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E&P Waste Management Plan

ECMC Rule 905 and
Weld County Code, Sec. 21-5-450

Weld County, Colorado

Created: November 17, 2022
Revised: October 31, 2023

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1.0 SUMMARY

HERV Oil, (HERV) is responsible for the management of waste in accordance with federal, state, and local regulations prior to transporting the waste to a treatment, storage, or disposal facility (TSDF), recycling facility or saltwater disposal well. This WMP summarizes applicable waste management requirements and procedures established by HERV and in accordance with Rule 905 Management under the Colorado Energy & Carbon Management Commission (ECMC), and in accordance with Weld County Code, Sec. 21-5-450.

The WMP was prepared to ensure that Exploration and Production (E&P) waste management will be conducted in a manner to protect public health, safety, welfare, environment, and wildlife resources. This plan will be reviewed on a routine basis to ensure compliance with revisions to applicable regulations.

The WMP was prepared for the following (Facilities):

Name: Ruh State North Pad (multi-well oil and gas production pad)
County: Weld (NW NW Section 1, T6N, R62W, 6th PM)
Approximate Coordinates: 40.521592° N, 104.278282° W
Name: Ruh State South Pad (multi-well oil and gas production pad)
County: Weld (SE NE Section 11, T6N, R62W, 6th PM)
Approximate Coordinates: 40.503048° N, 104.281345° W

Figures 1 illustrates the Waste Disposal Locations and Haul Routes

Figure 2 illustrates the location of solid waste, E&P waste, hazardous waste and salt-water disposal and recycling facilities, that HERV intends to utilize during the drilling, completion, and operation of the Facilities.

Recycling and Reuse Plan

HERV understands the importance of fully utilizing available resources. This includes reuse and recycling efforts of E&P waste products on future oil and gas development projects. HERV will identify if a Recycling and Reuse Plan is valid on any specific project and submit a written management plan with the applicable Form 4, Form 15, or Form 28, as required. This plan, when applicable, will also be consistent with Water Management Plan. Specifics as to the reuse, recycling of each waste is addressed in the Waste Determination Forms included in the appendices.

Waste Types

Waste Determination Forms have been prepared for the anticipated wastes. E&P wastes are included in **Appendix A and B**. Non-E&P wastes are included in **Appendix C**. Each form was created to provide a description of the waste generation process, determination of waste type, details on characterization, treatment, estimated volumes, management and storage, transport, and disposal (or recycling) and record keeping requirements of each waste type**.** Should the E&P exemption for any waste stream addressed by this WMP be rescinded, HERV will characterize the waste to determine the proper means of storing, transporting and disposing of the waste in accordance with state and federal regulations.

2.0 CONSTRUCTION

2.1 General Trash (Non-E&P Waste)

No non-E&P waste generation is anticipated during the construction phase. All surface debris, trash,

unusable scrap, or solid waste from the facility will be temporarily stored on location in a secure container (roll off dumpster) and ultimately disposed of as needed at one of the following waste disposal facilities via truck. This waste is anticipated to be generated during the construction, drilling, and completions phases of the HERV and will be transported at frequencies based on waste volume. The landfills include:

Primary: Waste Management - North Weld Landfill
Backup: Waste Management – Buffalo Ridge Landfill

Estimated Volume and Frequency – To be determined, disposal as needed.

3.0 DRILLING

3.1 Water-Based and Oil-Based Drilling Fluids (E&P Exempt Waste)

Oil and water-based drilling fluids are used to lubricate and remove drill cuttings during the drilling process. Drilling fluids are processed to remove solids and recirculated. When drilling is complete, or the drilling fluid is spent the drilling fluids are sent for disposal.

Oil and water-based drilling fluids are detailed in Waste Determination Forms included in **Appendix A**.

3.2 Drill Cuttings (E&P Exempt Waste)

Drill cuttings consist of small pieces of rock and soil (including spall and carvings) that break away from the well walls during drilling and are screened out of the liquid mud system.

Oil and water-based drill cuttings are detailed in the Waste Determination Forms included in **Appendix A**.

4.0 COMPLETIONS

4.1 Flowback and Workover Fluid (Other E&P Exempt Waste)

Oil and water-based drilling fluids from flowback and used flowback and workover fluids, muds, completion, treatment, stimulation, and packing fluid, blowdown, swabbing and bailing wastes, and pipe dope from well development and workover.

Flowback and workover operations are detailed in the Waste Determination Forms included in **Appendix B**.

5.0 PRODUCTION

5.1 Produced Water (E&P Exempt Waste)

Water (brine) brought up from the hydrocarbon bearing strata during the extraction of oil and gas. It may include formation water, water that has been injected into the formation and any chemicals added down hole or during the oil/water separation process.

Produced Water is detailed in Waste Determination Forms included in **Appendix A**.

5.2 Tank and Vessel Bottoms (Basic Sediment and Water) (Other E&P Exempt Waste)

Tank and vessel bottoms include basic sediment and water (BS&W), heavy hydrocarbons, solid sands and emulsions, that settle in the bottom of storage tanks and/or treating vessels. BS&W usually consists of water, paraffin, sand, scale, rust, and other sediments. This form only applies to those tank and vessel

bottoms that do not contain technologically enhance naturally occurring radioactive material (TeNORM).

Tank and vessel bottoms are detailed in the Waste Determination Forms included in **Appendix B**. TeNORM impacted material and equipment is detailed Section 9.0 Non-E&P Exempt Waste and the Waste Determination Form is included in **Appendix C**.

6.0 SPILL RESPONSE AND REMEDIATION

6.1 Oily Waste (Other E&P Exempt Waste)

Soil that has been impacted with crude oil, condensate, produced water, or any other E&P waste. Oily waste/spill cleanup wastes are detailed in the Waste Determination Forms included in **Appendix B**.

7.0 FACILITY DECOMMISSIONING

See Sections 2.0 Construction, 4.2 Tank Bottoms and 5.1 Oily Waste, for description of wastes typically generated during facility decommissioning operations.

