
DUST MITIGATION PLAN

BNL | ENTERPRISE

State 16 SWSE 3054

Sec. 16 T30S R54W (SW/4 SE/4)

Las Animas County, Colorado

Surface: State

Submitted as an accompaniment to the Form 2A Application
and consistent with the requirements of Rule 427.a.

January 19, 2022

Revised: March 21, 2022

BNL (Enterprise) Inc. Las Animas County, Colorado

Dust Mitigation Plan

Project Summary:

BNL (Enterprise) Inc. (“BNL”) proposed State 16 SWSE 3054 Location is located in Sec. 16 T30S R54W in Las Animas County, Colorado. BNL plans to drill and test one *helium* well. If the well produces commercial quantities of helium the well will be shut-in for a period of six to nine months until helium production/processing facilities can be constructed on an offsite facility location. The helium facility will be on lands outside of the Oil and Gas Development Plan. The facility will be constructed on private surface. The landowner agreement provides for the installation of the gas gathering line. The production/processing facilities will not require an oil and gas development plan. BNL will use a 130-mil rig liner during the drilling and testing of the well. As minimal soil will be disturbed during this time as possible. The well will be drilled vertically to no more than 2,500 feet and will not require hydraulic fracturing. The proposed location is state surface and state minerals with a total pad disturbance of 3.4± acres. During the drilling and testing phase, the existing access road will be minimally upgraded to allow for construction and, if needed, emergency vehicles. If the well proves to be of commercial quantities, the road will be crowned and ditched, in consultation with the Colorado State Land Board and any other owners along the access route. The graded site elevation is expected to be approximately 5,505’. No federal lands or minerals are involved in this project. All operations would be conducted in compliance with all federal, state, and local applicable laws, rules, and regulations.

Plan:

Project Overview:

BNL’s Dust Mitigation Plan is intended to facilitate compliance with the applicable regulations of the Colorado Oil and Gas Conservation Commission, the Colorado Department of Public Health and Environment and Las Animas County.

BNL’s development of the State 16 SWSE 3054 wellpad (“Location”) requires earth disturbing activities and travel on unpaved roads which has the potential to produce fugitive dust emissions.

Dust associated with the Location activities and traffic on roads will be minimized throughout all phases such that there are minimal visible dust emissions from the Location or associated roads to the maximum extent practicable given wind and other weather conditions.

No proppant will be used in completion operations.

Cuttings will be disposed of in at a commercial facility.

Any chemical application will have Safety Data Sheets on location.

Compliance with Rule 427.a.

1. Wellpad soil types:

DaE – Dalerose-Rock outcrop complex, 3 to 25 percent slopes

WeB – Wiley silt loam, 0 to 3 percent slopes

Access Road soil types:

BaA-Baca silt loam, 1 to 4 percent slopes.

CD- Chacuaco-Dalerose, 0 to 3 percent slopes

CpB – Calemore silt loam, 0 to 3 percent slopes

DaE – Dalerose-Rock outcrop complex, 3 to 25 percent slopes

Dv – Feterita silt loam, 0 to 2 percent slopes

MnB – Manzanst silty clay loam, 1 to 3 percent slopes

Rc – Raku silt loam, 0 to 2 percent slopes

WC-Plughat-Villegreen complex, 1 to 4 percent slopes

WeB-Wiley silt loam, 0 to 3 percent slopes

Pipeline soil types:

BaA-Baca silt loam, 1 to 4 percent slopes.

CD- Chacuaco-Dalerose, 0 to 3 percent slopes

CpB – Calemore silt loam, 0 to 3 percent slopes

DaE – Dalerose-Rock outcrop complex, 3 to 25 percent slopes

Dv – Feterita silt loam, 0 to 2 percent slopes

MnB – Manzanst silty clay loam, 1 to 3 percent slopes

Rc – Raku silt loam, 0 to 2 percent slopes

WC-Plughat-Villegreen complex, 1 to 4 percent slopes

WeB-Wiley silt loam, 0 to 3 percent slopes

2. Proposed vehicle speed limit: 20 MPH or less on roads; 5 MPH or less on the Location.

3. Total disturbed area:

- Wellpad: 3.4 acres
- Access Road: 19 acres
- Pipeline: 16 acres

Total Acres of disturbance: 39 acres

4. Access roads will not be paved. During the drilling and testing phase, the existing access road will be minimally upgraded to allow for construction and if needed emergency vehicles. If the well proves to be commercial, road will be crowned (with a minimum of 4 inches of gravel) and ditched, as agreed to by the private surface owner. Road surfacing material will consist of limestone, scoria or river rock or as agreed upon by the private surface owner and will be sourced as locally as possible to minimize travel distance.

