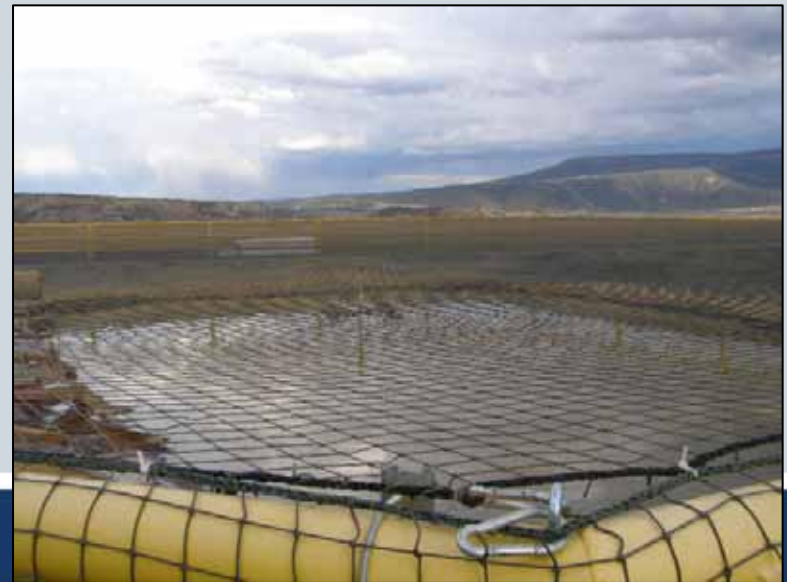


## Evaporative Pond Facilities Policies

- Purpose - Minimize or eliminate potential adverse impacts of waste or produced water from drilling operations.
- Requires a Conditional Use Permit.
- Provides guidance to staff, public and applicants.





MESA COUNTY PLANNING AND ECONOMIC DEVELOPMENT DEPARTMENT  
MESA COUNTY, COLORADO

EVAPORATION POND FACILITIES/LAND FARMS  
POLICIES

(A Component of the Energy Master Plan)

Adopted February 25, 2008

**Purpose**

Mesa County shall require that exploration and production waste disposal facilities and other evaporation pond uses minimize or eliminate potential adverse impacts. These facilities are regulated as Conditional Use Permits in Mesa County, and these Policies provide guidance to the applicants, citizens and staff. These facilities, known herein as evaporation pond facilities (EPF's), shall be planned, located, designed and operated to facilitate compatibility with surrounding land uses in terms of, but not limited to, general use, scale, traffic, dust, noise, odor, and pollution. EPF's will be allowed for the purpose of disposing of produced water from gas or oil drilling operations. If drilling mud is accepted at the facility, it must be land farmed and not disposed of in pits.

All facilities will be reviewed by the appropriate regulatory agencies for compatibility with state, local and federal regulations.

**I. Location:**

- A. New EPF's shall be located a minimum distance of 1,000 feet from perennial or intermittent surface water. Fluids from these facilities will not at any time contaminate such waters nor discharge without prior written permission from the applicable authorities.
- B. New EPF's shall be separated from a municipal boundary or any rural community (as delineated on the Mesa County Master Plan Future Land Use Map) by a minimum distance of one mile.
- C. New EPF's shall be located a minimum distance of ½ mile from an existing dwelling. The ½ mile distance may be decreased if the applicant satisfactorily demonstrates that site characteristics or intervening topography indicate that odors, visibility and noise from the facility will not impact adjacent and/or surrounding properties. Alternatively, Mesa County may require the ½ mile minimum distance from an existing dwelling to be increased if findings of review of site characteristics or intervening topography indicate that odors, visibility and noise from the facility will impact adjacent and/or surrounding properties.
- D. The site must be a minimum of 80 acres in size.

**II. Site Analysis:**

The applicant shall collect baseline data prior to operations for ground water flow rates, direction of flow, conductivity, depth to groundwater, drinking water and livestock water aquifers beneath

the site and permeability of soils. Water quality sampling shall occur on that portion of the stream or drainage ½ mile above the site and ½ mile below. A soils and vegetation analysis prepared in consultation with Tri-River Extension Service shall also be compiled for reclamation purposes. Typical wind patterns reflecting typical diurnal and seasonal flows shall be documented. Sampling, analysis, and documentation shall be completed using acceptable scientific methods. All data shall be submitted with the Site Plan application after a Conditional Use Permit for an EPF is approved. Property owners within a one-mile radius of the site must be contacted in order to collect baseline data from domestic wells.

### **III. Site Planning:**

These standards shall be in place until CDPHE or the applicable State agency adopts criteria that is deemed suitable to replace these by the Mesa County Board of Commissioners.

