L	S	28	NONE	L	R	28	PG1		S
29	ERNAC3	L	S	29	GUSA2		GSUA2	29	NONE	L	R	29	NONE		R
30	ERNAC3		ERNAC3	30	NONE		S	30	NONE	L	R	30	NONE	L	R
31	ERNAC3		S	31	PG1		S	31	NONE		S	31	NONE	L	S
32	PF1	L	S	32	NONE	L	S	32	CESTM		CESTM	32	ERNAC3	L	S
33	PF1		S	33	NONE		S	33	ERNAC3	L	S	33	NONE		S
34	NONE		R	34	NONE	L	S	34	PG1	L	S	34	NONE		R
35	NONE	L	S	35	ERNAC3	L	S	35	PG1	L	S	35	NONE	L	S
36	NONE	L	S	36	PG1	L	S	36	NONE		R	36	ERNAC3	L	S
37	NONE	L	S	37	VETH	L	S	37	ERNAC3	L	R	37	ERNAC3	L	S
38	PF1		PF1	38	NONE	L	S	38	ERNAC3		S	38	ERNAC3	L	S
39	NONE		R	39	ERNAC3	L	S	39	ERNAC3	L	ERNAC3	39	ERNAC3	L	S
40	BRIN2		BRIN2	40	BRIN2		BRIN2	40	BRTE	L	S	40	ERNAC3		ERNAC3
41	NONE		R	41	ERNAC3	L	S	41	BRIN2	L	S	41	NONE	L	S
42	ERNAC3	L	S	42	BRIN2	L	S	42	BRIN2	L	S	42	NONE	L	S
43	NONE	L	S	43	BRIN2	L	S	43	ERNAC3	L	S	43	NONE	L	S
44	PF1	L	S	44	PF1		S	44	ERNAC3	L	S	44	NONE	L	S
45	GUSA2	L	S	45	NONE		S	45	ERNAC3	L	S	45	NONE	L	S
46	NONE	L	S	46	PG1	L	S	46	ERNAC3	L	S	46	VETH	L	S
47	PG1	L	S	47	BRIN2	L	S	47	NONE	L	S	47	ERNAC3	L	S
48	GUSA2	L	S	48	BRIN2	L	S	48	NONE		S	48	ERNAC3	L	S
49	ERNAC3	L	S	49	BRIN2	L	S	49	NONE	L	S	49	ERNAC3	L	S
50	NONE		R	50	BRIN2	L	S	50	NONE		S	50	NONE	L	R

% canopy cover = **57.5**      % weed cover = **8**  
 % bare ground = **16.5**      % cover w/o weeds = **49.5**  
 % basal cover = **7.5**  
 % litter = **67.5**

**USDA PLANT CODES**

BASC5 – Bassia scoparia – Kochia/Burningbush  
 BRIN2 – Bromus inermis – smooth brome  
 BRTE – Bromus tectorum – cheatgrass  
 ELEL5 – Elymus elymoides – squirreltail  
 CESTM – Centaurea stoebe – spotted knapweed  
 ERNAC3 – Erigeron annuus – rubber rabbitbrush  
 GUSA2 – Gutierrezia sarothrae – broom snakeweed  
 VETH – Verbascum Thapsus – common mullein

**Soil Surface (do not use litter):**  
 Species Code (for basal intercept)  
 R = rock fragment (>1/4" in diameter)  
 BR = bedrock, M = moss  
 LC = visible lichen crust on soil  
 S = soil without any other soil surface code  
 EL = embedded litter  
 D = dull

**Top canopy codes:** Species code, common name, or NONE (no canopy).  
**Lower canopy layers codes:** Species code, common name, L (herbaceous litter), W (woody litter, >1/4" in diameter).