8.0 PLUGGING AND ABANDONMENT

Drilling mud circulated out of annulus and cement brought back to surface during plugging activities (See Section 4.1 Flowback and Workover Fluids) and removal of impacted soil encountered after the removal of operating equipment (see Section 6.1 Oily Waste).

9.0 NON-E&P EXEMPT WASTES

9.1 Technologically Enhanced Naturally Occurring Materials (TeNORM)

Scale or sludge containing Naturally Occurring Radioactive Material (NORM) or Technologically Enhanced Naturally Occurring Radioactive Material (TeNORM) typically removed from pipes, heater-treaters, tank bottom sludges, and other equipment. The scale typically consists of barium, calcium, or strontium sulfate that has precipitated out of solution in produced water along with radium, a radioactive nuclide. TeNORM waste is detailed in Waste Determination Forms included in **Appendix B**.

9.2 Used Oil

Used oil from equipment maintenance. Examples of oils included in this description are: Pumpjack crankcase, regen compressor, instrument air compressor, lube oil compressor oil, turbine/expander compressor oil, inlet compressor oil. Used Oil is detailed in Waste Determination Forms included in **Appendix B**.

10.0 CENTRALIZED E&P WASTE MANAGEMENT FACILITY

HERV does not intend to apply for and/or operate a Centralized E&P Waste Management Facility.

11.0 TRANSPORTATION

Wastes generated during drilling, construction and operation of the facilities will be completed by licensed haulers and shipments will be properly manifested or utilize bill of lading, shipping papers, labels and placards as determined by the type of waste. Records of waste transported off-site will include the following:

- Date of Transport
- Name of Transport
- Name of Generator
- Type and Volume of Waste

- Location of generation
- Name and location of Disposal Facility

HERV will use appropriate haul routes for all waste transport as coordinated and identified within the approved 1041 WOGLA for these locations and communicated via the Road Maintenance Agreement with Weld County.

12.0 BEST MANAGEMENT PRACTICES

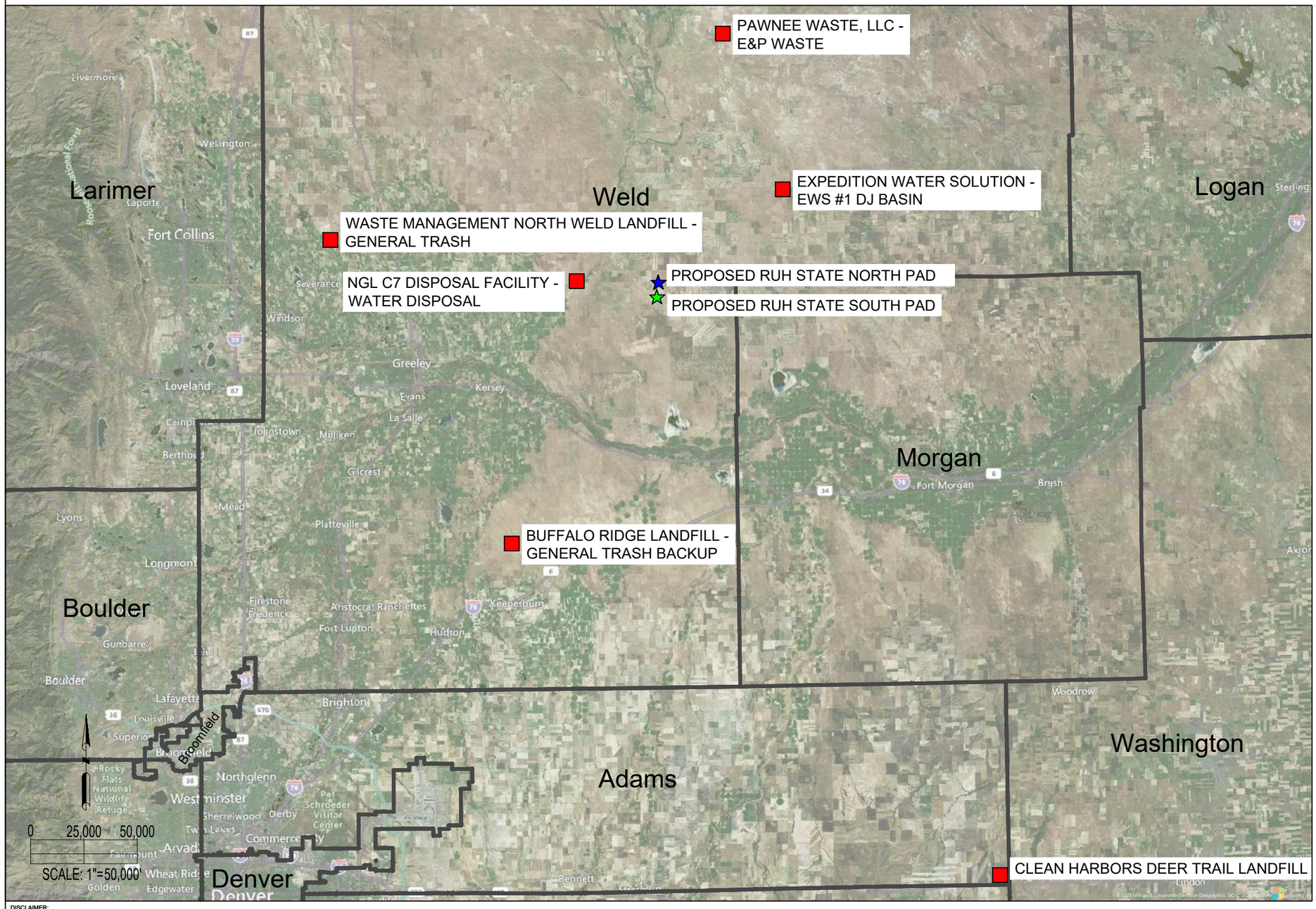
HERV will employ the following Best Management Practices during the life cycle of the facility:

