

May 25, 2022

Rusty Kelly  
Catamount Energy Partners, LLC  
1801 Broadway, Suite 1000  
Denver, CO 80202

**RE: Soil Gas Survey Results  
Bryce (OWP) #1-X (API#: 05-067-09087)  
La Plata County, Colorado**

Dear Mr. Kelly,

Cottonwood Consulting LLC (Cottonwood) is pleased to provide you with the results of a soil gas survey conducted in the vicinity of the Bryce (OWP) #1-X (API#: 05-067-09087) temporarily abandoned well in La Plata County, Colorado (Figure 1). The methodology and associated results are summarized below.

## **Background**

The Bryce (OWP) #1-X was drilled in 1938 by Spatter Nick to a total depth of 4,835 feet below ground surface (bgs). The well was abandoned in 1949. The well is currently considered an “orphaned” well and managed by the Colorado Oil and Gas Conservation Commission (COGCC) Orphaned Well Program (OWP). The Bryce (OWP) #1-X abandoned well appears to be the primary conduit for methane migration that resulted in the explosion of the nearby Yoakum residence in 2005. Following the explosion, numerous soil gas surveys were conducted to evaluate the presence of methane seepage at the site. Results of the soil gas surveys indicated the presence of methane seepage from February 2005 through July 2007. Initial remediation of the Bryce (OWP) #1-X was conducted by the COGCC in November 2005 and methane seepage was not detected in the vicinity of the Bryce (OWP) #1-X between September 2007 and September 2010. An additional soil gas survey was conducted in June 2016 and also indicated that methane seepage was not detected in the vicinity of the Bryce (OWP) #1-X and surrounding area.

Catamount Energy Partners, LLC (Catamount) has come to an agreement with the COGCC and will be responsible for final plugging and abandonment of the Bryce (OWP) #1-X wellbore. Catamount contracted Cottonwood to conduct a pre-plugging soil gas survey around the Bryce (OWP) #1-X wellhead and surrounding area. The COGCC scout card for the Bryce (OWP) #1-X is included as Attachment 1.

## **Methodology**

Cottonwood was on-site to conduct the soil gas survey on April 29, 2022. Prior to the soil gas survey, Cottonwood conducted a utility locate to ensure that all underground utilities within the survey area were properly marked prior to ground disturbance.

Soil gas measurements were collected at 50-foot intervals in a grid surrounding the location of the Bryce (OWP) #1-X, the former Yoakum residence, and the water well associated with the Yoakum residence (Permit #: 233433).

At each measurement location, Cottonwood used a slide-hammer to advance a borehole to a total depth of approximately one to two feet bgs. Tubing connected to a GEM5000 Plus<sup>®</sup> Landfill Gas Meter was lowered into each borehole to collect measurements of methane, carbon dioxide, hydrogen sulfide, carbon monoxide, and oxygen. The concentration of each gas and the associated measurement location was recorded using a Trimble GeoXH<sup>®</sup> GPS unit capable of sub-meter accuracy. Additional observations regarding vegetation and general site conditions were recorded in a field notebook.

## Results

Methane was not detected in any of the measurement locations. Carbon dioxide, carbon monoxide, oxygen, and hydrogen sulfide concentration were generally consistent with background levels. Vegetation in the survey area appeared to be consistent with seasonal and surrounding conditions.

Results of the soil gas survey are presented on Figure 1; soil gas measurements are presented in Table 1; and photographic documentation of site conditions during the survey is included as Attachment 2.

## Conclusions

Based on results of the soil gas survey, it does not appear that methane is seeping from the ground surface in the vicinity of the Bryce (OWP) #1-X, the former Yoakum residence, or the water well. An additional soil gas survey will be conducted following plugging of the Bryce (OWP) #1-X.

Should you have any questions, please do not hesitate to contact me at 970-764-7356 or [kssiesser@cottonwoodconsulting.com](mailto:kssiesser@cottonwoodconsulting.com). We appreciate the opportunity to provide services to Catamount.

Sincerely,



Kyle G. Siesser, P.G.  
Cottonwood Consulting, LLC



Attachments: Figure 1 – Soil Gas Survey Area  
Table 1 – Soil Gas Survey Results  
Attachment 1 – Bryce (OWP) #1-X Scout Card  
Attachment 2 – Photographic Log

**FIGURE 1**




Notes: Soil gas survey conducted prior to plugging and abandoning the Bryce (OWP) #1-X. All measurements collected 4/29/2022.