**Unknown Species Codes:**  
 AF# = annual forb  
 PF# = perennial forb  
 AG# = annual graminoid  
 PG# = perennial graminoid  
 SH# = shrub  
 TR# = tree

*\*Bare ground occurs ONLY when Top canopy = NONE, Lower canopy layers are empty (no L), and Soil surface = S.  
 Sheet adapted from Jornada's Line-Point Intercept Data Form*

## Line-Point Intercept Offsite Transects

Site North Alikali Gulch 14-22 Direction S to N Line on site  
 Date 12/15/16 Line Length 50 m or ft? ft  
 Inspector LT Environmental, Inc. Intercept (Point) Spacing Interval 1 Units ft

Transect 1					Transect 2						
Pt.	Top Canopy	Lower Canopy Layers			Soil Surface	Pt.	Top Canopy	Lower Canopy Layers			Soil Surface
		Code1	Code2	Code3				Code1	Code2	Code3	
1	JUSC2	L			S	1	JUSC2	L			S
2	ARTEM	L			S	2	PG1	L			S
3	NONE				R	3	PG1	L			S
4	NONE				S	4	NONE	L			S
5	NONE				S	5	JUSC2	L			S
6	JUSC2	L			S	6	JUSC2	L			S
7	JUSC2	ACHY			ACHY	7	NONE				S
8	NONE				R	8	NONE				S
9	ACHY	L			S	9	NONE				S
10	NONE				R	10	NONE	L			S
11	ACHY	L			S	11	ACHY	L			S
12	PG1	L			S	12	ACHY	L			S
13	OPPO				OPPO	13	ACHY	L			S
14	PIED	PG1	L		S	14	NONE	L			S
15	NONE				S	15	NONE				R
16	NONE				R	16	NONE	L			S
17	PIED	L			S	17	NONE	L			R
18	PG1				PG1	18	PF1	L			S
19	JUSC2	L			S	19	JUSC2	L			S
20	JUSC2	L			S	20	NONE	L			S
21	JUSC2	L			S	21	ACHY	L			S
22	JUSC2	L			S	22	NONE	L			S
23	JUSC2	PG1	L		S	23	GUSA2	L			S
24	ACHY	L			S	24	NONE				R
25	ACHY	L			S	25	ACHY	L			S
26	ACHY				ACHY	26	PF1	L			S
27	ACHY	L			S	27	ACHY	L			S
28	NONE	L			S	28	PIED	L			S
29	PG1	L			S	29	ACHY	L			S
30	BRIN2	PIED	L		S	30	NONE	L			S
31	NONE	L			S	31	NONE				R
32	NONE	L			S	32	OPPO				S
33	PIED	L			S	33	OPPO				S
34	NONE	L			S	34	OPPO				OPPO
35	PG1	L			S	35	ACHY				S
36	NONE	L			S	36	PF1				S
37	NONE	L			S	37	NONE				S
38	NONE				R	38	PG1				PG1
39	NONE	L			S	39	NONE				R
40	PG1	L			S	40	NONE				R
41	NONE	L			S	41	OPPO				R
42	JUSC2	ACHY	L		S	42	NONE	L			S
43	NONE	L			S	43	NONE	L			S
44	PIED	L			S	44	NONE	L			S
45	NONE	L			S	45	NONE	L			S
46	NONE				R	46	NONE	L			S
47	NONE	L			S	47	PF1				R
48	NONE	L			S	48	GUSA2				GUSA2
49	NONE	L			S	49	NONE	L			S
50	JUSC2	PG1	L		S	50	NONE	L			S

% canopy cover = 54      % weed cover = 0  
 % bare ground = 17      % cover w/o weeds = 54  
 % basal cover = 7  
 % litter = 69

**USDA PLANT CODES**

ACHY – Achnatherum hymenoides – Indian ricegrass  
 ARTEM – Artemisia sp. – sagebrush sp.  
 BRIN2 – Bromus inermis – smooth bromo  
 GUSA2 – Gutierrezia sarothrae – broom snakeweed  
 JUSC2 – Juniperus scopulorum – Rocky Mountain juniper  
 OPPO – Opuntia polyacantha – plains prickly pear  
 PIED – Pinus edulis – twoneedle pinyon

<p><b>Top canopy codes:</b> Species code, common name, or NONE (no canopy).</p> <p><b>Lower canopy layers codes:</b> Species code, common name, L (herbaceous litter), W (woody litter, &gt;1/4" in diameter).</p>	<p><b>Unknown Species Codes:</b></p> <p>AF# = annual forb          PF# = perennial forb          AG# = annual graminoid          PG# = perennial graminoid          SH# = shrub          TR# = tree</p>
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**Soil Surface (do not use litter):**

Species Code (for basal intercept)  
 R = rock fragment (>1/4" in diameter)  
 BR = bedrock, M = moss  
 LC = visible lichen crust on soil  
 S = soil without any other soil surface code  
 EL = embedded litter  
 D = duff

\*Bare ground occurs ONLY when Top canopy = NONE. Lower canopy layers are empty (no L), and Soil surface = S.