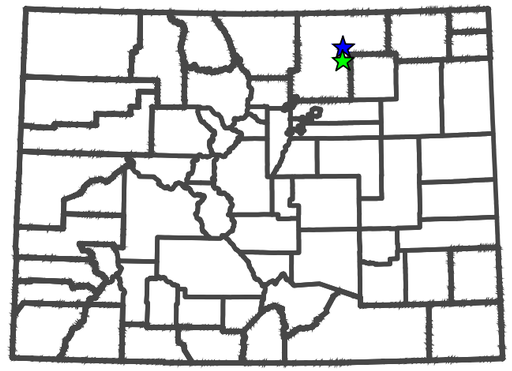
- Trash or other waste materials will not be buried or burned on location.
- Trash receptacles will be covered at all time except during to reduce the exposure to precipitation and will be designed, maintained, and operated to exclude wildlife, and to protect public safety, the environment, and wildlife from exposure to overflowing, leak prone, or insecure waste storage containers.
- All waste materials will be disposed of at a properly permitted commercial waste facility, if not reused or recycled.
- When wastes are handled on site from generation, to storage, to transportation and disposal, practices (solidification of liquids and placement of storage) and equipment (secondary containment and liners) are used to maintain full control of the waste and to prevent waste from impacting the working pad surface.
- Wastes stored on site will be stored in clearly labeled compatible containers that are regularly inspected to ensure they comply with applicable regulations, are in good condition, and are free of excessive wear, structural issues, or other defects that may impact effectiveness.
- Produced water will be disposed of at an offsite permitted disposal facility.
- HERV will use appropriate haul routes for all waste transport as coordinated and identified within the approved 1041 WOGLA for this location and communicated via the Road Maintenance Agreement with Weld County.
- HERV employees and/or contractors will inspect the location daily to ensure waste is properly stored and receptacles are being emptied as needed during the drilling and completions phases of the operation and will do the same at least twice weekly during the production phase.
- All waste material from drilling, completions, maintenance, production, and abandonment activities will be transported for disposal by licensed haulers with proper manifests, shipping papers, labels and placards, and waste determination or profiles approved by the disposal facility.

Figure 1

Waste Disposal Locations Map/ Haul Route Maps

RUH STATE OGDP
WASTE DISPOSAL LOCATIONS





DISCLAIMER:
THIS PLOT DOES NOT REPRESENT A MONUMENTED LAND SURVEY AND SHOULD NOT BE RELIED UPON TO DETERMINE BOUNDARY LINES, PROPERTY OWNERSHIP OR OTHER PROPERTY INTERESTS. PARCEL LINES, IF DEPICTED HAVE NOT BEEN FIELD VERIFIED AND MAY BE BASED UPON PUBLICLY AVAILABLE DATA THAT ALSO HAS NOT BEEN INDEPENDENTLY VERIFIED.

ASCENT GEOMATICS SOLUTIONS
8620 Wolff Court
Westminster, CO 80031
(303) 928-7128
www.ascentgeomatics.com

FIELD DATE:	DRAWING DATE:	SITE NAME:
09–14–22	11–02–23	RUH STATE NORTH PAD & RUH STATE SOUTH PAD
DRAWN BY: HJL	CHECKED BY: CSG	SURFACE LOCATION: SEC. 1 & 11, T6N, R62W, 6TH P.M. WELD COUNTY, COLORADO

DATA SOURCE:
AERIAL IMAGERY: 2023 MICROSOFT CORPORATION EARTHSTAR GEOGRAPHICS SIO, 2023 TOMTOM

PUBLICLY AVAILABLE DATA SOURCES HAVE NOT BEEN INDEPENDENTLY VERIFIED BY ASCENT.

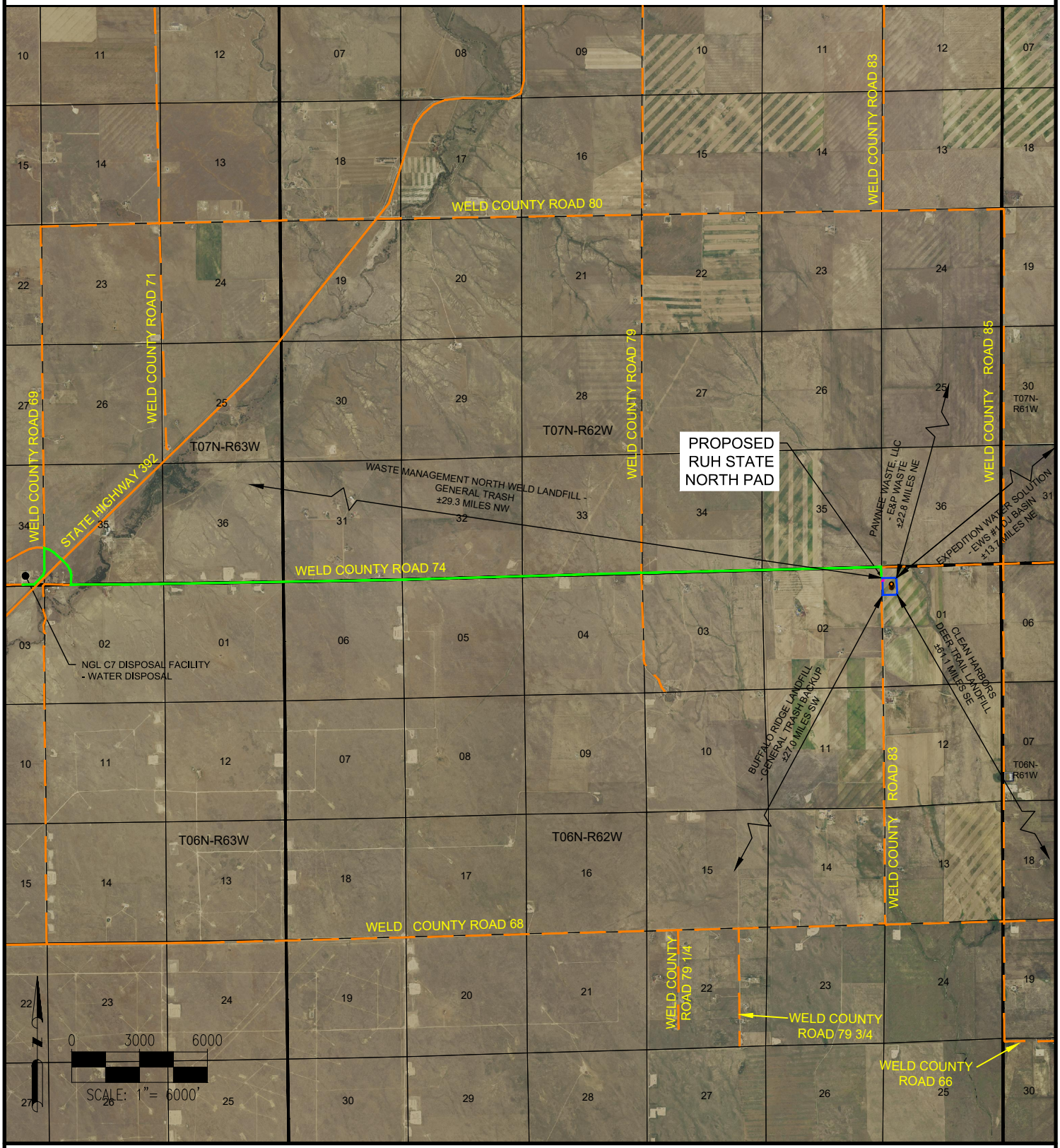
LEGEND:

