

Swift Energy Operating, LLC

Waters 34-12-32-1H Form 2A Best Management Practices Report

INTRODUCTION

This Form 2A Best Management Practices Report includes the Best Management Practices (BMPs) and reclamation plans for Swift Energy Operating, LLC (Swift) proposed Waters 34-12-32-1H well pad and access road in accordance with Colorado Oil and Gas Conservation Commission's (COGCC) Form 2A requirements. BMP diagrams and additional general stormwater information are included in the Swift Master Stormwater Management Plan (MSWMP) for oil and gas construction activities for the Niobrara Waters and Niobrara Kikel Ranch Exploratory Units. The MSWMP can be obtained from Swift and is in accordance with Colorado Department of Public Health and Environment (CDPHE) stormwater guidelines. The Swift representative contact information is below:

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PROJECT LOCATION AND DESCRIPTION

The proposed project is located in Township 34 North, Range 12 West, Section 32, 1,399 feet from the north line and 235 feet from the west line, and at an elevation of 6,919 feet, La Plata County, Colorado. The well pad project area would be located just below a small rise, 1.6 miles east of Cherry Creek. An existing private two-track road parallels the west side of the well pad and continues north; a D.J. Simmons flowline traverses the southeastern corner. Construction associated with the proposed project would include grading an irregular-shaped well pad approximately 445 feet by 410 feet, with a construction zone varying from 0 to 18 feet around the perimeter of the pad that would disturb 4.44 acres. A new access road of 70.5 feet in length constructed within a 30-foot-wide right-of-way (ROW) is proposed to access the location. The existing private two-track road is approximately 3 miles in length and would be upgraded, within a 30-foot ROW, to access the location from County Road 116 located to the North. New disturbance would be 4.49 acres. Total disturbance including the upgrades to the existing road would be 15.39 acres.

The well plats provide specific site descriptions and infrastructure information for the project. During drilling operations, all waste would be appropriately contained and disposed of properly. Swift's MSWMP addresses all waste management issues, including materials handling and off-site vehicle

tracking procedures. Swift has committed to strictly adhere to these procedures.

ESTIMATED TOTAL AREA OF THE SITE TO UNDERGO CLEARING, EXCAVATION, OR GRADING

The maximum disturbance associated with the proposed well pad is approximately 4.44 acres. New disturbance associated with the access road would be 0.05 acre. Total disturbance associated with the road upgrade would be 10.9 acres. New surface disturbance associated with the proposed project would be 4.49 acres. Total disturbance would be 15.39 acres.

EXISTING GEOLOGY AND SOIL DATA

Surface geology of the project area and vicinity is composed of the Cliff House Sandstone (USGS 2008¹). Surveyed soils for the well pad project area consist of two types—Witt loam, 1 to 3 percent slopes and Witt loam, 1 to 3 percent slopes (NRCS 2013²).

Witt loam soil is typically deep and well-drained with moderately slow permeability, high available water capacity, medium runoff, and a moderate hazard of erosion. Effective rooting depth is 60 inches or more.

¹ U.S. Geological Survey (USGS) Gap Analysis Program. *1:500,000 Scale Geology for the Southwestern U.S.* [Computer file]. Logan, Utah, USA: RS/GIS Laboratory, College of Natural Resources, Utah State University, 2008.

² Natural Resources Conservation Service (NRCS). 2013. Web Soil Survey. Available online at: <http://websoilsurvey.nrcs.usda.gov/app/>.

DESCRIPTION OF EXISTING VEGETATION AND ESTIMATE OF PERCENT OF GROUND COVER

The proposed well pad is located in disturbed grassland/rangeland consisting of field bindweed (*Convolvulus arvensis*), kochia (*Bassia prostrata*), cheatgrass (*Bromus tectorum*), scarlet globemallow (*Sphaeralcea coccinea*), crested wheatgrass (*Agropyron cristatum*), bottlebrush squirreltail (*Elymus elymoides*), prickly Russian thistle (*Salsola tragus*), redstem stork's bill (*Erodium cicutarium*), common mullein (*Verbascum Thapsus*), smooth brome (*Bromus inermis*), and scattered shrubs including rubber rabbitbrush (*Ericameria nauseosa*), big sagebrush (*Artemisia tridentata*), fourwing saltbush (*Atriplex canescens*), broom snakeweed, and hairy false goldenaster (*Heterotheca villosa*). A few plants of the county-listed, noxious weed, Canada thistle (*Cirsium arvense*), were found as well. Vegetation cover was visually estimated to be 55 percent, about half of which is comprised of weedy species. The action area contains a mix of piñon-juniper woodland, rangeland, and grassland.