Sheet adapted from Jornada's Line-Point Intercept Data Form

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 Arvada CO 80003



SOIL, WATER & PLANT TESTING LABORATORY  
 FORT COLLINS, COLORADO 80523-1120  
 Phone 970-491-5061 Fax 970-491-2930



NUMBER OF SAMPLES 3  
 DATE RECEIVED 1/17/2017  
 DATE REPORTED 1/26/2017  
 COUNTY Adams

**AGRICULTURAL TEST REPORT**

IDENTIFICATION		ROUTINE SOIL TEST RESULTS																	
METHOD USED:					Estimate	Estimate			Modified Walkley Black	AB-DTPA Extract	NaHCO <sub>3</sub> Extract	-----AB-DTPA Extract-----						Hot Water	AB-DTPA Extract
Lab No.	Sample ID	Sample Depth	pH	Salts mmhos/cm	Excess Lime	Texture Estimate	SAR	Gyp meq/100g	Organic Matter %	Nitrate N ppm	Phosphorus P ppm	Phosphorus P ppm	Potassium K ppm	Zinc Zn ppm	Iron Fe ppm	Manganese Mn ppm	Copper Cu ppm	Boron B ppm	Sulfur S ppm
F362a	551 N Alkali gulch		8.4	0.2	medium	sandy clay loam	0.1		1.6	1	7.5	4.3	81.5	0.7	8.5	0.7	1.1	0.15	6.9
F363b	552		8.2	0.3	medium	sandy clay loam	0.1		1.7	1	19.2	5.4	133	9.6	11.2	1.5	6.7	0.18	7.5
F364c	553		8.2	0.3	medium	sandy clay loam	0.1		2.1	5	13.7	7.9	176	3.9	11.2	1.9	5.2	0.12	7.8

**FERTILIZER RECOMMENDATIONS:**

I. D.	FIELD INFORMATION								POUNDS OF ACTUAL NUTRIENT PER ACRE									
Lab No.	Sample ID	Acres	Irrigation	Proposed Crop	Yield Goal	Lime (T/A) to raise pH to:			N lbs/A	P <sub>2</sub> O <sub>5</sub> lbs/A	K <sub>2</sub> O lbs/A	Zn lbs/A	Fe lbs/A	Mn lbs/A	Cu lbs/A	Boron lbs/A	Sulfur lbs/A	Gypsum T/A
						6.0	6.5	7.0										
F362a	551 N Alkali gulch		dryland	reclamation/native					40	40	40	0	0	0	0	0	20	N/A
F363b	552		dryland	reclamation/native					40	40	0	0	0	0	0	0	20	N/A
F364c	553		dryland	reclamation/native					40	40	0	0	0	0	0	0	20	N/A

**SPECIAL COMMENTS AND SUGGESTIONS:**

The response to fertilizer will depend on available moisture.  
 The pH's are high, but are typical of soils in Colorado.  
 The salts (EC) and SAR's are low and not a problem for plant growth.

# Soil Test Explanation

Fact Sheet No. 0.502

Crop Series | Soil



by J.R. Self\*

Colorado State University routinely analyzes soil samples for pH, soluble salts, organic matter, lime and soil texture. Nitrate nitrogen, phosphorus, potassium, zinc, iron, copper, and manganese are determined from an ammonium bicarbonate-DTPA extract (AB-DTBA).

## Routine Soil Tests

**Soil pH**, from the 1:1 soil: water method, indicates the acidity or alkalinity of soil based on a scale of 0 to 14. On the pH scale, 7.0 is neutral, values below 7.0 are acid, and those above are alkaline. Most Colorado soils are alkaline, having a pH between 7.2 and 8.3. A pH value above 8.5 in a saturated paste indicates that the soil may contain excess sodium.

