



Expanded Liberty Unit (ELU) M12 496 Well Pad
Waste Management Plan

Piceance Basin, Colorado



Waste Management Plan

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1. Purpose

- 1.1 The proper management of wastes generated by Caerus Oil and Gas LLC (Caerus) and its wholly owned subsidiaries is necessary for compliance with environmental regulations. Properly managed waste reduces the company's operating costs and minimizes potential liabilities. Questions regarding this Waste Management Plan (Plan) should be directed to the Environmental, Health & Safety (EHS) representative.
- 1.2 This plan is intended to provide a system for the identification, classification, minimization, handling, and disposal of all M12 496 wastes generated by Caerus operations, and to ensure documentation of management from generation to final disposal. The Waste Management Guides in Appendix A identified preferred methods of managing each type of waste and are provided with operational phase and estimated volumes generated. However, if there is a waste that is identified and it is not specifically identified in this Plan, please contact the Caerus EHS representative for assistance. Consistent waste management techniques are essential for maintaining compliance.

2. Scope

This plan covers routine separation, handling, packaging, manifesting and disposal of waste typically generated at Caerus exploration, production, and midstream operations in Colorado. The Plan is not intended to be an exhaustive reference source but is written to address the requirements of Rule 304.c.(11) Waste Management Plan as part of the Form 2A Location Assessment Permit Application of the 300 Series of the Energy Carbon & Management Commission's (ECMC) Rules. Caerus's Waste Management Plan was developed in accordance with Rule 905.a.(4). And ECMC Waste Management Plan Guidance.

3. Regulatory Authority

In the U.S., the Environmental Protection Agency (EPA) regulates and oversees waste management regulations. Each State may have their own waste management regulations and have one or more agencies that oversee the implementation of the federal and state regulations. In Colorado, the following agencies are responsible for waste management and disposal:

- Colorado Energy & Carbon Management Commission (ECMC) - Jurisdiction over E&P Exempt Waste.



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- Colorado Department of Public Health and Environment (CDPHE) - Jurisdiction over all other wastes including hazardous and non-hazardous industrial waste, TENORM and municipal/domestic waste.

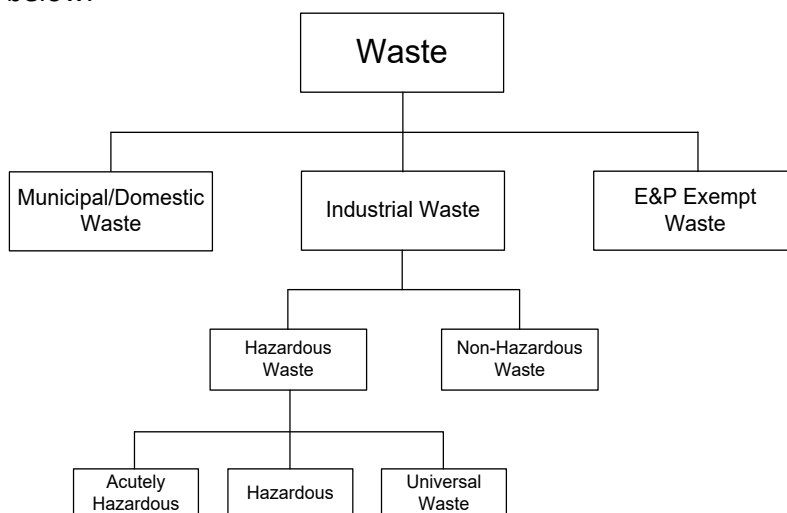
4. Waste Identification and Classification

4.1 Classification and Analysis

The proper identification and classification of waste is the first step in proper waste management. Waste regulations, both federal and state, tend to categorize and regulate waste based on its origin. Waste Characterization will be identified based generator knowledge, and sample analysis. Sample analysis will be conducted per ECMC rules to meet Table 915-1 parameters and Water Quality Control Commission, and Colorado Department of Public Health and Environment – Water Quality Control Division and EPA SW 846 guidance. Generally, there are three origins or categories of waste:

- 1) Industrial Solid Waste
- 2) Municipal/Domestic Solid Waste
- 3) Oil and Gas Exploration & Production (E&P) Waste

Each of these categories may be broken into various subcategories as illustrated in the chart below.





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4.2 Industrial Solid Waste

Industrial solid wastes are wastes that are generated by various industrial processes. *Waste associated with down hole oil and gas exploration and production activities are expressly excluded from Industrial Waste category (see Section 4.5).* Industrial Solid Waste can be found in a solid, liquid, or gaseous form.

Examples of industrial solid waste generated by Caerus can include non-friable asbestos, cleaning solutions, solvents or degreasers, absorbent media, filters, filter media, and/or some empty chemical containers. Most of the Industrial Solid Waste generated by Caerus is non-hazardous even though the materials may contain hazardous components. Although this waste is not classified as hazardous, it must be managed in a similar manner to protect human health and the environment. Basically, all Industrial Solid Waste falls into two sub-categories – Hazardous and Non-Hazardous.

Hazardous Waste

A hazardous waste is one that may pose a substantial hazard to human health or the environment when improperly disposed. To decide if a waste is hazardous, a hazardous waste determination must be made based on the characteristics of the waste. It is important to know which wastes are hazardous because special handling requirements are required. A common example of potentially hazardous waste generated at a Caerus site is unused methanol and solvents.

In Colorado, facilities that generate hazardous waste are classified as Very Small Quantity Generators (VSQG), Small Quantity Generators (SQG) or Large Quantity Generators (LQG) based on the amount of hazardous waste generated on a monthly basis. All SQG and LQG facilities must obtain an EPA Generator Number, usually through the state environmental regulatory agency. Caerus facilities that generate hazardous waste are usually classified as Very Small Quantity Generators (VSQG) due to the small quantities of hazardous waste that could be generated. Appendix E contains detailed guidance on the management of hazardous waste at a VSQG facility.

A sub-category of hazardous waste is **Universal Waste**. This category was designated to reduce the amount of hazardous waste collected in the municipal waste stream by making it easier for universal waste handlers to collect these items and send them for recycling or proper disposal. Universal Wastes in Colorado include batteries (other than alkaline), pesticides, aerosols cans, mercury containing devices, and some mercury containing lamps (fluorescent bulbs) and electronics. Facilities that accumulate less than 11,000 pounds (lbs.) or 5000 kilograms (kg) of universal waste at any one time have the option



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of handling those wastes under Colorado's universal waste regulations or as hazardous waste from a Very Small Quantity Generator (VSQG).

Non-Hazardous Waste

In general, all Industrial Solid Waste that is not classified as hazardous is considered non-hazardous waste. Examples of non-hazardous waste include empty paint and aerosol cans, alkaline batteries, wooden pallets, wire, and non-asbestos insulation. These wastes can usually be placed directly into trash receptacles or dumpsters for disposal. Other non-hazardous wastes may require manifesting and shipping by approved transporters.

A sub-category of non-hazardous waste is **Medical Waste**. Medical waste is any solid waste that is generated in the diagnosis, treatment or immunization of people or animals. These wastes are usually generated at hospitals, clinics, physician's offices, and medical research facilities, but can also be generated at any location where an injury is treated. Examples of medical waste include:

- Blood-soaked bandages
- Discarded gloves used during treatment of injury
- Discarded needles and lancets

4.3 Municipal/Domestic Solid Waste (General Refuse and Office Waste)

Examples of municipal waste include office trash, paper, food waste and rubbish. Sewage is also classified as municipal/domestic solid waste unless contaminated with hazardous materials. Sewage includes both grey water and septic waste generated at office buildings, drilling rigs, galleys, and living quarters.

4.4 Electronic Waste

Electronic waste (E-waste) consists of any broken or unwanted electrical or electronic appliance. In Caerus operations, this type of waste typically includes computers and computer monitors, printers, televisions, video equipment, mobile phones, and fax machines. Electronic waste is a concern largely due to the potential toxicity and carcinogenicity of some of the substances contained in the waste if processed improperly. Electronic waste may be classified as non-hazardous, universal hazardous, or hazardous depending on state specific factors such as the amount of waste generated and whether the waste is recycled or disposed of in a landfill. Colorado law prohibits disposal of electronic waste, instead consumers must deliver their electronic equipment to collection facilities for recycling. E-waste disposal assistance will be provided by the EHS or IT Department.



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4.5 **Oil and Gas Exploration and Production Waste (E&P Waste)**

E&P wastes are excluded or exempt from federal regulation, with the exception of items containing TENORM, and as a result, are generally regulated by the states. The following rule of thumb can be used to determine if an E&P-related waste is exempt or non-exempt from federal regulation:

- Has the waste come from down-hole, i.e., was it brought to the surface during oil and gas E&P operations?
- Has the waste otherwise been generated by contact with the oil and gas production stream during the removal of produced water or other contaminants from the product?

If the answer to either question is yes, then the waste is likely considered to be considered exempt from RCRA subtitle C regulations and deemed Oil and Gas E&P (Exempt) Waste. Colorado defines E&P Exempt Waste as follows:

“Exploration and Production Waste” (E&P waste) is a term of art under the Federal Resource Conservation and Recovery Act (RCRA) that distinguishes it from other regulated hazardous wastes. E&P wastes are wastes intrinsically derived from primary field operations and uniquely associated with exploration, development, or production of oil or natural gas (as distinct from transportation or refining operations). Examples of E&P waste include: flowback fluids, produced water, drilling fluids, oily waste, drill cuttings, and tank bottoms. Spilled or released product (crude oil or condensate) at primary field exploration operations and production facilities are also considered E&P waste.” In the event the Federal RCRA eliminated rules around E&P waste Caerus would dispose of solids offsite at an approved landfill when required and liquids would continue to be reused or disposed of via UIC wells as allowed. Any E&P fluids not permitted to be disposed of via Caerus operated UIC wells would be transported offsite to commercial UIC wells for disposal.

The EPA has developed lists of exempt and non-exempt oilfield wastes (provided in Appendix D) that, while not comprehensive, provide examples of the types of wastes that fall under these categories.

4.5.1 Drill Cuttings

Caerus will be utilizing water-based drilling mud on the M12 496 wells. Solids control equipment consisting of shale shakers, centrifuges, and flocculating units may be utilized to separate drill cutting’s solids from liquid (drilling mud and water). Drill cuttings will be stored in steel bins and placed on the compacted cuttings



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management area on the southwest side of the well pad (see Appendix D). Cuttings samples may be collected when drilling is initiated for waste characterization. Based on the analytical results, drill cuttings will be managed and disposed of pursuant to ECMC rule 905.e. The M12-496 site will utilize steel storage bins on location for management and drying of the cuttings and awaiting offsite disposal; therefore, surface management and temporary storage of drill cuttings on a compacted portion of the well pad will be sufficiently protective of groundwater. Cuttings management consists of transporting moist cuttings between shaker bins to solidification and storage bins via a front-end loader. This process can allow small amounts of cuttings to escape the bucket of the loader and can transport cutting material via the tires. Caerus will inspect and clean the cutting management area to keep the location as free as possible of cuttings. In the event a reportable amount of cuttings were to leave their primary containment, Caerus will report this release to the ECMC per Rule 912. When drilling and completion activities are complete and equipment has been removed Caerus will collect soil samples from the surface of the cuttings management area to insure compliance with ECMC Table 915-1.

Disposal haul routes have been included (See Appendix C). Waste cement may be used as a drying agent (if approved by the receiving offsite commercial disposal landfill) to solidify the cuttings prior to offsite disposal. The M12-496 drill cuttings have been conditionally approved for disposal by both Wray Gulch (Rio Blanco County) landfill and Greenleaf Environmental Services. The anticipated volume of water based cuttings is based on 34 permitted wells, typically each well generates 550 cubic yards (CY) totaling 18,700 +/-CY.

4.5.2 Drilling Fluids Management

Closed loop systems will be used to separate solids from liquid. The majority of drilling fluids are anticipated to be reusable and therefore drilling fluids will be recycled and used in drilling operations at the proceeding drilling location. Any drilling fluids that are deemed to be unusable, will be transported to an approved off-site disposal facility or solidified and incorporated into the cuttings stockpile.

4.5.3 Completion, Production, and Plugging Waste

Green Completion Practices will be utilized on all Caerus locations. All solids captured within frac tanks will be disposed of offsite at an approved commercial disposal facility. Produced Water, frac fluid and flowback fluids will be recycled, when possible, into Caerus's water treatment and facility storage system. For additional details please see the Water Plan per Rule 304.c.(18). When fluid disposal needs to occur, Caerus will either inject fluids into a permitted UIC well or transport fluid offsite to an approved commercial disposal facility. Caerus will transport all tank bottoms, pit



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bottoms, BS&W, pigging waste solids, Cement returns during plugging, and filters to an approved commercial disposal facility.

4.5.4 Hydrocarbon impacted soils

In the event soils become impacted by E&P materials, the soils will be sampled to determine if they exceed ECMC Table 915-1. If a reportable spill occurs a Form 19 Spill Report will be submitted to the ECMC, and remediation will take place under an approved Form 27. Impacted soils will either be treated until ECMC Table 915-1 compliance is achieved or soils will be disposed of offsite at a commercial disposal facility.

4.6 Technologically Enhanced Naturally Occurring Radioactive Material (TENORM)

TENORM is a special class of waste that contains naturally occurring radioactive material resulting from human activity that has concentrated the radioactivity or increased the likelihood of exposure by making the radioactive material more accessible to human contact. When the level of TENORM is above a specified regulatory limit, the waste is considered TENORM waste and special precautions and waste disposal practices must be followed. Waste with TENORM levels below regulatory limits can usually be treated as E&P Waste. For 2021 CDPHE is requiring a TENORM field wide waste characterization and exposure sampling plan.

5. Waste Minimization

5.1 Waste minimization is any change to the waste generation and management process that reduces the volume or hazardous constituents of a waste. It may include a variety of methods including:

- Using a less hazardous product.
- Controlling inventory to the lowest amounts needed.
- Re-use of waste as part of makeup constituents.
- Used as beneficial reuse as fill material to aid in site contouring during reclamation
- Good housekeeping.
- Proper equipment maintenance and replacement; and
- Careful selection of subcontractors.



