

# **Antelope 44-19 Compressor Station**

SESE Sec. 19-T5N-R62W

Facility ID: 427983

Post Excavation Assessment and No Further Action Request

October 2024

Prepared by Earth Systems LLC



On behalf of Bonanza Creek Energy Operating Company LLC



# **ATTACHMENT A**



## **FIELD NOTES**

SITE NAME: Antelope 44-19 Compressor Station								Date: 9/26/2024	REM #:	Weather: Clear 90
SITE DIRECTIONS: Weld County Road 61 & 388 SE 1m. to yellow gate, SE 4.4m., N 1.5m, E 2.2m, S into								CLIENT: Bonanza Creek Energy Operating Company LLC		
LEGALS AND LAT/LONG: 40.377972, -104.356857								EARTH SYSTEMS PERSONNEL: RZ, MB, IA, JG, AM		
SOIL TYPES (USCS): Sandy loam, SP. Poorly graded sand.								SURFACE GRADIENT: South		
SURROUNDING LAND USE: Rangeland								CROP: Rangeland		
SOIL SAMPLING								FACILITY INFRASTRUCTURE		
Date/Time	Soil Sample ID	PID (ppm)	Visual	Olfactory	Photo? (Y/N)	USCS	Lab (Y/N)	EQUIPMENT	Quantity	
9/26/24 - 1400	W01 @ 2.2'	1	No	No	Yes	SP	Yes	Above Ground Storage Tank (AST)	5	
9/26/24 - 1400	W02 @ 1.8'	0.9	No	No	Yes	SP	Yes	Produced Water Vessel (PWV)	1	
9/26/24 - 1303	NW01 @ 1.3'	0.0	No	No	Yes	SP	Yes	Separator (SEP)	NA	
9/26/24 - 1303	N01 @ 2.9'	0.0	No	No	Yes	SP	Yes	Emission Control Device (ECD)	NA	
9/26/24 - 1330	E01 @ 1.8'	0.8	No	No	Yes	SP	Yes	Dump Line (DL)	NA	
9/26/24 - 1340	SE01 @ 2.5'	1.5	No	No	Yes	SP	Yes	Wellhead (WH)	NA	
9/26/24 - 1350	S01 @ 2.7'	1.6	No	No	Yes	SP	Yes	Flowline (FL)	NA	
9/26/24 - 1415	BS01 @ 3.0'	0.5	No	No	Yes	SP	Yes	FL Method of Closure	NA	
9/26/24 - 1410	BN01 @ 3.2'	0.5	No	No	Yes	SP	Yes	FL Footage Removed	NA	
								Footage Abandoned in Place	NA	
								Other:	NA	
								Soil Loads Removed		
								IMPACTED SOIL IDENTIFIED?		
								ESTIMATED VOLUME OF IMPACTS:		
								Date	Number	CY
								Total Removed		
								Disposal Facility:		
								Groundwater Recovery		
								DATE GW ENCOUNTERED:	DEPTH:	
								GROUNDWATER IN CONTACT WITH IMPACTED SOIL?		
								LNAPL OR SHEEN OBSERVED ON GW?		
GROUNDWATER SAMPLING								Date	BBLs	
Date/Time	Groundwater Sample ID	Depth Collected	Turbid?	Sheen?	Odor?	Photo?				
								Total Removed		
								Disposal Facility:		