**Soluble salts** are measured by the electrical conductivity of a soil extract from a 1:1 soil:water ratio and are reported in mmhos/cm. Crops vary markedly in their tolerance to soluble salts. Therefore, the values must be interpreted in relation to the specific crop. (See Table 1.)

**Organic matter** (O.M.), reported as percent of total soil, contains about 95 percent of all soil nitrogen (N). About 30 pounds N per acre will be released (mineralized to nitrate) during the cropping season from each 1 percent O.M. present. Nitrogen release rates will be slower in mountain meadow and other high elevation soils.

**Nitrate nitrogen**, reported in ppm  $\text{NO}_3\text{-N}$ , is soluble and readily available for plant uptake and is therefore considered equally available as fertilizer N. To determine the approximate pounds of  $\text{NO}_3\text{-N}$ /acre-foot (1 acre to a depth of 1 foot), multiply the soil test value (ppm) by 3.6. For example, 10 ppm  $\times$  3.6 = 36 pounds  $\text{NO}_3\text{-N}$ /acre to a depth of one foot.

**Phosphorus, potassium, zinc, iron, copper and manganese** interpretations are given in Tables 2 through 7. When the soil test is very low to medium, fertilizer response is expected. Fertilizer recommended for high-testing soils is for maintenance (to maintain soil fertility at that desirable level). No fertilizer is recommended for soils testing high for dryland production. For the micronutrients, no fertilizer is recommended when the test indicates adequate. To date, there has been no confirmed field crop response to copper or manganese fertilization in Colorado. This test is an availability index. It does not measure the total amount in the soil, but only that fraction extractable by the soil test.

**Lime** ( $\text{CaCO}_3$ ) is estimated as percent free lime. In the routine test, values are reported as low (0 to 1 percent), medium (1 to 2 percent), and high (above 2 percent). Specific values are determined only when a sodium evaluation is requested. The percent free lime content is important in determining whether elemental sulfur will be an effective amendment in sodium reclamation. The lime content has no direct bearing on soil, water and plant test interpretations for fertilizer recommendations by the Colorado State University Soil, Water and Plant Testing Laboratory.

**Texture** is estimated by the hand-feel method. It is important on sands, loamy sands and sandy loams that nitrogen applications be split to avoid mid- or late-season deficiency. It's also recommended that high nitrogen rates be split for many crops.

## Additional Soil Tests

**Sodium adsorption ratio** (SAR) is determined by saturated paste extraction and is reported as a special ratio of sodium to calcium plus magnesium.

## Quick Facts

- Colorado State University routinely analyzes soil samples for pH, soluble salts, organic matter, nitrate nitrogen, phosphorus, potassium, zinc, iron, copper, manganese, lime and soil texture.
- Additional tests for gypsum and the sodium adsorption ratio (SAR) may be run in the laboratory.
- Nutrient levels are reported as parts per million (ppm) of the elemental nutrient.
- Included in a report from the Colorado State University Soil Testing Laboratory are interpretations that relate results to fertilizer and management suggestions.

**Table 1: Tolerance levels of crops for soluble salts.**

Test values in mmhos/cm	Interpretation
0-2	Satisfactory for crops
2-4	Affects sensitive crops
4-8	High for many crops
above 8	Very high for most crops

**Table 2: Available phosphorus (ammonium bicarbonate-DTPA test).**

Test values* in ppm	Interpretation	
	Irrigated production	Dryland production
0-3	Very low	Low
4-7	Low	Medium
8-11	Medium	High
12-15	High	
above 15	Very high	

**Table 3: Available potassium (ammonium bicarbonate-DTPA test).**

Test values* in ppm	Interpretation	
	Irrigated production	Dryland production
0-60	Low	Low-medium
61-120	Medium	High
121-180	High	
above 180	Very High	

**Table 4: Available zinc (ammonium bicarbonate-DTPA test).**

Test values* in ppm	Interpretation	
	Irrigated production	Dryland production
0-0.50	Very low	Low
0.5-0.99	Low	Marginal
1.0-1.50	Marginal	Adequate
above 1.50	Adequate	

**Table 5: Available iron (ammonium bicarbonate-DTPA test).**

Test values* in ppm <sup>1</sup>	Irrigated and dryland production
0-3.0	Low
3.1-5.0	Marginal
above 5.0	Adequate

<sup>1</sup> Values below 10.0 may be deficient for turf and many ornamentals.

