

RAILROAD COMMISSION OF TEXAS

Oil and Gas Division

APPLICATION REQUIREMENTS AND PERMIT CONDITIONS FOR BENEFICIAL RECYCLING OF TREATED DOMESTIC WASTEWATER AND MOBILE DRINKING WATER TREATMENT SYSTEM WASTEWATER AT DRILL SITES

The Railroad Commission of Texas (RRC) has received requests from industry to recycle treated domestic wastewater generated from mobile on-site sewage treatment units located at oil and gas drill sites. The RRC also has received requests to recycle mobile drinking water treatment system wastewater, including reverse osmosis reject water, generated at oil and gas drill sites. The term “domestic wastewater” means wastewater that originates primarily from kitchen, bathroom, and laundry sources, including waste from food preparation, dishwashing, garbage grinding, toilets, baths, showers, and sinks of a residential dwelling. The term “mobile drinking water treatment system wastewater” means wastewater generated from the treatment of surface or subsurface groundwater for drinking water purposes.

The RRC has reviewed these requests and conferred with the Texas Commission on Environmental Quality (TCEQ) on jurisdictional issues regarding activities on oil and gas drill sites as outlined in the Memorandum of Understanding (MOU) between the two agencies codified at 16 Texas Administrative Code (TAC) §3.30 (Statewide Rule 30).

The RRC has jurisdiction over the on-site treatment and management of domestic wastewater generated at oil and gas drill sites. The RRC also has jurisdiction over waste stream(s) generated from mobile drinking water treatment systems located at and resulting from use exclusively at well sites. The TCEQ has jurisdiction over the treatment of water that will be used for drinking water, other potable uses, and potable water delivery, and therefore, the TCEQ also has jurisdiction over mobile potable water treatment units operated at drill sites (mobile drinking water treatment systems) and over the transportation of domestic waste and wastewater.

The RRC uses the minor permit process under 16 TAC §3.8(d)(6)(G) to consider permit applications to authorize the operator of a lease to beneficially recycle treated domestic wastewater and mobile drinking water treatment system wastewater at drill sites.

Any domestic waste stream not utilized must be transported by a TCEQ registered sludge transporter that is authorized to transport domestic sewage to a TCEQ-permitted disposal facility authorized to receive and manage domestic sewage prior to treatment system relocation.

If treated domestic wastewater and mobile drinking water treatment system wastewater are commingled, the more stringent requirements will apply, unless otherwise indicated.

If mobile drinking water treatment system wastewater is exclusively reincorporated into the non-potable water from the supply well from which it came, no permit is required for use as rig wash or for down-hole purposes.

The RRC reserves the right to require modifications to a permit as determined by site specific conditions or to revoke or cancel a permit should investigation determine that such authorization is being abused.

The RRC will consider two options for recycling of treated domestic wastewater or mobile drinking water treatment system wastewater:

OPTION 1: Down-hole purposes.

- Make-up water for drilling fluid to be used to drill after the surface casing has been set through the base of usable quality water.
- Make-up water for cement.
- Make-up water for hydraulic fracturing fluid.

OPTION 2: Surface application.

- Dust suppression for the drill pad or roads.
- Controlled (non-atomized) irrigation.

The RRC will continue to coordinate with the TCEQ to evaluate permit applications for other beneficial recycling of treated domestic wastewater or mobile drinking water treatment system wastewater on a case-by-case basis.

RECYCLING OF MOBILE DRINKING WATER TREATMENT SYSTEM WASTEWATER

OPTION 1: Requirements for recycling of mobile drinking water treatment system wastewater for down-hole purposes:

No permit is required for down-hole recycling of mobile drinking water treatment wastewater.

OPTION 2: Requirements for recycling of mobile drinking water treatment wastewater for dust suppression or controlled irrigation:

Application Requirements: The operator of an oil or gas lease may apply to the RRC for a minor permit to recycle mobile drinking water treatment system wastewater from a drill site by submitting the following information to Technical Permitting in Austin or the appropriate RRC District Office:

- a. Operator name, county, field name, lease name and number, well number and drilling permit number, and latitude/longitude location.
- b. Name of the contractor providing the treatment services generating the mobile drinking water treatment system wastewater.
- c. Description and estimated volume of the waste stream.
- d. Method of storage before recycling.
- e. The proposed method of recycling.
- f. A description of the precautions that will be taken to minimize direct exposure until confirmation that the waste stream intended for recycling meets the analytical standards specified in this document.
- g. Any other information that Technical Permitting or the appropriate RRC District Office may consider necessary.

Conditions:

1. Prior to recycling, wastewater must be stored in above-ground tank(s) or a synthetically lined or clay (earthen) lined pit with a permeability $\leq 1 \times 10^{-7}$ centimeters per second (cm/s) as permitted or authorized by 16 TAC §3.8 (Statewide Rule 8).
2. Quality assurance sampling and analysis must be conducted at least once per site location for the Field Parameters listed below for OPTION 2 only. All samples shall be representative of the respective waste streams. All sample acquisition, preservation and analysis must be performed according to procedures specified in 40 Code of Federal Regulations (CFR) Part 136.
3. If the mobile drinking water treatment wastewater is stored for greater than seven (7) days, a chlorine residual of 2 to 3 parts per million (ppm) must be maintained and verified every seven (7) days.
4. In no case may the wastewater be discharged or allowed to enter any watercourses or drainage ways, including any drainage ditch, dry creek, flowing creek, river, or any other body of surface water.