5. Number of truck trips during the Construction, Drilling, Completion and Production stages:

Phase of Development	Monthly Truck Trips	1st Year Truck Trips	Years 2-20+ Truck Trips
Construction (Wellpad & Access)	96	96	0
Drilling/Testing	104	104	0
Completion	96	96	0
Production/Daily Operations	30	365	365
Total Truck Trips	326	661	365

Traffic counts are approximate, based on round trips, and may vary due to circumstances.

6. Plan for Suppressing Fugitive Dust Caused by Wind:

- Stop work orders will be issued during high wind conditions when possible with contiguous activities on location (sustained winds of 25 MPH or greater).
- Regular road maintenance will be implemented to mitigate fugitive dust.
- Avoid unnecessary work on dust generating on high wind days.
- Natural or artificial windbreaks may be utilized as appropriate.
- Utilize gravel in high wind areas on specific portions of roads and wellpads.

7. Best Management Practices:

- BNL will use a 130 mil rig liner during the drilling and testing of the well. No soil will be disturbed during this time. The rig mat will eliminate fugitive dust from the wellpad. See product specs in Appendix A.
- Utilize existing vegetation, trees slash or brush piles to cover disturbed areas not used for vehicle traffic.
- Application of fresh water during dry season.
- Applications of approved chemicals may be applied to areas not needed for traffic to form a less erodible soil.
- Operations will be confined to the wellpad working surface.
- Continuous monitoring of disturbed areas to evaluate additional BMPs needed.
- Fresh water application to disturbed areas during construction.
- Fresh water or magnesium chloride application to graveled surfaced of the Location and associated roads.
- Speed limit signs will be posted per surface owner agreement.
- Contractors will be notified of speed limits if no signs are posted.
- Regular road maintenance such as grading and adding additional gravel as needed.

Dust Mitigation Plan

Appendix A

Las Animas County Area, Colorado, Parts of Huerfano and Las Animas Counties

BaA—Baca silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2rh1c
Elevation: 3,610 to 6,230 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 130 to 170 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Baca and similar soils: 90 percent
Minor components: 10 percent
*Estimates are based on observations, descriptions, and transects of
the mapunit.*

Description of Baca

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loess

Typical profile

A - 0 to 3 inches: silt loam
AB - 3 to 6 inches: silty clay loam
Bt1 - 6 to 13 inches: silty clay
Bt2 - 13 to 21 inches: silty clay
Btk - 21 to 27 inches: silty clay loam
Bk1 - 27 to 47 inches: silty clay loam
Bk2 - 47 to 79 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
*Capacity of the most limiting layer to transmit water
(Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Nonsaline to slightly saline (0.5 to 4.0
mmhos/cm)

Sodium adsorption ratio, maximum: 5.0
Available water capacity: High (about 11.7 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: C
Ecological site: R067BY002CO - Loamy Plains
Forage suitability group: Clayey (G067BW001CO)
Other vegetative classification: Clayey (G067BW001CO), Loamy
Plains #2 (067XY002CO_2)
Hydric soil rating: No

Minor Components

Manzanst

Percent of map unit: 5 percent
Landform: Interfluves, fan remnants
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R067BY042CO - Clayey Plains
Other vegetative classification: Clayey (G067BW001CO), Clayey
Plains #42 (067XY042CO_2)
Hydric soil rating: No

Wiley

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R067BY002CO - Loamy Plains
Other vegetative classification: Loamy (G067BW017CO), Loamy
Plains #2 (067XY002CO_2)
Hydric soil rating: No