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5.2 Waste minimization should follow the Waste Management Hierarchy of Preference endorsed in the federal Pollution Prevention Act of 1990. The overriding principle of the hierarchy is the reduction, if not elimination, of both the volume and toxicity of waste that is introduced into the environment. The hierarchy, from most desirable to least desirable, is as follows:

- A. Source Reduction (most desirable)
- B. Recycling
- C. Treatment
- D. Disposal (least desirable)

A. Source Reduction

Source reduction reduces or avoids the generation of waste by installing equipment or implementing procedures. Substantial cost and liability reduction can be realized because wastes that are not generated, do not have to be managed or disposed.

B. Reuse and Recycling

When source reduction is cost prohibitive or not technologically feasible, opportunities in recycling should be considered. Recycling is the process of extracting further utility out of a material. As an example, metals can be extracted from used batteries to make new batteries or other products. Recycling can also involve the use or reuse of a waste as a feedstock in an industrial process. Recycling helps to preserve raw materials and reduces the amount of material that requires disposal such as the use of produced water in enhanced recovery projects or reclamation of water-based drilling fluid, solvents, metals, filters, and coolants. Included in Appendix A Waste Management Guides

C. Treatment

Treatment is a method, technique, or process that changes the waste to render it less hazardous. Less hazardous waste can be more recyclable, safer to transport or store or even less expensive to dispose. Note that treatment does not prevent the creation of pollutants. Treatment involves changing the nature of the waste or reducing or eliminating the pollutants in a waste.



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D. Disposal

Disposal involves processes that discharge, inject, bury, or dump wastes on or below the land or water surface. Disposal is the least desirable option due to the potential harm to the environment and the resulting financial liability, if disposed of improperly.

5.3 Specific opportunities for minimizing waste include:

- Use of closed drilling pit systems to reduce the volume of drilling waste.
- Re-injecting produced water.
- Recycling of Produced Water into Caerus completions operations or through external water sharing.
- Using bulk containers rather than drums.
- Ensuring that contractors remove or transport their products to the next site.
- Recycling engine oil or mixing it with crude oil or condensate to be sold.
- Reducing engine oil and glycol replacement intervals to optimal; and
- Recycling wastes such as paper, cans, bottles, batteries, computers, scrap metal, tires, etc.

5.4 Minimization opportunities pertaining to each waste stream are listed on the Waste Management Guides in Appendix A. For further assistance with waste minimization, contact the EHS Department.

6. Waste Handling and Storage

6.1 The proper handling and storage of waste is essential to ensuring protection of human health and the environment, while minimizing company liability. The following guidelines identify proper waste handling and storage practices to be employed by personnel at all Caerus locations:

- A. The proper personal protective equipment should always be worn when handling waste. Refer to the SDS, if available, and Caerus' EHS Department for additional information.
- B. Implement good housekeeping measures to minimally impact the operating area and maintain a well-kept appearance at all company facilities.
- C. Waste should always be segregated and stored according to its waste classification. Never mix exempt or non-hazardous wastes with hazardous wastes as this could not only result in an unfavorable physical reaction but could also result in a reclassification of the



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waste (e.g., mixing an exempt waste with a non-exempt hazardous waste will result in the mixture being classified as non-exempt hazardous waste).

D. Waste containers should always be labeled with their content and periodically checked for leaks or other integrity problems.

- E. A designated storage area should be established for waste storage. The time period that waste is stored should always be kept to a minimum, especially with hazardous waste. As per Caerus policy, hazardous waste shall be disposed of as soon as possible unless the district supervisor provides approval and consultation with the EHS Department.

7. Waste Disposal

- 7.1 Waste disposal generally is the discharge, deposition, injection, or placing of any waste into or on land, water, or air. In the waste management hierarchy, disposal is the least preferred waste management option because it also involves the greatest potential liability. The following are methods of disposal that are acceptable if a waste cannot be eliminated, reduced, or recycled:

Injection

A common method to dispose of certain liquid and solid wastes is through underground injection. Injection wells are classified as to the type of waste that the wells are allowed to accept and in Colorado are permitted through the ECMC in the 800 series rules. Injection wells must be permitted prior to the disposal of the waste.

Discharge

All discharges must be permitted through the CDPHE, and specific discharge criteria must be confirmed through analytical testing and/or visual observation, if required.

Burial

Burial of wastes must be done at a permitted and approved landfill, with the possible exception of water-based drill cuttings and remediated E&P waste. Burial of water-based drill cuttings in a cuttings trench through beneficial reuse and E&P solids may be allowed in certain locations pending they meet ECMC table 915-1 and ECMC approval through the Form 27 process. Contact the EHS Department for more information.

Biodegradation

A technique for remediating hydrocarbon contaminated soil waste, and drill cuttings is biodegradation or bioremediation. The process works by decomposing hydrocarbon molecules in the presence of air, moisture, and naturally occurring microorganisms. Any free hydrocarbon



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or produced water is removed first. The material to be biodegraded is disked into the soil to reduce the hydrocarbon content to manageable levels specified by state, federal or international standards. Biodegradation is often enhanced by adding nutrients (fertilizer) and/or organic matter to the soil prior to disking. Repeated disking and additional amendments may be needed in some cases to complete the biodegradation.

Evaporation

Disposal of produced water via evaporation is allowed in permitted ponds. Evaporation ponds are permitted through the ECMC and CDPHE. For more information, contact the EHS Department.

Incineration

A technique used for the destruction of wastes through an incineration process. Only permitted or approved incineration facilities should be used. Permitting is required through CDPHE and through the Form 27 process for E&P waste.

Offsite Disposal

Disposal of waste at offsite landfills should be coordinated through the disposal facility. Trucking should occur under manifest and disposal records shall be maintained for a minimum of 5 years. In some circumstances offsite disposal may be the only approved method. ECMC requires per Rule 905.b Operators to only transport E&P Waste offsite within Colorado to facilities authorized by the Director, to permitted commercial waste disposal facilities, or beneficial use sites approved to receive E&P Waste by CDPHE and the Relevant Local Government. Any E&P waste being disposed of outside of the state of Colorado must be disposed of at facilities authorized and permitted by the appropriate regulatory agency in the receiving state. Operators must comply with the Rocky Mountain Low-level Radioactive Waste Board's Rules, as incorporated by reference in Rule 901.b. For more information or disposal coordination please contact the EHS Department.

- 7.2 Waste disposal liability extends to Caerus as the operating company which generates and handles the waste. When disposing of waste at a third-party facility, good business practices dictate that regulatory compliant, financially sound, and economically stable facilities that are well operated are utilized. Caerus EHS personnel or their consultants may periodically review or obtain publicly available records of disposal sites for compliance and operational condition. Some facilities that do not meet Caerus standards may be restricted from use. Before disposal or recycling of industrial or E&P exempt waste, an appropriate contract must be in place with all waste haulers and waste disposal/recycling facilities. For assistance contact the EHS or Legal Department.



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8. Waste Tracking

- 8.1 Any records related to waste generation, storage, transportation/shipment, and disposal must be kept on site, or at the field office.
- 8.2 Hazardous waste generated at Small Quantity Generator and Large Quantity Generator facilities requires a specific Hazardous Waste Manifest for shipment. Although not required by law, it is recommended that hazardous waste from a Very Small Quantity Generator also be shipped with a Hazardous Waste Manifest. Hazardous waste manifest should be maintained for a minimum of 3 years. Refer to Appendix D for more information.
- 8.3 E&P Waste being transported offsite must maintain, for not less than 5 years, copies of each invoice, bill, ticket, or manifest and other records as necessary to document the requirements listed in ECMC Rule 905.b.(3). A-F. records must be signed by the transporter and be available to ECMC upon request.
- 8.4 Other wastes may simply require shipping manifests, delivery tickets, sundry notices, etc. Refer to Appendix A – Waste Management Guides for shipping and manifest requirements for a particular waste.
 - 8.4.1 Tickets, bills or manifests must include the date of the transport, the identity of the waste generator, the identity of the waste transporter, the location of the waste pickup site, the type and volume of waste and the name and location of the treatment or disposal site.

9. Waste Management Guides

- 9.1 Appendix A contains individual waste management guides. The guides present information and data for wastes that may be generated and should be used accordingly. Particular attention should be given to the handling/storage guidance, recordkeeping requirements, and opportunities for waste minimization. If questions still arise after reviewing a particular Waste Management Guide, contact the Caerus EHS Department.

10. Approved Waste Disposal/Recycling Vendors

- 10.1 A list of approved disposal and recycling vendors and facilities are listed in Appendix B. If a new facility needs to be added to this list, please contact your EHS representative.



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11. Document Management

- 11.1 This Waste Management Plan will be kept electronically stored in Microsoft Teams EHS files, printed documents risk being out of date.
- 11.2 The following documentation forms, information, and data will be retained in Caerus Field office files for no less than three years for hazardous waste documentation and for no less than 5 years for ECMC regulated wastes.
 - A. Waste transport and shipping records (waste logs, waste manifests, shipping manifests, delivery tickets, sundry notices, etc.)
 - B. Lab analysis and associated information and data
 - C. Regulatory agency correspondence
 - D. Disposal Facility waste characterization and acceptance

12. References

12.1 EPA Federal Regulations

- A. Resource Conservation Recovery Act (RCRA)
- B. Comprehensive Environmental Response, Compensation and Recovery Act (CERCLA)
- C. Hazardous and Solid Waste Act (HSWA)
- D. Pollution Prevention Act (PPA)



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12.2 Colorado Regulations

- A. ECMC Rule 905 Management of E&P Waste
- B. ECMC Rule 906 Management of NON-E&P Waste
- C. CDPHE Solid Waste Regulation 6CCR 1007-2

12.3 Industry Standards

- A. API E5 Environmental Guidance Document: *Waste Management in Exploration and Production Operations*

13. Waste Best Management Practices

- Whenever feasible, the Operator will strive to minimization and reduce waste.
- Recycling produced water for Caerus's completions operations.
- Erosion and stormwater control features will be re-used when possible.
- Reduction of waste by use of closed loop drilling systems to reduce the volume of drill cuttings.
- Reduction of waste by using bulk containers rather than drums.
- Unused chemicals will be transported to the next drilling site or will be sent back to the chemical provider company.
- Proper equipment maintenance and replacement.
- Communication with subcontractors on waste minimization practices.
- The proper personal protective equipment (PPE) will always be worn when handling waste.
- Implement good housekeeping measures to minimally impact the operating area and maintain a well-kept appearance at all company facilities.
- Waste will be segregated and stored according to its waste classification.
- A designated storage area will be established for waste storage.
- Operator will properly characterize and dispose of all waste (i.e. the specific landfill/waste disposal location allows for acceptance of the waste stream).



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Appendix A

Waste Management Guides

Waste	Guide No.
Absorbents - Spent (charcoal, silica, etc.)	1.0
Acids and Caustics - spent	2.0
Aerosol Cans - Spent (degreasers, WD-40, spray paint, lubricants, etc.)	3.0
Batteries (Non-Rechargeable) – Alkaline and Button-Style Lithium	4.0
Batteries (Rechargeable) – Lithium-ion, Nickel Cadmium (Ni-Cd), and Nickel Metal Hydride (Ni-MH)	5.0
Batteries – Lead Acid	6.0
Blowdown and Swabbing Waste	7.0
Cement - Excess	8.0
Chemicals - Spent and Unused Hazardous	9.0
Chemicals - Spent and Unused Non-Hazardous	10.0
Concrete (Demolition Foundations)	11.0
Contaminated Personal Protective Equipment (PPE) (gloves, masks, coveralls, etc.)	12.0
Condensate Collected from Spills	13.0
Domestic Refuse (trash, construction debris, food waste)	14.0
Drilling Fluid/Mud	15.0
Drilling Mud Solids and Cuttings	16.0
Electronic Waste (computer monitors, laptops, etc.)	17.0
Empty Drums and Bulk Containers	18.0
Filters - amine, glycol, coalescing	19.0
Filters - oil and fuel	20.0
Filters - produced water	21.0
Fluorescent Lamps and Bulbs - Broken and Intact	22.0
Glycol – Ethylene Based – Spent and Unused	23.0
Ink and Toner Waste	24.0
Lubricating Oils and Hydraulic Oils	25.0
Medical Waste	26.0
Oil Contaminated Debris (oily rags, oil pads, booms, etc.)	27.0
Pesticides/Herbicides	28.0
Pigging Waste	29.0
Pressurized Cylinders (fire extinguishers, calibration gas, etc.)	30.0
Produced Solids and Tank Bottoms	31.0
Produced Water	32.0
Scrap Metal (pipe, vessels)	33.0
Septic Waste	34.0
Soil Contaminated with Chemical or Lube Oil	35.0
Soil Contaminated with Crude Oil, Condensate or Produced Water	36.0
Solvents - Spent	37.0
Technologically Enhanced Naturally Occurring Radioactive Material (TENORM)	38.0
Well Workover and Completion Fluids	39.0



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1.0 Absorbents – Spent (Charcoal, Silica, etc.)