### Legend

-  Oil & Gas Well
-  Water Well

### Subsurface Methane Measurement

-  0.0%



Mapping by: E. Millar, 5/20/2022

Coordinate System:  
NAD 1983 UTM Zone 13 N

Location: SWSW Sec 31 T33N R9W NMPM

**Figure 1**  
**Bryce (OWP) #1-X**  
**Soil Gas Survey Map**  
**Catamount Energy Partners, LLC**

**TABLE 1**

**Table 1**  
**Soil Gas Survey Results**  
**Bryce (OWP) #1-X**  
**Catamount Energy Partners, LLC**

Point ID	CH4 (%)	CO2 (%)	O2 (%)	H2S (ppm)	Latitude	Longitude
1	0.0	0.8	19.6	1	37.05413905	-107.8734949
2	0.0	0.2	20.4	0	37.05414949	-107.8734975
3	0.0	0.2	20.4	0	37.05428449	-107.8734989
4	0.0	0.2	20.3	0	37.05441894	-107.8734946
5	0.0	0.4	20.2	0	37.05442467	-107.8733207
6	0.0	0.2	20.4	0	37.05442113	-107.8731529
7	0.0	0.2	20.5	0	37.05429074	-107.8731478
8	0.0	0.3	20.3	1	37.05427367	-107.8733242
9	0.0	0.2	20.5	0	37.0541457	-107.8733134
10	0.0	0.2	20.6	0	37.05415759	-107.8731476
11	0.0	0.1	20.6	0	37.05400805	-107.8731541
12	0.0	0.2	20.6	0	37.05387473	-107.8731472
13	0.0	0.3	20.5	0	37.05374286	-107.8731392
14	0.0	0.4	20.5	0	37.05361121	-107.8731227
15	0.0	0.2	20.7	0	37.05347397	-107.8731009
16	0.0	0.1	20.8	0	37.05347791	-107.8732892
17	0.0	0.2	20.7	0	37.05361008	-107.8732983
18	0.0	0.2	20.7	0	37.05375455	-107.8733201
19	0.0	0.1	20.7	0	37.05375001	-107.8729724
20	0.0	0.2	20.7	0	37.05361649	-107.8729621
21	0.0	0.2	20.7	0	37.05347782	-107.872957
22	0.0	0.1	20.7	0	37.05375675	-107.8727835
23	0.0	0.2	20.7	0	37.05376471	-107.8726173
24	0.0	0.2	20.7	0	37.05389587	-107.8726341
25	0.0	0.1	20.8	0	37.05388757	-107.8727977
26	0.0	0.1	20.8	0	37.05387783	-107.8729665
27	0.0	0.5	20.6	0	37.05387896	-107.8733134
28	0.0	0.6	20.7	0	37.05401098	-107.8732963
29	0.0	0.2	20.5	1	37.0540094	-107.8734801
30	0.0	0.4	20.7	1	37.053856	-107.8734785
31	0.0	0.2	20.8	0	37.05387132	-107.8736536
32	0.0	0.2	20.8	0	37.05386142	-107.8738078
33	0.0	0.2	20.8	0	37.05399201	-107.8738191
34	0.0	0.1	20.8	0	37.05400008	-107.8736488
35	0.0	0.3	20.7	0	37.05413884	-107.8736596
36	0.0	0.1	20.8	0	37.05413406	-107.8738359
37	0.0	0.1	20.9	0	37.05426797	-107.8738411
38	0.0	0.3	20.8	0	37.05427939	-107.8736562
39	0.0	0.2	20.9	0	37.05441073	-107.8736496
40	0.0	0.2	20.9	0	37.05439873	-107.8738368

**Notes:**

All measurements collected on April 29, 2022.

CH4 - Methane

CO2- Carbon Dioxide

O2- Oxygen

H2S - Hydrogen Sulfide

% - percent

ppm - parts per million

## **ATTACHMENT 1**

# COGIS - WELL Information

Scout Card



[Related](#)



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[GIS](#)



[Doc](#)



[COA](#)



[Wellbore](#)



[Orders](#)

## Surface Location Data for API # 05-067-09087

Status: TA

11/16/2005

Well Name/No:

[BRYCE \(OWP\) #1-X](#)

(click well name for production)

Operator:

SPATTER\* NICK - 81448

Status Date:

11/16/2005

Federal or State Lease #:

FacilityID:

**281384**

LocationID:

**306944**

County:

LA PLATA #067

Location:

SWSW 31 33N9W N PM

Field:

IGNACIO BLANCO - #38300

Elevation:

6,020 ft.