- A. All ponds shall be constructed to Class I specifications in the CDPHE regulations. Two liners are required meeting geotechnical specifications for the site, and the leachate collection system in each pond shall be monitored for leaks regularly.
- B. Synthetic pond liners shall be a minimum thickness of 60 mil and skim pit liners shall be a minimum thickness of 80 mil.
- C. The findings from the analysis of the site characteristics must be incorporated into the site design and location of the evaporation ponds on the property.
- D. All ponds shall be located a minimum of 500 feet from the down-gradient property line to allow additional monitoring wells to be placed on the site if necessary.
- E. The total on-site pond volume should provide enough additional storage for emergency emptying of any pond or in lieu of this provide an emergency repair plan that clearly indicates the emptying of a pond procedure.
- F. Circulation pumps must be utilized to prevent stagnation of the ponds.
- G. Wind speed and wind direction impacts must be satisfactorily mitigated.
- H. For any proposed evaporation pond facility, the following Transportation Impact Study (TIS) is required:
  - 1) Where TIS requirements in the Road Access Policy and the Evaporation Pond Facilities Policy differ, the more stringent requirement shall apply.
  - 2) A pre-study conference with the Road Access Policy Administrator and a Mesa County Development Engineer is mandatory.
  - 3) All proposed public road (not just publicly maintained) travel routes to the proposed site, from point(s) of origin or 5 miles, whichever is less shall be included in the TIS.
  - 4) Regardless of estimated daily trip generation, the applicant shall conduct a Level 3 Transportation Impact Study (TIS) for each public road travel route per the requirements in Section 3 and Appendix C of the Mesa County Road Access Policy (RAP).
  - 5) When any proposed travel corridor includes streets or roads within the jurisdiction of other government agencies, Mesa County's TIS requirements shall be the minimum required and shall be included in the TIS submitted to Mesa County. Such other government agencies may have additional requirements that shall be adhered to.
  - 6) In addition to the RAP requirements, and at Mesa County's discretion, the applicant may be required to analyze segments of any public road travel route to determine it's suitability for the proposed traffic generated by the evaporation pond facility. This requirement may include but is not limited to:
    - o Pavement and subsurface investigation and load certification

- Roadway structures investigation and load certification
  - Verification of design vehicle path and clearances
- I. Safety considerations shall be employed as follows:
- 1) Signs warning of potential drowning hazard shall be posted adjacent to all of the ponds.
  - 2) Ropes or ladders extending below the surface of the pond, or other means of escape, shall be provided along the perimeter of the ponds to allow a person to climb out of a pond in the event of an accident.
  - 3) Signs will be posted at the entrance to the facility and within the site giving emergency contact information.
- J. The skim pits and ponds shall be netted and fenced appropriately to keep out wildlife in the area as identified by the US Fish and Wildlife Service and Colorado Division of Wildlife agencies. Netting structures shall be constructed so that the netting is prevented from sagging into the pit fluids and perimeter netting extends to the ground to prevent wildlife entry.
- K. Engineering solutions to odor emissions shall be incorporated into the design of the facility which may include a capture system or enclosed lagoon to contain malodorous liquids which may then be physically, chemically or biologically treated to reduce odor content. Odors shall be controlled in a manner to prevent nuisance levels from occurring off site.
- L. Land Farming/Land Spreading: Applications of drilling waste to the soils require an evaluation of the following potential impacts by a professional engineer or hydrologist: area-wide topographical and geological features; current and likely future activities around the disposal site; hydrogeologic data (location, size, and direction of flow for existing surface water bodies and fresh or useable aquifers); natural or existing drainage patterns; nearby environmentally sensitive features such as wetlands, urban areas and potential air quality impacts. In addition, historical rainfall distribution data should be reviewed to establish moisture requirements for land spreading and predict net evaporation rates. Site design needs to control water flow into, onto, or from facility systems shall be identified. Materials to be used in land farming will be identified and evaluated for treatment and application. The operation may not emit dust or contaminate surface or ground water at any time. A management plan shall be prepared by a professional and submitted to Mesa County and appropriate State regulatory agencies incorporating these concerns. The areas shall be bermed and fenced. This type of activity must meet all State and Federal requirements.

#### **IV. Bonding**

The facility will be sufficiently bonded according to CDPHE or COGCC requirements at a minimum to insure that the reclamation plan, remediation plan and post closure water monitoring can be completed. Bonding estimates will be prepared by a professional engineer and submitted for review and approval by Mesa County, and the bond will be recalculated every 5 years. The bond will be sufficient to cover reclamation and, if needed, remediation of adverse environmental impacts. The bond will be required to adequately cover road maintenance costs and remediation of occurrences as well.

#### **V. Testing and Operations:**

The applicant shall abide by ASTM collection and testing protocol and procedures to ensure that surface and ground water flow rates, water quality, direction of flow, conductivity, TDS, pH,

turbidity, temperature, depth to groundwater and permeability of soils will all be documented consistently. Sampling of streams and drainages as applicable in Section II of these Policies as well as monitoring wells on site will occur quarterly after the EPF opens for business. The testing shall follow adopted protocols and procedures and contain a summary section in layperson's terms and be submitted to Mesa County Planning and Economic Development (MCPED) and Colorado Department of Public Health and Environment (CDPHE). At a minimum, one monitoring well shall be placed upgradient from the facility and two monitoring wells downgradient subject to further review by the applicant's geologist. In the development of monitoring plans, the applicant shall consult with Mesa County, state, and federal agencies to develop monitoring strategies which support the long-term understanding of the water quality of the region. Non-proprietary monitoring information shall be provided in hardcopy and electronic formats to Mesa County to facilitate long-term local and regional water resource assessment and management efforts and to make the information available for the public domain.