Operational Phase – (e.) Production

Waste Generation Description	Spent absorbents from dehydration units, sweetening units, hydrocarbon removal processes and used in removing impurities from process fluids.
Classification	E&P Exempt
Estimated Volumes	N/A
Classification Basis	Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53, but may be classified as hazardous if mismanaged.
Handling/Storage	Waste intended for recycling or landfill must be drained of all liquids and dried. Containerize liquids and absorbent in separate rain-proof, and leak proof containers. Keep containers closed when not in use. Store containers in designated non-hazardous waste storage areas that reduce the potential for release.
Labeling	Label with contents. For example, “Spent Absorbents”.
Required Sampling/Analysis¹ for Classification Status	Typically, none.
Required Logs, Manifests, Notifications	Use the state specified method of shipment for E&P Waste (required manifest or standard bill of lading).
Transportation	Waste must be transported by an authorized transporter.
Disposal	Dispose of at an approved E&P exempt waste landfill.
Approved Disposal Vendors	See Appendix B.
Recycling	N/A
Approved Recycle Vendors	N/A
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five years.
Waste Minimization Best Practices	Change out absorbent material only as often as required. Ensure preventive maintenance and good housekeeping to prevent spills and leaks.
Regulatory Reference	40 CFR 261 & ECMC Rule 905

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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2.0 Acids and Caustics – Spent

Operational Phase – (c.) Completions, (b.) Drilling and (e.) Production

Waste Generation Description	Acid or caustic that has been used for well workover and stimulation.
Classification	E&P Exempt if returning from down well. Potentially Hazardous, if chemicals are to be disposed. Unused chemical product returned to the vendor are not classified as waste.
Estimated Volume	N/A
Classification Basis	Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53, but may be classified as hazardous if mismanaged if returning from down well. Non-Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53. Meets the requirements for hazardous waste as defined by 40 CFR 261 and UAC R315-5 when not meeting E&P exemption.
Handling/Storage	Containerize spent acids in rain-proof and leak-proof containers that are compatible with corrosive materials. Keep containers closed when not in use. Store containers in designated non-hazardous waste storage areas that reduce the potential for release. If commingling with produced water, store in produced water tanks.
Labeling	Label with contents. For example, "Spent Acids".
Required Sampling/Analysis¹ for Classification Status	Typically, none.
Required Logs, Manifests, Notifications	If shipping to 3 rd party disposal, use the state specified method of shipment for E&P Waste (required manifest or standard bill of lading).
Transportation	Waste must be transported by an authorized and/or certified transporter.
Disposal	Dispose of along with produced water at an approved subsurface injection facility (Caerus operated or 3 rd party facility). If non-E&P exempt dispose of at an approved hazardous waste landfill or an approved non-hazardous waste landfill if characterized as non-hazardous.
Approved Disposal Vendors	See Appendix B.
Recycling	N/A
Approved Recycle Vendors	N/A
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of 5 years.
Waste Minimization Best Practices	Use as little acid as practical to perform necessary work. Return unused acid to vendor, if possible. Use spent acid to neutralize excess caustics as per 40 CFR 264.1 (g)(6).
Regulatory Reference	40 CFR 261 ECOM Rule 905

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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3.0 Aerosol Cans – Spent (Degreasers, WD-40, Spray Paint, Lubricants, etc.)

Operational Phase – (a.- h.) All Operations

Waste Generation Description	Aerosol cans containing lubricants, degreasers, spray paint, etc.
Classification	Non-Hazardous if can is “RCRA empty” (See Classification Basis) of product. Hazardous if can is not “RCRA empty” and product can no longer be used.
Estimated Volume	5 lbs
Classification Basis	Non-Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53. May meet the requirements for hazardous waste if can is not “RCRA empty”. Can is RCRA empty if all product has been removed using practices commonly employed (spraying) and residue left in can is <1 inch or <3% of original product weight.
Handling/Storage	Do not puncture aerosol cans. Containerize spent aerosol cans that are classified as hazardous waste in rain-proof and leak-proof containers that are compatible with the chemicals stored therein. Keep containers closed when not in use. If managed as hazardous waste, store cans for no more than 180 days. Contact EHS Department for assistance.
Labeling	If managed as hazardous waste, label container as “Waste Aerosol Cans - Hazardous” or “Used Aerosol Cans – Hazardous. The accumulation start date must also be recorded, either on the container or in written or electronic records.
Required Sampling/Analysis¹ for Classification Status	Typically, none.
Required Logs, Manifests, Notifications	If disposed of a hazardous waste, a Uniform Hazardous Waste Manifest is not required, but is highly recommended for Very Small Quantity Generators. Hazardous waste from Small Quantity or Large Quantity Hazardous Waste Generators always requires a Uniform Hazardous Waste Manifest.
Transportation	Waste must be transported by an authorized transporter.
Disposal	If hazardous, dispose of at an approved hazardous waste landfill. Confirm that landfill will accept waste aerosol cans. Aerosol cans that are RCRA empty should be punctured at the aerosol can puncture station and allowed to empty, cans should be place in the steel recycle bin to be recycled. Contact EHS Department for assistance.
Approved Disposal Vendors	See Appendix B.
Recycling	Empty cans that have been punctured are to be recycled as scrap steel.
Approved Recycle Vendors	N/A
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of three years (indefinitely if hazardous).
Waste Minimization Best Practices	Purchase aerosols on an as needed basis. Use all product so that the waste can is classified as non-hazardous waste.
Regulatory Reference	40 CFR 261 & 273, ECMC Rule 906

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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4.0 Batteries (Non-Rechargeable) – Alkaline and Button-Style Lithium

Operational Phase – (a. – h.) All Operations

Waste Generation Description	Typical non-rechargeable alkaline batteries and button-style lithium batteries used in flashlights, radios, and other electronic devices and small appliances
Classification	Non-hazardous
Estimated Volume	5 lbs
Classification Basis	Does not meet the requirements for hazardous waste as defined by 40 CFR 261 or UAC R315-5. May be considered hazardous in states that require bioassay analysis.
Handling/Storage	May be placed directly into trash receptacles as domestic refuse. Any leaking batteries should be placed in secure, non-leaking containers before disposal. If disposing of several batteries at once, consider taping over contacts to avoid fire hazard.
Labeling	Typically, none
Required Sampling/Analysis¹ for Classification Status	Typically, none.
Required Logs, Manifests, Notifications	Typically, none
Transportation	Waste must be transported by an authorized transporter.
Disposal	Dispose of at an approved non-hazardous waste landfill
Approved Disposal Vendors	See Appendix B.
Recycling	Recycling of alkaline and lithium batteries is usually not an option
Approved Recycle Vendors	N/A
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of three years.
Waste Minimization Best Practices	Utilize rechargeable batteries when possible. Purchase long-life batteries to decrease the number needed.
Regulatory Reference	40 CFR 261 and 273 ECOM Rule 906

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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5.0 Batteries (Rechargeable) – Lithium-ion, Nickel Cadmium (Ni-Cd), and Nickel Metal Hydride (Ni-MH) Operational Phase – (a. – h.) All Operations

Waste Generation Description	Ni-Cd, Ni-MH, Lithium-ion and other rechargeable batteries in radios, computers, cell phones, etc.
Classification	Ni-Cd batteries are classified as Hazardous or Hazardous – Universal. Ni-MH and Lithium-ion batteries are classified as Non-hazardous
Estimated Volume	10 lbs
Classification Basis	Ni-Cd batteries are regulated as hazardous under the US EPA Universal Waste Rule. Ni-MH and Lithium-ion batteries do not meet the requirements for hazardous waste as defined by 40 CFR 261 or 273.
Handling/Storage	Spent Ni-MH and Lithium-ion batteries may not be placed directly into trash receptacles as domestic refuse recycling is required. Any leaking batteries should be placed in secure, non-leaking containers before disposal. Consider taping over battery contacts to avoid fire hazard. It may also be acceptable to dispose of spent Ni-Cd batteries as domestic refuse if generating facility is a Very Small Quantity Generator. Contact the EHS Department for more information. All spent batteries should be stored for no more than one year in a designated storage area.
Labeling	Label container as “Waste Batteries” or “Used Batteries”. If managed as universal hazardous waste, label as above or as “Universal Waste - Batteries”. The accumulation start date must also be recorded, either on the container or in written or electronic records.
Required Sampling/Analysis¹ for Classification Status	Typically, none.
Required Logs, Manifests, Notifications	Typically, none unless facility accumulates >11,000 lbs. of Universal Waste
Transportation	Waste must be transported by an authorized transporter.
Disposal	Dispose of spent Ni-Cd batteries at an approved hazardous or universal hazardous waste landfill or an approved non-hazardous waste landfill that accepts hazardous waste from Very Small Quantity Generators. Confirm that landfill will accept waste batteries.
Approved Disposal Vendors	See Appendix B.
Recycling	Recycle at an approved recycling facility. Many retail, electronic stores will accept Lithium-ion, Ni-Cd and Ni-MH batteries
Approved Recycle Vendors	See Appendix B.
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of three years.
Waste Minimization Best Practices	Utilize rechargeable batteries when possible. Purchase long-life batteries to decrease the number needed. Recycling is the preferred method of disposal. If it's rechargeable, it's recyclable.
Regulatory Reference	40 CFR 261 and 273, ECMC Rule 906

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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6.0 Batteries – Lead Acid

Operational Phase – (a. – h.) All Operations

Waste Generation Description	Lead acid batteries used in electrical and mechanical applications.
Classification	Hazardous if disposed of in landfill. May be managed as universal waste if recycled or reclaimed.
Estimated Volume	20 lbs
Classification Basis	Meets the criteria for hazardous waste as defined by 40 CFR 261. Can be classified as non-hazardous if recycled or reclaimed. Also classified as universal hazardous waste under 40 CFR 273.
Handling/Storage	Store spent batteries in designated storage area in rainproof, leak-proof containers that are compatible with the types of batteries stored therein. If managed as hazardous waste, store batteries for no more than 180 days. If managed as universal hazardous, store for no more than one year.
Labeling	If managed as hazardous waste, label container as “Waste Batteries - Hazardous” or “Used Batteries - Hazardous”. If managed as universal hazardous waste, label as above or as “Universal Waste Batteries”. The accumulation start date must also be recorded, either on the container or in written or electronic records.
Required Sampling/Analysis¹ for Classification Status	Typically, none.
Required Logs, Manifests, Notifications	If non-hazardous (recycled), use Bill of Lading or Non-Hazardous Waste Manifest. If hazardous (disposal), a Uniform Hazardous Waste Manifest is not required, but is highly recommended for Very Small Quantity Generators. Hazardous waste from Small Quantity or Large Quantity Hazardous Waste Generators always requires a Uniform Hazardous Waste Manifest.
Transportation	Waste must be transported by an authorized transporter.
Disposal	If not recycled, dispose of at an approved hazardous waste landfill or an approved non-hazardous waste landfill that accepts hazardous waste from Very Small Quantity Generators. Confirm that landfill will accept waste batteries.
Approved Disposal Vendors	See Appendix B.
Recycling	Return to vendor or recycle at an approved recycling facility.
Approved Recycle Vendors	See Appendix B.
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of three years.
Waste Minimization Best Practices	Recycling is the preferred method of disposal.
Regulatory Reference	40 CFR 261, 266, and 273 ECMC Rule 906

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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7.0 Blowdown and Swabbing Waste

Operational Phase – (e.) Production

Waste Generation Description	Fluids cleaned out of a well bore including crude oil, produced water, paraffin and water mix, emulsion breakers, corrosion inhibitors and scale inhibitors.
Classification	E&P Exempt
Estimated Volume	5 BBLs
Classification Basis	Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53, but may be classified as Hazardous if mismanaged.
Handling/Storage	Send through production system for ultimate disposal with produced water.
Labeling	N/A
Required Sampling/Analysis¹ for Classification Status	Typically, none.
Required Logs, Manifests, Notifications	If shipping to 3 rd party disposal, use the state specified method of shipment for E&P Waste (required manifest, load ticket, or standard bill of lading).
Transportation	Waste must be transported by an authorized transporter.
Disposal	Dispose of along with produced water at an approved subsurface injection facility (Caerus operated or 3 rd party facility).
Approved Disposal Vendors	Use Caerus-operated water injection well or see Appendix B.
Recycling	N/A
Approved Recycle Vendors	N/A
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of three years.
Waste Minimization Best Practices	Return fluids to the production system if possible.
Regulatory Reference	ECMC Rule 905

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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8.0 Cement – Excess and returns

Operational Phase – (b.) Drilling, (a.) Construction and (h.) Plug and Abandonment

Waste Generation Description	Unused cement used in drilling and well work operations.
Classification	Non-Hazardous
Estimated Volume	100 yards
Classification Basis	Does not meet the requirements for hazardous waste as defined by 40 CFR 261 or UAC R315-5.
Handling/Storage	Containerize in leak-proof containers and keep dry. Keep containers closed when not in use and store in designated non-hazardous waste storage areas that reduce the potential for release.
Labeling	None
Required Sampling/Analysis¹ for Classification Status	Typically, none. However, analyze if contamination is evident and utilize results to confirm waste classification.
Required Logs, Manifests, Notifications	Typically, none if returned to vendor.
Transportation	Waste must be transported by an authorized transporter.
Disposal	If excess cement is in a slurry, it will be placed in a cement wash-out facility or disposed of offsite at an approved 3rd party disposal facility. Depending on the disposal requirements at the offsite commercial disposal landfills, excess cement from the drilling process including cement return and waste cement may be mixed with cuttings for offsite disposal. Dry excess cement could be returned to the vendor or used on another job.
Approved Disposal Vendors	N/A
Recycling	Return unused dry cement to vendor.
Approved Recycle Vendors	N/A
Recordkeeping	N/A
Waste Minimization Best Practices	Calculate cement needs carefully to reduce excess cement mixture. Utilize excess cement at other work sites when possible or use as a drying agent to remove excess fluids from cuttings.
Regulatory Reference	40 CFR 261 ECMC Ruler 906

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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9.0 Chemicals – Spent and Unused - Hazardous

