

## WASTE MANAGEMENT PLAN

Date: September 15, 2021

Location: WR OGDP 4 / Wells Ranch CDP / AB32-01  
Pad



Legal Description: NENE Section 32, Township 7 North, Range 64 West, Weld County, Colorado

### Table of Contents

Article I. Introduction .....	2
Facility Information .....	2
Article II. E&P Waste Management Plan .....	2
<b>Water-based Bentonitic Drilling Fluids</b> .....	3
<b>Water-based Bentonitic Drill Cuttings</b> .....	3
<b>Oil-based Drilling Fluids</b> .....	4
<b>Oil-based Drill Cuttings</b> .....	5
<b>Frac Sand</b> .....	5
<b>Produced Water</b> .....	5
<b>Oily Waste/Tank Bottoms</b> .....	6
<b>Spill Impacted or Contaminated Soil</b> .....	6
<b>General Trash</b> .....	7
<b>Reuse and Recycling</b> .....	7
<b>Haul Routes</b> .....	8
<b>Technologically Enhanced Naturally Occurring Radioactive Materials (TENORM)</b> .....	8
Article III. Vendors .....	8
Exhibits/References/Appendices .....	8

## **Article I.        Introduction**

### *Facility Information*

This document provides site-specific information for the AB32-01 Pad within the WR OGD 4 of the Wells Ranch CDP. The information in this document relates specifically to the time during the construction, drilling, completion, and production of the five (5) proposed horizontal wells on this location.

The proposed location is rangeland southwest of the intersection of WCR 53 and WCR 76. The Pad will be in NENE Section 32, Township 7 North, Range 64 West, zoned agricultural within the Weld County Near-Urban Planning Area. A 1041 WOGLA was filed for the CDP as 1041WOGLA19-0042 on 12/10/2019 and recorded at reception #4556398 on 1/8/2020. Site-specific supplemental information will be filed with Weld County prior to commencement of operations.

The proposed AB32-01 Pad oil and gas location disturbance will be 9.8 acres, reduced to 2.4 after interim reclamation. The proposed working pad surface will be 5.6 acres. The Pad is on Parcel 071132100003 owned by Dean B and Tuesday L Westerman. The location is currently used for farming.

The AB32-01 Pad will produce to the proposed AB28-13 Multi. Equipment at the AB32-01 Pad will include wells and meter/sales buildings.

Phase	Duration (days)	Estimated Start Date
Construction	25 days	2nd Quarter, 2025
Drilling	40 days	3rd Quarter, 2025
Completion	40 days	4th Quarter, 2025
Flowback	N/A	Flowing back to production facility
Production	30 years	1st Quarter, 2026
Interim Reclamation	60 days	3rd Quarter, 2026

## **Article II.        E&P Waste Management Plan**

In compliance with Weld County Ordinance Sec. 21-5-450, COGCC Rules 905 and 1000 Series Reclamation Regulations, and the Drill Cuttings Management Policy (9/15/14), Noble Energy, Inc. (Noble) submits the following general plan for handling and disposing of E&P waste, including drilling mud and cuttings.

The wastes described in this plan are characterized as solid wastes, per COGCC definitions. All wastes, with the exception of general trash, are specifically exempt from the Resource Conservation Recovery Act (RCRA) Subtitle C hazardous waste regulations. 40 CFR 261.4(b)(95) states the following wastes are not hazardous wastes: drilling fluids, produced waters, and other wastes associated with the exploration, development, or production of crude oil, natural gas or geothermal energy.

Wastes stored onsite will be stored in compatible containers that are regularly inspected to ensure they are in good condition and free of excessive wear, structural issues or other defects that may impact their effectiveness. Noble utilizes only licensed third-party transporters for all waste transport and coordinates with Relevant Local Governments on haul routes for transport of waste.

### ***Water-based Bentonitic Drilling Fluids***

#### Treatment

Water-based bentonitic drilling fluids returning up the annulus will be filtered to remove solids through the closed loop system, cuttings shaken out into impervious bins above a mat and hauled off for off-site disposal while fluids will be routed through a suction tank and mud pump, remixed and recirculated.

#### Characterization

Water with bentonite clay to create native mud with lime is characterized as a solid waste, per COGCC definitions. This waste is specifically excluded from RCRA Subtitle C hazardous waste regulations, is not a listed waste and is characterized as an E&P exempt waste.

