



Topsoil Protection Plan Rule 1002.c. pursuant to 304.c.(14)

Mohee Fed 0297-17
SWNE, Section 17, T2N R97W 6th P.M.
Rio Blanco County,
Colorado

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Developed by



EIS

Environmental & Permitting Solutions

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Anschutz Exploration Corporation

Mohee Fed 0297-17 OGD

SWNE Section 17, T2N R97W

Lat/Long: 40.143422 -108.297264

Rio Blanco County, CO

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1 INTRODUCTION

Anschutz Exploration Corporation (AEC) has developed this Topsoil Protection Plan to address Colorado Energy and Carbon Management Commission's (ECMC) Rule 1002.c. pursuant to Rule 304.c.(14). It describes implementation of short-term and long-term methods to protect topsoil associated with the development of oil wells on the Mohee Fed 0297-17 Well Pad ("Well Pad") and associated features ("Project").

2 PROJECT DESCRIPTION

The Mohee Fed 0297-17 Well Pad is located in the SWNE of Section 17, T2N R97W in Rio Blanco County, Colorado. The Well Pad is approximately 38.36 miles, by road, from Meeker, Colorado. The Well Pad, the existing access road and the proposed new lease access road are all situated on Bureau of Land Management (BLM) surface to access and develop unitized BLM minerals from eight (8) horizontal oil wells. The location will be accessed via CR 77 in the NWSW of Section 4, T2N R97W where an existing lease road will lead to the proposed new access road starting in the NENW of Section 17 T2N R97W, which will be built approximately 1,985-feet in length with a 50-foot-wide construction right-of-way (ROW). Once interim reclamation commences the ROW width for the road will be reclaimed back to 30-foot wide. The new lease access road long-term disturbance will be 1.37 acres. The Well Pad's short-term disturbance will be 9.745 acres and the long-term disturbance will be 4.686 acres after interim reclamation. The pipeline corridor will be co-located with the existing road and the new lease access road which will be approximately 1960-feet in length with an initial construction width of 70-feet. The entire pipeline corridor will be reclaimed and seeded during interim reclamation. For the purposes of accessing the pipeline for maintenance or repairs the pipeline trench easement will be 30-feet wide. The pipeline will have a short-term disturbance of 3.150 acres which will be fully reclaimed and seeded at interim reclamation. Please reference Table 2.1 for surface disturbance acreage.

2.1 Well Pad

The proposed well pad would be a 550-foot by 500-foot leveled area with a permitted construction zone on all sides of the pad for the establishment of cut and fill slopes (9.745 acres). During the construction of the well pad, elevated areas within the pad area would be excavated and utilized as fill material on low areas of the pad to establish a level working surface. The well pad would require a maximum cut of 9.6 feet on the northeast corner and a maximum fill of 20.2 feet on the southwest corner of the pad. This entire area would be utilized during construction and setting of equipment. Once drilling and completion operations are finished, a small area encompassing the wells, facilities, and access road would be left level and stabilized for ongoing operations during the life of the wells. The running surface

and facility area for the pad would be graveled to stabilize soils and mitigate mud and dust (4.686 acres). Beyond the level reseeded well pad and working areas, the remaining pad would be recontoured and reseeded to blend with the surrounding topography. All cut and fill slopes of the pad would be established at a 1.5:1 slope and would be reseeded with the BLM seed mix.

2.2 Access Roads

There would be a new proposed access roads that would be 1,985 feet long from the kick-off points at the edge of the proposed well pad to an existing ROW AEC has acquired. The totaling 1,985 feet would be constructed with 50-foot-wide construction surface and then reduced to a 30-foot-wide running surface. The construction of the access road while utilization of the existing BLM two track for 1,985-foot that would be improved. The road disturbance would encompass 2.278 acres. For the long term, a 30-foot-wide graveled running surface, and the bottoms of the bar ditches along either side of the access road would remain for the life of the project (1.367 acres).

2.3 Pipelines

During construction of the proposed pipeline, AEC's excavation contractor will strip the topsoil horizon. Topsoil will be stripped to a depth no less than six inches (6") and segregated from all other subsurface materials in a wind row along one side of the pipeline right of way during pipeline construction. No topsoil will be used to backfill the pipeline trench nor will any be mixed with subsoil during backfilling operations. All topsoil will be redistributed over the backfilled pipeline during final reclamation. The approved seed mix and mulch will be applied to the topsoil to stabilize the soil and promote desirable plant growth. There will be 2,541 cubic yards of topsoil from the pipeline construction area stored on the north side of the open trench during construction and then redistributed in the same area during reclamation following construction.