Criteria for mobile drinking water treatment system wastewater: Mobile drinking water treatment system wastewater to be recycled under Option 2 must be sampled at least once per location for the following field parameters and the results evaluated by the RRC:

<u>Field Parameter</u>	<u>Limitation</u>
Total Dissolved Solids (TDS) (Standard Method 2540 or equivalent)	Report milligrams per liter (mg/l)
pH (EPA Method 9045 or equivalent)	Report Standard Units (SU)
Electrical Conductivity (EC)	Report (mmhos/cm)

RECYCLING OF TREATED DOMESTIC WASTEWATER

Application Requirements: For recycling of treated domestic wastewater, the operator of the drill site must submit a request for a minor permit to Technical Permitting in Austin or the appropriate RRC District Office. The request must include the following information:

- a. Operator name, county, field name, lease name and number, well number and drilling permit number, and latitude/longitude location.
- b. Name of the contractor providing the treatment services for the treated domestic wastewater.
- c. Description, source, and estimated daily volume of the waste stream to be treated and treated wastewater for recycling (the volume of the influent source of domestic sewage must be less than 5,000 gallons per day).
- d. The method of storage of the wastewater before recycling.
- e. A description of the precautions that will be taken to minimize direct exposure until verification that the treated domestic wastewater meets the criteria specified in this document.
- f. The proposed re-use of the treated domestic sewage or wastewater.
- g. A waiver from the surface owner or proof that notice has been provided to the surface owner at least ten (10) days prior to submission of the application to the RRC for any recycling other than down-hole purposes.
- h. Any other information that Technical Permitting or the appropriate District Office may consider necessary.

OPTION 1: Requirements for recycling of treated domestic wastewater for down-hole purposes:

Conditions:

1. Prior to recycling, wastewater must be stored in above-ground tank(s) or a synthetically lined or clay (earthen) lined pit with a permeability $\leq 1 \times 10^{-7}$ (cm/s) as permitted or authorized by 16 TAC §3.8 (Statewide Rule 8).
2. Quality assurance sampling and analysis for the parameters below must be conducted every fourteen (14) days (grab sample). All samples must be representative of the respective waste streams. All sample acquisition, preservation, and chemical analysis must be performed according to procedures specified in 40 CFR Part 136.
3. If the treated wastewater is stored for greater than seven (7) days, a chlorine residual between 2 and 3 parts per million (ppm) must be maintained.
4. No more than 5,000 gallons per day of pre-treated domestic wastewater may be processed.
5. In no case may the waste stream be discharged or allowed to enter any watercourses or drainage ways, including any drainage ditch, dry creek, flowing creek, river, or any other body of surface water.
6. Solids accumulated during the treatment of domestic sewage must be transported by a TCEQ registered sludge transporter that is authorized to transport domestic sewage to a permitted disposal facility authorized to receive and manage domestic sewage prior to treatment system relocation.

Criteria:

<u>Parameter</u>	<u>Limitation</u>
Biological Oxygen Demand (BOD ₅) / (CBOD ₅)*	≤ 80 (mg/l)
Escherichia coli (E-Coli)	≤ 800 CFU/100 milliliters (ml)
Chlorine Residual (>7 day storage) (EPA Method 334.0 or equivalent)	2 - 3 (mg/l)
pH (EPA Method 9045C or equivalent field method)	6.0 - 9.0 (SU)

*Carbonaceous Biological/Biochemical Oxygen Demand (CBOD₅) may be substituted for BOD₅

OPTION 2: Requirements for recycling of treated domestic wastewater for dust suppression or controlled irrigation:

Conditions:

1. Prior to recycling, wastewater must be stored in above-ground tank(s) or a synthetically lined pit or to a clay (earthen) lined pit with a permeability of $\leq 1 \times 10^{-7}$ (cm/s) as permitted or authorized by 16 TAC §3.8 (Statewide Rule 8).
2. Quality assurance sampling and analysis for the parameters listed below must be conducted every seven (7) days (grab sample). All samples must be representative of the respective waste streams. All sample acquisition, preservation, and chemical analysis must be performed according to procedures specified in 40 CFR Part 136.
3. If the wastewater is stored for greater than seven (7) days, a chlorine residual of 2 to 3 ppm must be maintained.
4. No more than 5,000 gallons per day of pre-treated domestic waste may be processed.

5. In no case may the waste stream be allowed to enter any watercourses or drainage ways, including any drainage ditch, dry creek, flowing creek, river, or any other body of surface water. Topography and proximity to surface water bodies will be limiting factors on a site specific basis.
6. Surface application is prohibited during rainfall or precipitation events.
7. Solids accumulated during the treatment of domestic sewage must be transported by a TCEQ registered sludge transporter, authorized to transport domestic sewage to a permitted disposal facility authorized to receive and manage domestic sewage prior to treatment system relocation.

Criteria (Dust Suppression & Controlled Irrigation):

<u>Parameter</u>	<u>Limitation</u>
Biological Oxygen Demand (BOD ₅) / (CBOD ₅)*	≤ 65 (mg/l)
<i>Escherichia coli</i> (E-Coli) "Dust Suppression"	≤ 200 CFU/100 (ml)
<i>Escherichia coli</i> (E-Coli) "Controlled Irrigation"	≤ 75 CFU/100 (ml)
Oil & Grease (EPA Method 1664)	≤ 30 (mg/l)
pH (EPA Method 9045C or equivalent field method)	6.0 - 9.0 (SU)
Total Chlorides (or site-specific background for surficial aquifer)	≤ 1,500 (mg/l)
Chlorine Residual (>7 day storage) (EPA Method 334.0 or equivalent)	2 - 3 (mg/l)

*Carbonaceous Biological/Biochemical Oxygen Demand (CBOD₅) may be substituted for BOD₅