



DEPARTMENT OF NATURAL RESOURCES

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Alan Howard Karchmer Living Trust #46220
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RE: Exploration and Production Water Management and Spill/Release Reporting
Red Mesa Field

Dear Dear Sir or Madam,

It is the responsibility of oil and gas operators to ensure that drilling and completion fluids, produced water, and other exploration and production (E&P) wastes are managed, treated, and disposed of in such a way that these substances do not impact public health, safety, welfare, or the environment in the State of Colorado. To this end, the Colorado Oil and Gas Conservation Commission (COGCC) has promulgated rules (Rules or COGCC Rules), including the 900 Series Rules, that operators must follow in the conduct of their oil and gas activities. (COGCC Rules are available electronically at www.cogcc.state.co.us). COGCC staff is providing this brief summary of COGCC Rules related to the management and handling of drilling and completion fluids and produced water that may be helpful for operators in the Red Mesa Field. Please feel free to contact me at any time if you have any questions or want to discuss these Rules further. This summary is not a substitute for the COGCC Rules themselves, and any inconsistencies or conflicts should be resolved in favor of the COGCC Rules.

Sensitive Areas - Rule 100

Most of the Red Mesa Field is located in what the COGCC considers to be a sensitive area due to the presence of shallow groundwater contained in the Red Mesa Aquifer. A sensitive area is defined in COGCC Rules (Rule 100) as:

[A]n area vulnerable to potential significant adverse ground water impacts, due to factors such as the presence of shallow economically usable ground water or pathways for communication with deeper economically usable ground water; proximity to surface water, including lakes, rivers, perennial or intermittent streams, creeks, irrigation canals, and wetlands.

The shallow Red Mesa Aquifer provides the only source of water to local residents and feeds springs and creeks throughout the area, including the Marvel Spring. Wright Water Engineers performed a study in 2002 (*Red Mesa Aquifer Groundwater Study 2002 Interim Report*) that loosely defines the extent of the Red Mesa Aquifer as follows:

- To the north approximately to CR 141;
- To the west approximately to the La Plata River;
- To the east approximately to Long Hollow; and
- To the south approximately to the confluence of the La Plata River and Long Hollow.

In general, the Red Mesa Aquifer discharges to the La Plata River west of CR 140 and to Long Hollow and its tributaries to the east of CR 140. A general map of the areal extent of the Red Mesa Aquifer is attached as Figure 1.

The following rules and regulations apply to the management of drilling and completion fluids and produced water. I have also highlighted the parts of the rules that apply specifically to sensitive areas such as the Red Mesa.

Pits - Definitions - Rule 100

COGCC Rule 100 defines a pit as “any natural or man-made depression in the ground used for oil or gas exploration or production purposes.” Different types of pits may be used for different oil and gas operations. Summaries of COGCC definitions for drilling, production, and special use pits are provided below. Complete definitions, including types of pits for each category, are provided as an attachment entitled, “Rule 100 – Definitions (Pits).”

- Drilling Pits are those pits used during drilling operations and initial completion of a well, including ancillary pits, completion pits, and reserve pits.
- Production Pits are those pits used after drilling operations and initial completion of a well, including natural gas gathering, processing and storage facility pits, multi-well pits, skimming/settling pits, produced water pits, percolation pits, and evaporation pits.
- Special Purpose Pits are those pits used in oil and gas operations, including natural gas gathering, processing and storage facility pits, multi-well pits, blowdown pits, flare pits, emergency pits, basic sediment/tank bottom pits, workover pits, and plugging pits.

Pits - Permitting and Reporting - Rule 903

Operators are required to use an Earthen Pit Report/Permit Form 15 for pit permitting and reporting. Rule 903 describes 1) when a Pit Permit with prior COGCC Director approval is required and 2) when a Pit Report without prior COGCC Director approval is required within 30 days of pit construction. Whether an operator is required to submit a Pit Permit application or a Pit Report depends on the type of pit, whether it is lined or unlined and whether it is inside or outside a sensitive area. **Since the COGCC considers most of the Red Mesa Field to be located in a sensitive area, produced water pits must be lined (COGCC Rule 904.a.(2)) and pit permits must be submitted to the COGCC for approval prior to construction.** A summary of permitting and reporting requirements for the various pits and conditions is provided in Table 1.