- ★ = PROPOSED RUH STATE NORTH PAD
- ★ = PROPOSED RUH STATE SOUTH PAD
- ■ = WASTE DISPOSAL LOCATION

PREPARED FOR: HERVOIL

PLAT: \\AGSFS\PROJECTS\HERV___B210002\PRO0\CUSTOM\RUHSTATEOGDP_WASTEMANAGEMENTPLANMAP LAYOUT TAB: ACCESS

RUH STATE NORTH PAD
WASTE DISPOSAL HAUL ROUTE MAP



HAUL ROUTE PASSES NO LOCAL TOWNS, SCHOOL FACILITIES, FUTURE SCHOOL FACILITIES AND/OR CHILD CARE CENTERS

LEGEND:

- = PROPOSED WELL
- = DISTURBANCE AREA
- = PROPOSED ACCESS ROAD
- = TOWNSHIP LINE
- = SECTION LINE
- = PUBLIC ROAD - GRAVEL
- = PUBLIC ROAD - PAVED
- = HAUL ROUTE

DISCLAIMER:
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DATA SOURCE:
AERIAL IMAGERY: NAIP 2021
PLSS: BLM

PUBLICLY AVAILABLE DATA SOURCES HAVE NOT BEEN INDEPENDENTLY VERIFIED BY ASCENT.

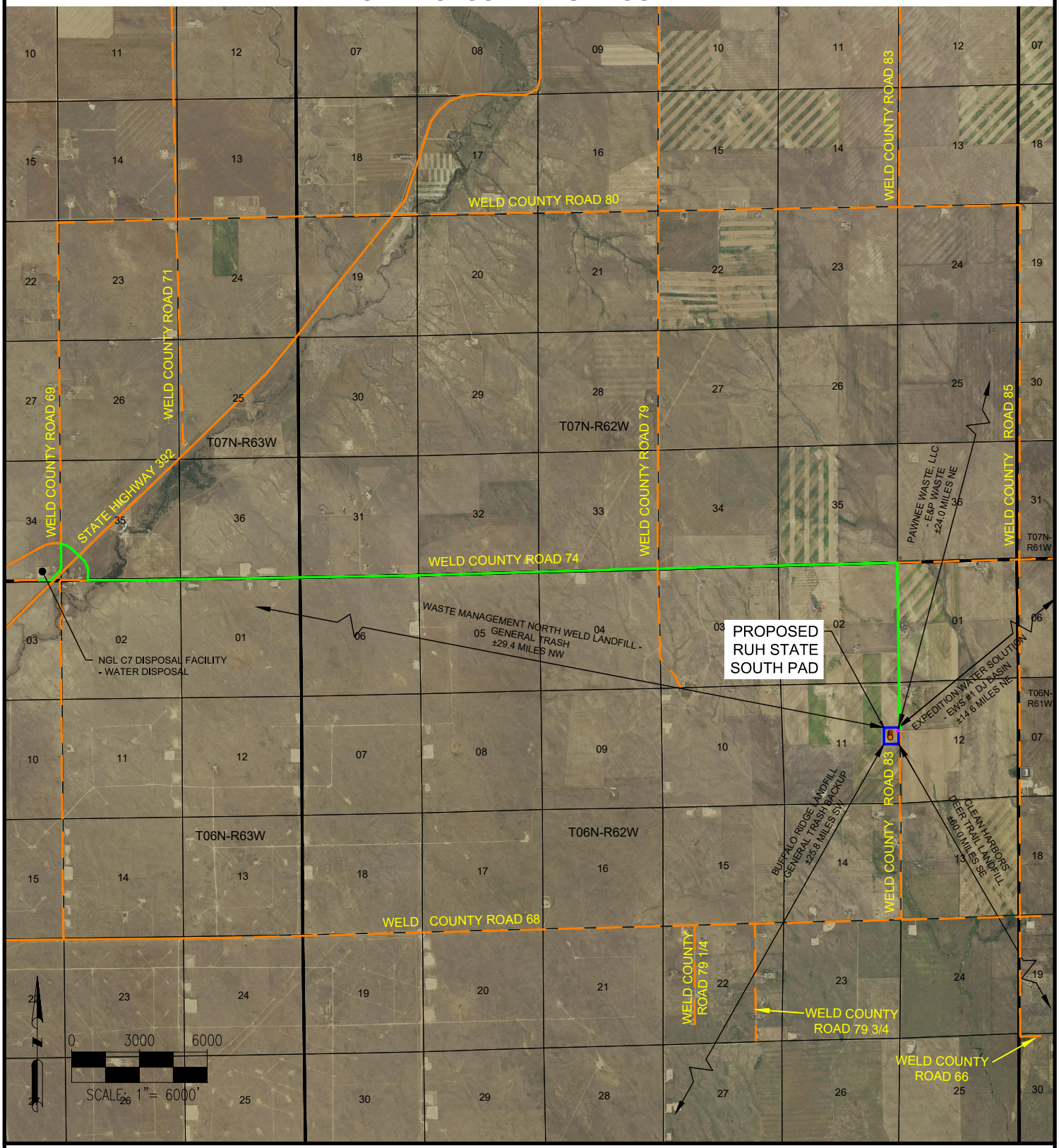
ASCENT GEOMATICS SOLUTIONS
8620 Wolff Court
Westminster, CO 80031
(303) 928-7128
www.ascentgeomatics.com