# **ATTACHMENT B**

## **PHOTO LOG**



## PHOTOGRAPHIC LOG

<b>Client Name:</b> Bonanza Creek/Civitas		<b>Site Location:</b> Antelope 44-19 Compressor Station	
<b>Photo No. 1</b>	<b>Date:</b> 9/26/2024	<div> <div> <div>SE</div> <div>150</div> <div>S</div> <div>180</div> <div>SV</div> <div>210</div> <div>240</div> <div>W</div> <div>270</div> <div>300</div> <div>NW</div> </div> <div> <div>☀ 229°SW (T)    ● 40°22'40"N, 104°21'24"W ±13ft    ▲ 4678ft</div> </div> </div>  <div>26 Sep 2024, 15:07:24</div>	
<b>Direction Photo Taken:</b>  Southwest			
<b>Description:</b>  Overview of the excavation.			
<b>Photo No. 2</b>	<b>Date:</b> 9/26/2024	<div> <div> <div>W</div> <div>240</div> <div>NW</div> <div>270</div> <div>300</div> <div>330</div> <div>N</div> <div>0</div> <div>NE</div> <div>30</div> </div> <div> <div>☀ 324°NW (T)    ● 40°22'40"N, 104°21'23"W ±9ft    ▲ 4685ft</div> </div> </div>  <div>26 Sep 2024, 15:06:15</div>	
<b>Direction Photo Taken:</b>  Northwest			
<b>Description:</b>  Facility to the north of the excavation.			

## PHOTOGRAPHIC LOG

Client Name: Bonanza Creek/Civitas		Site Location: Antelope 44-19 Compressor Station	
Photo No. 3	Date: 9/26/2024	<div><div><div>S180SW210240W270NW300330</div><div>252°W (T) 40°22'40"N, 104°21'23"W ±13ft 4687ft</div></div></div>	
Direction Photo Taken:  WSW			
Description:  Surrounding area to the south of the excavation.			
Photo No. 4	Date: 9/26/2024	<div><div><div>SW210240W270NW300330N0</div><div>294°NW (T) 40°22'40"N, 104°21'25"W ±16ft 4681ft</div></div></div>	
Direction Photo Taken:  WNW			
Description:  Soil sample locations: W01 @ 2.2' W02 @ 1.8'			

## PHOTOGRAPHIC LOG

<b>Client Name:</b> Bonanza Creek/ Civitas		<b>Site Location:</b> Antelope 44-19 Compressor Station	
<b>Photo No.</b> 5	<b>Date:</b> 9/26/2024	 <p>SW W NW N</p> <p>210 240 270 300 330 0</p> <p>☀ 277°W (T) ☉ 40°22'40"N, 104°21'25"W ±16ft ▲ 4681ft</p> <p>NW01 (1.3')</p> <p>26 Sep 2024, 14:44:19</p>	
<b>Direction Photo Taken:</b>  West			
<b>Description:</b>  Soil sample location: NW01 @ 1.3'			
<b>Photo No.</b> 6	<b>Date:</b> 9/26/2024	 <p>W NW N NE E</p> <p>270 300 330 0 30 60 90</p> <p>☀ 2°N (T) ☉ 40°22'40"N, 104°21'25"W ±16ft ▲ 4681ft</p> <p>BN01 (3.2')</p> <p>N01 (2.9')</p> <p>26 Sep 2024, 14:44:33</p>	
<b>Direction Photo</b>  <b>Taken:</b> North			
<b>Description:</b>  Soil sample locations: BN01 @ 3.2' N01 @ 2.9'			