Table 2-1. Project Disturbance Estimates for the Proposed Mohee Fed 0297-17

Permitted Area Surface Disturbance (acres)			
Feature	Short-term Disturbance Acreage	Interim Reclaimed Acreage	Long-term Disturbance Acreage
Well Pad	9.745	5.059	4.686
New Access Roads for Well Pad	2.278	0.911	1.367
Pipeline Corridor	3.150	3.150	-
Overall Disturbance Total:	15.173	9.120	6.053

3 SITE PREPARATION AND STABILIZATION

Prior to separation and storage of the topsoil horizon or top six (6) inches of soil from the proposed project, woody vegetation will be mulched, and stormwater control measures will be properly installed to control erosion and sedimentation during precipitation events. AEC's Stormwater Management Plan includes further detail on stormwater control measures planned for use. When separating the soil horizons, AEC will segregate the horizons based upon noted changes in physical characteristics such as organic content, color, texture, density, or consistency. To the extent feasible, stockpiled soils will be protected from degradation due to contamination or compaction and from wind and water erosion during drilling and production operations using surface roughening, temporary seeding and mulching, erosion control blankets, or soil binders. Best management practices to prevent weed establishment and to maintain soil microbial activity will be implemented.

4 DESKTOP CLASSIFICATION OF SOIL

Soil types found within the Project disturbance area include: Forelle loam, 3 to 8 percent slopes; Rentsac-Moyerson-Rock outcrop complex, 5 to 65 percent slopes; Kobase silty clay loam, moist, 3 to 8 percent slopes; Rentsac channery loam, 5 to 50 percent slopes; and Moyerson stony clay loam, 15 to 65 percent slopes according to the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey (see Table 4-2). The majority of the Project would be within Forelle loam, 3 to 8 percent slopes, totaling 8.591 acres of total surface disturbance.

Forelle loam, 3 to 8 percent slopes is located along terraces. It is a well-drained soil with a runoff class of medium. The parent material is alluvium derived from sedimentary rock and/or eolian deposits. This soil is considered prime farmland if irrigated. Proper vegetation growth will help maintain soil stabilization and minimize erosion from water. This soil type does have a high shrink-swell potential and a low soil strength.

Rentsac-Moyerson-Rock outcrop complex, 5 to 65 percent slopes is located along ridges. It is a well-drained soil with runoff class of medium to very high. The parent material is residuum weathered from sandstone. This soil is not considered to be prime farmland. Proper vegetation growth will help maintain soil stabilization and minimize erosion from water.

Kobase silty clay loam, moist, 3 to 8 percent slopes is located within valley floors and fan. It is a well-drained soil with a high runoff class. The parent material is calcareous alluvium derived from shale. This soil is considered prime farmland if irrigated. Proper vegetation growth will help maintain soil stabilization and minimize erosion from water.

Rentsac channery loam, 5 to 50 percent slopes is located along ridges. It is a well-drained soil with runoff being very high. The parent material is residuum weathered from calcareous sandstone. This soil is not considered prime farmland. Proper vegetation growth will help maintain soil stabilization and minimize erosion from water.



Moyerson stony clay loam, 15 to 65 percent slopes is located on ridges and plateaus. It is well-drained soil with runoff being a high. The parent material is calcareous alluvium derived from shale. This soil is considered prime farmland if irrigated. Proper vegetation growth will help maintain soil stabilization and minimize erosion from water.



Table 4-2. Soil Types and Disturbance Estimates for the Proposed Mohee Fed 0297-17 Pad


Soil Type	Surface Disturbance (acres)
Forelle loam, 3 to 8 percent slopes	8.714
Rentsac-Moyerson-Rock outcrop complex, 5 to 65 percent slopes	2.393
Kobase silty clay loam, moist, 3 to 8 percent slopes	0.378
Rentsac channery loam, 5 to 50 percent slopes	3.128
Moyerson stony clay loam, 15 to 65 percent slopes	0.560
Total:	15.173

5 TOPSOIL PITS

Soil pits have been dug within the project area in order to acquire a baseline for topsoil within the project area. Biologists Rachel Kattnig and James Sunkel visited the site on October 9, 2023, to dig topsoil profile pits. The topsoil pits were dug at the proposed four corners of the well pad and near the well head to get a good representation of the topsoil across the entire pad area.