Operational Phase – (a. – h.) All Operations

Waste Generation Description	Spent hazardous chemicals used by a facility or unused chemicals still in a condition to be used as originally intended but has no further function at a facility.
Classification	Hazardous, if chemicals are to be disposed. Unused chemical product returned to the vendor are not classified as waste.
Estimated Volume	N/A
Classification Basis	Non-Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53. Meets the requirements for hazardous waste as defined by 40 CFR 261 and UAC R315-5.
Handling/Storage	Containerize spent chemicals in rain-proof and leak-proof containers that are compatible with chemicals stored therein (original containers, if available). Keep containers closed when not in use. Store containers in designated hazardous waste storage areas that reduce the potential for release. If you exceed 2204.6 pounds (1000 Kg) per month of hazardous waste, the storage time limit may change. Contact EHS Department for assistance.
Labeling	Label as “Hazardous Waste”. Include contents (type of spent chemicals), generator information and accumulation start date on label.
Required Sampling/Analysis¹ for Classification Status	Typically, none unless classification is unknown.
Required Logs, Manifests, Notifications	If chemicals are to be disposed, a Uniform Hazardous Waste Manifest is not required, but is highly recommended for Very Small Quantity Generators. Hazardous waste from Small Quantity or Large Quantity Hazardous Waste Generators always requires a Uniform Hazardous Waste Manifest.
Transportation	Waste must be transported by an authorized and certified transporter.
Disposal	Dispose of at an approved hazardous waste landfill or an approved non-hazardous waste landfill that accepts hazardous waste from Very Small Quantity Generators.
Approved Disposal Vendors	Contact EHS Dept.
Recycling	Unused chemical products should always be returned to vendor, if possible.
Approved Recycle Vendors	N/A
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for 3 years.
Waste Minimization Best Practices	If possible, return unused chemical product to vendor. Use chemical completely before removing from the system to reduce the amount of waste produced. Use non-hazardous products whenever possible. Recycling is the preferred method of disposal.
Regulatory Reference	40 CFR 261 ECMC Rule 906

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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10.0 Chemicals – Spent and Unused - Non-Hazardous

Operational Phase – (a. – h.) All Operations

Waste Generation Description	Spent non-hazardous chemicals used by a facility or unused chemicals still in a condition to be used as originally intended but has no further function at a facility.
Classification	Non-Hazardous, if chemicals are to be disposed. Unused chemicals returned to the vendor are not classified as waste.
Estimated Volume	N/A
Classification Basis	Does not meet the requirements for hazardous waste as defined by 40 CFR 261 or UAC R315-5.
Handling/Storage	Containerize spent chemicals in rain-proof and leak-proof containers that are compatible with chemicals stored therein (original containers if available). Keep containers closed when not in use. Store containers in designated non-hazardous waste storage areas that reduce the potential for release.
Labeling	Label as non-hazardous with chemical name.
Required Sampling/Analysis¹ for Classification Status	Typically, none unless classification is unknown.
Required Logs, Manifests, Notifications	If chemicals are to be disposed, use a Bill of Lading or Non-Hazardous Waste Manifest.
Transportation	Waste must be transported by an authorized transporter.
Disposal	Dispose of at an approved non-hazardous waste landfill.
Approved Disposal Vendors	Contact EHS Dept.
Recycling	Unused chemicals should always be returned to vendor.
Approved Recycle Vendors	N/A
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of three years.
Waste Minimization Best Practices	If possible, return unused chemicals to vendor. Use chemical completely before removing from the system to reduce the amount of waste produced.
Regulatory Reference	40 CFR 261 ECMC Rule 906

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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11.0 Concrete (Demolition Foundations)

Operational Phase – (a.) Construction, & (g.) Facility Decommissioning and (h.) Plug and Abandonment

Waste Generation Description	Used concrete resulting from the demolition of foundations found on site.
Classification	Non-Hazardous
Estimated Volume	10 yards
Classification Basis	Does not meet the requirements for hazardous waste as defined by 40 CFR 261
Handling/Storage	
Labeling	None
Required Sampling/Analysis¹ for Classification Status	Typically, none unless there is a potential for contamination.
Required Logs, Manifests, Notifications	
Transportation	concrete must be transported by an approved transporter
Disposal	Dispose of at an approved non-hazardous waste landfill or use as rip-rap, etc.
Approved Disposal Vendors	See Appendix B.
Recycling	Recycle at an approved recycling facility, crush for road base, etc.
Approved Recycle Vendors	N/A
Recordkeeping	
Waste Minimization Best Practices	Crush uncontaminated concrete for reuse as aggregate. Use other materials such as high-density polyethylene liners rather than concrete.
Regulatory Reference	40 CFR 261 ECMC Rule 906

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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12.0 Contaminated Personal Protective Equipment (PPE) (Gloves, Masks, Coveralls, etc.)

Operational Phase – (a. - h.) All Operations

Waste Generation Description	PPE that has been contaminated with oil, condensate, fuel, chemicals, etc. and can no longer be utilized by employees.
Classification	Non-Hazardous
Estimated Volume	N/A
Classification Basis	Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53, but may be classified as hazardous if mismanaged.
Handling/Storage	Containerize contaminated PPE in rain-proof and leak-proof containers that are compatible with the material stored therein. Keep containers closed when not in use. Store containers in designated non-hazardous waste storage areas that reduce the potential for release.
Labeling	Label with contents. For example, "Contaminated PPE".
Required Sampling/Analysis¹ for Classification Status	Typically, none.
Required Logs, Manifests, Notifications	
Transportation	Waste must be transported by an authorized transporter.
Disposal	
Approved Disposal Vendors	See Appendix B.
Recycling	N/A
Approved Recycle Vendors	N/A
Recordkeeping	
Waste Minimization Best Practices	Wash or decontaminate and reuse when possible.
Regulatory Reference	40 CFR 261 ECMC Rule 906

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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13.0 Condensate Collected from Spills

Operational Phase – (a. – h.) All Operations

Waste Generation Description	Crude oil and condensate collected from spills, leaks, and operation upsets.
Classification	E&P Exempt
Estimated Volume	N/A
Classification Basis	Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53, but may be classified as hazardous if mismanaged.
Handling/Storage	If not placed back into production system, containerize in rain-proof and leak-proof containers that are compatible with the material stored therein. Keep containers closed when not in use. Store containers in designated non-hazardous waste storage areas that reduce the potential for release.
Labeling	Label with contents. For example, "Crude Oil or Condensate".
Required Sampling/Analysis¹ for Classification Status	Typically, none.
Required Logs, Manifests, Notifications	Use the state specified method of shipment for E&P Waste (required manifest, load ticket, or standard bill of lading).
Transportation	Waste must be transported by an authorized transporter.
Disposal	If not placed back in production system, dispose of at an approved E&P exempt waste facility.
Approved Disposal Vendors	See Appendix B
Recycling	Return to production stream for recovery.
Approved Recycle Vendors	N/A
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five years.
Waste Minimization Best Practices	Ensure preventive maintenance and good housekeeping to prevent spills and leaks. If possible, return recovered oil to production system.
Regulatory Reference	ECMC Rule 905

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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14.0 Domestic Refuse (Trash, Construction Debris, Food Waste)

Operational Phase – (a. – h.) All Operations

Waste Generation Description	General office and living quarter trash, paper, food waste, etc.
Classification	Municipal/Domestic Solid Waste
Estimated Volume	25 yards
Classification Basis	Does not meet the criteria for hazardous waste as defined by 40 CFR 261 or UAC R315-5 but may be classified as hazardous if mismanaged.
Handling/Storage	Do not mix with material that is contaminated or may be hazardous. Place domestic refuse in trash receptacle if not recycled.
Labeling	None
Required Sampling/Analysis¹ for Classification Status	Typically, none.
Required Logs, Manifests, Notifications	Typically, none.
Transportation	Waste must be transported by an authorized transporter.
Disposal	Dispose of at an approved municipal waste landfill.
Approved Disposal Vendors	See Appendix B.
Recycling	Recycle at an approved recycling facility.
Approved Recycle Vendors	N/A
Recordkeeping	Maintain all logs, manifests and waste documentation for billing purposes.
Waste Minimization Best Practices	Purchase items in bulk to reduce packing waste. Utilize reusable items such as cups, plates, and utensils. Compost food waste and other biodegradable materials to reduce waste. Utilize recycling bins for paper, plastic, glass, and cardboard waste.
Regulatory Reference	40 CFR 261 ECOM Rule 906

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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15.0 Water-based Bentonitic Drilling Fluid/Mud

Operational Phase – (b.) Drilling

Waste Generation Description	Water based circulating fluid/mud used in the rotary drilling of wells to clean and condition the hole and to counterbalance formation pressure.
Classification	E&P Exempt
Estimated Volume	18,700 yards
Classification Basis	Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53, but may be classified as Hazardous if mismanaged.
Handling/Storage	Closed loop systems will be used to separate solids from liquid. The majority of drilling fluids are anticipated to be clean drilling fluids and will be recycled and reused in drilling operations at the next drilling site. Any drilling fluids that are deemed to be unusable, will be transported to an approved off-site disposal facility.
Labeling	N/A
Required Sampling/Analysis¹ for Classification Status	Typically, none.
Required Logs, Manifests, Notifications	Use the state-specified method of shipment for E&P Waste (required manifest or standard bill of lading).
Transportation	Waste must be transported by an authorized transporter.
Disposal	Dispose of at an approved E&P exempt waste landfill or approved subsurface injection facility.
Approved Disposal Vendors	See Appendix B.
Recycling	Reuse drilling fluid whenever possible.
Approved Recycle Vendors	N/A
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five years.
Waste Minimization Best Practices	Utilize a closed-loop mud system or aeration/evaporation methods whenever possible to reduce volumes of drilling wastes. Utilize solids control technology (e.g., chemically enhanced centrifuge) to recover water from drilling mud. Reuse fluids at another location.
Regulatory Reference	ECMC Rule 905

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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16.0 Water-based Bentonitic Drilling Mud Solids and Cuttings

Operational Phase – (b.) Drilling

Waste Generation Description	Particles and cuttings generated by drilling into the subsurface geological formations including cured cement carried to the surface with the drilling fluid (water based).
Classification	E&P Exempt
Estimated Volume	
Classification Basis	Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53, but may be classified as Hazardous if mismanaged.
Handling/Storage	Store dry on location within steel bins.
Labeling	
Required Sampling/Analysis¹ for Classification Status	ECMC table 915-1
Required Logs, Manifests, Notifications	Beneficial use approval. Form 27 submittal for onsite burial. Offsite disposal under Manifest
Transportation	Waste must be transported with manifest by an authorized transporter. See attached haul routes and disposal facilities.
Disposal	Solids control equipment consisting of shale shakers, centrifuges, and flocculating units may be utilized to separate drill cutting solids from liquid (drilling mud and water). Caerus is anticipating cuttings will not be compliant with ECMC Table 915-1, so offsite disposal is planned, and disposal haul routes have been included. The M12-496 site will have steel storage bins on location for stockpiled cuttings awaiting offsite disposal; therefore, surface management and temporary storage of drill cuttings on a compacted and bermed portion of the well pad will be sufficiently protective of groundwater. The moisture content of any cuttings shall be as low as practicable to prevent accumulation of liquids greater than de minimis amounts. When offsite disposal occurs waste cement may be used as a drying agent (if approved by the receiving offsite commercial disposal landfill) to aid in solidify the cuttings. All offsite disposal will be in accordance with ECMC Rule 905.b. and comply with all CDOT shipping requirements. Any excess cuttings that meet the constituent levels in Table 915-1 may potentially be reused on location upon approval of a Form 27 or a request for approved of a 915.b. Reclamation Plan for beneficial reuse. This will be proposed by Caerus prior to the start of interim reclamation.
Approved Disposal Vendors	See Appendix B.
Recycling	N/A
Approved Recycle Vendors	N/A
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five years.
Waste Minimization Best Practices	Design and monitor drilling mud programs to reduce hole size (when feasible). The use of centrifuges and drying beds can also reduce the volume of mud required for drilling.
Regulatory Reference	ECMC Rule 905

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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17.0 Electronic Waste (Computer Monitors, Communication equipment, etc.)

Operational Phase – (a. – h.) All Operations

Waste Generation Description	Computer monitors, PC, keyboards, disk drives, network routers, etc.
Classification	Non-hazardous but potentially hazardous if hazardous waste characteristics are present
Estimated Volume	10 lbs
Classification Basis	Classification dependent on waste characteristics under 40 CFR 261 or Title 25 Article 17 Part 3
Handling/Storage	Electronic waste generated onsite can be managed as universal waste, in most cases. Some states place limits on the amount of electronic waste that is generated before it becomes hazardous waste. Store electronic waste indoors in a manner as to prevent breakage.
Labeling	Typically, none.
Required Sampling/Analysis¹ for Classification Status	Typically, none.
Required Logs, Manifests, Notifications	If necessary, manifesting would be completed by the IT Department.
Transportation	Pick up and transportation should be set up through the IT Department.
Disposal	N/A
Approved Disposal Vendors	N/A
Recycling	Recycle at an approved recycling facility. Contact the IT Department for more information.
Approved Recycle Vendors	Contact the IT Department.
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of three years.
Waste Minimization Best Practices	Do not dispose of obsolete electronic waste in the trash. Recycling is the preferred method of disposal.
Regulatory Reference	40 CFR 261, ECOM Rule 906

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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18.0 Empty Drums and Bulk Containers

Operational Phase – (a. – h.) All Operations

Waste Generation Description	Metal and plastic drums and similar, returnable, bulk containers of various sizes, sorted by chemical when possible.
Classification	Non-Hazardous if RCRA empty (all product has been removed and residue left in can is <1 inch or <3% of original product weight.
Estimated Volume	25 bulk containers back to product reseller
Classification Basis	Does not meet the criteria for hazardous waste as defined by 40 CFR 261
Handling/Storage	Store empty drums and containers in a designated drum storage area. Ensure that all drums and containers are properly sealed. Effort should be made to empty the container completely before storage. Drums and containers previously containing hazardous and non-hazardous materials are considered empty when there is less than one inch of residue remaining. Drums and containers previously containing acute hazardous materials must be triple rinsed and the rinseate disposed of accordingly. Contact the EHS Dept. for more information.
Labeling	Label as "Empty".
Required Sampling/Analysis¹ for Classification Status	Typically, none.
Required Logs, Manifests, Notifications	Bill of Lading or Non-Hazardous Waste Manifest.
Transportation	Waste must be transported by an authorized transporter.
Disposal	Crush and dispose of at an approved non-hazardous waste landfill.
Approved Disposal Vendors	See Appendix B.
Recycling	Return to vendor or recycle at an approved recycling facility. Drums and containers to be recycled must be completely empty of all liquid residue.
Approved Recycle Vendors	See Appendix B.
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of three years.
Waste Minimization Best Practices	Purchase materials in returnable or recyclable drums and containers. Purchase materials in bulk to decrease the number of empty containers or drums generated. Require that vendors pick up all empty drums and containers as a contract condition.
Regulatory Reference	40 CFR 261 ECMC Rule 906