**Table 6: Available manganese (ammonium bicarbonate-DTPA test).**

Test values* in ppm	Interpretation
0-0.5	May be low
above 0.5	Adequate

**Table 7: Available copper (ammonium bicarbonate-DTPA test).**

Test values* in ppm	Interpretation
0-0.2	May be low
above 0.2	Adequate

\*These tests are an availability index. They do not measure the total amount in soil, but only that fraction extractable by the soil test.

This test evaluates the sodium content of soil. A value of 13 or greater indicates an excess of sodium will be adsorbed by the soil clay particles. Excess sodium can cause soil to be hard and cloddy when dry, to crust badly, and to take water very slowly.

The **gypsum test** is done if the SAR is greater than or equal to 15. Total gypsum is reported in meq. (milliequivalent) CaSO<sub>4</sub>/100g. If sufficient native gypsum is present, sodium-affected soils may be successfully treated without addition of amendments such as gypsum or sulfur. The gypsum supplies soluble calcium to replace the adsorbed sodium. Reclamation can proceed if drainage of the land is possible. A gypsum recommendation is provided if the gypsum test shows insufficient gypsum in sodic soils.

PHOTOGRAPHIC LOG



**Photo 1** – Looking north from south end of pad.



**Photo 2** – Looking east from south end of pad.



**Photo 3** – Looking south from north end of pad.



**Photo 4** – Looking west from south end of pad.

## PHOTOGRAPHIC LOG



**Photo 5** – Looking west toward cut slope.



**Photo 6** – Looking south along fill slope.



**Photo 7** – Looking north over rocky and sparse vegetation area.



**Photo 8** – Looking east toward culvert in access road.

## North Alkali Gulch 14-22 Summary and Timeline

### May 2004:

- On 5/08/2004, Western Gas Resources, Inc. Plugged and Abandoned the North Alkali Gulch 14-22 well (API 05-067-06178) at Location #385549 (Document #1162407).

### July 2012:

- On 7/17/2012, WGR received an unsatisfactory inspection from COGCC (Document #668200030). The Corrective Action (CA) was to remove the pipeline riser and to pursue a 502.b. variance to leave the lease road in place or remove and reclaim lease road with a due date of 10/31/2012. At this time, the location was vegetated with desirable sage brush.

### September 2012:

- On 9/19/2012, at WGR's request to discuss CA activities in progress, Landman Derek Smith and HSE Representative Charles Chase met on site at the well pad with Mike Leonard, Field Inspection Quality Assurance Supervisor, of COGCC, and discussed the landowner's wish to keep the access road as well as bring to attention concerns regarding ownership of the riser and associated flowline/gathering line. In that meeting, Inspector Leonard advised WGR to remove the pipeline riser or prove ownership by other entity, and reclaim the lease road or file a variance only related to leaving the lease road in place. Inspector Leonard stated he would file a formal inspection with the CAs discussed during the site visit.
- On 9/19/2012, COGCC issued an unsatisfactory inspection (Document #668200154) with the CA to remove the pipeline riser and remove lease road or apply for a 502.b. variance by 12/31/2012.
- WGR Landman Derek Smith met with Red Mesa Reservoir & Ditch Company (representing the landowner) and obtained a verbal confirmation for WGR to release liability of the lease road to the landowner. Document was not signed by the landowner. Derek Smith is no longer with WGR.
- WGR representatives met with Arlyn Thorsen and Kent McEvers (WGR Operations from San Juan Plant). It was communicated that all gathering lines in the area were divested to Williams Field Services. Thorsen and McEvers were to look for the documents at the San Juan Plant. Follow-up with these individuals yielded information that both had retired from the company.

### August 2016:

- On 8/11/2016, COGCC issued an inspection with Corrective Actions (Document #680600884) (CA) for a final reclamation and stormwater inspection conducted by Catherine Roy and identified unremoved equipment left on location. CA requested well pad and access road to be re-contoured, de-compacted and seeded with NRCS recommended seed mix (not landowner's recommendation), remove gravel, culverts, risers and all associated oil and gas equipment to be removed. COGCC also makes reference that the site failed the 80% revegetation standard and lists several noxious weeds present. CA to control weeds by 9/23/2016 and reclaim the well pad by November 2016.