- A. Quarterly reports shall be submitted to MCPED and CDPHE containing:
  - 1. The results of random load screenings (frequency shall be determined by the facility operator's laboratory);
  - 2. Real-time and historical data will be logged for wind speed and direction following established minimum standards for monitoring equipment.
- B. No measurable or visible layer of oil may be allowed to accumulate or remain on the surface of any evaporation pond.
- C. Spray evaporation systems shall be operated such that all spray-borne suspended or dissolved solids remain within the perimeter of the pond's lined area.
- D. An emergency management plan and spill prevention and response plan shall be developed by the applicant's engineer and submitted for review and approval by Mesa County and CDPHE. Standard operating procedures dealing with occurrences shall be covered within the plan. Employees shall be trained in the procedures.
- E. A real time meteorological station shall be located and utilized on the site for data collection and analysis of wind speed and direction at a minimum.
- F. The facility shall be monitored daily during the work week at a minimum.
- G. The facility will be locked and inaccessible to unauthorized personnel when operations personnel are not on site.
- H. Odors shall be controlled in a manner to prevent nuisances.
- I. All surface-disturbing activities and vehicle access on or across soils saturated to a depth of 3 inches or more shall not occur (land farming is excepted).
- J. Site inspections shall be allowed by any State, Federal or local government agency without prior notice.
- K. Occurrences

The following guidelines shall be followed in the event that a leak, spill, overflow, accident or other situation occurs which causes the EPF to either be in violation or potentially in violation of state, local or federal regulations or permits.

- 1. The approved Emergency Management Plan and Spill Response Plan for the facility shall be followed.
- 2. If a pond-specific leak is detected, the pond shall be emptied immediately and the source of the leak repaired.
- 3. If contaminants are found to exceed permissible levels in a perimeter monitoring well or allowed volumes in any area of the facility are exceeded, the EPF shall cease acceptance of new waste immediately and direct customers to another State and locally approved facility. The facility may not resume

operations until the incident is fully delineated. The cause must be corrected to the satisfaction of the County in cooperation with the appropriate State agencies. Operations may continue as long as remediation is active.

4. Documentation that an occurrence has taken place must be provided to MCPED in writing within 24 hours of the occurrence (or at the beginning of the next business day). All other appropriate agencies shall be notified as required.

5. Documentation that an occurrence has been successfully remediated must be provided to MCPED and CDPHE and approved by both agencies prior to re-opening the facility.

6. If phytoremediation is proposed, a plan shall be prepared with the assistance of the Tri-River Extension Service.

#### L. Operational Status

Mesa County shall be notified prior to any change of ownership/operator status at the facility and/or of any permit revisions or equipment upgrade/process change integral to the operation of the facility. If the EPF is sold to a different owner, that new owner assumes all the requirements of the permitted use.

### **VI. Closure:**

Ponds or pits shall be properly closed (consistent with the approved reclamation plan) within six months after cessation of use. A closure plan must be filed with the appropriate state regulatory agencies for their approval and copied to MCPED. Upon completion of the closure of the facility, a closure report shall be submitted to CDPHE for their approval. A letter shall be submitted to MCPED from the State approving the closure of the facility for amendment of the Conditional Use Permit. Migration of the contents of the containment areas shall not be allowed to contaminate ground or surface waters during or after closure.

### **VII. Reclamation**

The facility will submit, as part of the Conditional Use Permit application, a reclamation plan that will include but not be limited to the following:

1. Removal of the structures at the facility.
2. Removal and disposal of the remaining waste including sludge and contaminated soil and pond liner.
3. Regrading the site to the approximate original contour.
4. Erosion control and revegetation of the disturbed area. Revegetation plans shall be approved by the Tri-River Extension Service.
5. A post-closure plan as required by CDPHE which includes future land use for the site.

### **VIII. Definitions**

Produced water – the water (brine) brought up from the hydrocarbon bearing formation strata during the extraction of oil and gas, and can include formation water, injection water, and any chemicals added down hole or during the oil/water separation process. (Source: EPA)

Occurrence – Leak, spill, overflow, accident or other spill of a reportable quantity as defined by local, state and federal requirements and permits.

Evaporation pond – surface impoundment used for the purpose of containing, treating and evaporating produced water.

Evaporation Pond Facility – both private and commercial centralized produced water facilities not including individual reserve pits at well locations.

Skim Pit – Surface impoundment for skimming oil from produced water (also called a holding pond).

Phytoremediation: Use of plants to remediate contaminated soil or groundwater.

Land farming - the controlled and repeated application of wastes to the soil surface, using microorganisms in the soil to naturally biodegrade hydrocarbon constituents, dilute and attenuate metals, and transform and assimilate waste constituents.

Land spreading - a one-time application of waste to a parcel of land using natural soil processes to biodegrade the organic constituents in the waste where the objective is to dispose of the waste in a manner that preserves the subsoil's chemical, biological, and physical properties by limiting the accumulation of contaminants and protecting the quality of surface and groundwater.