The southern portion of the proposed access road upgrade crosses habitats associated with disturbed grassland, abandoned agricultural land and grazing land, while the northern portion of the access road is dominated with a piñon-juniper forest and associated understory vegetation. Several snags associated with a wildfire are located on a small portion of the upgrade.

Several La Plata County-listed noxious and enforceable weed species were observed throughout the proposed area of the access road upgrade. Listed weeds include hoary cress (*Cardaria draba*), leafy spurge (*Euphorbia esula*), Musk thistle (*Carduus nutans*), and Canada thistle (*Cirsium arvense*). All of these weeds are included on the Colorado State Noxious B list. Large patches of leafy spurge occur along

the access road, as well the general vicinity. Hoary cress is present at the beginning of the access road upgrade, at County Road 116. The Weed Management Plan for the Waters 34-12-32-1H Well Pad addresses how Swift plans to control and prevent the spread of noxious weeds.

NAME OF RECEIVING WATER AND TYPE OF OUTFALLS

Drainage from the proposed project area generally flows south into several unnamed washes that eventually drain into Cherry Creek or the La Plata River, 1.5 miles south. The La Plata River is the nearest perennial water source indicated on the United States Geological Survey (USGS) topographic map. There are no perennial water sources, wetlands, seeps, springs, or riparian areas within the proposed well pad or access road disturbance.

PROJECT-SPECIFIC STRUCTURAL BMPs

The following listed BMPs are site-specific BMPs identified by Ecosphere Environmental Services during the field visit. Site specific BMPs would be installed pre-construction and during the construction process, and would continue to be maintained until the site is determined stabilized per CDPHE and COGCC requirements. BMP diagrams are included in the MSWMP. BMPs would be maintained or amended by Swift as site conditions change throughout the reclamation process. Stormwater inspections would occur as stipulated in the MSWMP and as required by the CDPHE. A map showing the BMP locations is attached. Table 1 describes structural BMPs proposed at Waters 34-12-32-1H.

Table 1. Structural BMPs

BMP	How It Works	Location
Diversion Ditch	The diversion ditch leads water off the well pad to the silt trap.	North and east side of pad
Silt Trap	The silt trap at the end of the diversion allows sediment from the construction area to settle and the cleaner water to exit the silt trap.	Ends of diversion ditch, northwest and east sides of pad
Culvert Protection	Inlet and outlet protection prevents soil and debris from entering storm drain inlets, and prevents scouring at outlets by reducing flow.	At culverts along access road.
Fiber Wattle (Sediment Control Logs)	Fiber Wattles on the downhill side of a disturbed area filter stormwater.	Lined around the west, south, and southeast sides of the well pad; lined around all stock-piled soils every 70 feet in the diversion ditch, and in disturbed areas.
Berm	Compacted berm on the fill slope of the pad will prevent runoff from the site.	Southern portion of well pad.

PROJECT SPECIFIC NON-STRUCTURAL BMPs

Non-structural BMPs are discussed in the Swift MSWMP; Table 2 describes non-structural BMPs proposed at Waters 34-12-32-1H.

Table 2. Non-structural BMPs

BMP	How It Works	Location
Soil Roughening	Surface roughening creates small ridges and gullies with the teeth of the bucket of the front end loader or with the grooves of tracked equipment. These ridges and gullies go across the slope (or along the contour of the slope), trapping stormwater and helping with revegetation. To create these ridges/gullies with tracked equipment, the equipment should be run up/down the slope (or perpendicular to the contour of the slope).	All disturbed areas (area of reclamation)
Equipment Storage	All equipment will be contained within the lease/ROW disturbance.	Within disturbance area
Rapid Reclamation	Rapid reclamation (surface contouring, surface roughening, seeding, and weed control) helps to stabilize soil with vegetation.	Within disturbance area (as shown on attached map)

PROJECT BMP MAP