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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19.0 Filters – Amine, Glycol, Coalescing

Operational Phase – (b.) Drilling & (e.) Production

Waste Generation Description	Spent filters from dehydration units, sweetening units, hydrocarbon removal processes and used in removing impurities from process fluids.
Classification	E&P Exempt
Estimated Volume	N/A
Classification Basis	Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53, but may be classified as Hazardous if mismanaged.
Handling/Storage	Filters intended for recycling or landfill must be drained of all liquids prior to disposal. Containerize liquids and filters in separate rain-proof, and leak proof containers that are compatible with material stored therein. Keep containers closed when not in use. Store containers in designated non-hazardous waste storage areas that reduce the potential for release.
Labeling	Label with contents. For example, "Used Filters".
Required Sampling/Analysis¹ for Classification Status	Typically, none.
Required Logs, Manifests, Notifications	Use the state specified method of shipment for E&P Waste (required manifest or standard bill of lading).
Transportation	Waste must be transported by an authorized transporter.
Disposal	Dispose of at an approved E&P exempt waste landfill.
Approved Disposal Vendors	See Appendix B.
Recycling	N/A
Approved Recycle Vendors	N/A
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of three years.
Waste Minimization Best Practices	Change filters only when necessary. When handling filters, take precautions to prevent liquid spilling. Recycle drained fluids by introducing them back into the production system, if possible.
Regulatory Reference	ECMC Rule 905

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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20.0 Filters – Oil and Fuel

Operational Phase – (a. – h.) All Operations

Waste Generation Description	Filter material used for engines to removes solid contaminants from fuel and oil.
Classification	Non-Hazardous
Estimated Volume	100 lbs
Classification Basis	Does not meet the criteria for hazardous waste as defined by 40 CFR 261 or UAC R315-5.
Handling/Storage	Used oil and fuel filters must be “hot drained” to remove all contents, by puncturing a hole in the filter and allowing to drain for 12-24 hours. Once drained, the used filters are required to be containerized within rainproof, leak-proof, closed containers and stored within designated non-hazardous waste storage areas prior to removal from facility. Filters that have not been “hot drained” may be considered hazardous waste.
Labeling	Label with contents. For example, “Used Oil Filters” or “Used Fuel Filters”
Required Sampling/Analysis¹ for Classification Status	Typically, none.
Required Logs, Manifests, Notifications	Bill of Lading or Non-Hazardous Waste Manifest.
Transportation	Waste must be transported by an authorized transporter.
Disposal	Dispose of at an approved non-hazardous waste landfill.
Approved Disposal Vendors	See Appendix B.
Recycling	N/A
Approved Recycle Vendors	N/A
Recordkeeping	Maintain all logs, manifests, and waste documentation at the facility as necessary.
Waste Minimization Best Practices	Change filters only when necessary. When handling filters, take precautions to prevent spilling. Recycle drained fluids, if possible.
Regulatory Reference	40 CFR 261, ECMC Rule 906

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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21.0 Filters – Produced Water

Operational Phase – (c.) Completions & (d.) Flowback

Waste Generation Description	Wound string cartridge filters for filtering produced water.
Classification	E&P Exempt
Estimated Volume	5 yards
Classification Basis	Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53, but may be classified as Hazardous if mismanaged.
Handling/Storage	Filters intended for recycling or landfill must be drained of all liquids prior to disposal. Return recovered liquids back into produced water tanks. Containerize filters in separate rain-proof, and leak proof containers that are compatible with material stored therein. Keep containers closed when not in use. Store containers in designated non-hazardous waste storage areas that reduce the potential for release.
Labeling	Label with contents. For example, "Used Filters".
Required Sampling/Analysis¹ for Classification Status	Typically, none.
Required Logs, Manifests, Notifications	Use the state specified method of shipment for E&P Waste (required manifest or standard bill of lading).
Transportation	Waste must be transported by an authorized transporter.
Disposal	Dispose of at an approved E&P exempt waste landfill.
Approved Disposal Vendors	See Appendix B.
Recycling	N/A
Approved Recycle Vendors	N/A
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five years.
Waste Minimization Best Practices	Change filters only as often as required. When handling filters, take precautions to prevent liquid spilling. Recycle drained fluids by introducing them back into the produced water system, if possible.
Regulatory Reference	ECMC Rule 905

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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22.0 Fluorescent Lamps and Bulbs - Broken and Intact

Operational Phase – (b.) Drilling

Waste Generation Description	Fluorescent light bulbs and lamps are used in office buildings and facilities to provide lighting in offices and other work areas. May contain mercury.
Classification	Hazardous or Universal Hazardous
Estimated Volume	1 lb
Classification Basis	Meets the criteria for hazardous waste as defined by 40 CFR 261. Also classified as universal hazardous waste under 40 CFR 273.
Handling/Storage	All fluorescent lamps and bulbs generated onsite should be managed as either hazardous waste or universal hazardous waste. Store lamps and bulbs (broken and intact) in a structurally sound container such as a cardboard box. The container is required to remain closed when not in use. If managed as universal hazardous waste, store for no more than one year.
Labeling	If managed as hazardous waste, label container as "Waste Lamps - Hazardous" or "Used Lamps - Hazardous". If managed as universal hazardous waste, label as above or as "Universal Waste Lamps". The accumulation start date must also be recorded, either on the container or in written or electronic records.
Required Sampling/Analysis¹ for Classification Status	Typically, none.
Required Logs, Manifests, Notifications	Lamps and bulbs that are recycled or disposed of as Universal Waste typically need no manifests. If disposed of as a hazardous waste, a Uniform Hazardous Waste Manifest is not required, but is highly recommended for Very Small Quantity Generators. Hazardous waste from Small Quantity or Large Quantity Hazardous Waste Generators always requires a Uniform Hazardous Waste Manifest.
Transportation	Waste must be transported by an authorized transporter.
Disposal	Dispose of at an approved hazardous waste or universal hazardous waste landfill, or at a non-hazardous waste landfill that accepts hazardous waste from a Very Small Quantity Generator.
Approved Disposal Vendors	See Appendix B.
Recycling	Recycle at an approved recycling facility.
Approved Recycle Vendors	Contact EHS Dept.
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of three years.
Waste Minimization Best Practices	Change lamps and bulbs when necessary. Recycle spent lamps and bulbs. Utilize "low-mercury" or "environmentally friendly" lamps and bulbs (look for green end caps).
Regulatory Reference	40 CFR 273, ECOM Rule 906

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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23.0 Glycol – Ethylene Based – Spent and Unused

Operational Phase – (b.) Drilling, (e.) Production, & (g.) Facility Closure

Waste Generation Description	Chemical used in dehydration units for removal of water from the gas stream.
Classification	E&P Exempt or non-hazardous waste
Estimated Volume	100 gallons
Classification Basis	Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53, but may be classified as Hazardous if mismanaged.
Handling/Storage	Reconditioned by third party contractor and reused onsite.
Labeling	N/A
Required Sampling/Analysis¹ for Classification Status	N/A
Required Logs, Manifests, Notifications	N/A
Transportation	Waste must be transported by an authorized transporter.
Disposal	Dispose of at an approved E&P exempt waste landfill or recycle.
Approved Disposal Vendors	See Appendix B.
Recycling	Reconditioned by third party contractor and reused onsite or sent to recycling center.
Approved Recycle Vendors	N/A
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five years.
Waste Minimization Best Practices	Optimize circulation rates on glycol pumps. Regenerate glycol for reuse or send to a recycling facility.
Regulatory Reference	40 CFR 261, or Rule 905

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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24.0 Ink and Toner Waste

Operational Phase – (b.) Drilling & (c.) Completions

Waste Generation Description	Used ink and toner cartridges.
Classification	Non-Hazardous
Estimated Volume	1 lb
Classification Basis	Does not meet the criteria for hazardous waste as defined by 40 CFR 261
Handling/Storage	Containerize and store in designated non-hazardous waste storage areas that reduce the potential for release.
Labeling	Label as non-hazardous with contents. For example, "Used Toner Cartridges".
Required Sampling/Analysis¹ for Classification Status	Typically, none.
Required Logs, Manifests, Notifications	If sent to disposal, use Bill of Lading or Non-Hazardous Waste Manifest.
Transportation	Waste must be transported by an authorized transporter.
Disposal	Dispose of at an approved non-hazardous waste landfill or return to manufacture.
Approved Disposal Vendors	See Appendix B.
Recycling	Return to manufacture for recycling using original container. Contact the EHS Department for assistance.
Approved Recycle Vendors	Contact the EHS Department.
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office.
Waste Minimization Best Practices	Recycle used ink and toner waste.
Regulatory Reference	40 CFR 261, ECOM Rule 906

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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25.0 Lubricating Oils and Hydraulic Oils

Operational Phase – (a. - h.) All Operations

Waste Generation Description	Used lubrication or hydraulic oil that originates from diesel and natural gas fired engines and from hydraulic equipment.
Classification	Non-Hazardous
Estimated Volume	1000 gallons during construction, drilling and completions, then minimal
Classification Basis	Does not meet the criteria for hazardous waste as defined by 40 CFR 261. However, if used oil is not recycled, generator must provide analytical proof that the waste is not hazardous prior to disposal.
Handling/Storage	Containerize in rain-proof and leak-proof containers that are compatible with chemicals stored therein. Keep containers closed when not in use. Store containers in designated non-hazardous waste storage areas that reduce the potential for release. Any container 55 gallons or greater must have secondary containment.
Labeling	Container must be labeled as "Used Oil".
Required Sampling/Analysis¹ for Classification Status	Typically, none, if waste oils are recycled.
Required Logs, Manifests, Notifications	Bill of Lading or Non-Hazardous Waste Manifest.
Transportation	Waste must be transported by an authorized transporter.
Disposal	N/A
Approved Disposal Vendors	N/A
Recycling	Recycle at an approved recycling facility.
Approved Recycle Vendors	See Appendix B
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office.
Waste Minimization Best Practices	Provide preventative maintenance to reduce leaks and drips. Recycle lubricating oil back into the production system if allowed by state regulations and sales contract.
Regulatory Reference	40 CFR 279, ECMC Rule 906

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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26.0 Medical and or Biological Waste

Operational Phase – (a. – h.) All Operations

Waste Generation Description	Solid and liquid waste composed of or contaminated with blood, vomit, other bodily fluids, animal or human waste, biological waste, pathological waste, or sharps (needles and blades).
Classification	Non-Hazardous
Estimated Volume	N/A
Classification Basis	Does not meet the criteria for hazardous waste as defined by 40 CFR 261
Handling/Storage	Place sharps in a rigid, leak- and puncture-resistant container with a lid. Keep the lid closed when not in use. Place other medical wastes in a DOT- or ASTM-rated plastic bag (commonly referred to as a "red bag"), if available. Otherwise, use a sturdy, sealable plastic bag. Place the bags in a sturdy box or other sealed container. If the waste contains flowing (free) liquids, including liquids in a container, place absorbent material in the bag along with the waste. Use enough absorbent material to absorb 150% of the volume of the liquids in the waste. Seal all seams in the box after adding waste. Store medical waste in a dry, secure area.
Labeling	Label the outer container as "Non-Hazardous Medical Waste" or "Non-Hazardous Medical Waste - Sharps" with a description of the contents.
Required Sampling/Analysis¹ for Classification Status	Typically, none.
Required Logs, Manifests, Notifications	Typically, none.
Transportation	Waste must be transported by an authorized transporter.
Disposal	Medical waste should always be disposed of through the use of an approved medical waste disposal service, if available. If such a service is not available, the waste should be taken to the nearest clinic or hospital for disposal. Ultimate disposal in an approved non-hazardous waste landfill.
Approved Disposal Vendors	See Appendix B.
Recycling	N/A
Approved Recycle Vendors	N/A
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of three years.
Waste Minimization Best Practices	N/A
Regulatory Reference	40 CFR 261, ECMC Rule 906

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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27.0 Technologically Enhanced Naturally Occurring Radioactive Material (TENORM)

Operational Phase – (g.) Facility Decommissioning

Waste Generation Description	Material such as pipe scale, produced sand/clay, tank/vessel bottoms, filter media, etc. that exhibit gamma radioactivity above background levels.
Classification	Special Waste
Estimated Volume	N/A – Caerus has not detected TENORM materials on a Piceance location
Classification Basis	Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53, but may be classified as hazardous if mismanaged or contaminated with non-exempt waste.
Handling/Storage	Do not cut, weld, burn, or rattle TENORM contaminated materials or equipment without proper personal protective equipment. Place in designated drums or tanks of good integrity. Keep containers closed when not in use. Openings on TENORM contaminated equipment must be sealed. Fence or rope off and label areas where TENORM contaminated material is stored. Access to storage area should be limited to as few personnel as possible. Refer to the Caerus TENORM Program for more information.
Labeling	If equipment or waste has TENORM levels above 50 μ R/hr, label with "TENORM" by securely attaching a clearly visible waterproof tag or marking with a legible waterproof paint or ink.
Required Sampling/Analysis¹ for Classification Status	Laboratory analysis required for TENORM contaminated waste. Refer to the Caerus TENORM Program for more information.
Required Logs, Manifests, Notifications	Contact EHS Dept. for manifesting requirements.
Transportation	Waste must be transported by an authorized and certified transporter. Contact the EHS Dept. for potential DOT shipping requirements.
Disposal	Depending on the laboratory analysis, NORM waste must be disposed of at an approved NORM disposal facility. Refer to the Caerus TENORM Program or contact the EHS Dept. for more information.
Approved Disposal Vendors	See Appendix B.
Recycling	N/A
Approved Recycle Vendors	N/A
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of three years.
Waste Minimization Best Practices	Use scale inhibitors where TENORM scale accumulates. Segregate and isolate TENORM contaminated waste.
Regulatory Reference	CDPHE TENORM Part 20, ECMC 905.b.(2)

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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28.0 Oil Contaminated Debris (Oily Rags, Oil Pads, Booms, etc.)

