Caerus Piceance, LLC - Operator # 10456

**Interim Reclamation Plan**

**PCU FED A27 197 CDP & FRAC PAD**

COGCC Location ID Pending
NWNW Section 27, T1S R97W
Rio Blanco County

**Site Description:**

The proposed PCU Fed A27 197 CDP (Central Delivery Point) and Frac pad would be located within the valley of Lee Gulch in the Piceance Basin. The site is located on federal lands managed by the Bureau of Land Management (BLM) in Section 27, Township 1 South, Range 97 West. Site aspect is west-southwesterly with slopes ranging from 6 to 13%. The surrounding terrain consists of a valley bottom with moderately steep slopes and ephemeral drainages. Elevation of the proposed pad is approximately 6,196 feet and average annual precipitation of the area is between 16 and 20 inches per year. The current primary uses of the land are wildlife habitat, rangeland, and natural gas development. The historical and current land use description at the site is Rangeland.

The total pad disturbance area associated with construction and hydraulic fracturing operations is 5.692 acres. During interim reclamation 3.463 acres of the frac pad and outer construction disturbance will be reclaimed, and 2.229 acres will be stabilized as the CDP working surface for long-term production operations. If the location services additional well pads due to future development in the area, the CDP working surface may be increased and interim reclamation area decreased to accommodate additional facility equipment.

**Soils Description:**

The United States Department of Agriculture (USDA) National Resource Conservation Service (NRCS) Web Soil Survey was used to identify Soil Map Units within the proposed well pad and access road boundaries. Two Map Units were identified within the project area:

| Map Unit Symbol | Soil Name | Description |
|---|---|---|
| 6 | Barcus channery loamy sand, 2 to 8 percent slopes | Soils are formed from calcareous alluvium derived from sandstone and shale. Occurs in alluvial fans and valleys and is somewhat excessively drained with a low runoff class. |
| 91 | Torriorthents-Rock outcrop complex, 15 to 90 percent slopes | Soils are formed from colluvium derived from siltstone and/or residuum weathered from limestone, sandstone, and shale. Occurs in mountains, hills, ridges, canyons, and is well drained with a very high runoff class. |

These soils typically have non-saline to very slightly saline properties, have water table depths greater than 80 inches, and the depth to lithic bedrock typically ranges 16 inches to more than 80 inches.

**Reference Area And Pre-Disturbance Vegetation Composition:**

The planned location is within Ecological Sites R048AY285CO — Foothill Swale and R048AY287CO — Stony Foothills. The vegetation community present in the project area is primarily composed of Basin big sagebrush shrublands intermixed with greasewood with an understory of native grasses (Indian ricegrass, Muttongrass, Western wheatgrass, Bottlebrush squirreltail), native forbs (Scarlet gilia, Plains prickly pear, Flatspine stickseed), introduced forbs (Desert madwort, Curveseed butterwort), and noxious weeds (Cheatgrass). The reference area

is north of the planned location at 39.942200, -108.275024 and has similar slope, aspect, elevation, and vegetation community.

**Known Weed Infestations:**

Cheatgrass (*Bromus tectorum*) was identified with moderate frequency in the project area during pre-disturbance assessments.

**Management of Waste Material:**

Waste materials will be managed per Caerus best management practices and Rules 603.f., 905.a., and 1003.a., as detailed in the associated Waste Management Plan. Prior to commencement of interim reclamation operations, debris and waste materials associated with construction and well completion operations will be removed. There are no pits associated with the location.

**Gathering Lines:**

The PCU Fed A27 197 CDP location would have 8,168 feet of new pipeline corridor (approximately 18.754 acres of disturbance). The pipeline corridor will extend southwest from the location to existing gathering infrastructure within the Piceance Creek valley. All portions of this surface disturbance will be reclaimed using the same best management practices described below.

**Access Road:**

The proposed access road starts near the mouth of Lee Gulch and travels south 3,961 feet to the location. A 400-foot secondary access road will be constructed for use during well completion operations. Right-of-way width will be vary based on slope and landform. Roadside ditches with appropriate erosion control measures will be installed and construction and maintenance of the access road will conform to standards outlined in the 2007 version of BLM and United States Forest Service (USFS) "Surface Operating Standards for Oil and Gas Exploration and Development – The Gold Book". Topsoil salvaged during construction will be spread on access road shoulders, with a greater volume retained upslope of the road for use during final reclamation. The roadsides will be seeded and mulched, and the secondary access road will be removed and the disturbance reclaimed during interim reclamation operations.