			
Location:	Corner #1	Location:	Corner #2
Date:	10/9/2023	Date:	10/9/2023
A-horizon	0-1-inches	A-horizon	0-2-inches
B-horizon	1-10 inches	B-horizon	2-8 inches
C-horizon	10-14 inches	C-horizon	8-14 inches

			
Location:	Corner #4	Location:	Corner #6
Date:	10/9/2023	Date:	10/9/2023
A-horizon	0-3-inches	A-horizon	0-1-inches
B-horizon	3-5 inches	B-horizon	1-3.5 inches
C-horizon	5-12 inches	C-horizon	3.5-8 inches
		E-horizon	8-12 inches

	
Location:	Wellhead
Date:	10/9/2023
A-horizon	0-1.5-inch
B-horizon	1.5-7 inch
C-horizon	7-12 inches

6 SOIL PIT PROFILE DESCRIPTION

The Well Pad is located in a vegetative community classified as mixed Pinyon/Juniper Woodlands and Sagebrush Shrubland. The dominant species throughout the proposed Project area is Bonneville big

sagebrush (*Artemisia tridentata*). Five (5) samples pit were dug on the well pad: three (3) were located within Forelle loam, 3 to 8 percent slopes, one (1) was located within Rentsac-Moyerson-Rock outcrop complex, 5 to 65 percent slopes, and one (1) was located within Rentsac channery loam, 5 to 50 percent slopes. The A and B horizons were identified in the soil profiles, but there was little to no O horizon. The A horizon which is considered the “topsoil” horizon, is poorly defined and contains very little organic matter. The soil pits were dug from 0 to 12 inches. The depth of the A horizon did not exceed six (6) inches in any of the test pits. The rooting depth varied from five (5) to seven (7) inches.

6.1 Corner #1

This soil pit was dug in corner 1 of the proposed pad on 10/9/2023. This soil pit was dug to 14 inches with a topsoil depth of 1 inch. The NRCS mapped soil is identified as Forelle loam, 3 to 8 percent slopes. This soil has a very poor topsoil layer due to the lack of organic matter in the soil.

6.2 Corner #2

This soil pit was dug in corner 2 of the proposed pad on 10/9/2023. This soil pit was dug to 14 inches with a topsoil depth of 2 inches. The NRCS mapped soil is identified as Rentsac-Moyerson-Rock outcrop complex, 5 to 65 percent slopes. This soil has a very poor topsoil layer due to the lack of organic matter in the soil.

6.3 Corner #4

This soil pit was dug in corner 4 of the proposed pad on 10/9/2023. This soil pit was dug to 12 inches with a topsoil depth of 3 inches. The NRCS mapped soil is identified as Forelle loam, 3 to 8 percent slopes. This soil has a very poor topsoil layer due to the lack of organic matter in the soil.

6.4 Corner #6

This soil pit was dug in corner 6 of the proposed pad on 10/9/2023. This soil pit was dug to 12 inches with a topsoil depth of 1 inch. The NRCS mapped soil is identified as Rentsac channery loam, 5 to 50 percent slopes. This soil has a very poor topsoil layer due to the lack of organic matter in the soil.

6.5 Wellhead

This soil pit was dug at the wellhead location of the proposed pad on 10/9/2023. This soil pit was dug to 12 inches with a topsoil depth of 1.5 inches. The NRCS mapped soil is identified as Forelle loam, 3 to 8 percent slopes. This soil has a very poor topsoil layer due to the lack of organic matter in the soil.

7 TOTAL TOPSOIL SALVAGE

Based on the topsoil profile pit data, the depth of topsoil appears to vary from 1 – 3 inches across the well pad and ECMC states that a minimum of 6 inches of the top of the soil will be taken. In accordance with ECMC Rule 1002.b.(2)., AEC will separate and store the top six (6) inches of soil to facilitate subsequent reclamation. During the stripping of soil, there will be an approximate 5,600 cubic yards of soil stockpiled along the perimeter of the Well Pad. The cubic yards of topsoil is calculated based on stripping 6.94 acres of topsoil from the pad footprint area and the cut/fill slopes. Of the volumes of topsoil predicted to be stripped for the Project, the calculated stockpile volumes are proposed to be at no greater than a three to one (3:1) slope ratio and five (5) feet or less in height to accommodate the volumes, while preserving the viability of the topsoil.

8 BMPs FOR SHORT-TERM AND LONG-TERM STABILIZATION

8.1 Short-term Stabilization

Proper stockpiling and management of the topsoil will help to preserve the chemical and biological integrity of topsoil. AEC plans to implement the following BMPs to stabilize topsoil stockpiles in the initial phase of construction.