Operational Phase – (a. – h.) All Operations

Waste Generation Description	Oily rags, oil pads and booms generated from equipment maintenance and spill response procedures
Classification	E&P Exempt or Non-Hazardous
Estimated Volume	1 yard per year
Classification Basis	Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53, but may be classified as Hazardous if mismanaged or contaminated with non-exempt waste.
Handling/Storage	Waste must be drained of all liquids. Containerize liquids in drums. Deposit oil contaminated debris in rain-proof, leak-proof containers. Keep containers closed when not in use. Store containers in designated non-hazardous waste storage areas that reduce the potential for release.
Labeling	Label with contents. For example, “Oil Contaminated Debris” or “Oily Rags” (if separated).
Required Sampling/Analysis¹ for Classification Status	Typically, none.
Required Logs, Manifests, Notifications	Use the state specified method of shipment for E&P Waste (required manifest or standard bill of lading).
Transportation	Waste must be transported by an authorized transporter.
Disposal	Dispose of at an approved E&P exempt waste landfill or dispose through a oily rag disposal handler.
Approved Disposal Vendors	See Appendix B.
Recycling	N/A
Approved Recycle Vendors	N/A
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five years.
Waste Minimization Best Practices	Maintain equipment and facilities to prevent drips, leaks and spills which would require cleanup. Reuse or recycle whenever possible. Keep separate from other wastes.
Regulatory Reference	40 CFR 261, ECOM Rule 905

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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29.0 Pesticides / Herbicides - Unused

Operational Phase – (a.) Construction, (e.) Production & Facility decommissioning

Waste Generation Description	Liquid pesticides and herbicides used to kill or control pests and plant life.
Classification	Hazardous - Universal
Estimated Volume	N/A
Classification Basis	Regulated as hazardous under the US EPA Universal Waste Rule
Handling/Storage	All spent or unused pesticides and herbicides should be managed as universal waste. Store pesticides and herbicides in rainproof, leak-proof containers that are compatible with the types of chemicals stored therein. Store waste pesticides and herbicides for no more than one year in a designated storage area.
Labeling	“Universal Waste- Pesticides and Herbicides” and date of initial accumulation
Required Sampling/Analysis¹ for Classification Status	Typically, none if labeled and known product
Required Logs, Manifests, Notifications	Typically, none.
Transportation	Waste must be transported by an authorized transporter.
Disposal	Return to vendor or use at another location.
Approved Disposal Vendors	N/A
Recycling	Return to vendor.
Approved Recycle Vendors	N/A
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of three years.
Waste Minimization Best Practices	Utilize a commercial application service to ensure proper usage and inventory control. Have vendor pick unused pesticides and herbicides.
Regulatory Reference	40 CFR 273, ECMC Rule 906

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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30.0 Pigging Waste

Operational Phase – (e.) Production & (g.) Facility decommissioning

Waste Generation Description	Pigging wastes from gathering lines in primary field operations.
Classification	E&P Exempt
Estimated Volume	Variable 5BBLs per year
Classification Basis	Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53, but may be classified as Hazardous if mismanaged.
Handling/Storage	Containerize in rain-proof and leak-proof containers that are compatible with waste stored therein. Keep containers closed when not in use. Store containers in designated non-hazardous waste storage areas that reduce the potential for release
Labeling	Label with contents. For example, "Produced Solids"
Required Sampling/Analysis¹ for Classification Status	Disposed of under waster characterization profile.
Required Logs, Manifests, Notifications	Use the state specified method of shipment for E&P Waste (required manifest or standard bill of lading).
Transportation	Waste must be transported by an authorized transporter.
Disposal	Liquids should be returned to the production system; Solids will be disposed of at an approved E&P exempt waste landfill.
Approved Disposal Vendors	See Appendix B
Recycling	N/A
Approved Recycle Vendors	N/A
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five years.
Waste Minimization Best Practices	Reuse pigs and reclaim waste whenever possible. Reduce accumulation of paraffin, hydrates, and scale. Remove as much produced water as possible and return to the production system, ensure only solids are being disposed of at an offsite commercial disposal facility.
Regulatory Reference	ECMC Rule 905

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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31.0 Pressurized Cylinders (Fire Extinguishers, Calibration Gas, etc.)

Operational Phase – (a. – h.) All Operations

Waste Generation Description	Pressurized cylinders that can no longer be used and are to be decommissioned.
Classification	Non-Hazardous
Estimated Volume	N/A
Classification Basis	Does not meet the criteria for hazardous waste as defined by 40 CFR 261
Handling/Storage	Completely discharge and depressurize cylinders prior to storage. Containerize and store in designated non-hazardous waste storage areas that reduce the potential for release. Cylinders that are empty of all product and propellant can be treated as scrap metal (see Waste Guide Sheet for Scrap Metal).
Labeling	Label as non-hazardous with contents. For example, “Non-Hazardous Waste – Used Pressurized Cylinders”.
Required Sampling/Analysis¹ for Classification Status	Typically, none.
Required Logs, Manifests, Notifications	Bill of Lading or Non-Hazardous Waste Manifest.
Transportation	Waste must be transported by an authorized and certified transporter.
Disposal	Dispose of at an approved non-hazardous waste landfill.
Approved Disposal Vendors	See Appendix B.
Recycling	Return waste cylinders to vendor.
Approved Recycle Vendors	N/A
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of three years.
Waste Minimization Best Practices	Recharge or recycle all used pressurized cylinders, if possible.
Regulatory Reference	40 CFR 261, ECOM Rule 906

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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32.0 Produced Solids and Tank Bottoms

Operational Phase – (c.) Completions, (d.) Flowback, (e.) Production, & (g.) Facility Decommissioning

Waste Generation Description	All sediments/sand/sludge /salt removed from the bottoms of tanks or vessels when periodically cleaned out.
Classification	E&P Exempt
Estimated Volume	Estimated 5 BBLS per year
Classification Basis	Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53, but may be classified as Hazardous if mismanaged. If waste material contains TENORM, it must be treated as TENORM waste.
Handling/Storage	Containerize in rain-proof and leak-proof containers that are compatible with waste stored therein. Keep containers closed when not in use. Store containers in designated non-hazardous waste storage areas that reduce the potential for release.
Labeling	Label with contents. For example, "Produced Solids"
Required Sampling/Analysis¹ for Classification Status	Disposed of under waster characterization profile.
Required Logs, Manifests, Notifications	Use the state specified method of shipment for E&P Waste (required manifest or standard bill of lading).
Transportation	Waste must be transported by an authorized transporter.
Disposal	Dispose of at an approved E&P exempt waste landfill or landfarm.
Approved Disposal Vendors	See Appendix B.
Recycling	N/A
Approved Recycle Vendors	N/A
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five years.
Waste Minimization Best Practices	Remove as much produced water as possible and return to the production system, ensure only solids are being disposed of at an offsite commercial disposal facility.
Regulatory Reference	ECMC Rule 905

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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33.0 Produced Water

Operational Phase – (d.) Flowback, (e.) Production, (g.) Facility Decommissioning & (h.) Plugging and Abandonment

Waste Generation Description	Water collected during the process of extracting and dewatering oil and gas.
Classification	E&P Exempt
Estimated Volume	Variable initially high volumes which will taper down as well production decreases
Classification Basis	Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53, but may be classified as Hazardous if mismanaged.
Handling/Storage	Containerize in rain-proof and leak proof containers, tanks or permitted E&P waste management facility that are compatible with waste stored therein. Keep containers closed when not in use. Tanks, containers, and E&P waste management facilities will be constructed to reduce the potential for release.
Labeling	Label with contents. For example, "Produced Water". All Tanks and Containers will be labeled pursuant to Rule 605.h. Containing Operator name, operator emergency contact number, tank capacity, tank contents, & NFPA or GHS label
Required Sampling/Analysis¹ for Classification Status	Typically, none.
Required Logs, Manifests, Notifications	Use the state specified method of shipment for E&P Waste (required manifest or standard bill of lading).
Transportation	Waste must be transported by an authorized transporter.
Disposal	Dispose of in Caerus injection well, or an approved 3 rd party Class II Injection Well or approved evaporation facility.
Approved Disposal Vendors	See Appendix B.
Recycling	Place in Caerus operated E&P Waste Management Facility produced water system for re-use in completions activities.
Approved Recycle Vendors	N/A
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five years.
Waste Minimization Best Practices	Use produced water for frac water, if possible. Optimize production rates to minimize the influx of water. Dispose of in Caerus operated injections wells or through water share agreements, whenever possible.
Regulatory Reference	ECMC Rule 905

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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34.0 Scrap Metal (Pipe, Vessels, etc.)

Operational Phase – (a. - h.) All Operations

Waste Generation Description	Used metallic equipment, tanks, piping and other materials.
Classification	Non-Hazardous
Estimated Volume	Scrap metal will be recycled and reused none is estimated for disposal
Classification Basis	Non-Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53. Does not meet the criteria for hazardous waste as defined by 40 CFR 261
Handling/Storage	Handle to prevent uncontrolled leakage of liquids. Stockpile in scrap yard only on impervious surface if contaminants are suspected. Seal off pipe ends if material contains TENORM, segregate from other scrap metal, and store with other TENORM contaminated materials.
Labeling	Typically, none. Label TENORM scrap as necessary.
Required Sampling/Analysis¹ for Classification Status	If material appears contaminated, a waste classification determination may be required (i.e., analytical testing). If required test equipment, piping, and tubulars for TENORM prior to salvage. If positive for TENORM, manage as TENORM-contaminated material.
Required Logs, Manifests, Notifications	Bill of Lading or Non-Hazardous Waste Manifest.
Transportation	Waste must be transported by an authorized transporter.
Disposal	Dispose of at an approved non-hazardous waste landfill.
Approved Disposal Vendors	See Appendix B.
Recycling	Recycle at an approved recycling facility (scrap metal dealer).
Approved Recycle Vendors	See Appendix B.
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office.
Waste Minimization Best Practices	If clean, re-use for structural steel, fence, etc. Send to a recycling facility.
Regulatory Reference	40 CFR 261 ECOM Rule 906

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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35.0 Septic Waste

Operational Phase – (a. – h.) All Operations

Waste Generation Description	Water and human waste from toilets.
Classification	Municipal/Domestic Solid Waste
Estimated Volume	300 gallons per day during drilling & completions activities, 50 gallons/day during construction and workover
Classification Basis	Non-Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53. Does not meet the criteria for hazardous waste as defined by 40 CFR 261 but may be hazardous if mixed with hazardous waste streams such as chemicals or solvents.
Handling/Storage	Flush only domestic wastes down the drains, never hazardous wastes, or process waste waters. In remote locations without a sewer system, wastes should be directed to either a portable septic system or leak-proof container. Wastes are then shipped off site for disposal.
Labeling	None
Required Sampling/Analysis¹ for Classification Status	Typically, none.
Required Logs, Manifests, Notifications	Typically, none.
Transportation	Waste must be transported by an authorized transporter.
Disposal	As long as the waste consists of only domestic sewage, typical sink drain, and wash down water, the waste should drain to the septic system, if available. Containerized septic waste should be disposed of at an approved sewage treatment facility or municipal waste landfill.
Approved Disposal Vendors	See Appendix B.
Recycling	N/A
Approved Recycle Vendors	N/A
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office.
Waste Minimization Best Practices	Minimize water usage.
Regulatory Reference	40 CFR 261, ECOM Rule 906

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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36.0 Soil Contaminated with Chemical or Lube Oil

Operational Phase – (a. – h.) All Operations

Waste Generation Description	Chemical or lube oil contaminated soils resulting from spills, leaks and other operational upsets.
Classification	Non-Hazardous (but potentially hazardous depending on contaminants)
Estimated Volume	Variable, in the event of a spill Caerus will notify CDPHE of volumes
Classification Basis	May contain components that meet the criteria for hazardous waste as defined by 40 CFR 261
Handling/Storage	Drain any excess chemical or lube oil from the soil. Containerize both the liquid and soil within separate rainproof, leak-proof containers. Keep containers closed when not in use and store in designated non-hazardous waste storage areas that reduce the potential for release. If classified as hazardous, dispose of as soon as possible. If you exceed 2204.6 pounds (1000 Kg) per month of hazardous waste, the storage time limit may change. Contact EHS Department for assistance.
Labeling	If non-hazardous, label contents. For example, "Non-Hazardous Lube Oil Contaminated Soil". If hazardous, label as "Hazardous Waste". Include contents, generator information and accumulation start date on label.
Required Sampling/Analysis¹ for Classification Status	Soil contaminated with chemicals or lube oil may be hazardous. Analysis is required to confirm waste classification and for waste characterization landfill approval. CDPHE remediation conformation sampling as required.
Required Logs, Manifests, Notifications	If non-hazardous, use Bill of Lading or Non-Hazardous Waste Manifest. If hazardous, a Uniform Hazardous Waste Manifest is not required, but is highly recommended for Very Small Quantity Generators. Hazardous waste from Small Quantity or Large Quantity Hazardous Waste Generators always requires a Uniform Hazardous Waste Manifest.
Transportation	Waste must be transported by an authorized transporter.
Disposal	Non-Hazardous – Dispose of at an approved non-hazardous waste landfill. Hazardous - Dispose of at an approved hazardous waste landfill or at a non-hazardous waste landfill that accepts hazardous waste from a Very Small Quantity Generator.
Approved Disposal Vendors	See Appendix B.
Recycling	N/A
Approved Recycle Vendors	N/A
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of three years (indefinitely if hazardous).
Waste Minimization Best Practices	Utilize secondary containment to prevent further contamination. Recover free liquids and recycle. If allowable, remediate impacted soil in-situ or in a landfarm.
Regulatory Reference	CDPHE 6CCR 1007-2, ECOM Rule 906



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¹ Contact EHS Department for assistance with conducting sampling and analysis.