Planned Location 390 FSL 765 FWL

Lat/Long: 37.054009/-107.873538

Lat/Long Calculated From Footages

## Wellbore Data for Sidetrack #00

Status: EP

11/15/2006

Spud Date:

5/13/1938

Spud Date is:

PLANNED

### Wellbore Permit

Permit #:

20054577

Expiration Date:

11/15/2006

Prop Depth/Form:

4835

Surface Mineral Owner Same:

not available

Mineral Owner:

not available

Surface Owner:

not available

Unit:

MESA VERDE

Unit Number:

Formation and Spacing: Code: MVRD , Formation: MESAVERDE , Order: , Unit Acreage: , Drill Unit:

### Wellbore Completed

Completion Date:

N/A

Measured TD:

Measured PB depth:

True Vertical TD:

True Vertical PB depth:

Casing:

String Type: CONDUCTOR , Hole Size: , Size: , Top: 0, Depth: 20, Weight: UNK

Cement:

Sacks: , Top: 0, Bottom: 20, Determination Method: VISU

Casing:

String Type: SURF , Hole Size: 10.625, Size: 8.625, Top: 0, Depth: 318, Weight: 24

Cement:

Sacks: 285, Top: 0, Bottom: 318, Determination Method: VISU

Casing:

String Type: 1ST LINER , Hole Size: 10.625, Size: , Top: 380, Depth: 1150, Weight: UNK

Cement:

Sacks: , Top: 380, Bottom: 1150, Determination Method: CALC

Casing:

String Type: 2ND LINER , Hole Size: , Size: 4.5, Top: 1121, Depth: 4835, Weight: UNK

Cement:

Sacks: 140, Top: 1121, Bottom: 4835, Determination Method: CALC

**Formation**

**Log Top**

**Log Bottom**

**Cored**

**DSTs**

No additional interval records were found for sidetrack 00.



## **ATTACHMENT 2**

Photographic Log  
Bryce (OWP) #1-X  
Soil Gas Survey  
Catamount Energy Partners, LLC

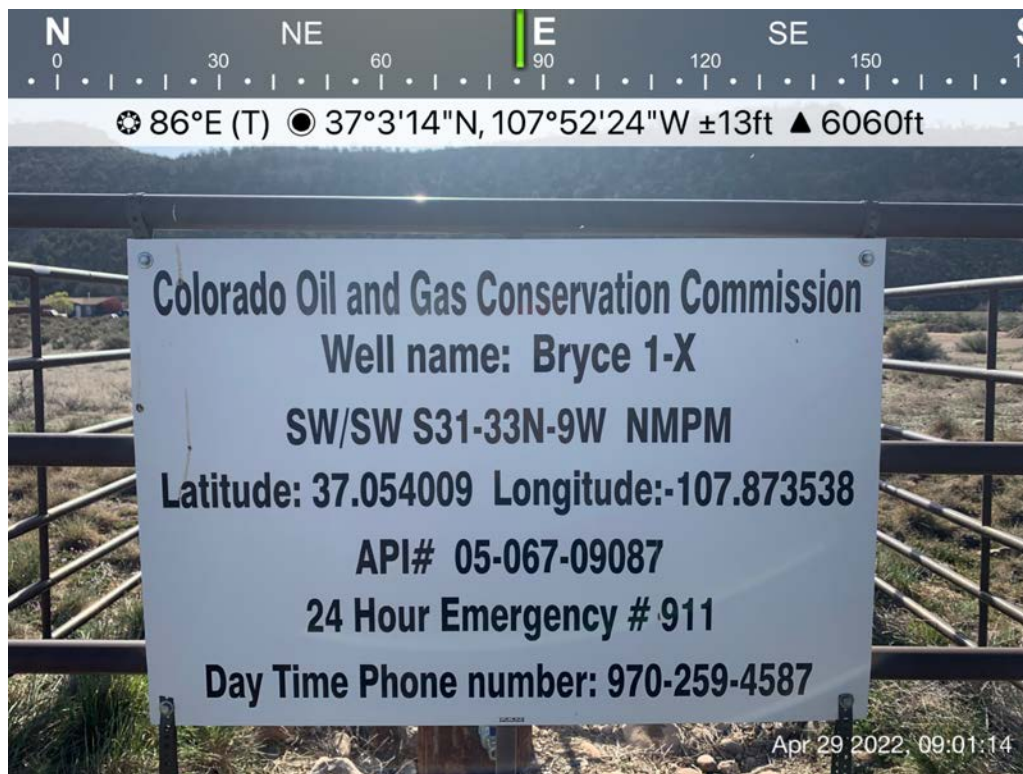


Photo 1: Bryce (OWP) #1-X well sign, 4/29/2022.