#### Management/Storage/Disposal/Transport

A minimum of two 1600 hp x 7500 psi triplex mud pumps will be utilized for the circulating system. Also, in addition to the BOP stack, a gas buster and flare stack will be installed into the system with a fully operational EDR system to monitor pressures and tank volumes.

Surface Hole is to be drilled with fresh water with enough viscosity to clean the hole. Gel sweeps should be utilized to clean the hole. The entire interval will be drilled with a closed loop solids control system. Mud weights in this section can vary from 8.4-8.8 ppg. Reactive clays and bit balling can be expected.

A 40 ml poly liner with foam type berms will be utilized under the drilling rig, mud tanks, shakers, and drill cuttings bins.

All oil and water loadouts that are commonly used have a load bucket and isolation valve. Since they are used often, there is not a bull plug installed. Any loadouts (water on back of tanks for example) that are rarely used, are bull plugged without a load bucket.

Waste Management is contracted to transport this waste stream to one of the permitted commercial waste disposal facilities listed below in Article III Vendors. Occasionally, other licensed third-party transporters may be utilized. A list of potential licensed transporters is included below in Article III Vendors.

### ***Water-based Bentonitic Drill Cuttings***

#### Treatment

Water-based bentonitic drilling fluids returning up the annulus will be filtered to remove solids through the closed loop system, cuttings shaken out into impervious bins above a mat and hauled off for off-site disposal while fluids will be routed through a suction tank and mud pump, remixed and recirculated.

#### Characterization

Drill cuttings are made up of small pieces of shale, chalk or sand that is cut from the subsurface formations via the drill bit. Such pieces are lifted to the surface via the drilling mud in the hole and are characterized as a solid waste, per COGCC definitions. This waste is specifically excluded from RCRA

Subtitle C hazardous waste regulations, is not a listed waste and is characterized as an E&P exempt waste.

#### Management/Storage/Disposal/Transport

Samples of cuttings will be separated for analysis and mud logging.

Waste Management is contracted to transport this waste stream to one of the permitted commercial waste disposal facilities listed below in Article III Vendors. Occasionally, other licensed third-party transporters may be utilized. A list of potential licensed transporters is included below in Article III Vendors.

### ***Oil-based Drilling Fluids***

#### Treatment

Oil-based drilling fluids returning up the annulus will be filtered to remove solids through the closed loop system, cuttings shaken out into impervious bins above a mat and hauled off for off-site disposal while fluids will be routed through a suction tank and mud pump, remixed and recirculated.

#### Characterization

Operator utilizes a clear, colorless refined distillate derived from petro hydrocarbons that is specifically designed for down hole OBM drilling purposes. This product provides a higher aniline point and a lower BTEX than straight diesel which should reduce the odor associated with the OBM system. The refined distillate is a non-Group II or Group III fluid and is not an additive/odor neutralizer. An additive/odor neutralizer during drilling and completion and the utilization of closed flowback tanks with all water vapors being sent to a temporary ECD during the flowback period will also be used to help mitigate aromatics on location. Oil based drilling fluids are characterized as a solid waste, per COGCC definitions. This waste is specifically excluded from RCRA Subtitle C hazardous waste regulations, is not a listed waste and is characterized as an E&P exempt waste.

#### Management/Storage/Disposal/Transport

Production Hole is to be drilled with an oil-based mud (OBM) system utilizing diesel make up fuel. Mud weight will be kept at 9.6 – 11.5 ppg. Ensure there is enough volume of fluid in the system and be prepared to have Mud Engineer order out heavier mud for caps and weighting up.

A 40 ml poly liner with foam type berms will be utilized under the drilling rig, mud tanks, shakers, and drill cuttings bins.

All oil and water loadouts that are commonly used have a load bucket and isolation valve. Since they are used often, there is not a bull plug installed. Any loadouts (water on back of tanks for example) that are rarely used, are bull plugged without a load bucket.

Waste Management is contracted to transport this waste stream to one of the permitted commercial waste disposal facilities listed below in Article III Vendors. Occasionally, other licensed third-party transporters may be utilized. A list of potential licensed transporters is included below in Article III Vendors.