FIELD DATE: 12-23-21
DRAWING DATE: 11-02-23
BY: HJL
CHECKED: CSG

SITE NAME: RUH STATE NORTH PAD
SURFACE LOCATION:
NW 1/4 NW 1/4 SEC. 1, T6N, R62W, 6TH P.M.
WELD COUNTY, COLORADO

PREPARED FOR: HERVOIL

RUH STATE SOUTH PAD
WASTE DISPOSAL HAUL ROUTE MAP



HAUL ROUTE PASSES NO LOCAL TOWNS, SCHOOL FACILITIES, FUTURE SCHOOL FACILITIES AND/OR CHILD CARE CENTERS

LEGEND:

- = PROPOSED WELL
- = DISTURBANCE AREA
- = PROPOSED ACCESS ROAD
- = TOWNSHIP LINE
- = SECTION LINE
- = PUBLIC ROAD - GRAVEL
- = PUBLIC ROAD - PAVED
- = HAUL ROUTE

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DATA SOURCE:
AERIAL IMAGERY: NAIP 2021
PLSS: BLM

PUBLICLY AVAILABLE DATA SOURCES HAVE NOT BEEN INDEPENDENTLY VERIFIED BY ASCENT.

ASCENT GEOMATICS SOLUTIONS
8620 Wolff Court
Westminster, CO 80031
(303) 928-7128
www.ascentgeomatics.com

FIELD DATE: 09-14-22
DRAWING DATE: 11-02-23
BY: HJL
CHECKED: CSG

SITE NAME: RUH STATE SOUTH PAD
SURFACE LOCATION:
SE 1/4 NE 1/4 SEC. 11, T6N, R62W, 6TH P.M.
WELD COUNTY, COLORADO

PREPARED FOR: HERV OIL

Appendix A

Waste Determination Forms

E&P Wastes

- Drilling Fluids (Oil and Water-Based)
- Drill Cuttings (Oil and Water-based)
- Produced Water

Waste Determination Form

WDF No.	Waste Stream	Last Updated	Page
905d	**Drilling Fluids Oil and Water-Based (Mud)**	10/31/2023	1 of 1

Final Status Determination	**E&P Exempt**	**Applies to Hazardous Waste Generator Status**	**No**
Potential EPA Waste Codes	**N/A**		

Description of process generating the waste: Oil and water-based drilling fluids are used to lubricate and remove drill cuttings during the drilling process. Drilling fluids are processed to remove solids and recirculated. When drilling is complete, or the drilling fluid is spent the drilling fluids are sent for disposal.

Recycling and Reuse: Drilling fluids will be filtered and reused during the drilling phase and upon completion the fluid will be returned to the provider for reuse and proper disposal at the end of its useful life.

Estimated Volume: Drilling fluids will be reused during well drilling and disposed of at the completion or returned to the provider. Estimated volume if disposed 200 bbl.

Exemption: This waste is considered exempt under 2 CCR 404-1-905 (*40 CFR 261.4(b)(5)*).

Characterization for disposal profile: Generator knowledge will be used to profile the waste with the disposal facility.

On-site Treatment: Drilling fluids/muds are recirculated and process through shakers to remove solids during the drilling process.

On-site Management and Storage: Spent drilling fluids/muds are collected upon completion of the drilling phase into vac trucks for disposal.

Transport: Drilling Fluids wastes will be transported for disposal by licensed haulers with proper manifests, shipping papers, labels and placards, and waste determination or profiles approved by the disposal facility.

Recordkeeping: Records of waste that is transported off-site shall be maintained for 5-years including copies of each invoice, bill, or ticket and such other records as necessary to document waste disposal. Records will include:

Date of transport	Name of the generator
Name of the transporter	Location of the waste
Type and volume of waste	Name and location of the disposal facility

Disposal: Drilling fluids will be transported to the following facilities for disposal under 905.d(2)A and/or B:

Pawnee Waste, LLC	Waste Management – North Weld Landfill
47368 Co Rd 118	40000 WCR 25
Grover CO 80729	Ault, CO 80610

WASTE DETERMINATION FORM

WDF No.	Waste Stream	Last Updated	Page
905g	**Drill Cuttings (Oil and Water-Based Drilling Muds)**	10/31/2023	1 of 1

Final Status Determination	**E&P Exempt**	**Applies to Hazardous Waste Generator Status**	**No**
Potential EPA Waste Codes	**N/A**		

Description of process generating the waste: Small pieces of rock and soil that break away from the well walls during drilling and are screened out of the liquid mud system.

Recycling and Reuse: Drill cuttings are not planned to be reused or recycled at this time.

Exemption: This waste is considered exempt based on 2 CCR 404-1-905 (*40 CFR 261.4(b)(5)*).

Estimated Volume: Estimated volume of drilling cuttings, during drilling operations, at 250 tons per day 13 loads per day for disposal.

Characterization for disposal profile: Drill cuttings are generated from oil and water-based drilling fluids and will be characterized as Oily Waste (Rule 905.g(1) A and C). Generator knowledge will be used to profile the waste with the disposal facility.

On-site Treatment: Drill cuttings will be separated from drilling muds to facilitate reuse of the mud through a mechanical shaker. Drill cuttings will be solidified on-site by adding an agent (fly ash, clay, lime or other drying agent) to the cuttings inside the cutting boxes to remove free liquids prior to off-site disposal.
.

On-site management and Storage: Drill cuttings will be stored in cutting bins at the rig until loaded for disposal in side-dump trailers. Drill cuttings are stored on location next to the rig shaker boxes. Cuttings are stored on-site less than 24 hours prior to disposal.

Transport: Drill cuttings will be transported for disposal by licensed haulers with proper manifests, shipping papers, labels and placards, and waste determination or profiles approved by the disposal facility.