## PHOTOGRAPHIC LOG

**Client Name:**  
Bonanza Creek/Civitas

**Site Location:**  
Antelope 44-19 Compressor Station

**Photo No.**  
7

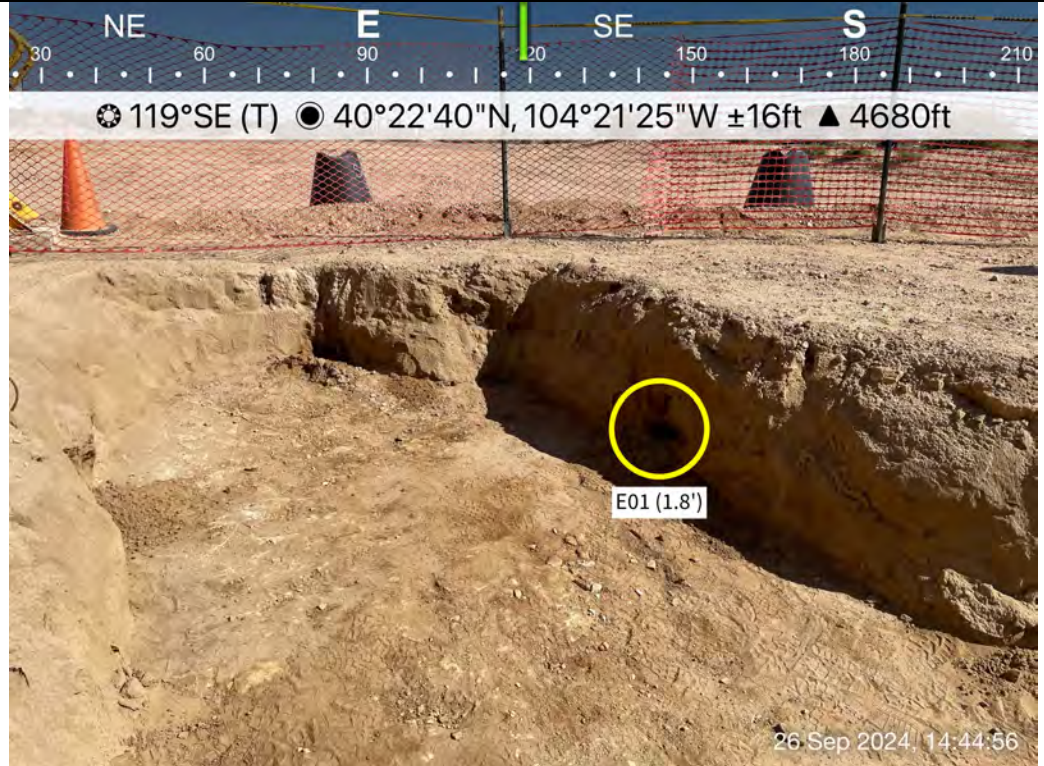
**Date:**  
9/26/2024

**Direction Photo Taken:**

Southeast

**Description:**

Soil sample location:  
E01 @1.8'



**Photo No.**  
8

**Date:**  
9/26/2024

**Direction Photo Taken:**

East

**Description:**

Soil sample location:  
SE01 @ 2.5'