### ***Oil-based Drill Cuttings***

#### Treatment

Oil-based drilling fluids returning up the annulus will be filtered to remove solids through the closed loop system, cuttings shaken out into impervious bins above a mat and hauled off for off-site disposal while fluids will be routed through a suction tank and mud pump, remixed and recirculated.

#### Characterization

Oil-based drill cuttings are characterized as a solid waste, per COGCC definitions. This waste is specifically excluded from RCRA Subtitle C hazardous waste regulations, is not a listed waste and is characterized as an E&P exempt waste.

#### Management/Storage/Disposal/Transport

Mud logging will be done on cuttings.

Waste Management is contracted to transport this waste stream to one of the permitted commercial waste disposal facilities listed below in Article III Vendors. Occasionally, other licensed third-party transporters may be utilized. A list of potential licensed transporters is included below in Article III Vendors.

### ***Frac Sand***

#### Treatment

Without traditional flowback, sand used in the hydraulic fracturing process will gather in the production separators and be removed as needed. The sand is gathered in trucks and hauled for off-site disposal.

#### Characterization

Frac sands are characterized as a solid waste, per COGCC definitions. This waste is specifically excluded from RCRA Subtitle C hazardous waste regulations, is not a listed waste and is characterized as an E&P exempt waste.

#### Management/Storage/Disposal/Transport

Frac sand will be periodically drained via vacuum truck and will be transported by licensed third-party trucks listed below in Article III Vendors.

### ***Produced Water***

#### Treatment

Prior to production, produced water will be run through separation equipment and routed via dump lines to an open top temporary flowback tanks and loaded for off-site disposal via truck. After production is established, produced fluids will be routed to HP & LP separators, where the water will be routed to sealed water tanks and loaded for off-site disposal via truck.

#### Characterization

Produced waters are naturally occurring saline waters from underground formations that are brought to the surface and characterized as a solid waste, per COGCC definitions. This waste is specifically excluded from RCRA Subtitle C hazardous waste regulations, is not a listed waste and is characterized as an E&P exempt waste.

Management/Storage/Disposal/Transport

There will be no produced water storage at the AB32-01 Pad. Produced water will be piped off site, to the storage tanks on AB28-13 Multi.

If a Buried produced water vault is used, such vaults within the containment area shall be constructed of fiberglass and installed above an impermeable synthetic or geosynthetic liner system which shall be tied back into the surface liner.

If a Buried produced water vault is used, such buried vaults for condensate from the ECDs shall be constructed of fiberglass and tested for integrity after installation, inspected at regular intervals and maintained, repaired, or replaced to prevent spills or releases of E&P waste. There will also be surface containment installed around any buried fiberglass vault to protect against any overflow.

If no buried produced water vault is used, produced water will be contained in water tanks or multi-use tanks inside the facility tank berm.

***Oily Waste/Tank Bottoms***

Treatment

None.

Characterization

A mixture of sediment, dirt, emulsified oil, and water which settles and accumulates in the bottom of storage tanks and characterized as a solid waste, per COGCC definitions. This waste is specifically excluded from RCRA Subtitle C hazardous waste regulations, is not a listed waste and is characterized as an E&P exempt waste.

Management/Storage/Disposal/Transport

There will be no tanks at the AB32-01 Pad. Tanks will be on AB32-01 Multi.

Transport

Oily waste and tank bottoms will be transported by licensed third-party vacuum trucks listed below in Article III Vendors.

***Spill Impacted or Contaminated Soil***

Treatment

None.

Characterization

A mixture of soil or dirt impacted by production fluids from a spill or a leak. Impacted or Contaminated Soil is characterized as a solid waste, per COGCC definitions. This waste is specifically excluded from RCRA Subtitle C hazardous waste regulations, is not a listed waste and is characterized as an E&P exempt waste.

Management/Storage/Disposal/Transport

Impacted or Contaminated Soil will be containerized as needed either in storage bins or directly into dump trucks, depending on the volume needed.

Impacted or Contaminated Soil will be transported by licensed third-party vacuum trucks listed below in Article III Vendors.

***General Trash***

Treatment

None.

Characterization

General trash consists of any unused equipment, junk, or man-made waste. General trash is characterized as a solid waste, per COGCC definitions, is not a listed waste and is characterized as non-hazardous waste.

Management/Storage/Disposal/Transport

A trash bin will be located on site to accumulate waste by the personnel drilling the wells. Site will have unused equipment, trash and junk removed immediately as the bin is filled during drilling and completion phases. Lease operator will remove any trash found on site during daily inspections.

