February 25, 2019

Mr. Rich Cripe
Wyoming Department of Environmental Quality
Water Quality Division
200 West 17th Street, Suite 200
Cheyenne, Wyoming 82002

Submitted online
http://wq.wyomingdeq.commentinput.com

RE: Commercial Oilfield Wastewater Disposal Facilities

Dear Mr. Cripe:

The Environmental Defense Fund (EDF) and the Wyoming Outdoor Council appreciates the opportunity to provide comments in response to the public outreach regarding Wyoming Department of Environmental Quality (WDEQ) Minimum Standards for the Design and Construction of Commercial Oilfield Waste Disposal Facilities (COWDF). EDF is a national organization representing over two million members including in Wyoming, many of whom care deeply about the impacts of oil and gas operations on health and the environment. Wyoming Outdoor Council is Wyoming's oldest statewide environmental advocacy organization and has worked to protect public lands and wildlife, and Wyoming's clean air and water for more than fifty years.

The notice for public outreach identified specific sections of the current COWDF that are being considered for revisions and public input is being solicited. Of the identified sections, we are offering comments on the following.

- Permit Application Requirements
  - Potential streamlining of requirements
- Minimum Design, Construction, and Operation Standards
  - Potential addition of liner and leak detection
- Site Suitability
  - Potential revision of setback distances
- Monitoring and Reporting Requirements
  - Possible streamlining, clarifying, and updating requirements
- Operation and Maintenance Plan
  - Possible streamlining, clarifying, and updating requirements
- Financial Assurance
  - Possible replacement of certain documentation in order to ensure consistency among permittees

- Public Participation
    - Public participation to include opportunity for public review and comment on draft requirements

Permit Application Requirements

There are a number of good parts of the current permit application requirements including the requirement of a "Management Plan" consisting of an engineering design report; a construction plan; an operation plan; and a financial assurance, closure, post closure, and corrective action plan with detail on the items that each of these plans are to include.

Separate to these plans is a requirement that "All plans, specifications, and reports submitted under this chapter be sealed, signed, and dated by a licensed professional engineer under W.S. Title 33, Chapter 29 and/or by a licensed professional geologist under W.S. Title 33, Chapter 41, as applicable."

Without specifics regarding potential changes to the guidance for permit plication, we are unable to offer detailed comments. However, the requirement for a seal and signature by a professional engineer or professional geologist is a critical element that we strongly recommend to be retained.

Minimum Design, Construction, and Operation Standards

We recommend that all surface impoundments for retaining oilfield waste be double lined with leak detection. An impoundment with only a compacted clay linear creates an increased risk of contamination because a failure of this liner may not to be detected until a release has occurred of sufficient quality to be recognized by a drop in water level (hard to discern since wastewater is being added and removed as part of routine facility operation), identified in nearby monitor wells or show a visible appearance at the surface or nearby surface water bodies. In all cases, by the time the leak/release is identified it will be significant and costly to remediate.

An example of a leading management practice for double lined impoundments with leak detection is included in The University Lands "Produced Water Frac Pit, Design, Construction, Operation, and Closure Specifications"[1]. University Lands manages the surface and mineral interests of 2.1 million acres of land across nineteen counties in West Texas for the benefit of the Permanent University Fund; one of the largest university endowments in the United States and benefits more than twenty educational and health institutions across both The University of Texas System and Texas A&M University System. They recognize the importance of properly designed and constructed surface impoundments; therefore, operators are required to meet these specifications if they want to operate an impoundment on their lands.

[1] See University Lands Produced Water Frac Pit, Design, Construction, Operation, and Closure Specifications http://www.utlands.utsystem.edu/Content/Documents/Operations/Prod_Water_FracPit_Specifications.pdf

Double lining with leak detection allows for constant monitoring and more rapid identification of a loss of integrity of the primary linear. As long as a leak in the primary liner is quickly identified, the secondary liner should prevent the leak from becoming a release.