## PHOTOGRAPHIC LOG

**Client Name:**  
Bonanza Creek/Civitas

**Site Location:**  
Antelope 44-19 Compressor Station

**Photo No.**  
9

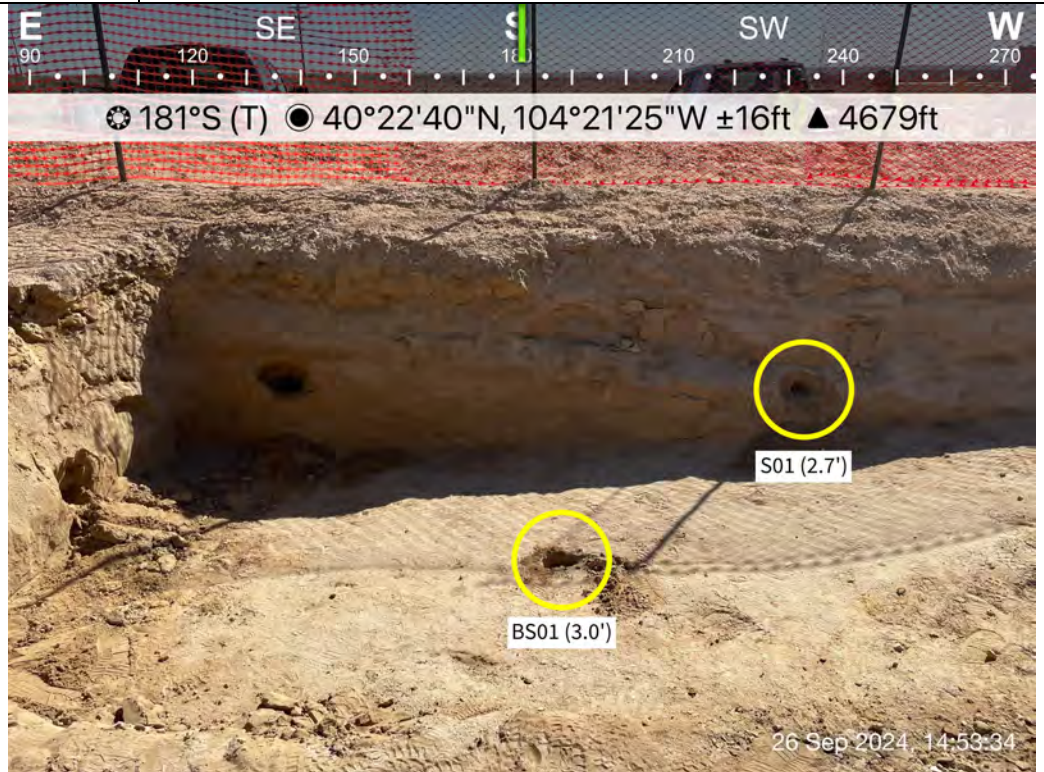
**Date:**  
9/26/2024

**Direction Photo Taken:**

South

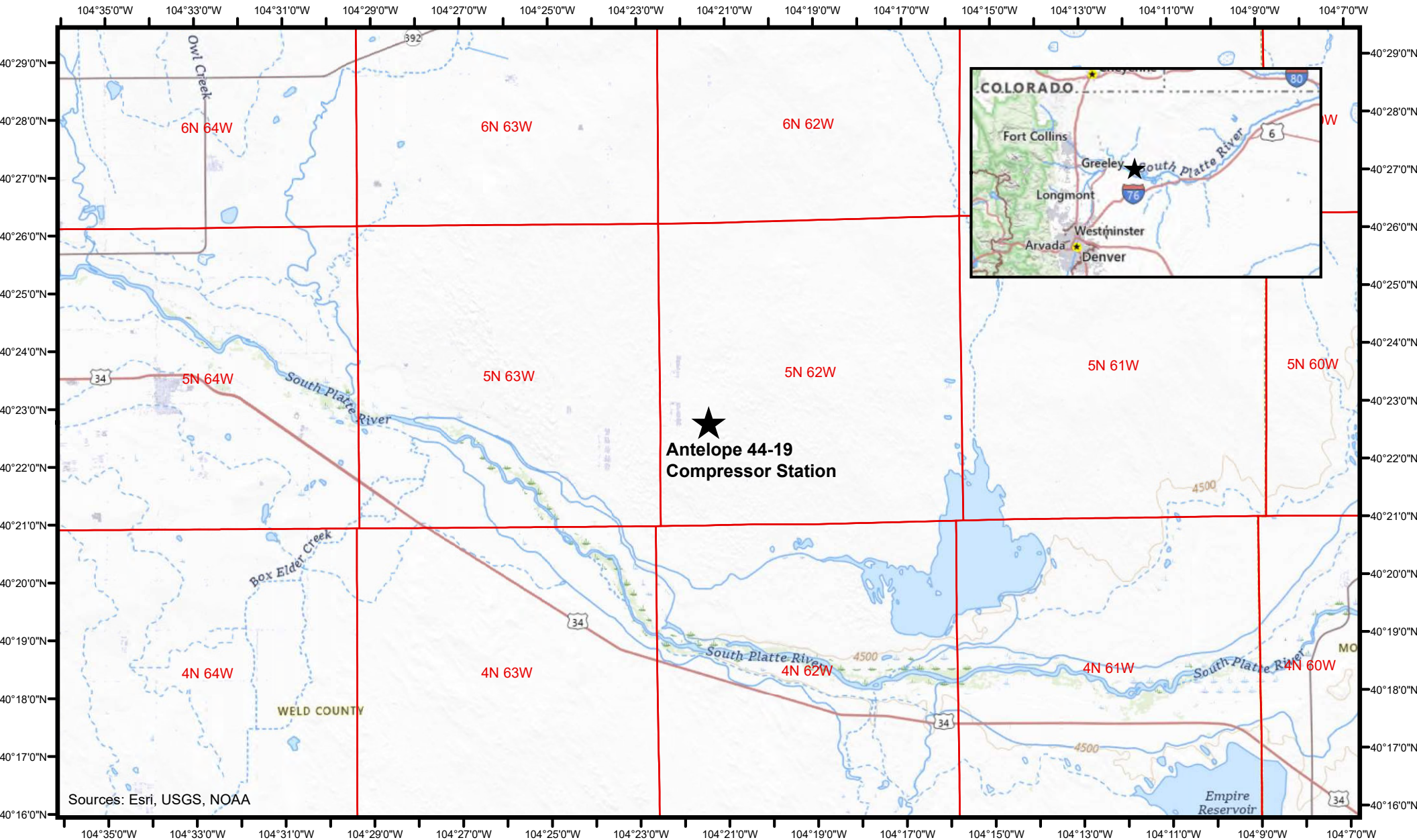
**Description:**

Soil sample locations:  