Produced Water - Disposal - Rule 907.c.(2)

In sensitive areas, like the Red Mesa Field, and in accordance with COGCC Rule 907.c.(2), produced water may be disposed of as follows:

- Injection into a Class II well, permitted in accordance with Rule 325;

Note: Currently there are no active commercial Class II injection wells in the Red Mesa area. Such facilities may be available in New Mexico or Utah.

- Evaporation in a properly permitted lined pit;

Note: Properly permitted, constructed, and operated pits are allowed in the Red Mesa area. If produced waters are collected from several leases and transported to a centralized pit for treatment and/or disposal, then it is necessary to permit the central location as a "Centralized E&P Waste Management Facility" in accordance with COGCC Rule 908. This would be a non-commercial management facility for use by the operator only. Centralized facilities may include components such as land treatment or land application, pits, and recycling equipment. A copy of Rule 908 that describes the applicability and permit requirements for Centralized E&P Waste Management Facilities is attached for your reference.

- Disposal at permitted commercial facilities; or
- Discharging into state waters, in accordance with the Water Quality Control Act and the rules and regulations promulgated thereunder. Produced water discharged pursuant to this provision may be put to beneficial use in accordance with applicable state statutes and regulations governing the use and administration of water.

Note: Because COGCC considers most of the Red Mesa Field to be a sensitive area and in accordance with COGCC Rule 907.c. (2).D., produced water may not be disposed of by road spreading in the Red Mesa area.

Reuse/Recycling - Rule 907.a.(3)

The COGCC encourages the reuse and recycling of E&P waste. Under Rule 907.a.(3) operators may propose plans for managing E&P waste through beneficial use, reuse and recycling by submitting a written management plan to the Director for approval. Such plans must describe the proposed use of the E&P waste, method of E&P waste treatment, and product quality assurance, and must include a copy of any certification or authorization that may be required by other laws.

Transportation - Rule 907.b.

When operators transport E&P waste off-site within Colorado for treatment or disposal, they must transport it to facilities authorized by the Director or waste disposal facilities approved to receive E&P waste by the Colorado Department of Public Health and Environment. Rule 907.b.(1).

Rule 907.b.(2) requires generators of E&P waste to maintain, for not less than three years, copies of each invoice, bill or ticket and such other records as necessary to document the following information from a transporter or disposal site, describing the disposal of E&P waste from each location:

- 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.

Such records must be made available for inspection by the Director during normal business hours and copies must be furnished to the Director upon request.

Produced Water Reporting – Rule 330.a.

Operators are also required to report the volume of water produced in barrels on a monthly basis on Form 7 – Operator’s Monthly Report of Operations. Rule 330.a. requires that the volume of produced water be computed and reported in terms of barrels on the basis of properly calibrated meter measurements or tank measurements of water-level differences, made and recorded to the nearest 1/4 inch of 100% capacity tables. If measurements are based on oil/water ratios, the oil/water ratio must be based on a production test performed during the last calendar year. Other equivalent methods for measurement of produced water may be approved by the Director.

Spill/Release Definitions – Rule 100

The COGCC definition of a spill is the unauthorized sudden discharge of E&P waste to the environment.

The COGCC definition of a release is any unauthorized discharge of E&P waste to the environment over time.

Spill/Release Reporting – Rule 906.b.

Spills and releases of E&P waste include spills of produced water and must be reported in accordance with Rule 906.b. These requirements include:

- Reporting spills/releases of E&P waste or produced fluid exceeding five barrels (including spills/releases contained within unlined berms) on COGCC Spill/Release Report, Form 19. The report must include information relating to initial mitigation, site investigation and remediation, and must be submitted to the Director within ten days of discovery.
- Verbally reporting to the Director within 24 hours of discovery spills/releases which exceed 20 barrels of E&P waste.