- The upper six (6) inches of topsoil (if available) would be stripped following vegetation and site clearing during construction of the Well Pad. This topsoil would not be mixed with the underlying subsoil horizons and would be stockpiled as a berm along the perimeter of the pads as designated on the plats and separate from subsoil horizons or other excavated material.
- Stockpiles will be kept separate by sediment control logs, straw bale barriers, etc. The stockpile surface will be reseeded and stabilized with mulch and/or erosion control blankets as necessary to control any erosion and sedimentation.
- Topsoil stockpiles will be indicated on site with signage.
- Stockpiles will be placed in areas away from vehicle and equipment traffic, and when stockpiling, compaction will be minimized by limiting the number of equipment passes, limiting stockpile height, and reseeded.
- Surface roughening, reseeded, and the use of tackifier, mulch, and/or erosion control products will be utilized to aid in protection against wind and water erosion.
- AEC will use cultural, mechanical, biological, and chemical control to prevent the establishment of weeds.

8.2 Long-term Stabilization

AEC plans to implement the following BMPs during interim reclamation to stabilize redistributed topsoil and topsoil stockpiles after construction, drilling, and completion phases are complete.

- During interim reclamation, the stockpiled topsoil and sub-surface soils would be replaced in the proper order, prior to final seedbed preparation. Once the level pad and slopes have been established, a portion of the stored topsoil would be redistributed at a depth of six (6) inches across all reseeded areas.
- The remaining topsoil will be stored as berms no greater than five (5) feet along the northwest, northeast and southeast side of the Well Pad and marked with a permanent sign for final reclamation of the well pad.
- Spreading of topsoil shall not be done when the ground or topsoil is wet.
- Vehicle/equipment traffic would not be allowed to cross topsoil stockpiles.
- If topsoil is stored for a length of time such that nutrients are depleted from the topsoil, amendments would be added to the topsoil as advised by the AEC environmental scientist or appropriate agent/contractor.
- The seed bed will be prepared on all reseeded areas as outlined in AEC's Interim and Final Reclamation Plan in a way that alleviates compaction and minimizes the potential for erosion.
- Topsoiled areas will be planted with the approved seed mix agreed upon by the ECMC, CPW, and BLM (See AEC's Interim and Final Reclamation Plan for seed mix).

- Reseeded areas will be covered with certified weed free mulch at an application rate specified by the products manufacturer, or a specification sheet that follows good engineering practices.
- AEC will use cultural, mechanical, biological, and chemical control to prevent the establishment of weeds as outlined in AEC's Weed Management Plan.

8.3 Seeding

The seed mix chosen for this project was designated by BLM and is listed in Table 3-1. Reseeding would take place as soon as practicable within the first favorable season. A disc-type seed drill with two boxes for various seed sizes would be utilized for seeding the disturbed areas of the site. AEC or its reclamation contractor would ensure that perennial grasses and shrubs are planted at the appropriate depth. Intermediate size seeds (such as wheatgrasses and shrubs) would be planted at a depth of 0.5-inch, larger seeds (such as Indian ricegrass) would be planted at a depth of 1 to 2 inches, and small seeds (such as sand dropseed) would be planted at a depth of 0.25 inch. In situations where differing planting depths are not practicable with the equipment being used, the entire mix would be planted no deeper than 0.25 inch. A drag, packer, or roller would follow the seeder to ensure uniform seed coverage and adequate compaction. Seed would be drilled perpendicular to slopes in order to minimize runoff and erosion.

Drill seeding may be used on well-packed and stable soils that occur on gentler slopes and where tractors and drills can safely operate. Where drill seeding is not practicable due to topography, the contractor would hand-broadcast seed using a "cyclone" hand seeder or similar broadcast seeder. Broadcast application of seed requires a doubling of the drill-seeding rate. The seed would then be raked into the ground so the seed is planted no deeper than 0.25 inch below the surface.

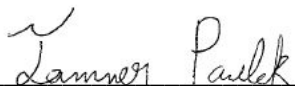
8.4 Long-term Stabilization

Two tons of certified weed free hay or two and half tons of certified weed free straw per acre would be applied and mechanically crimped into the soil after reseeding. Prior to the winter shutdown or the summer seeding window closure, unseeded slopes shall be mulched with two tons of mulching material (weed free) per acre and mechanically crimped into topsoil.

9 CERTIFICATION STATEMENT

Certification Statement:

"I hereby certify that this Topsoil Protection Plan was prepared by me in accordance with the provisions of Rule 304.c.(14) of the Colorado Oil and Gas Conservation Commission (COGCC)."



Preparer's Name

10/10/2023

Date

Operator's Certification:

“This Topsoil Protection Plan has been submitted as part of the Oil and Gas Location Assessment (Form 2A) for the COGCC. I understand that additional erosion control, sediment control and water quality enhancing measures may be required of the operator and his or her agents due to unforeseen pollutant discharges or if the submitted plan does not function as intended. The requirements of this plan shall be the obligation of the operator and/or his successors or heirs; until such time as the plan is properly completed, modified, or voided.”

Operator or Authorized Agent

Date

10 MAP OF SOIL TYPES