Operator will not bury or burn trash or other waste materials at an oil and gas location.

Trash receptacles will be designed, maintained, and operated to exclude wildlife, and to protect public safety, the environment, and wildlife from exposure to overflowing, leak prone, or insecure trash receptacles.

General trash and other non-hazardous waste will be hauled off site by a licensed third-party transporter to be disposed of at a properly permitted commercial waste facility per Rule 906.c.

***Reuse and Recycling***

At this time, Noble does not participate in beneficial land reuse or produced water/flowback recycling. Noble may propose plans in the future for managing these waste streams through beneficial use, reuse, and recycling for approval, by the Director.

Noble will continue to evaluate new technology for effective and efficient application for the management of E&P waste. If opportunities for reuse and recycling become practicable, a reuse and recycling plan will be submitted as described in Rule 905.a.(3).

### ***Haul Routes***

Haul routes are designated and developed in consultation with Weld County Department of Public Works. The Noble haul routes anticipate that access to the CDP will be predominantly from State Highways 14 and 392 and US Highway 85. Paved Weld County Roads (“WCR”) 74 will serve as the primary artery with WCR’s 51, 55, 65, 71, 76, 80, and 82 providing additional access in the CDP. In the event that haul routes are adjusted in the future, Noble will do so in consultation with Weld County, at least 45 days, but no more than 6 months prior to construction.

### ***Technologically Enhanced Naturally Occurring Radioactive Materials (TENORM)***

Some wastes generated from oil and gas operations are subject to TENORM regulation and will be disposed of at a licensed facility authorized to receive TENORM wastes. Noble will comply with the requirements of 6 CCR 1007-1 Part 20 – Registration and Licensing of Technologically Enhanced Naturally Occurring Radioactive Material (TENORM), which became effective on January 14, 2021.

### **Article III.      Vendors**

Third-Party disposal facilities used as part of this plan for waste disposal:

- Waste Management
  - Buffalo Ridge landfill
  - CSI landfill
  - North Weld Landfill (Ault)
- Republic Services
  - Tower Landfill
- NGL Water Solutions DJ, LLC
- High Sierra Injection Facilities

Third-Party transporters used as part of this plan for waste transport:

- Waste Management
- 1888 Industrial Services
- Atlas Energy Services
- Fortress Development Solutions
- Northern Plains Trucking
- Frontrange Hydro Bandits

### **Exhibits/References/Appendices**

Waste Summary Table



**Table 1, Waste Handling Summary**

<b>Waste Type</b>	<b>Waste Content Description</b>	<b>Waste per Well</b>	<b>Units</b>	<b>Disposal Frequency</b>	<b>Containment Description</b>	<b>Disposal Type</b>	<b>Disposal Location</b>
<b>Drilling</b>	Drill Cuttings	339	Cubic Yards	One Time Only	3-sided, high wall steel bins	Haul to Commercial Facility	Commercial
<b>Drilling</b>	Drilling Fluids	67	Barrels	One Time Only	Steel tanks	Haul to Commercial Facility	Commercial
<b>Sewage</b>	Sewage	95	Barrels	Weekly	Chemical toilets or enclosed sewer system	Haul to Commercial Facility	Commercial
<b>General Trash</b>	Garbage/Trash	9	Cubic Yards	Weekly	Enclosed trash containers	Haul to Commercial Facility	Commercial
<b>Frac Sand</b>	Frac sand removed from production separators	500	Pounds	Monthly	Direct placement into truck	Haul to Commercial Facility	Commercial
<b>Produced Water</b>	Produced water after well is turned over to production. The volume reported is estimated.	1500+ for first 3 months, reducing to approximately 300 after	Barrels	Day	Water is piped into existing infrastructure	Off-Lease Injection/Commercial Facility	Private
<b>Oily Waste/Tank Bottoms (drill pad doesn't have tanks)</b>	A mixture of sediment, dirt, emulsified oil, and water	NA	NA	NA	No permanent oil/condensate storage tanks will be onsite.	NA	NA
<b>Spill Impacted or Contaminated Soil</b>	Soil impacted from spills of production fluids	Varies	NA	As Needed	Excavation and direct placement into dump trucks or storage bins	Haul to Commercial Facility	Commercial