BS01 @ 3.0'  
S01 @ 2.7'



# **ATTACHMENT C**

## **FIGURES**



### LEGEND



SITE LOCATION



TOWNSHIP BOUNDARY



## SITE LOCATION MAP

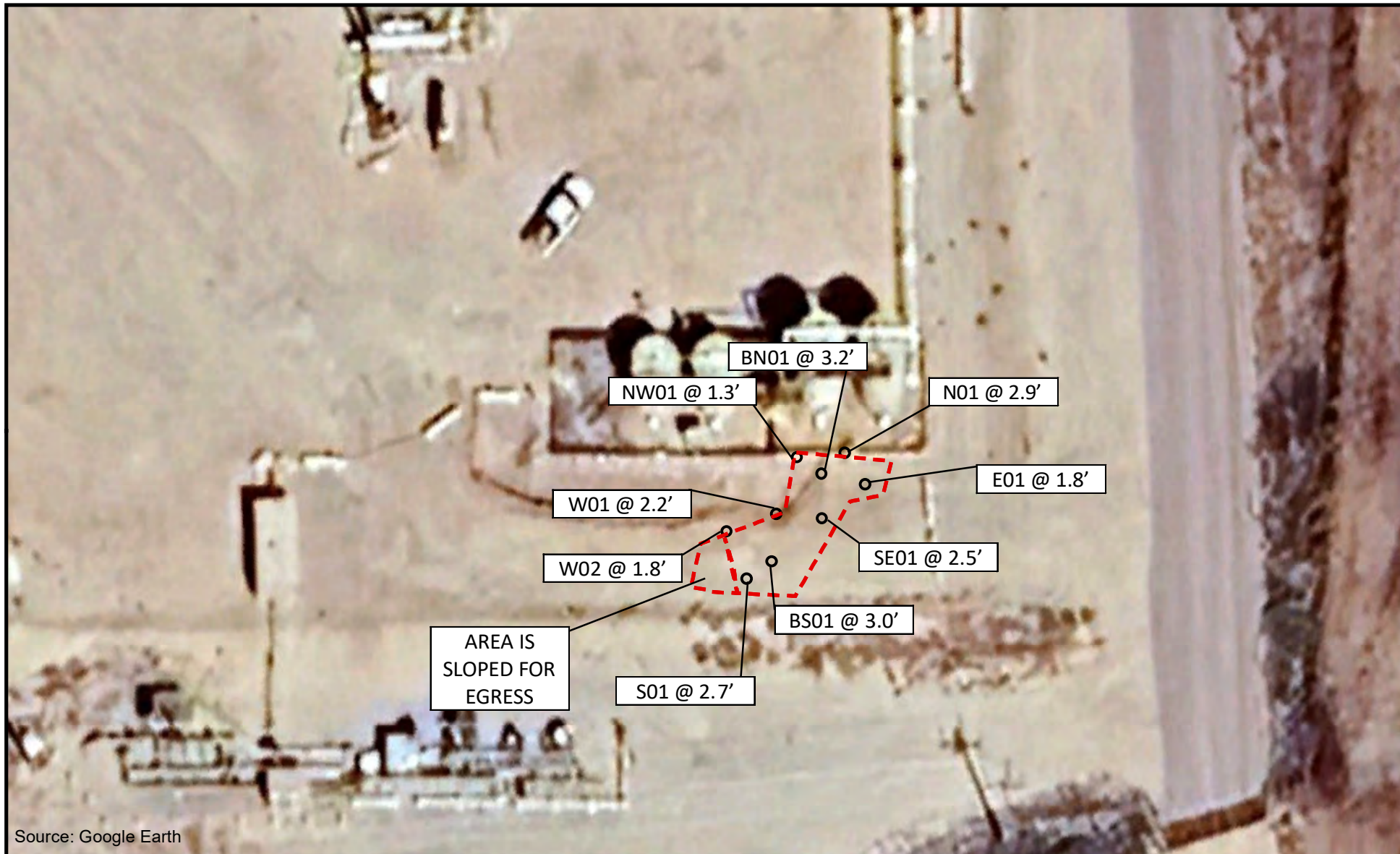
Bonanza Creek Energy Operating Company LLC  
Antelope 44-19 Compressor Station  
SESE Sec. 19-T5N-R62W  
Weld County, Colorado