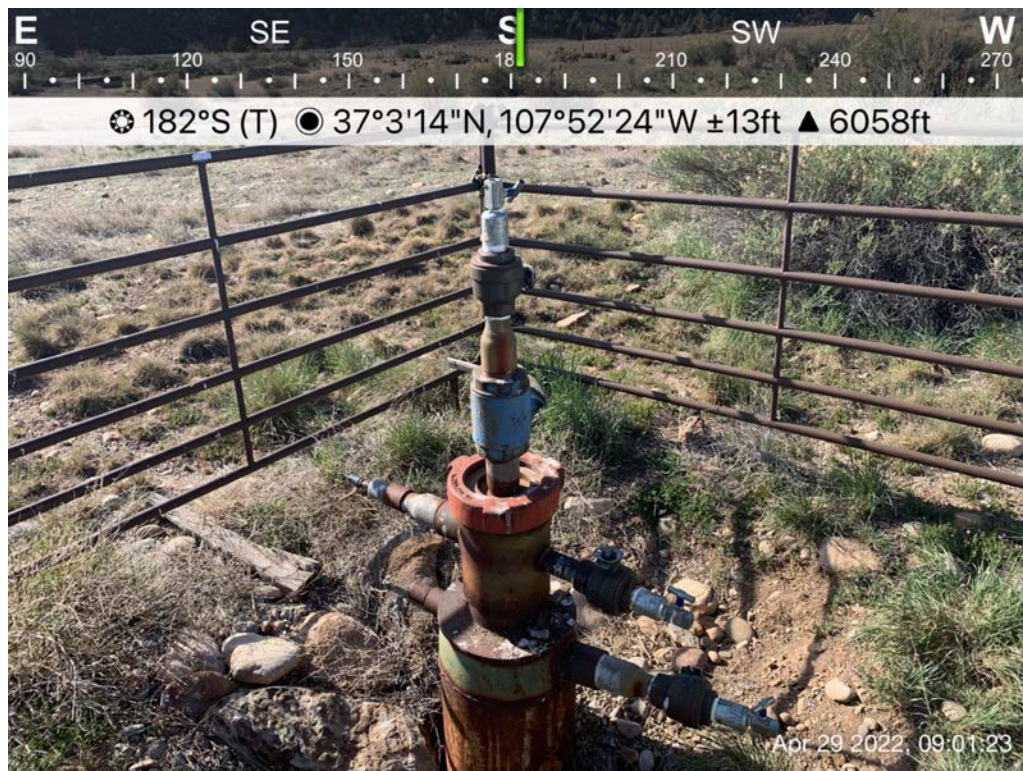


Photo 2: Bryce (OWP) #1-X wellhead, 4/29/2022.



Photographic Log  
Bryce (OWP) #1-X  
Soil Gas Survey  
Catamount Energy Partners, LLC



Photo 3: Looking north from the wellhead, 4/29/2022.