Data Source Information

Soil Survey Area: Las Animas County Area, Colorado, Parts of Huerfano and
Las Animas Counties
Survey Area Data: Version 23, Jun 5, 2020

Las Animas County Area, Colorado, Parts of Huerfano and Las Animas Counties

CD—Chacuaco-Dalerose complex, 2 to 7 percent slopes

Map Unit Setting

National map unit symbol: vvjn
Elevation: 5,000 to 6,000 feet
Mean annual precipitation: 14 to 17 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 125 to 150 days
Farmland classification: Not prime farmland

Map Unit Composition

Chacuaco and similar soils: 60 percent
Dalerose and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chacuaco

Setting

Landform: Plains, interfluves, ridges
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Side slope, rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian deposits over residuum weathered from sandstone

Typical profile

A - 0 to 5 inches: loam
AB - 5 to 10 inches: loam
Bt - 10 to 20 inches: clay loam
Bk - 20 to 30 inches: very gravelly loam
R - 30 to 60 inches: bedrock

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.01 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Gypsum, maximum content: 2 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum: 2.0

Available water capacity: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): 3e

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: C

Ecological site: R067BY002CO - Loamy Plains

Forage suitability group: Loamy, Dry (G070XW019CO)

Other vegetative classification: Loamy, Dry (G070XW019CO),
Loamy Plains #2 (067XY002CO_2)

Hydric soil rating: No

Description of Dalerose

Setting

Landform: Scarps

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Crest

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Slope alluvium and residuum weathered from sandstone

Typical profile

A - 0 to 5 inches: gravelly fine sandy loam

Bk - 5 to 10 inches: gravelly loam

R - 10 to 60 inches: bedrock

Properties and qualities

Slope: 3 to 7 percent

Depth to restrictive feature: 6 to 20 inches to lithic bedrock

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water

(Ksat): Moderately low to moderately high (0.01 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water capacity: Very low (about 1.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: D

Ecological site: R067BY056CO - Sandstone Breaks

Forage suitability group: Needs Field Review (G070XW050CO)

Other vegetative classification: Needs Field Review
(G070XW050CO), Sandstone Breaks #56 (067XY056CO_2)

Hydric soil rating: No

Minor Components

Rock outcrop

Percent of map unit: 10 percent

Landform: Scarps

Hydric soil rating: No

Data Source Information

Soil Survey Area: Las Animas County Area, Colorado, Parts of Huerfano and
Las Animas Counties

Survey Area Data: Version 23, Jun 5, 2020

Las Animas County Area, Colorado, Parts of Huerfano and Las Animas Counties

CpB—Calemore silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 3jlv
Elevation: 5,000 to 6,500 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 50 to 53 degrees F
Frost-free period: 130 to 155 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Calemore and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Calemore

Setting

Landform: Plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess and/or silty alluvium

Typical profile

A - 0 to 7 inches: silt loam
Bt1 - 7 to 11 inches: silty clay loam
Bt2 - 11 to 20 inches: silty clay loam
Btk1 - 20 to 36 inches: clay loam
Btk2 - 36 to 42 inches: silty clay loam
Bk - 42 to 65 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.9 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: C
Ecological site: R067BY002CO - Loamy Plains
Forage suitability group: Loamy (G067BW017CO)
Other vegetative classification: Loamy Plains #2
(067XY002CO_2), Loamy (G067BW017CO)
Hydric soil rating: No

Minor Components

Baca

Percent of map unit: 5 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R067BY002CO - Loamy Plains
Other vegetative classification: Loamy Plains #2 (067XY002CO_2),
Clayey (G067BW001CO)
Hydric soil rating: No

Raku

Percent of map unit: 5 percent
Landform: Depressions, drainageways, plains
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R067BY002CO - Loamy Plains
Other vegetative classification: Loamy Plains #2 (067XY002CO_2),
Loamy (G067BW017CO)
Hydric soil rating: No

Wiley

Percent of map unit: 5 percent
Landform: Plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R067BY002CO - Loamy Plains
Other vegetative classification: Loamy Plains #2 (067XY002CO_2),
Loamy (G067BW017CO)
Hydric soil rating: No