- Verbally reporting to the Director as soon as practicable after discovery spills/releases of any size which impact or threaten to impact any waters of the state, residence or occupied structure, livestock or public byway.

Spill/Release Surface Owner Notification and Consultation – Rule 906.c.

Operators are required to make good faith efforts to notify and consult with the surface owner prior to commencing operations to remediate E&P waste from a spill/release in an area not being utilized for oil and gas operations.

Site Investigation, Remediation, Closure – Rule 909

Operators are required to close oil and gas sites, including pits, spills/releases of E&P waste, and E&P waste management sites in accordance with COGCC Rules 909, 1003, and 1004, as appropriate. Should conditions warrant and in accordance with COGCC Rule 909.c., the COGCC Director may require operators to submit a Form 27 – Site Investigation Remediation Workplan,

. . .

COGCC staff looks forward to working with operators in the Red Mesa Field and hopes the above information provides a good refresher on how to manage drilling fluids, produced water and pits in the Red Mesa area. Please feel free to contact me at 970-259-1619 if you would like to discuss these topics or other compliance issues related to COGCC Rules. Please note that this summary is not inclusive of all COGCC Rules, but is focused on topics deemed to be of particular relevance in the Red Mesa area. If you have field staff that are responsible for these activities, please forward a copy to them for reference. I would be happy to meet with them and discuss any questions they might have.

Regards,
Colorado Oil and Gas Conservation Commission Staff



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Attachments: Figure 1: Red Mesa Aquifer Extent
Table 1: Pit Permitting/Reporting Summary Table
Rule 100: Pit Definitions
Rule 908: Centralized E&P Waste Management Facilities

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Debbie Baldwin, Environmental Manager, COGCC
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TABLE 1 - PIT PERMITTING/REPORTING SUMMARY
COLORADO OIL AND GAS CONSERVATION COMMISSION
(COGCC Rule 903)

Pit Type	Construction	Sensitive Area Determination	Form 15 Requirement	Instructions
Production ^{1,2}	Lined	Inside of Sensitive Area	Permit	Submit Form 15 Permit Application and supporting documentation for approval in advance of pit construction.
Production ^{1,2}	Unlined	Inside of Sensitive Area	Permit	Submit Form 15 Permit Application and supporting documentation for approval in advance of pit construction.
Production	Unlined	Outside of Sensitive Area	Permit	Submit Form 15 Permit Application and supporting documentation for approval in advance of pit construction.
Production	Lined	Outside of Sensitive Area	Report	Submit Form 15 Report within 30 days after construction of pit.
Production	Lined or unlined < 5 bbl/day (calculated on monthly basis)	Outside of Sensitive Area	Report	Submit Form 15 Pit Report within 30 days after construction of pit.
Drilling	20,000 ppm TPH and 15,000 ppm chloride	Inside of Sensitive Area	Permit	Submit Form 15 Permit Application and supporting documentation for approval in advance of pit construction.
Drilling	20,000 ppm TPH and 50,000 ppm chloride	Outside of Sensitive Area	Permit	Form 15 Permit Application and supporting documentation to be submitted and approved advance of pit construction.
Drilling	Water-based bentonitic drilling fluids	NA	NA	Form 15 permit or report is not required.
Special Use ^{1,2}	Lined	Inside of Sensitive Area	Report	Submit Form 15 Pit Report within 30 days after construction of pit.
Special Use ^{1,2}	Unlined	Inside of Sensitive Area	Permit	Submit Form 15 Permit Application and supporting documentation for approval in advance of pit construction.
Special Use	Lined	Outside of Sensitive Area	Report	Submit Form 15 Pit Report within 30 days after construction of pit.
Special Use	Unlined	Outside of Sensitive Area	Permit	Submit Form 15 Permit Application and supporting documentation for approval in advance of pit construction.

Note:

1. Unlined production and special purpose pits are generally not approved in sensitive areas (Rule 901.f).
2. Inside sensitive areas the Director may require a leak detection system or other protective measures for a pit, as determined by site-specific conditions (Rule 904.b (4)).

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