Recordkeeping: Records of waste that is transported off-HERV shall be maintained for 5 years including copies of each invoice, bill, or ticket and such other records as necessary to document waste disposal. Records will include:

Date of transport	Name of the generator
Name of the transporter	Location of the waste
Type and volume of waste	Name and location of the disposal facility

Disposal: Drill cuttings will be transported to the following facility for disposal in accordance with 905.g(2)A:

Pawnee Waste, LLC	Waste Management – North Weld Landfill
47368 Co Rd 118	40000 WCR 25
Grover CO 80729	Ault, CO 80610

Waste Determination Form

WDF No.	Waste Stream		Last Updated	Page
905c	**Produced Water (Production)**		10/31/2023	1 of 1
Final Status Determination	**E&P Waste**	**Applies to Hazardous Waste Generator Status**		**No**
Potential EPA Waste Codes	**N/A**			

Description of process generating the waste: Water (brine) brought up from the hydrocarbon bearing strata during the extraction of oil and gas. It may include formation water, water that has been injected into the formation and any chemicals added down hole or during the oil/water separation process.

Recycling and Reuse: Produced water is not planned to be reused or recycled at this time.

Exemption: This waste is considered an E&P exempt waste under 2 CCR 404-1-905 (*40 CFR 261.4(b)(5)*).

Estimated Volume: Estimated volume will vary depending on the formation and is estimated at 10-50 bbl per day for the life of the well. Disposal frequency will vary based on storage capacity and availability of pipeline.

Characterization for disposal profile: Generator knowledge will be used to profile the waste with the disposal facility.

On-site Treatment: Produced water will be separated from the total fluids extracted from the well by applying heat and possibly with the use of chemical emulsion breakers injected downhole and gravity to allow solids to settle to the bottom of tanks.

On-site Management and Storage: Produced Water will be stored in aboveground storage tanks located at the facility inside sized secondary containment in accordance with 40 CFR Part 112. Produced water will be disposed as need by transfer to tanker truck and/or by onsite connection to a produced water disposal pipeline. Water levels in the tanks are monitored electronic gauging to maintain a safe available storage capacity and to maximize loads when using trucks for disposal.

Transport: Produced water will be transported for disposal by licensed haulers with proper manifests, shipping papers, labels and placards, and waste determination or profiles approved by the disposal facility.

Record Keeping: Records of produced water that is transported off-site shall be maintained for 5-years including copies of each invoice, bill, or ticket and such other records as necessary to document waste disposal. Records will include:

Date of transport	Name of the generator
Name of the transporter	Location of the waste
Type and volume of waste	Name and location of the disposal facility

Disposal: Produced water will be transported to one of the following facilities for disposal under 905.c(2)A:

NGL Water Disposal C-7 33888 WC Rd 74 Galeton CO 80622	Expedition Water Solution – EWS #1 DJ Basin 43904 CR 105 Briggsdale CO 80611

Appendix B

Waste Determination Forms

Other E&P Wastes
Flowback /Workover Fluids
Tank and Vessel Bottoms
Impacted Soil

Waste Determination Form

Waste Number	Waste Stream	Last Updated	Page
905f	**Flowback and Workover Fluid (Used)**	10/31/2023	1 of 1

Final Status Determination	**E&P Exempt**	**Applies to Hazardous Waste Generator Status**	**No**
Potential EPA Waste Codes	**N/A**		

Description of process generating the waste: Used flowback and workover fluids, muds, completion, treatment, stimulation, and packing fluid, blowdown, swabbing and bailing wastes, and pipe dope from well development and workover.

Recycling and Reuse: Flowback and workover fluid is not planned to be reused or recycled at this time. Unused chemicals and additives will be returned to the contractor for use at the next applicable project.

Exemption: This waste is considered exempt under 2 CCR 404-1-905 (*40 CFR 261.4(b)(5)*).

Estimated Volume: Under a full development scenario estimated volume of flowback fluids will peak at approximately 8,260 bbl per day, decreasing to approximately 1,000 bbl per day and approximately 10 loads per day for disposal per day by year two, and approximately 500 bbl per day and approximately 5 loads per day for disposal per day by year three.

Characterization for disposal profile: Generator knowledge will be used to profile the waste with the disposal facility.

On-site Treatment: Flowback fluids maybe treated with heat to allow separation of oil and to break emulsions from the flowback water and/or placed into temporary storage tanks to allow gravity separation of solids from the flowback water pending disposal.

On-site Management and Storage: Flowback and Workover Fluid wastes will be stored in temporary frac-tanks that will provide secondary containment during flowback operations in case of spills. Flowback and Workover Fluid wastes will be stored nor more than 24 hours on-site. During active drilling hauling operates 12 hours per day to ensure adequate storage in tanks.

Transport: Flowback and Workover wastes will be transported for disposal by licensed haulers with proper manifests, shipping papers, labels and placards, and waste determination or profiles approved by the disposal facility.

Record Keeping: Records of waste that is transported off-site shall be maintained for 5-years including copies of each invoice, bill, or ticket and such other records as necessary to document waste disposal. Records will include:

Date of transport	Name of the generator
Name of the transporter	Location of the waste
Type and volume of waste	Name and location of the disposal facility

Disposal: Drilling fluids from flowback/completions and workovers will be transported to the following facility for disposal under 905.d(2)A & B and 905.f(1):

Pawnee Waste, LLC	Waste Management – North Weld Landfill
47368 Co Rd 118	40000 WCR 25
Grover CO 80729	Ault, CO 80610

Waste Determination Form

WDF No	Waste Stream	Last Updated	Page
905f	**Tank and Vessel Bottoms (Basic Sediment and Water)**	10/31/2023	1 of 2

Final Status Determination	**E&P Exempt**	**Applies to Hazardous Waste Generator Status**	**No**
Potential EPA Waste Codes	**N/A**		

Description of process generating the waste: Tank and vessel bottoms include basic sediment and water (BS&W), heavy hydrocarbons, solid sands and emulsions, that settle in the bottom of storage tanks and/or treating vessels. BS&W usually consists of water, paraffin, sand, scale, rust, and other sediments. This form only applies to those tank and vessel bottoms that do not contain technologically enhanced naturally occurring radioactive material (TeNORM).