Data Source Information

Soil Survey Area: Las Animas County Area, Colorado, Parts of Huerfano and
Las Animas Counties

Survey Area Data: Version 24, Aug 31, 2021

Las Animas County Area, Colorado, Parts of Huerfano and Las Animas Counties

DaE—Dalerose-Rock outcrop complex, 3 to 25 percent slopes

Map Unit Setting

National map unit symbol: 3jly
Elevation: 5,000 to 6,000 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 50 to 53 degrees F
Frost-free period: 125 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Dalerose and similar soils: 75 percent
Rock outcrop: 15 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dalerose

Setting

Landform: Scarps
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Head slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Slope alluvium and residuum weathered from sandstone

Typical profile

A - 0 to 5 inches: gravelly fine sandy loam
Bk - 5 to 10 inches: gravelly loam
R - 10 to 60 inches: bedrock

Properties and qualities

Slope: 3 to 25 percent
Depth to restrictive feature: 6 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.01 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Very low (about 1.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R067BY056CO - Sandstone Breaks
Forage suitability group: Needs Field Review (G070XW050CO)
Other vegetative classification: Needs Field Review (G070XW050CO), Sandstone Breaks #56 (067XY056CO_2)
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Scarps
Parent material: Sandstone

Typical profile

R - 0 to 60 inches: bedrock

Properties and qualities

Slope: 3 to 25 percent
Depth to restrictive feature: 0 inches to lithic bedrock
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Minor Components

Chacuaco

Percent of map unit: 10 percent
Landform: Interfluves, ridges
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R067BY002CO - Loamy Plains
Other vegetative classification: Loamy, Dry (G070XW019CO), Loamy Plains #2 (067XY002CO_2)
Hydric soil rating: No

Data Source Information

Soil Survey Area: Las Animas County Area, Colorado, Parts of Huerfano and Las Animas Counties

Survey Area Data: Version 23, Jun 5, 2020

Las Animas County Area, Colorado, Parts of Huerfano and Las Animas Counties

Dv—Feterita silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 3jks
Elevation: 4,800 to 6,100 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 50 to 53 degrees F
Frost-free period: 135 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Feterita and similar soils: 95 percent
Minor components: 5 percent
*Estimates are based on observations, descriptions, and transects of
the mapunit.*

Description of Feterita

Setting

Landform: Playas
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Clayey alluvium

Typical profile

A - 0 to 3 inches: silt loam
Bt - 3 to 8 inches: silty clay loam
Btss - 8 to 21 inches: silty clay
Btkss - 21 to 35 inches: silty clay
Bkss - 35 to 72 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Negligible
*Capacity of the most limiting layer to transmit water
(Ksat):* Moderately low to moderately high (0.01 to 0.20 in/hr)
Depth to water table: About 0 to 10 inches
Frequency of flooding: None
Frequency of ponding: Occasional
Calcium carbonate, maximum content: 15 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to moderately saline (0.0 to 8.0
mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: High (about 10.7 inches)

Interpretive groups

Land capability classification (irrigated): 3c
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: C/D
Ecological site: R067BY010CO - Closed Upland Depression
Forage suitability group: Clayey (G067BW001CO)
Other vegetative classification: Clayey (G067BW001CO), Clayey
Plains #42 (067XY042CO_2)
Hydric soil rating: No

Minor Components

Manzanst

Percent of map unit: 5 percent
Landform: Fans, plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R067BY042CO - Clayey Plains
Other vegetative classification: Clayey Plains #42
(067XY042CO_2), Clayey (G067BW001CO)
Hydric soil rating: No

Data Source Information

Soil Survey Area: Las Animas County Area, Colorado, Parts of Huerfano and
Las Animas Counties

Survey Area Data: Version 24, Aug 31, 2021

Las Animas County Area, Colorado, Parts of Huerfano and Las Animas Counties

MnB—Manzanst silty clay loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2w4nw
Elevation: 3,870 to 6,660 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 130 to 170 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Manzanst and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Manzanst

Setting

Landform: Drainageways, terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Concave, linear
Parent material: Clayey alluvium derived from shale