**Recontouring:**

During the first favorable season within six months of the conclusion of well completion operations on all associated well pads, interim reclamation operations will commence, and the pad area will be reduced to the size necessary for long-term CDP operations. The portion of the pad used for hydraulic fracturing operations will be removed and all areas of the CDP pad not needed for long-term operations will be reclaimed. The disturbance area that will be interim reclaimed is approximately 3.463 acres. If the location services additional well pads due to future development in the area, the CDP working surface may be increased and interim reclamation area decreased to accommodate additional facility equipment.

The graveled pad surface will be reduced for long-term operation and the former working surface will be cross-ripped to a minimum depth of 18 inches or to bedrock, whichever is shallower, to de-compact subsoils. Subsoils will be recontoured to return topographic conditions of the interim reclamation area to their original relative positions, as detailed in the associated grading plans and surveyor plats. The reclaimed contours will blend with the surrounding landscape and pre-disturbance hydrologic surface features will be reestablished. Previously grubbed/chipped plant matter will be distributed, and salvaged topsoil will be spread to pre-disturbance depths. Excess topsoil will be retained in the interim reclamation area just south of the working surface, seeded during reclamation, and preserved for use during final reclamation operations.

The site specific recontouring and land-forming design will be implemented at the direction of the Caerus construction department and the associated Interim Reclamation Plat.

**Re-establishment and Stabilization of Drainage Features:**

During pre-disturbance environmental assessments, no Waters of the U.S., springs, or seeps were identified within the proposed disturbance boundaries of the Location. During site construction, existing intermittent drainages within the west and northeast disturbance boundaries will be modified to flow around the location boundaries. Modified drainage paths will be stabilized through the seeding of bank slopes and application of hydromulch. Site specific erosion control measures will be installed, per the associated Stormwater Management Plan and at the direction of the Caerus construction department, to prevent erosion channel formation, topsoil loss, and sediment discharge from Location. Long-term stormwater best management practices include land-forming and revegetation with native perennial plant species to prevent excessive erosion, soil instability, subsidence, or slumping throughout all reclamation areas.

**Seedbed Preparation, Seeding, and Mulching:**

The seedbed will be prepared via disk, harrow, or chisel plow to have the topsoil loose enough to allow for root growth and firm enough on the surface for proper seed to soil contact. The soil surface should also be relatively free of debris and dirt clods greater than 3 inches in diameter, as too much debris and clods will inhibit proper seed placement. If possible, the soil surface should also be free of rocks greater than 3 inches in diameter, though this may not be feasible based on soil types on the proposed location. Soil amendments will be broadcast and hydraulically applied throughout the interim reclamation area to assist in rebuilding soil structure and increase the establishment seeded vegetation for rapid disturbance stabilization. Based on pre-disturbance topsoil analysis, amendments for the reclaim area will include: 1000 lbs./acre Richlawn 3-6-3™ organic fertilizer with mycorrhizae and humates, 1000 lbs./acre sulfur flakes, and 30 g./acre Lot 125 biotic soil amendment.

Seed will be applied using a range type drill seeder throughout the interim reclamation area. All seed will be calculated in pounds per acre and certified weed free with pure live seed rated per applicable jurisdiction standards. Seed tags are reviewed by Caerus before application and documented through a seeding report form completed by contractors to ensure seed meets these standards. The below-detailed seed mix, provided by the White River BLM Field Office, will be used for interim reclamation.

Following seeding, certified weed-free straw mulch will be applied at a rate of 3,500 lbs./acre to cover 100% of the seedbed. Straw will be crimped along contour to properly anchor the mulch and ensure maximum soil moisture retention and stormwater stabilization. A natural fiber mulch (hydraulically applied) may also be utilized on slopes steeper than 3:1, areas of concentrated stormwater flow, or as a tackifier over the straw to prevent wind-loss.