- Follow-up conversation with Charles Chase and Denise Arthur yielded the information that a 502.b. variance for the access road would not be sufficient, as the priority was to re-contour the well pad, revegetate and control weeds.

#### **September 2016:**

- On 9/01/2016 Steve Fisher (WGR) spoke with Nancy Price from the Red Mesa Reservoir & Ditch Company, who was aware of WGR's request for a 502.b. variance letter requesting Red Mesa Reservoir & Ditch Company accept all responsibility for the access road to be left in place, but needed to speak with the President, Jim Greer.
- The 502.b. variance letter was drafted and sent to President of Red Mesa Reservoir & Ditch Company, Jim Greer, who indicated the 502.b. variance letter would be presented to the board.
- On 9/19/2016, Steve Fisher spoke with Mr. Greer relaying the 9/23 deadline WGR needed for a COGCC response. Mr. Greer responded he would sign the letter on that date and send the next day. Subsequently, Mr. Greer would call COGCC and apprise them of his intent to sign the letter and mail.
- On 9/28/2016, WGR received the signed 502.b. variance letter from the landowner.
- On 9/30/2016, Steve Fisher spoke with the landowner who was agreeable with WGR entering location early the following week to perform weed control. Landowner stated he would meet WGR on location on the day work is to be performed.
- 502.b. variance letter was never formally submitted as per recent conversation with Denise Arthur stating the reclamation requirements that would need to be addressed and access road 502.b variance letter would be insufficient for approval.
  - o Copy of signed 502.b. variance letter included with Response Letter
- Working internally to conduct due diligence on ownership of the pipeline riser and gathering line. Unable to find internal documents claiming ownership or divestiture of the gathering line.

#### **October 2016:**

- On October 20, 2016 weed control completed by Pride Weed Control (Sub-contractor for LT Environmental Inc.) Perspective Herbicide applied via spot spray method. Treatment was implemented to control the following noxious weed species:
  - o Spotted knapweed
  - o Musk thistle
  - o Leafy spurge
  - o Yellow toadflax
- Called in an 811 One Call utility locate request for the area of the pipeline riser. No response for any utilities was received for confirmation or clearance.

#### **November 2016:**

- Telephone conference between WGR and COGCC reclamation staff members Catherine Roy and Denise Arthur on 11/8/2016 to discuss timeframe extension for completion of reclamation activities. Call was precipitated to communicate WGR had submitted a Sundry Form 4 (Document #401143540) request on 11/04/2016. COGCC inquired as to the landowner's future land use plans and suggested utilizing the 502.b. variance process. Arthur mentioned that the variance would likely not be approved if re-contouring, vegetation and weed control was not

also addressed on the pad. WGR conveyed the landowner's desire to leave lease road in place for site maintenance and equipment staging. COGCC relayed that the request would be denied as it was filed four days after the CA due date of 11/01/2016.

- On 11/14/2016, COGCC denied Sundry Form 4 (Document #401143540) extension request to extend the timeframe for addressing the CAs.
- Coordinated with landowner to discuss potential action items, their future land use concerns and to gain access to conduct a preliminary soil study and vegetation survey at the site.
- Per conversation with Jim representing Red Mesa Reservoir & Ditch Company on the landowner's behalf, WGR requested to bring-in a consultant to conduct a vegetation survey. Red Mesa Reservoir & Ditch Company gave approval to conduct the survey.

#### **December 2016:**

- LT Environmental Inc. conducted a reclamation analysis at the site on 12/15/2016 that included a vegetation survey and a soil survey. Survey was conducted to gather information on whether the area could be cut and filled for blending into the surrounding topography.
  - o Survey results found the site to have 49.5% desirable canopy cover compared to the undisturbed adjacent area which had 54% canopy cover.  $49.5/54 = 91.6\%$  vegetation canopy cover when compared to the undisturbed adjacent area.
  - o Copy of analysis included with Response Letter dated 8/16/2017.