Typical profile

A - 0 to 3 inches: silty clay loam
Bt1 - 3 to 6 inches: silty clay loam
Bt2 - 6 to 20 inches: silty clay
Btk - 20 to 28 inches: silty clay
Bk1 - 28 to 40 inches: silty clay loam
Bk2 - 40 to 79 inches: silty clay loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Gypsum, maximum content: 3 percent
Maximum salinity: Nonsaline to slightly saline (0.5 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water supply, 0 to 60 inches: High (about 10.6 inches)

Interpretive groups

Land capability classification (irrigated): 3e

Land capability classification (nonirrigated): 4c

Hydrologic Soil Group: C

Ecological site: R067BY042CO - Clayey Plains

Hydric soil rating: No

Minor Components

Wiley

Percent of map unit: 5 percent

Landform: Interfluves

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R067BY002CO - Loamy Plains

Hydric soil rating: No

Ritoazul

Percent of map unit: 5 percent

Landform: Drainageways, interfluves

Landform position (three-dimensional): Rise

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R067BY042CO - Clayey Plains

Hydric soil rating: No

Baca

Percent of map unit: 5 percent

Landform: Interfluves

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Interfluve

Down-slope shape: Convex

Across-slope shape: Linear

Ecological site: R067BY002CO - Loamy Plains

Hydric soil rating: No

Data Source Information

Soil Survey Area: Las Animas County Area, Colorado, Parts of Huerfano and Las Animas Counties

Survey Area Data: Version 24, Aug 31, 2021

Las Animas County Area, Colorado, Parts of Huerfano and Las Animas Counties

Rc—Raku silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 3jpk
Elevation: 5,000 to 6,500 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 50 to 53 degrees F
Frost-free period: 130 to 155 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Raku and similar soils: 85 percent
Minor components: 15 percent
*Estimates are based on observations, descriptions, and transects of
the mapunit.*

Description of Raku

Setting

Landform: Plains, drainageways, depressions
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium and loess

Typical profile

A - 0 to 8 inches: silt loam
Bt1 - 8 to 11 inches: silty clay loam
Bt2 - 11 to 22 inches: silty clay
Bt3 - 22 to 28 inches: silty clay
Btk - 28 to 45 inches: silty clay loam
Bk - 45 to 68 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
*Capacity of the most limiting layer to transmit water
(Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Available water supply, 0 to 60 inches: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 4c

Hydrologic Soil Group: C
Ecological site: R067BY002CO - Loamy Plains
Forage suitability group: Loamy (G067BW017CO)
Other vegetative classification: Loamy (G067BW017CO), Loamy
Plains #2 (067XY002CO_2)
Hydric soil rating: No

Minor Components

Calemore

Percent of map unit: 5 percent
Landform: Plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R067BY002CO - Loamy Plains
Other vegetative classification: Loamy Plains #2 (067XY002CO_2),
Loamy (G067BW017CO)
Hydric soil rating: No

Wiley

Percent of map unit: 5 percent
Landform: Plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R067BY002CO - Loamy Plains
Other vegetative classification: Loamy (G067BW017CO), Loamy
Plains #2 (067XY002CO_2)
Hydric soil rating: No

Trementina, warm

Percent of map unit: 5 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R067BY002CO - Loamy Plains
Other vegetative classification: Loamy (G067BW017CO), Loamy
Plains #2 (067XY002CO_2)
Hydric soil rating: No

Data Source Information

Soil Survey Area: Las Animas County Area, Colorado, Parts of Huerfano and
Las Animas Counties

Survey Area Data: Version 24, Aug 31, 2021

Las Animas County Area, Colorado, Parts of Huerfano and Las Animas Counties

WC—Plughat-Villegreen complex, 1 to 4 percent slopes

Map Unit Setting

National map unit symbol: 2tqxn
Elevation: 4,900 to 5,800 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 130 to 170 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Plughat and similar soils: 43 percent
Villegreen and similar soils: 41 percent
Minor components: 16 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Plughat

Setting

Landform: Interfluves
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess over residuum weathered from sandstone