37.0 Soil Contaminated with Condensate or Produced Water

Operational Phase – (a. – h.) All Operations

Waste Generation Description	Non-Refined Oil, condensate, or produced water contaminated soils resulting from spills, leaks or operational upsets.
Classification	E&P Exempt
Estimated Volume	Variable, in the event of a spill a form 27 will provide detailed volumes
Classification Basis	Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53, but may be classified as Hazardous if mismanaged.
Handling/Storage	Drain any excess oil or produced water from the soil. Containerize the liquid within rainproof, leak-proof containers. Keep containers closed when not in use and store in designated non-hazardous waste storage areas that reduce the potential for release.
Labeling	Label with contents. For example, "E&P Exempt Contaminated Soil".
Required Sampling/Analysis¹ for Classification Status	Typically, none.
Required Logs, Manifests, Notifications	Use the state specified method of shipment for E&P Waste (required manifest or standard bill of lading).
Transportation	Waste must be transported by an authorized transporter.
Disposal	Dispose of at an approved E&P exempt waste landfill or landfarm.
Approved Disposal Vendors	See Appendix B.
Recycling	N/A
Approved Recycle Vendors	N/A
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five years.
Waste Minimization Best Practices	Utilize secondary containment to prevent further contamination. Recover free liquids and recycle. When possible, with EPMC approval through a Form 27 remediate impacted soil in-situ or in a landfarm to prevent offsite disposal.
Regulatory Reference	ECMC Rule 905

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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38.0 Solvents – Spent

Operational Phase – (a. – h.) All Operations

Waste Generation Description	Solvents used for cleaning/maintenance including paint thinners, brake cleaner, degreasers, etc.
Classification	Hazardous, if chemicals are to be disposed. Unused chemical product returned to the vendor are not classified as waste.
Estimated Volume	1 pint/year
Classification Basis	Meets the criteria for hazardous waste as defined by 40 CFR 261
Handling/Storage	Containerize in rainproof, leak-proof containers that are compatible with the solvents contained therein. Keep containers closed when not in use and store in designated hazardous waste storage areas that reduce the potential for release. Hazardous waste should be disposed of as soon as possible. If you exceed 2204.6 pounds (1000 Kg) per month of hazardous waste, the storage time limit may change. Contact EHS Department for assistance.
Labeling	Label as “Hazardous Waste”. Include contents (type of solvent), generator information and accumulation start date on label.
Required Sampling/Analysis¹ for Classification Status	Some solvents may be non-hazardous. Refer to the material safety data sheet (MSDS) to confirm waste classification.
Required Logs, Manifests, Notifications	If non-hazardous, use Bill of Lading or Non-Hazardous Waste Manifest. If hazardous, a Uniform Hazardous Waste Manifest is not required, but is highly recommended for Very Small Quantity Generators. Hazardous waste from Small Quantity or Large Quantity Hazardous Waste Generators always requires a Uniform Hazardous Waste Manifest.
Transportation	Waste must be transported by an authorized and certified transporter.
Disposal	Dispose of at an approved hazardous waste landfill or at a non-hazardous waste landfill that accepts hazardous waste from a Very Small Quantity Generator.
Approved Disposal Vendors	See Appendix B.
Recycling	N/A
Approved Recycle Vendors	N/A
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office indefinitely.
Waste Minimization Best Practices	Utilize biodegradable water-based solvents or soap cleaners whenever possible. Use all solvent before it becomes unusable. Use spent solvent for paraffin removal.
Regulatory Reference	40 CFR 261, ECOM Rule 906

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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39.0 Well Workover and Completion Fluids

Operational Phase – (c.) Completions

Waste Generation Description	Well work fluids including completion, workover fluids
Classification	E&P Exempt
Estimated Volume	200 BBLs per well per event
Classification Basis	Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53, but may be classified as Hazardous if unused and contains hazardous components.
Handling/Storage	Store used fluids in evaporation ponds or tanks.
Labeling	Label with contents. For example, "Produced water"
Required Sampling/Analysis¹ for Classification Status	Typically, none.
Required Logs, Manifests, Notifications	Use the state specified method of shipment for E&P Waste (required manifest or standard bill of lading).
Transportation	Waste must be transported by an authorized transporter or via pipeline
Disposal	Dispose of at an approved UIC injection facility or into Caerus's E&P Waste Management Facility.
Approved Disposal Vendors	See Appendix B.
Recycling	Flowback from completions will be treated at a ECMC approved facility to be recycled or re-used for additional stimulations at other pads. MSDS sheets will be maintained for any additives used in stimulation. Tanks will be labeled in accordance with ECMC regulations.
Approved Recycle Vendors	N/A
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five years.
Waste Minimization Best Practices	Recycle unused completion fluids and free liquids back into production system. Use the entire product whenever possible. Return unused fluids to vendor.
Regulatory Reference	ECMC Rule 905

¹ Contact EHS Department for assistance with conducting sampling and analysis.



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Appendix B Approved Waste Disposal & Recycling Vendors

Batteries			
Battery Type	Disposal/Recycling Facility	Location	Phone Number
Alkaline and button-type lithium	Garfield County Landfill	Rifle, CO	970-625-2516
	Mesa County Landfill	Grand Junction, CO	970-242-7467
Lead Acid	Green Zone	Rifle, CO	970-876-5941
	Western Metals Recycling	Grand Junction, CO	970-242-9500
Ni-Cd, NI-MH, Lithium-ion (rechargeable)	Green Zone	Rifle, CO	970-876-5941
	Batteries Plus	Grand Junction, CO	970-245-7000

Contaminated Soil and Debris			
Wastes Accepted	Disposal Facility	Location	Phone Number
Soil contaminated with oil, lube oil, produced water, or chemical	Greenleaf Environmental Services	De Beque, CO	970-283-8992
	Mesa County Landfill	Grand Junction, CO	970-242-7467
	Garfield County Landfill	Rifle, CO	970-625-2516
	Rio Blanco County Landfill	Meeker, CO	970-942-7281
	ECDC Environmental Landfill	East Carbon, UT	435-888-4418
Contaminated PPE, rags, pads, booms, etc.	Greenleaf Environmental Services	De Beque, CO	970-283-8992
	ECDC Environmental Landfill	East Carbon, UT	435-888-4418

Drilling & Production Waste (Exempt E&P waste)			
Wastes Accepted	Disposal Facility	Location	Phone Number
Spent Solid Absorbents	Greenleaf Services	De Beque, CO	970-283-8992
	ECDC Environmental Landfill	East Carbon, UT	435-888-4418
Produced solids, tank bottoms, BS&W, impacted soils oil from spills, spent glycol, etc.	Greenleaf Services	De Beque, UT	970-283-8992
	RN Industries, Inc.	Roosevelt, UT	435-722-3800
	Dalbo, Inc.	Vernal, UT	435-789-0743
	ECDC Environmental Landfill	East Carbon, UT	435-888-4418



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Filters

Filter Type	Disposal/Recycling Facility	Location	Phone Number
Amine, glycol, oil, fuel, air, produced water filters	Greenleaf Environmental Services	De Beque, CO	970-283-8992
	ECDC Environmental Landfill	East Carbon, UT	435-888-4418

Fluorescent Lamps and Bulbs

Wastes Accepted	Disposal Facility	Location	Phone Number
Fluorescent light bulbs and lamps	Garfield County Landfill	Rifle, CO	970-625-2516
	ECDC Environmental Landfill	East Carbon, UT	435-888-4418
	Mesa County Landfill	Grand Junction, CO	970-242-7467

General Refuse

Wastes Accepted	Disposal Facility	Location	Phone Number
Cans, bottles, paper, trash, food waste, etc.	Garfield County Landfill	Rifle, CO	970-625-2516
	Mesa County Landfill	Grand Junction, CO	970-242-7467
	Wray Gulch Landfill	Meeker, CO	970-942-7281
	South Canyon Landfill	Glenwood Springs, CO	970-945-5375

Hazardous Waste

Wastes Accepted	Disposal Facility	Location	Phone Number
If hazardous waste is suspected, contact EHS for assistance	AET Environmental	Denver, CO	303-333-8521
	Safety-Kleen	Grand Junction, CO	970-241-1343

Medical Waste

Wastes Accepted	Disposal Facility	Location	Phone Number
Bandages, bloody rags, etc.	Grand Valley Medical Center	Rifle, CO	970-625-1510
	St Mary's Hospital	Grand Junction, CO	970-298-2273
	Community Hospital	Grand Junction, CO	970-242-0920

Non-Hazardous (Industrial) Waste

Wastes Accepted	Disposal Facility	Location	Phone Number
Empty aerosol cans, empty drums, scrap metal, non-hazardous paint, non-asbestos insulation, pressurized cylinders, thread protectors, etc.	Western Metal Recycling	Grand Junction, CO	970-242-9500
	ECDC Environmental Landfill	East Carbon, UT	435-888-4418



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Wastes Accepted	Disposal Facility	Location	Phone Number
TENORM Waste	Newpark Environmental Services	Lafayette, LA	888-984-4445
	Deer Trail (Clean Harbors)	Deer Trail, CO	970-386-2293

Produced Water Disposal

Wastes Accepted	Disposal Facility	Location	Phone Number
Produced water, drilling fluid, blowdown/ swabbing waste, workover & completion fluids, rig wash	Greenleaf Environmental Services	De Beque, CO	970-283-8992
	Dalbo, Inc.	Vernal, UT	435-789-0743
	RN Industries, Inc.	Roosevelt, UT	435-722-3800
	Caerus operated UIC wells	Parachute, CO	970-285-2600

Scrap Metal Recycling

Wastes Accepted	Recycling Facility	Location	Phone Number
Scrap metal, wire, wire rope, cable, empty drums	Western Metal Recycling	Grand Junction, CO	970-242-9500
	Green Zone	Rifle, CO	970-876-5941

Septic Waste

Wastes Accepted	Disposal Facility	Location	Phone Number
Domestic sewage, grey water, water from sinks and showers	Western Colorado Waste	Whitewater, CO	970-255-7072

Solvents

Wastes Accepted	Disposal Facility	Location	Phone Number
Waste solvents	Safety-Kleen	Grand Junction, CO	970-241-1343
	ECDC Environmental Landfill	East Carbon, UT	435-888-4418

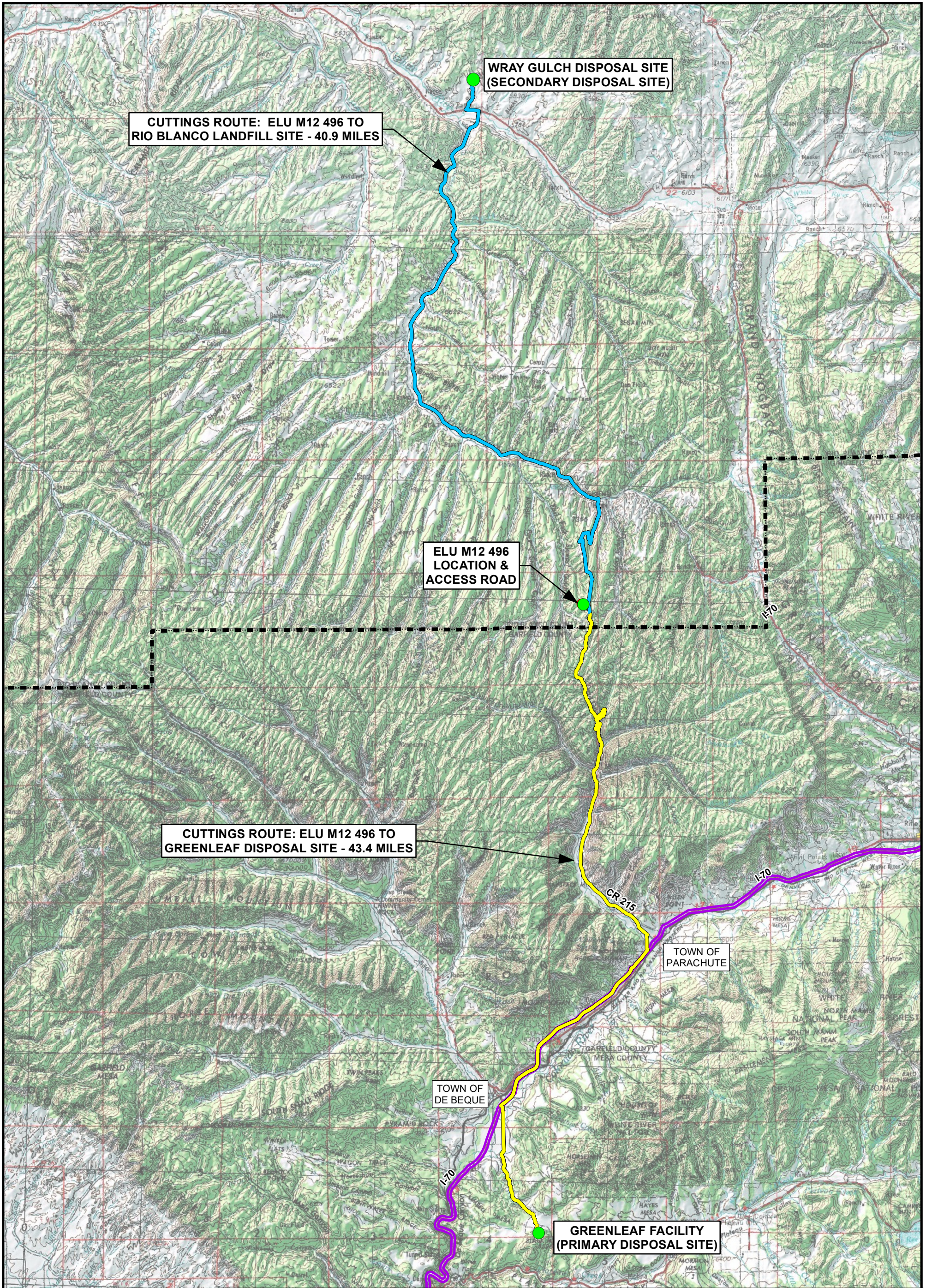
Used Lube Oil

Wastes Accepted	Recycling Company	Location	Phone Number
Used hydraulic and lube oil	Homax Oil Sales Inc.	Rock Springs, WY	307-362-8888