#### **May 2017:**

- On 5/17/2017, LT Environmental Inc. completed a Reclamation Status Assessment.
  - o Copy of analysis included with Response Letter
- On 5/25/2017, COGCC inspected site as part of the Notice to Operators (NTO) issued on 5/02/2017, and issues a failed reclamation inspection on 6/13/2017 (Document #680601637). Inspection sites failure to remove debris, regrade, re-contour, remove culverts, gravel and riser, reclaim facilities, revegetate and control weeds. Stormwater is cited as being controlled but will need to remain controlled throughout the reclamation process.

#### **June 2017:**

- Inability to reach landowner for access approval, WGR unable to access the site for follow up weed control.
- Landowner requested of WGR that no further action be taken at the site.
- On 6/26/2017, WGR spoke with Red Mesa Reservoir & Ditch Company regarding the requests made by the COGCC. It was explained that the COGCC required WGR to re-contour the pad and re-disturb the ground. Jim Greer of Red Mesa Reservoir & Ditch Company conveyed his disagreement with the decision stating that plants were growing and re-disturbing the ground is an activity he does not want to occur. Recognizing the wishes of Res Mesa Reservoir & Ditch Company, WGR approached Mr. Greer with a release of liability waiver to be signed in an effort to possibly pursue a 502.b. variance from the COGCC's 1000 series reclamation rules. Mr. Greer stated that as President of the Red Mesa Reservoir & Ditch Company, this request to sign a waiver and would need to run by the other board members.
- On 6/27/2017, WGR spoke with Mr. Greer where it was communicated that the decision of the Board is to not re-disturb the area. Subsequently, WGR requested Red Mesa Reservoir & Ditch

Company to sign a release requesting no further disturbance of the area, whereupon it could potentially be provided to the COGCC as an attachment to a 502.b. variance request. Red Mesa Reservoir & Ditch Company stated the acceptance of that request.

**July 2017:**

- On 7/12/2017, Surface Land sent release and waiver for the site to the landowner (represented by Red Mesa Reservoir & Ditch Company) for waiver signature to pursue a variance request. Red Mesa Reservoir & Ditch Company was in receipt of the waiver on 7/17/2017 or 7/18/2017. To-date, WGR has not received the signed waiver from Red Mesa.
- On, 7/19/2017, COGCC issues NOAV (Document #401343967) citing failure to comply with inspection Documents #668200030, #668200154, #680600884 and #680601637.

**August 2017:**

- WGR HSE and Regulatory representatives met with COGCC staff members Denise Arthur, Margaret Ash, Steven Mah and Catherine Roy on 8/01/2017 to discuss issuance of the NOAV (Document No. 401343967). Conversation included discussion of reclamation progress made since 2012 and the landowner sentiments to leave the access road and staging area around well pad as undisturbed. Additionally, WGR conveyed the landowner wishes for no more reclamation activity to occur. COGCC communicates their desire for final reclamation to include re-contouring work and possible installation of proper stormwater BMPs on the location. COGCC staff spoke of the need to continue reclamation discussions separate from the current meeting, but for WGR to continue negotiations with landowner. Additionally, WGR spoke to concerns with removing riser on location as former operator plugged well and proper abandonment of pipeline was unknown. It was stressed that a safety issue with the pipeline could be present. Moreover, WGR is currently utilizing a broker to determine proper ownership of the pipeline and associated riser. Concern was expressed over the requirement to remove equipment when ownership remains unknown.
- On 8/7/2017, WGR spoke with Jim Greer from Red Mesa Reservoir & Ditch Company regarding the release. All, save for one, Board Members had reviewed the release. Once remaining individual returns, approves and signs release, it will be sent to WGR who will then collaborate with the COGCC on a path forward to address outstanding Corrective Actions.
- On 8/16/2017, NOAV No. 401343967 response (answer) letter sent to COGCC. The following attachments are included:
  - o Signed variance letter from Red Mesa Reservoir & Ditch Company (Landowner) – 09/02/2016
  - o Reclamation Analysis with Soil Survey – 12/15/2016
  - o Reclamation Status Assessment – 5/17/2017
  - o Summary and Timeline of Events – 08/16/2017