Typical profile

A - 0 to 3 inches: silt loam
Bt1 - 3 to 6 inches: silty clay loam
Bt2 - 6 to 13 inches: silty clay loam
Btk - 13 to 27 inches: silty clay loam
Bk1 - 27 to 34 inches: silt loam
2Bk2 - 34 to 48 inches: loam
2R - 48 to 79 inches: bedrock

Properties and qualities

Slope: 1 to 4 percent
Depth to restrictive feature: 43 to 51 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Gypsum, maximum content: 2 percent

Maximum salinity: Nonsaline to very slightly saline (0.5 to 3.0 mmhos/cm)

Available water capacity: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): 4e

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: C

Ecological site: R067BY002CO - Loamy Plains

Hydric soil rating: No

Description of Villegreen

Setting

Landform: Interfluves

Landform position (two-dimensional): Shoulder, summit

Landform position (three-dimensional): Interfluve

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Loess over residuum weathered from sandstone

Typical profile

A - 0 to 6 inches: loam

BA - 6 to 9 inches: silty clay loam

Bt - 9 to 15 inches: silty clay loam

Btk - 15 to 24 inches: silty clay loam

2Bk - 24 to 32 inches: channery loam

2R - 32 to 79 inches: bedrock

Properties and qualities

Slope: 1 to 4 percent

Depth to restrictive feature: 30 to 33 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Gypsum, maximum content: 2 percent

Maximum salinity: Nonsaline to very slightly saline (0.5 to 3.0 mmhos/cm)

Available water capacity: Low (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): 3e

Land capability classification (nonirrigated): 4c

Hydrologic Soil Group: C

Ecological site: R067BY002CO - Loamy Plains

Hydric soil rating: No

Minor Components

Baca

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R067BY002CO - Loamy Plains
Hydric soil rating: No

Wiley

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R067BY002CO - Loamy Plains
Hydric soil rating: No

Boxcanyon

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Toeslope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R067BY002CO - Loamy Plains
Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent
Landform: Scarps
Down-slope shape: Linear
Across-slope shape: Linear

Data Source Information

Soil Survey Area: Las Animas County Area, Colorado, Parts of Huerfano and Las Animas Counties

Survey Area Data: Version 23, Jun 5, 2020

Las Animas County Area, Colorado, Parts of Huerfano and Las Animas Counties

WeB—Wiley silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 3jqx
Elevation: 5,000 to 6,000 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 50 to 53 degrees F
Frost-free period: 130 to 155 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Wiley and similar soils: 85 percent
Minor components: 15 percent
*Estimates are based on observations, descriptions, and transects of
the mapunit.*

Description of Wiley

Setting

Landform: Plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess

Typical profile

A - 0 to 4 inches: silt loam
Bt1 - 4 to 9 inches: silty clay loam
Bt2 - 9 to 15 inches: silty clay loam
Btk - 15 to 26 inches: silty clay loam
Bk1 - 26 to 35 inches: silt loam
Bk2 - 35 to 44 inches: silt loam
Bk3 - 44 to 72 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
*Capacity of the most limiting layer to transmit water
(Ksat):* Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Gypsum, maximum content: 3 percent
Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0
mmhos/cm)

Sodium adsorption ratio, maximum: 7.0
Available water capacity: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: C
Ecological site: R067BY002CO - Loamy Plains
Forage suitability group: Loamy (G067BW017CO)
Other vegetative classification: Loamy (G067BW017CO), Loamy
Plains #2 (067XY002CO_2)
Hydric soil rating: No

Minor Components

Plughat

Percent of map unit: 5 percent
Landform: Plains
Landform position (two-dimensional): Backslope, summit, footslope
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R067BY002CO - Loamy Plains
Other vegetative classification: Loamy (G067BW017CO), Loamy
Plains #2 (067XY002CO_2)
Hydric soil rating: No

Baca

Percent of map unit: 5 percent
Landform: Plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R067BY002CO - Loamy Plains
Other vegetative classification: Clayey (G067BW001CO), Loamy
Plains #2 (067XY002CO_2)
Hydric soil rating: No

Villegreen

Percent of map unit: 5 percent
Landform: Plains
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R067BY002CO - Loamy Plains
Other vegetative classification: Loamy, Dry (G067BW019CO),
Loamy Plains #2 (067XY002CO_2)

Hydric soil rating: No

Data Source Information

Soil Survey Area: Las Animas County Area, Colorado, Parts of Huerfano and
Las Animas Counties

Survey Area Data: Version 23, Jun 5, 2020

PIG Well Pad Liner — 130 mil

Product Information:

Cover your drill site with this ultra-durable, composite liner to protect workers and the environment.