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Appendix C

Haul Route



CUTTINGS ROUTE: ELU M12 496 TO
RIO BLANCO LANDFILL SITE - 40.9 MILES

WRAY GULCH DISPOSAL SITE
(SECONDARY DISPOSAL SITE)

ELU M12 496
LOCATION &
ACCESS ROAD

CUTTINGS ROUTE: ELU M12 496 TO
GREENLEAF DISPOSAL SITE - 43.4 MILES

TOWN OF
PARACHUTE

TOWN OF
DE BEQUE

GREENLEAF FACILITY
(PRIMARY DISPOSAL SITE)

LEGEND

- GREENLEAF DISPOSAL SITE ROUTE - 42.5 MI.
PRIMARY DISPOSAL ROUTE
- WRAY GULCH DISPOSAL SITE ROUTE - 40.0 MI.
SECONDARY DISPOSAL ROUTE



WASATCH SURVEYING ASSOCIATES
906 MAIN STREET, EVANSTON, WY 82930
(307) 789-4545




CAERUS OIL & GAS LLC

ELU M12 496 CUTTINGS ROUTE MAP
RIO BLANCO COUNTY &
GARFIELD COUNTY, COLORADO

CUTTINGS DISPOSAL HAUL ROUTE MAP

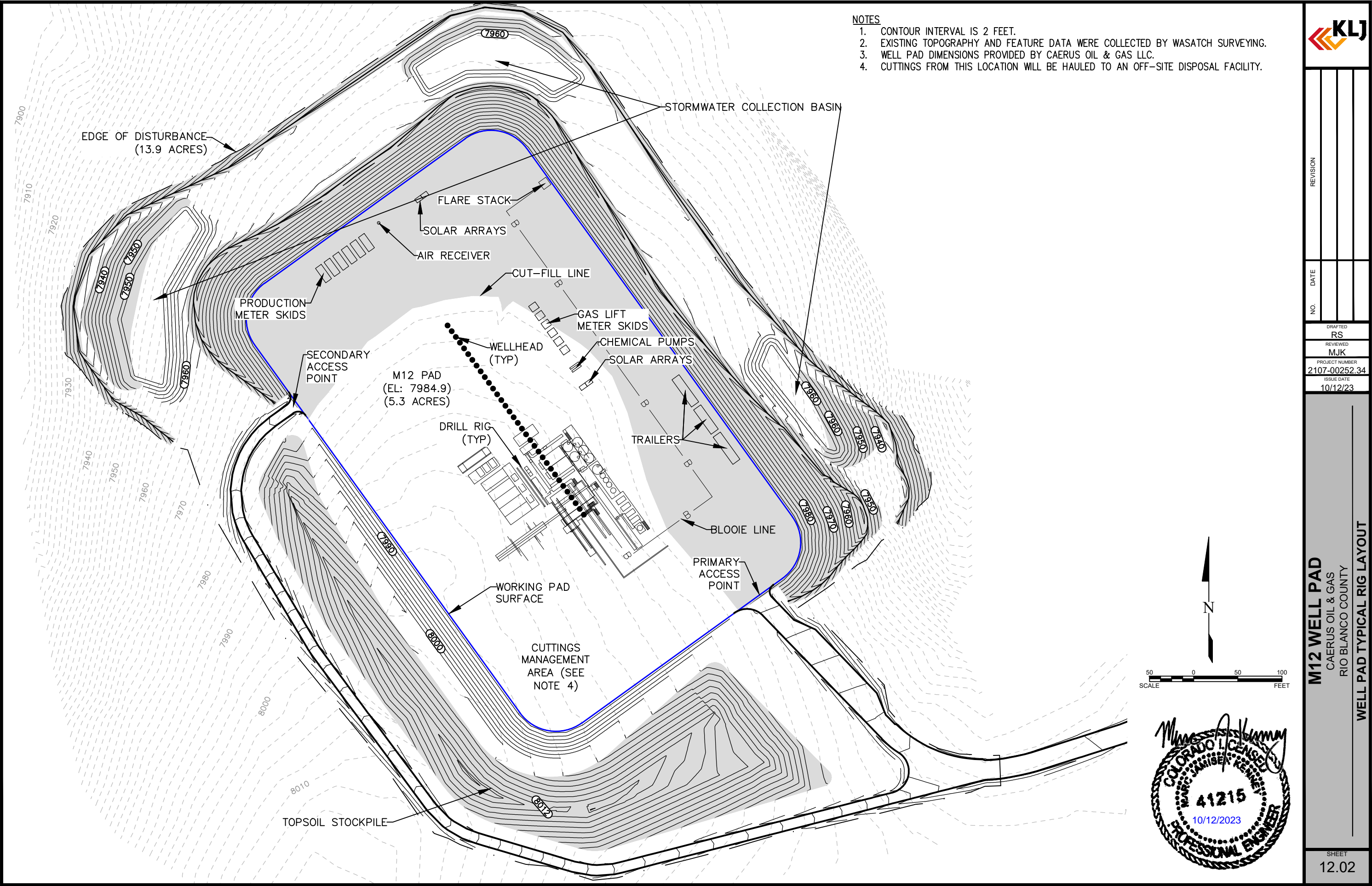
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DRAWN BY: SMM	DATE: 10/18/2023	PROJECT NO: 20-13-03




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Appendix D


Drill Rig Layout



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Appendix E

Waste Manifest

		PICEANCE BASIN NON-HAZARDOUS WASTE MANIFEST		MANIFEST # - YYYYMMDD- Site - #	
General Procedures (Safety / Environmental Concerns Assessment) – TO BE CONDUCTED BEFORE THE TRUCK DEPARTS PRINT CLEARLY AND PLEASE FILL OUT THIS FORM COMPLETELY. THIS INFORMATION IS USED FOR WASTE TRACKING AND TO FORWARD BILLING INFORMATION. 1. Are there free liquids? NO - Move to 2. YES - Do not transport, contact Brett Middleton – 970-687-4650 2. Make sure all side-cast from loading is removed from the vehicle / trailer before transport. Place the material in the trailer or back into the stockpile. 3. Insure that the load is securely covered. DO NOT TRANSPORT THIS MATERIAL IF FREE LIQUIDS ARE PRESENT OR IF THE MATERIAL HAS THE ABILITY TO SHIFT					
Mandatory Information – TO BE COMPLETED BY AUTHORIZED AGENT					
Generator	Generator: Caerus Oil & Gas 143 Diamond Ave. Parachute, CO 81635		Name of Authorized Agent: Contact Information:		
	Waste Origin (Location):		Estimated Quantity of Waste (yds ³)		
	Waste Type: <input type="checkbox"/> DAF Waste / Tank bottoms <input type="checkbox"/> Pit Bottoms <input type="checkbox"/> Contaminated Soil <input type="checkbox"/> Flowback <input checked="" type="checkbox"/> Cuttings				
	Operation: <input checked="" type="checkbox"/> Drilling <input type="checkbox"/> Production <input type="checkbox"/> Completions <input type="checkbox"/> Gathering <input type="checkbox"/> Construction <input type="checkbox"/> Other:				
	Description of Waste: Oil Waste (Cuttings) I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR Part 261 or by any applicable state law. I further certify that these wastes have been fully and accurately described, and classified.				
Printed Name:		Signature:		Date:	
Acknowledgement of receipt of materials – TO BE CONDUCTED BEFORE THE TRUCK DEPARTS					
Transporter	Transport Company:		Transport Container Type: Truck Number:		Emergency Notification: Colorado State Highway Patrol 970.284.6501 Caerus Gas Control 24-hr 970.285.2615
	I certify that the materials as described in the generator section were received by me for shipment in proper condition for transportation according to applicable local, state, and federal regulations. to the facility below: Printed Name:		Signature:		Date:
Waste Information:					
Disposal Facility	Facility Name / Address: Greenleaf Environmental Services, LLC 15655 45 th Road De Beque, CO 81630			Type of Disposal: <input type="checkbox"/> Landfarm <input type="checkbox"/> Injection <input checked="" type="checkbox"/> Landfill <input type="checkbox"/> Other:	
	Discrepancy comments:				
	I certify that the received materials match the description above and are suitable for disposal at the facility presented above: Printed Name:				
	Signature:		Date:		
Please return this manifest to the authorized agent provided in the generator section at the top on this form.					

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Appendix F

Waste Guidance Documents

Hazardous Waste Guidance for Very Small Quantity Generators (VSQG)

The following contains general guidance on hazardous waste generated at Very Small Quantity Generator (VSQG) facilities based on U.S. EPA Federal and Colorado state regulations. **Note: The following regulations may not apply to Universal Hazardous Waste. For guidelines on handling Universal Hazardous Waste, refer to the individual waste guide sheets or contact the EHS Department.**

I. HAZARDOUS WASTE

A hazardous waste is a waste that may pose a substantial hazard to human health or the environment when improperly disposed.

II. CHARACTERISTIC HAZARDOUS WASTE

A waste may be a Hazardous Waste if it exhibits one or more of the following characteristics:

- **Ignitability:** A waste is considered an ignitable waste if it has a flash point of less than 140 degrees Fahrenheit.
- **Reactivity:** A waste is a reactive hazardous waste if it reacts violently with water, is normally unstable, generates toxic gases when exposed to water or corrosive materials, or is capable of detonation or explosion when exposed to heat or flame.
- **Corrosivity:** A waste is a corrosive hazardous waste if it has a pH of less than or equal to 2 or greater than or equal to 12.5.



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- Toxicity: A waste is a toxic hazardous waste if it meets or exceeds a certain concentration of pesticides or herbicides, heavy metals, or organics, as determined by the Toxicity Characteristic Leaching Procedure (TCLP) test.

III. LISTED HAZARDOUS WASTES

If a waste is not characteristically hazardous it may be "listed." Four hazardous waste lists exist. The lists can be found in 40 CFR 261 and name specific chemicals and industrial processes from which wastes are considered hazardous. Wastes that appear on these lists have a designated identification number and must be handled as hazardous wastes.

IV. MIXTURE RULE

Mixing non-hazardous waste with hazardous can possibly lead to the entire mixture being classified as hazardous. Mixing these wastes increases the volume that must be handled, stored, transported, and disposed of as hazardous waste. The following rules apply:

1. Any material or waste mixed with a listed hazardous waste is a hazardous waste (with few exceptions).
2. When a characteristic hazardous waste is mixed with other materials or waste, the resulting mixture is hazardous only if the characteristic is still present.
3. Mixing to achieve non-hazardous status is not allowed with the exception of elementary neutralization of an acid or base in the container that a waste was generated.

V. GENERATOR CATEGORIES AND STORAGE OF HAZARDOUS WASTE

The amount of time that a waste may be stored depends on the quantity of hazardous waste generated. Three generator categories exist:

Waste Generator Category	Quantity of Waste Generated	Storage Time Limit
Very Small Quantity Generator (VSQG)	Less than 220 lbs. (100 kg)/month (about half of	there is no limit but as a best practice Hazardous



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	a 55-gallon drum of liquid)	waste should be disposed of as soon as possible.
Small Quantity Generator (SQG)	More than 220 lbs. (100 kg)/month but less than 2200 lbs. (1000kg)/month	Up to 180 days from the date a waste is initially placed in a container
Large Quantity Generator (LQG)	More than 2200 lbs. (1000 kg)/month (about five 55-gallon drums of liquid)	Up to 90 days from the date a waste is initially placed in a container

* Longer storage times must be approved by Area Supervisor/Manager and EHS Dept.

A summary of the storage, manifesting, recordkeeping, transportation, and training requirements for hazardous waste is shown on the Generator Summary Chart at the end of this Appendix. Other important guidelines for VSQG's include:

- A. A VSQG facility is not required to obtain an EPA Generator Number. Contact the EHS Department for more information.
- B. Under federal and state regulations, there is no storage time limit for hazardous waste at a VSQG, as long as the total amount of waste stored never exceeds 2200 lbs. **However, as a best management practice Hazardous waste should be disposed of as soon as possible.**
- C. Containers used for the storage of hazardous waste must be in good condition. The exterior of the container should not contain excessive amount of waste. Should the condition of a container become impaired, a generator is required to transfer material to a container in good condition. Good condition is defined as: no severe rusting, no sharp-edged creases or dents, no bulging heads, and no severe structural defects.
- D. Containers holding hazardous waste must be labeled at all times. The labels must contain the words "Hazardous Waste" and identify the contents and the date when waste was first placed in the container.



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- E. Containers holding hazardous waste must always be kept closed except when necessary to add or remove waste from the containers. The containers must not be handled in a manner that may cause them to rupture or leak. Containers should also be equipped with secondary containment.

VI. TRANSPORTATION OF HAZARDOUS WASTE

- A. All hazardous waste generated is to be picked up and shipped by an approved transportation company.
- B. Each shipment of hazardous waste must be accompanied by manifests and/or shipping papers in accordance with DOT regulations.
- C. The generating facility must maintain all records required by the applicable State Hazardous Waste Regulations (notification form, manifests, inspection logs, shipping papers, etc.).

VII. MANIFESTS

A hazardous waste manifest is a shipping document that identifies the hazardous waste generator, transporter, and the disposal facility. It also describes the contents of the waste shipment.

The hazardous waste generator uses a multi-part manifest to provide the generator, each transporter, the designated disposal facility with one copy for their records, plus an additional copy to be returned to the generator. Each completed manifest must be retained on-site indefinitely.

Although not required by federal regulations, it is highly recommended that hazardous waste generated at a VSQG be accompanied by a hazardous waste manifest.

Colorado may have its own hazardous waste manifest forms and procedures. For assistance contact the EHS department.