Figure 1

0 7,500 15,000 30,000  
Feet

10/7/2024



### LEGEND

-  SOIL SAMPLE LOCATION – BELOW ECMC TABLE 915-1 SOIL STANDARDS (COLLECTED VIA JUNIPER GPS)
-  EXCAVATION EXTENT (COLLECTED VIA JUNIPER GPS). WEST SIDE OF EXCAVATION IS SLOPED FOR EGRESS
- ECMC COLORADO ENERGY & CARBON MANAGEMENT COMMISSION
- GPS GLOBAL POSITIONING SYSTEM

0 15 30 60  
Feet



### POST-EXCAVATION SOIL SAMPLE LOCATIONS MAP

Bonanza Creek Energy Operating Company LLC  
Antelope 44-19 Compressor Station  
SESE Sec. 19-T5N-R62W  
Weld County, Colorado



Figure 2

# **ATTACHMENT D**

## **TABLES**

**TABLE 1**  
**ANTELOPE 44-19 COMPRESSOR STATION**  
**SOIL SAMPLE LOCATIONS**  
**BONANZA CREEK ENERGY OPERATING COMPANY LLC**



Soil Sample Location	Depth (BLS)	Date	PID Reading (ppm)	Latitude	Longitude	GPS PDOP Value	Lab (Y/N)
NW01 @ 1.3'	1.3	09/26/2024	0.0	40.377975	-104.356891	1.0	Y
N01 @ 2.9'	2.9	09/26/2024	0.0	40.377978	-104.356850	1.0	Y
E01 @ 1.8'	1.8	09/26/2024	0.8	40.377957	-104.356833	1.0	Y
SE01 @ 2.5'	2.5	09/26/2024	1.5	40.377935	-104.356870	1.0	Y
S01 @ 2.7'	2.7	09/26/2024	1.6	40.377895	-104.356936	1.0	Y
W01 @ 2.2'	2.2	09/26/2024	1.2	40.377938	-104.356910	1.1	Y
W02 @ 1.8'	1.8	09/26/2024	0.9	40.377926	-104.356953	1.1	Y
BN01 @ 3.2'	3.2	09/26/2024	0.5	40.377964	-104.356870	1.1	Y
BS01 @ 3.0'	3.0	09/26/2024	0.5	40.377906	-104.356914	1.1	Y

**Notes:**

BLS = Below Land Surface in Feet

PID = Photoionization Detector

ppm = parts per million

GPS = Global Positioning System

PDOP = Position Dilution of Precision

- = Not Applicable

**TABLE 2**  
**ANTELOPE 44-19 COMPRESSOR STATION**  
**SOIL ANALYTICAL DATA - VOCs**  
**BONANZA CREEK ENERGY OPERATING COMPANY LLC**