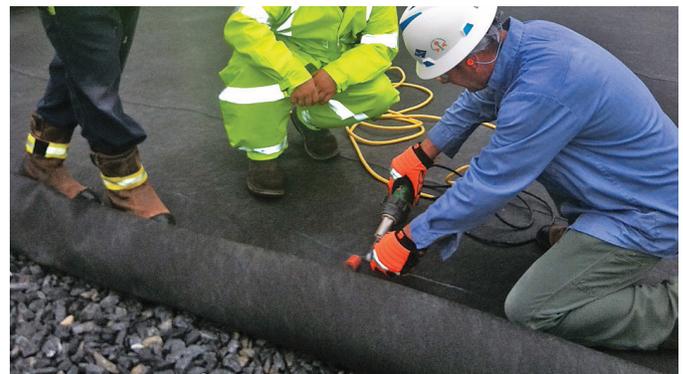
- Goes down over gravel subbase as a single layer — eliminates multiple-layer installation
- Polypropylene composite consists of three barrier films sandwiched by two layers of needle-punched geotextile with heat-fused surfaces
- Offers 3X more tear resistance and 5X more puncture resistance than standard 30-mil HDPE liners
- High-traction surface minimizes slip-and-fall injuries in wet or dry conditions
- Versatile liner can be used to create secondary containment structures on-site for frac tanks, cylindrical tanks and drill cuttings
- Welds easily for liquidtight installation
- Won't stretch or crack like HDPE
- Patent No. 9,517,596

PIG® Well Pad Liner – 130 mil			
Item #	Master Roll Approx. Dimensions	Approx. Weight	Color
MAT7000	18'W x 450'L	1,615 lbs.	Dark Gray
MAT7010	6'W x 920'L	1,085 lbs.	Dark Gray

Always in stock. 24/7 customer service. Contact your New Pig Energy sales representative for pricing details.

**Need a custom solution for your drilling operation?
Call the New Pig Energy secondary containment
experts at 1-855-PIG-LINER (744-5463).**

See back for additional product specifications.



New Pig Energy

*Secondary Containment
from the Leak & Spill Experts.®*

Phone: 1-855-PIG-LINER

Email: pigliner@newpigenergy.com

Online: newpigenergy.com

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PIG Well Pad Liner — 130 mil

Product Specifications:

	MAT7000	MAT7010
Composition:	Polypropylene	Polypropylene
Color:	Dark Gray	Dark Gray
UV Resistant:	Yes	Yes
Master Roll Width:	18' (5.5 m)	6' (1.8 m)
Thickness:	130 mil	130 mil
Approximate Roll Length:	450' (137.2 m)	920' (280.4 m)
Approximate Roll Weight:	1,615 lbs. (732.6 kg)	1,085 lbs. (492.1 kg)
Core Dia.:	4" (10.2 cm)	3" (7.6 cm)
Recyclable:	Yes	Yes

Testing Information:

MATERIAL	THICKNESS	TENSILE PROPERTIES (MAX STRENGTH)		PUNCTURE RESISTANCE	TEAR RESISTANCE	
		A-Break lb/in-width	B-Break lb/in-width		A	B
PIG Well Pad Liner – 130 mil	ASTM D 5994	ASTM D 6693/GRI, 2 ipm rate		ASTM D 4833	ASTM D 1004 (lbs.)	
	Mils			(lbs.)		
	168	159	112	314	81	67

Top Side Absorbency: Water = 3.31 gal / 100 sq ft; Oil = 3.42 gal / 100 sq ft

Permittivity (ASTM D 4491) = 0

Calculated Darcy Coefficient of Permeability = 0



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