There are a number of factors required for the proper design of a double lined impoundment with leak detection including:

- Linear material compatibility with fluid stored;
- Liner thickness, tear strength, and puncture strength;
- Anchoring of the liners in the impoundment embankment;
- Geonet material in the interspatial zone between the primary and secondary liner;
- Slope of the secondary liner to a sump to collect fluid that passes through the primary liner (allowing for the identification of a potential leak in the primary liner);
- Liner seaming procedures; and
- Calculation of "action leak rate" – the acceptable rate that fluid will pass through the primary liner – accumulation of fluid in excess of action leak rate indicates a possible leak in the primary liner.

In addition to development of plans and specifications, it is equally important to require a formal construction quality assurance (CQA) plan be developed and implemented. A CQA plan details activities performed during the course of impoundment construction to ensure construction meets design requirements. This includes a formal process to review and approve any field change orders, verification that field tests (like liner seam integrity test) are conducted and results evaluated and action taken if there is an indication that design and specification requirements are not met, and development of as-built plans (sealed by the engineer responsible for implementation of the COA plan) following construction.

We encourage the Agency to take these factors into consideration as it reviews the design, construction, and operation standards for impoundments.

Site Suitability

The current guidance specifies minimum setbacks for the waste disposal facilities and we do not have comments or recommendations on these setbacks.

However related to siting, the current guidelines state:

- "Ponds shall not be located within the ordinary high water mark of perennial rivers, streams, or creeks; not in the bottoms of rivers, streams, creek, draws, coulees, or other natural drainages into which natural runoff may flow and/or enter."
- "Ponds shall be protected from structural damage which could be caused by a 100-year flood event."

Structural damage resulting from flooding occurs not just because of elevated water levels but also from debris carried in the flood waters. It is practically impossible to construct barriers that protect from the significant forces resulting from both flowing water and debris carried in that

water. Therefore, we recommend not allowing any waste disposal facilities be constructed within the 100-year flood plain.

Monitoring and Reporting Requirements

The current monitoring requirements for the leak detection system include analysis for total petroleum hydrocarbons by EPA Method 8015 (modified for gasoline and diesel range hydrocarbons), chlorides, total dissolved solids, and sulfates. For the purposes of identifying if a leak has occurred, this list of analytes is appropriate and we do not recommend the current analyte list be shortened. However, there may be rationale for additional constituents to be added to the analyte list based on specifics of the facility so the guidance should allow for additional analyses as warranted.

Operation and Maintenance Plan

The current Operation and Maintenance Plan requirements stipulate that this plan is required for all new or modified disposal facilities with specific items to be included. The current guidance also allows for the WDEQ to require additional items based on the facility. We assume that "modified disposal facility" means that if modifications are made to an existing permitted facility, a revised operation and maintenance plan must be developed. We recommend this requirement be clearly stated. Additionally we recommend annual certification via letter to the WDEQ that the operation and maintenance plan is current, either as updated to address any facility operations or the facility operations have not changed in the prior year.

Financial Assurance

The current guidelines specify that financial assurance be provided for "closure and post-closure activities, and for corrective action if required under Section 3(e)(iii)." It further details methodology for determining financial assurance requirements and documentation. Providing sufficient financial assurance is necessary to protect against financial burdens for facility closure and cleanup (if required) being borne by the public. Care must be exercised to insure any modification to this guidance strengthens, not weakens, the financial assurance provisions.

Public Participation

We commend Wyoming DEQ for addressing public participation in the permitting process. A critical aspect of a permitting process is transparency of the information used in developing a permit and the permit evaluation process. Important to this process is public engagement, providing access to the information for public review and comment.

We appreciate the opportunity to provide our thoughts and ideas. We look forward to engaging in a more detailed fashion following issuance of the draft revise guidelines.

Respectfully submitted,

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And on behalf of:
Dan Heilig
Wyoming Outdoor Council