Soil Sample Location	Depth (BLS)	Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	TVPH-GRO (mg/kg)	TEPH-DRO (mg/kg)	TEPH-ORO (mg/kg)	1,2,4-TMB (mg/kg)	1,3,5-TMB (mg/kg)
ECMC Organic Compounds in Soils - GSSL <sup>(1)</sup>			0.0026	0.69	0.78	9.9	0.0038	500			0.0081	0.0087
ECMC Organic Compounds in Soils - RSL <sup>(2)</sup>			1.2	490	5.8	58	2	500			30	27
NW01 @ 1.3'	1.3	09/26/2024	ND (<0.00200)	ND (<0.00200)	ND (<0.00200)	ND (<0.00200)	ND (<0.002)	ND (<0.002)	ND (<25.0)	ND (<100)	ND (<0.00200)	ND (<0.00200)
N01 @ 2.9'	2.9	09/26/2024	ND (<0.00200)	ND (<0.00200)	ND (<0.00200)	ND (<0.00200)	ND (<0.002)	ND (<0.002)	ND (<25.0)	ND (<100)	ND (<0.00200)	ND (<0.00200)
E01 @ 1.8'	1.8	09/26/2024	ND (<0.00200)	ND (<0.00200)	ND (<0.00200)	ND (<0.00200)	ND (<0.002)	ND (<0.002)	ND (<25.0)	ND (<100)	ND (<0.00200)	ND (<0.00200)
SE01 @ 2.5'	2.5	09/26/2024	ND (<0.00200)	ND (<0.00200)	ND (<0.00200)	ND (<0.00200)	ND (<0.002)	ND (<0.002)	ND (<25.0)	ND (<100)	ND (<0.00200)	ND (<0.00200)
S01 @ 2.7'	2.7	09/26/2024	ND (<0.00200)	ND (<0.00200)	ND (<0.00200)	ND (<0.00200)	ND (<0.002)	ND (<0.002)	ND (<25.0)	ND (<100)	ND (<0.00200)	ND (<0.00200)
W01 @ 2.2'	2.2	09/26/2024	ND (<0.00200)	ND (<0.00200)	ND (<0.00200)	ND (<0.00200)	ND (<0.002)	ND (<0.002)	ND (<25.0)	ND (<100)	ND (<0.00200)	ND (<0.00200)
W02 @ 1.8'	1.8	09/26/2024	ND (<0.00200)	ND (<0.00200)	ND (<0.00200)	ND (<0.00200)	ND (<0.002)	ND (<0.002)	ND (<25.0)	ND (<100)	ND (<0.00200)	ND (<0.00200)
BN01 @ 3.2'	3.2	09/26/2024	ND (<0.00200)	ND (<0.00200)	ND (<0.00200)	ND (<0.00200)	ND (<0.002)	ND (<0.002)	ND (<25.0)	ND (<100)	ND (<0.00200)	ND (<0.00200)
BS01 @ 3.0'	3.0	09/26/2024	ND (<0.00200)	ND (<0.00200)	ND (<0.00200)	ND (<0.00200)	ND (<0.002)	ND (<0.002)	ND (<25.0)	ND (<100)	ND (<0.00200)	ND (<0.00200)

**Notes:**

VOCs = Volatile Organic Compounds

ECMC = Colorado Energy & Carbon Management Commission

(1) Standards for soil are referenced from ECMC Table 915-1: Organic Compounds in Soils - Protection of Groundwater Soil Screening Level Concentrations (Effective January 15, 2021)

(2) Standards for soil are referenced from ECMC Table 915-1: Organic Compounds in Soils - Residential Soil Screening Level Concentrations (Effective January 15, 2021)

GSSL = Protection of Groundwater Screening Level

RSL = Residential Soil Screening Level

BLS = Below Land Surface in Feet

(<) = Analytical result is less than the indicated laboratory reporting limit

mg/kg = milligrams per kilogram

TVPH - GRO = Total Volatile Petroleum Hydrocarbons - Gasoline Range Organics

TEPH - DRO = Total Extractable Petroleum Hydrocarbons - Diesel Range Organics

TEPH - ORO = Total Extractable Petroleum Hydrocarbons - Oil Range Organics

1,2,4 - TMB = 1,2,4 - Trimethylbenzene

1,3,5 - TMB = 1,3,5 - Trimethylbenzene

**BOLD** = Analytical result is in exceedance of ECMC Table 915-1: Organic Compounds in Soils - Protection of Groundwater Soil Screening Level Concentrations