Recycling and Reuse: There is no plan to reuse or recycle tank and vessel bottoms as this time.

Exemption: This waste is considered exempt under 2 CCR 404-1-905 (*40 CFR 261.4(b)(5)*).

Estimated Volume: Estimated volume will vary depending on the formation and will be confirmed by laboratory analysis as directed under 6 CCR 1007-1 Part 20.

Characterization for disposal profile: In general generator knowledge will be used to profile the waste with the disposal facility along with samples of the tank and vessel bottoms to determine if the material contains regulated levels of technologically enhanced naturally occurring radioactive materials (TeNORM) in accordance with 6 CCR 1007-1 Part 20.

On-site Treatment: Tank and vessel bottoms will be placed into sealed DOT-rated containers pending laboratory analysis to determine if the material contains TeNORM.

On-site Management and Storage: Tank and vessel bottoms will be allowed to accumulate in the tank or vessel until operation requirements necessitate removal. The tank and vessel waste will be stored On-site as stated above with containment. Tank and vessel bottoms will be sent off-site after receipt of laboratory analysis that indicates TeNORM is not present. The waste will be sent to a disposal facility that is licensed to accept E&P wastes that can contain hydrocarbons or possible benzene contamination. If the waste is determined to contain regulated levels of TeNORM the waste will be sent to a facility that is licensed to manage TeNORM wastes.

Transport: Tank and vessel bottoms will be transported for disposal by licensed haulers with proper manifests, shipping papers, labels and placards, and waste determination or profiles approved by the disposal facility.

Recordkeeping: Records of waste that is transported off-HERV shall be maintained for 5 years including copies of each invoice, bill, or ticket and such other records as necessary to document waste disposal. Records will include:

Date of transport	Name of the generator
Name of the transporter	Location of the waste
Type and volume of waste	Name and location of the disposal facility

Disposal: Tank and Vessel Bottoms will be transported to the following facility for disposal in accordance with 905.g(2)A:

Pawnee Waste, LLC 47368 Co Rd 118 Grover CO 80729	Waste Management – North Weld Landfill 40000 WCR 25 Ault, CO 80610
NGL Water Disposal C-7 33888 WC Rd 74 Galeton CO 80622	Expedition Water Solution – EWS #1 DJ Basin 43904 CR 105 Briggsdale CO 80611

Waste Determination Form

WDF No	Waste Stream	Last Updated	Page
905f	**Tank and Vessel Bottoms (Basic Sediment and Water)**	10/31/2023	2 of 2

Final Status Determination	**E&P Exempt**	**Applies to Hazardous Waste Generator Status**	**No**
Potential EPA Waste Codes	**N/A**		

If TeNORM impacted:

Pawnee Waste, LLC
47368 Co Rd 118
Grover CO 80729

Clean Harbors Deer Trail Landfill
108555 E Highway 36
Deer Trail CO 80105

Waste Determination Form

WDF	Waste Stream	Last Updated	Page
905e	**Soil/Gravel (Crude Oil/Condensate/Produced Water/Other E&P Waste Impacted)**	10/31/2023	1 of 1

Final Status Determination	**E&P Exempt**	**Applies to Hazardous Waste Generator Status**	**No**
Potential EPA Waste Codes	**N/A**		

Description of process generating the waste: Soil that has been impacted with crude oil, condensate, produced water, or any other E&P waste.

Recycling and Reuse: There is no plan to reuse or recycle E&P impacted soil/gravel at this time.

Exemption: This waste is considered exempt under 2 CCR 404-1-905 (*40 CFR 261.4(b)(5)*).

Estimated Volume: Estimated volume will vary depending on the incident.

Characterization for disposal profile: Generator knowledge will be used to profile the waste with the disposal facility.

On-site Treatment: In the event of a spill or leak of E&P wastes, HERV will immediately contain and control the release to protect and minimize adverse impacts. If a reportable quantity is released, HERV will notify the ECMC and Weld County within 24-hours. HERV will investigate, clean up and document the impacts from the release. If the release occurred outside of a lined containment, HERV will collect samples to document the effectiveness of the remediation in accordance with the criteria listed in Table 915-1 and document in accordance with Rule 912 and 913.

On-site Management and Storage: Impacted soil and gravel will be transported for disposal at the time that the impacted material is removed. Only if hauling or the disposal facilities are not available at the time of removal then impacted soil be placed in a temporary lined berm and/or 55-gallon drums pending disposal as soon as practical to arrange disposal approval and proper transportation.

Transport: Tank and vessel bottoms will be transported for disposal by licensed haulers with proper manifests, shipping papers, labels and placards, and waste determination or profiles approved by the disposal facility.

Recordkeeping: Records of waste that is transported off-HERV shall be maintained for 5 years including copies of each invoice, bill, or ticket and such other records as necessary to document waste disposal. Records will include:

Date of transport	Name of the generator
Name of the transporter	Location of the waste
Type and volume of waste	Name and location of the disposal facility

Disposal: Impacted soil/gravel will be transported to the following facility for disposal in accordance with 905.f(1):

Pawnee Waste, LLC	Waste Management – North Weld Landfill
47368 Co Rd 118	40000 WCR 25
Grover CO 80729	Ault, CO 80610

Appendix C

Waste Determination Forms

Non-E&P Waste
Used Oil
TeNORM

Waste Determination Form

WDF No.	Waste Stream		Last Updated	Page
906	**Oil (Used)**		10/31/2023	1 of 2
Final Status Determination	**Used Oil is not considered Hazardous (recycled)**	**Applies to Hazardous Waste Generator Status**		**N/Y***
Potential EPA Waste Codes	**D006, D007, D008 dependent on Disposal vs Recycling**			

***Description of process generating the waste:** Used oil from equipment maintenance. Examples of oils included in this description are: Pumpjack crankcase, regen compressor, instrument air compressor, lube oil compressor oil, turbine/expander compressor oil, inlet compressor oil. Used oil is exempt from hazardous waste status if recycled. If not recycled it is considered waste oil and must be treated as a hazardous waste.