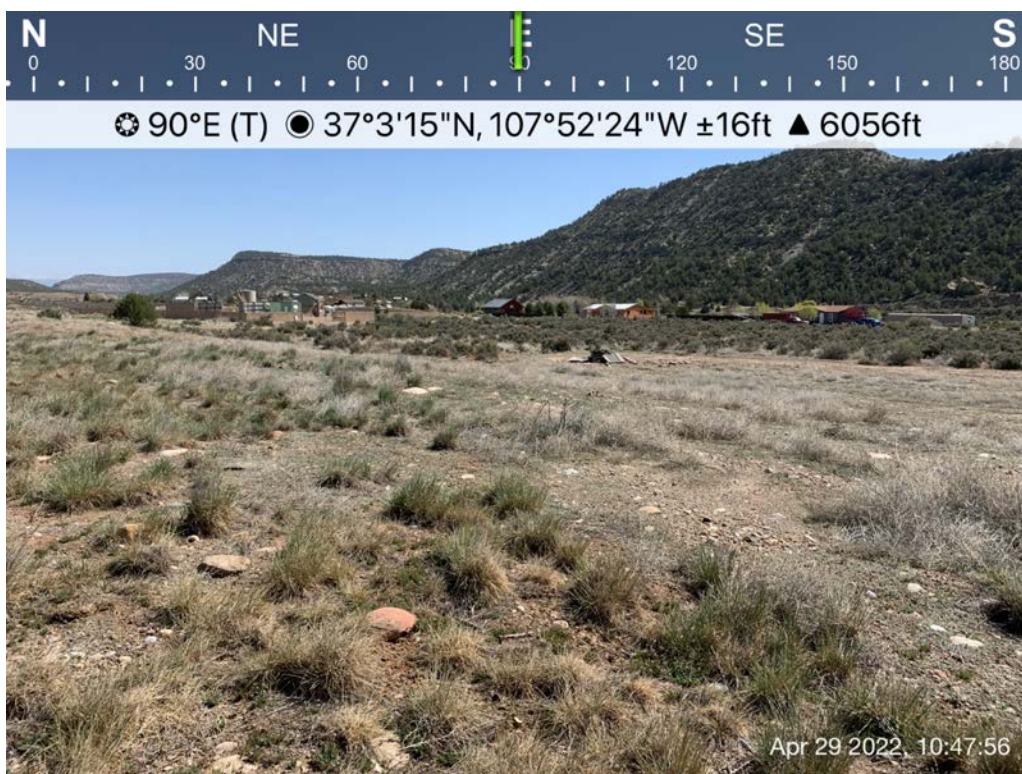


Photo 4: Looking east from the wellhead, 4/29/2022.



Photographic Log  
Bryce (OWP) #1-X  
Soil Gas Survey  
Catamount Energy Partners, LLC



Photo 5: Looking south from the wellhead, 4/29/2022.

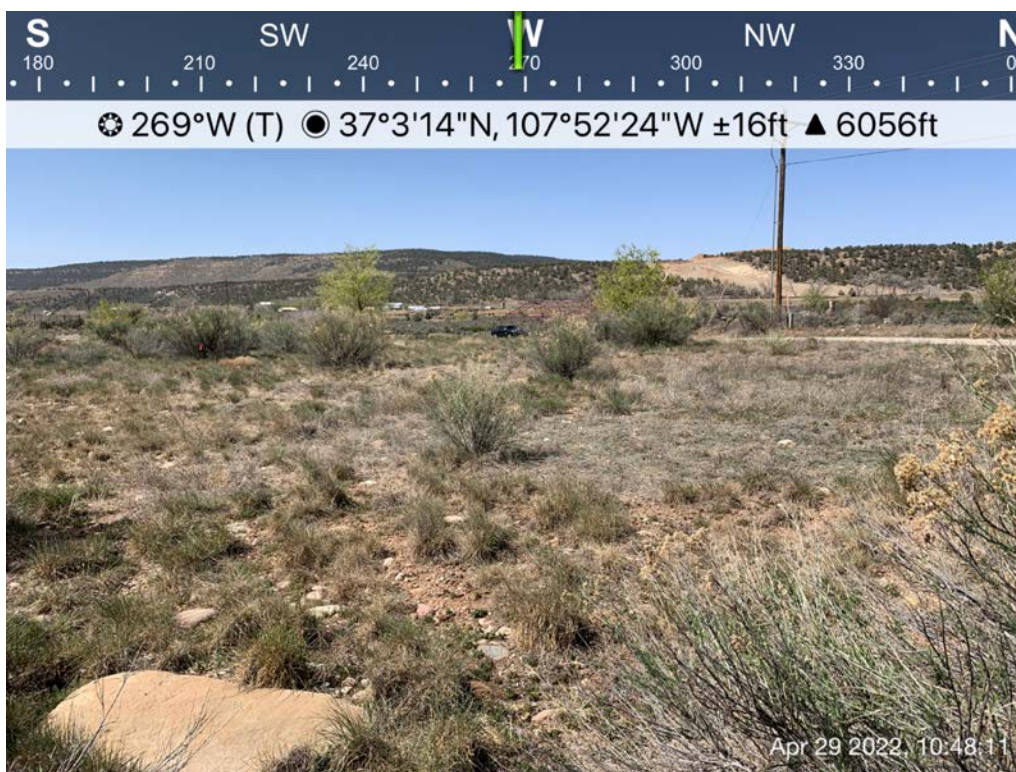


Photo 6: Looking west from the wellhead, 4/29/2022.