**BOLD** = Analytical result is in exceedance of ECMC Table 915-1: Organic Compounds in Soils - Residential Soil Screening Level Concentrations

**TABLE 3**  
**ANTELOPE 44-19 COMPRESSOR STATION**  
**SOIL ANALYTICAL DATA - PAHs**  
**BONANZA CREEK ENERGY OPERATING COMPANY LLC**



Soil Sample Location	Depth (BLS)	Date	Acenaphthene mg/kg	Anthracene mg/kg	Benzo(a)A mg/kg	Benzo(b)F mg/kg	Benzo(k)F mg/kg	Benzo(a)P mg/kg	Chrysene mg/kg	D (a,h) A mg/kg	Fluoranthene mg/kg	Fluorene mg/kg	1,2,3-CD mg/kg	1-M mg/kg	2-M mg/kg	Pyrene mg/kg
ECMC Organic Compounds in Soils - GSSL <sup>(1)</sup>			0.55	5.8	0.011	0.3	2.9	0.24	9	0.96	8.9	0.54	0.98	0.006	0.019	1.3
ECMC Organic Compounds in Soils - RSL <sup>(2)</sup>			360	1,800	1.1	1.1	11	0.11	110	0.11	240	240	1.1	18	24	180
NW01 @ 1.3'	1.3	09/26/2024	ND (<0.020)	ND (<0.020)	ND (<0.005)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)
N01 @ 2.9'	2.9	09/26/2024	ND (<0.020)	ND (<0.020)	ND (<0.005)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)
E01 @ 1.8'	1.8	09/26/2024	ND (<0.020)	ND (<0.020)	ND (<0.005)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)
SE01 @ 2.5'	2.5	09/26/2024	ND (<0.020)	ND (<0.020)	ND (<0.005)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)
S01 @ 2.7'	2.7	09/26/2024	ND (<0.020)	ND (<0.020)	ND (<0.005)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)
W01 @ 2.2'	2.2	09/26/2024	ND (<0.020)	ND (<0.020)	ND (<0.005)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)
W02 @ 1.8'	1.8	09/26/2024	ND (<0.020)	ND (<0.020)	ND (<0.005)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)
BN01 @ 3.2'	3.2	09/26/2024	ND (<0.020)	ND (<0.020)	ND (<0.005)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)
BS01 @ 3.0'	3.0	09/26/2024	ND (<0.020)	ND (<0.020)	ND (<0.005)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)	ND (<0.020)

**Notes:**

PAHs = Polycyclic Aromatic Hydrocarbons

(1) Standards for soil are referenced from ECMC Table 915-1: Organic Compounds in Soils - Protection of Groundwater Soil Screening Level Concentrations (Effective January 15, 2021)

(2) Standards for soil are referenced from ECMC Table 915-1: Organic Compounds in Soils - Residential Soil Screening Level Concentrations (Effective January 15, 2021)

ECMC = Colorado Energy & Carbon Management Commission

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(<) = Analytical result is less than the indicated laboratory reporting limit

mg/kg = milligrams per kilogram

Benzo(a)A = Benzo(a)Anthracene

Benzo(b)F = Benzo(b)Fluoranthene

Benzo(a)P = Benzo(a)Pyrene

D (a,h) A = Dibenzo(a,h)Anthracene

1,2,3-CD = Indeno(1,2,3-cd) Pyrene

1-M = 1-Methylnaphthalene

2-M = 2-Methylnaphthalene

**BOLD** = Analytical result is in exceedance of ECMC Table 915-1: Organic Compounds in Soils - Protection of Groundwater Soil Screening Level Concentrations

**BOLD** = Analytical result is in exceedance of ECMC Table 915-1: Organic Compounds in Soils - Residential Soil Screening Level Concentrations