Recycling and Reuse: Used oil will be properly stored, transported and recycled in accordance with state and federal regulation. If not recycled it will be managed as stated above.

Basis for the characteristic EPA codes: According to EPA publications, used oil may be contaminated with lead (D008), cadmium (D006), and chromium (D007) [*EPA530-K99-004*].

Estimated Volume: The estimated volume will vary based on the need and type of equipment generating used oil.

Applicable hazardous waste exemption: While not an exemption 6 CCR 1007-3, Sections 279.1 (40CFR Part 279) presumes Used Oil will be recycled and therefore is not considered hazardous waste. If the Used Oil is to be disposed of, the waste must be characterized and may exhibit characteristics of hazardous waste and require disposal as applicable under the hazardous waste rules.

Applicable recycling criteria: Used oil that is recycled and is also a hazardous waste solely because it exhibits a hazardous characteristic is not subject to regulation as a hazardous waste but is regulated under 6 CCR 1007-3, Sections 279.1 (and *40 CFR 279*). Used oil that is recycled includes any used oil which is reused, following its original use, for any purpose (including the purpose for which the oil was originally used). Recycling includes re-refining, burning for energy recovery, or reprocessing. Used oil mixed with hazardous waste is considered a hazardous waste.

Basis for the recycling criteria: 6 CCR 1007-3, Sections 279.1 (*40 CFR 261.6(a)(4)*)

Characterization for disposal profile: Used oil will be characterized based on generator knowledge will be used to profile the used oil with the recycling facility. If not recycled the waste will be analyzed, characterized and properly stored, transported and disposed of as a hazardous waste.

On-site Treatment: No treatment will be done to used oil other than proper storage and containment pending disposal or recycling. All storage containers will be labels as Used Oil and provided with adequate secondary containment.

On-site Management and Storage: If used oil is being disposed of or exhibits hazardous characteristics, it will be managed as a hazardous waste. Used Oil will be stored in a closed container, that is in good condition, and does not leak, or stored in a tank designated as a used oil container. Lids, funnels, and bungs will be kept closed when not adding used oil. Used oil containers will be stored inside containment pending disposal if disposal is not completed on the same day it is collected.

Transport: Used Oil will be transported for disposal/recycling by licensed haulers with proper manifests, shipping papers, labels and placards, and waste determination or profiles approved by the disposal facility.

Recordkeeping: Records of waste that is transported off-HERV shall be maintained for 5 years including copies of each invoice, bill, or ticket and such other records as necessary to document waste disposal. Records will include:

Date of transport	Name of the generator
Name of the transporter	Location of the waste
Type and volume of waste	Name and location of the disposal facility

Waste Determination Form				
WDF No.	**Waste Stream**		**Last Updated**	**Page**
906	**Oil (Used)**		10/31/2023	2 of 2
Final Status Determination	**Used Oil is not considered Hazardous (recycled)**	**Applies to Hazardous Waste Generator Status**	**N/Y***	
Potential EPA Waste Codes	**D006, D007, D008 dependent on Disposal vs Recycling**			

Disposal: Used Oil will be transported to the following facility for disposal/recycling in accordance with Rule 906:

Pawnee Waste, LLC
47368 Co Rd 118
Grover CO 80729

Waste Determination Form

WDF	Waste Stream	Last Updated	Page
906	**TENORM (Scale or Sludge)**	10/31/2023	1 of 1

Final Status Determination	**NORM/TENORM**	**Applies to Hazardous Waste Generator Status**	**No**
Potential EPA Waste Codes	**N/A**		

Description of process generating the waste: Scale or sludge containing Naturally Occurring Radioactive Material (NORM) or Technically Enhanced Naturally Occurring Radioactive Material (TENORM) typically removed from pipes, heater-treaters, tank bottom sludges, and other equipment. The scale typically consists of barium, calcium, or strontium sulfate that has precipitated out of solution in produced water along with radium, a radioactive nuclide.

Recycling and Reuse: Equipment impacted with TeNORM will be decontaminated when possible to allow for reuse of the equipment. TeNORM scale and debris will not be recycled.

Applicable hazardous waste exemption: TeNORM is only regulated as a hazardous waste if it is determined to be characteristic of a hazardous waste by combining it with a known hazardous waste.

Basis for the hazardous waste exemption: TeNORM does not fall under the E&P hazardous waste exemption but is regulated under 6 CCR 1007-1 Part 20.

Estimated Volume: Estimated volume will vary depending on the formation and will be confirmed by laboratory analysis as directed under 6 CCR 1007-1 Part 20.

Characterization for disposal profile: Sampling will be required to characterize the material, at the point of generation, in accordance with Section 20.3.2 of 6 CCR 1007-1, Part 20. If the data indicates the waste contains regulated levels of TENORM the data will be provided to the disposal facility to determine acceptance.

On-site Management and Storage: Accumulate TENORM scale and sludge in sealed DOT-rated containers. Keep containers closed when not adding waste. Store TENORM scale and sludge containers in a secure area. TENORM pipe should be marked and kept in a separate area to prevent cross contamination and wrapped or stored in a closed container to prevent loose scale from contacting soil or contact with rain or snow. Ensure TENORM wastes are only disposed of at permitted disposal facilities, that can accept wastes with low level radiation and possible hydrocarbon content.

Transport: TENORM waste will be transported for disposal by licensed haulers with proper manifests, shipping papers, labels and placards, and waste determination or profiles approved by the disposal facility.

Recordkeeping: Records of waste that is transported off-HERV shall be maintained for 5 years including copies of each invoice, bill, or ticket and such other records as necessary to document waste disposal. Records will include:

Date of transport	Name of the generator
Name of the transporter	Location of the waste
Type and volume of waste	Name and location of the disposal facility

D**isposal:** TENORM wastes will be transported to the following facility for disposal in accordance with 905.f(1):

Pawnee Waste, LLC	Clean Harbors Deer Trail Landfill
47368 Co Rd 118	108555 E Highway 36
Grover CO 80729	Deer Trail CO 80105