**Interim Reclamation Seed Mix:**

Standard BLM seed mix #3 – White River Field Office

| Cultivar | Species | Scientific Name | Application Rate (lbs. PLS/Acre) |
|---|---|---|---|
| Rosana | Western Wheatgrass | *Pascopyrum smithii* | 4 |
| Rimrock | Indian Ricegrass | *Achnatherum hymenoides* | 3 |
| Whitmar | Bluebunch Wheatgrass | *Pseudoroegneria spicata* ssp. *inermis* | 3.5 |
| VNS | Needle and Thread Grass | *Hesperostipa comata* ssp. *comata* | 2.5 |
| Critana | Thickspike Wheatgrass | *Elymus lanceolatus* ssp. *lanceolatus* | 3 |
| VNS | Sulphur Flower Buckwheat | *Eriogonum umbellatum* | 1.5 |
| VNS | Lewis Flax | *Linum lewisii* | 1 |
| VNS | Scarlet Globemallow | *Sphaeralcea coccinea* | 0.5 |
| | | **Total lbs. PLS/Acre (Drill Rate)** | 19 |

**Fencing:**

A standard wildlife-friendly fence will be installed around the reclaimed well pad to ensure that the interim reclaim does not get overgrazed by cattle. The four-strand fence will have smooth top and bottom wires. Distance from the ground to the bottom smooth wire will be no less than 16 inches. Distance from the top wire to the second wire will be no less than 12 inches. Middle wires will be barbed, with 6-inch spacing. Detail can be found in *Fencing with Wildlife in Mind*. Colorado Parks and Wildlife, Denver, CO. 36 pp. 2009.

**Management of Invasive Plants:**

Through routine site visits, any noxious and invasive weeds within the disturbance boundaries will be identified, inventoried, and treated by licensed contracted herbicide applicators or mechanically removed through mowing, line-trimming, or hand tools. Caerus will monitor, control, and reduce the spread of noxious and invasive weed species within Caerus' disturbances per Federal regulations, COGCC Regulation 1004.e., and rules pertaining to the administration and enforcement of the Colorado Noxious Weed Act.

**Reclamation Monitoring and Reporting:**

Federal and State regulations and Caerus Best Management Practices require routine site visits and active management over construction activities, along with annual reclamation reporting requirements. For compliance with Colorado Department of Public Health and Environment (CDPHE) Stormwater rules, the location will be visited for stormwater inspections every 14 days during active construction and monthly following completion of interim reclamation until the vegetation has reached 70% cover of pre-disturbance levels, with the focus on stabilizing soils, preventing erosion and site degradation, and monitoring for and treating invasive species. Annual inspections (at a minimum) will then take place throughout the life of the location. Quantitative vegetation assessments are completed biannually with results reported to the White River BLM Field Office. These assessments are completed until the reclaimed disturbance is deemed successful based on the following criteria provided by the BLM:

- Erosional features (gullying, headcutting, slumping, and deep or excessive rilling – greater than 3 inches) are equal to or less than those in the surrounding area. Water naturally infiltrates into the soil rather than running off the surface.
- Site is free of all State, County, or locally listed A and B weed species.
- Permanent vegetation cover, i.e., the basal and foliar cover of desirable perennial species, is at least 80% of the basal and foliar cover of the undisturbed site or of a reference area.
- The resulting plant community (in a healthy early seral state) contains at least 80% desirable plant species, preferably one of which is a forb or shrub. Plants are resilient, as demonstrated by vigorous, well-developed root systems and flowers. Shrubs are well established and at least in a "young" age class, rather than comprised mainly of seedlings that might not survive.
- No one species exceeds 70% of the basal and foliar cover in the resulting plant community to achieve species diversity on the site.

When the reclaim achieves these standards, Caerus will submit a Sundry Notice, Form 4, with associated attachments as detailed in COGCC Rule 1003.e.(3).

**Establishment of a Desirable Self-Perpetuating Plant Community:**

Caerus knows that reclamation maintenance, including greater than one seeding event, may be necessary to ensure the interim reclamation achieves uniform cover of a desirable, self-perpetuating, plant community. Monitoring, subsequent planning, and implementation of site-specific maintenance plans will ensure revegetation efforts are successful, topsoil is stabilized, and wildlife habitat and forage is reestablished.