RAILROAD COMMISSION OF TEXAS

# Discharge of Oil and Gas Waste

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Environmental Permits and Support

# Goal for Texas Waters

It is the goal of Texas Railroad Commission to maintain and protect the quality of surface and groundwater in the State. Policies shall be consistent with public health and welfare, and facilitate oil and gas industries, taking into consideration the economic development of the state.

# Disclaimer

- This presentation is a quick overview and not intended to be a complete guide for filing discharge applications
- Each application is reviewed by an analyst and additional information and clarifications may be required
- Please read all of the rules that are specific to your type of discharge
- Contact Environmental Permits and Support for help should you have any questions

# Topics for Discussion

- Laws and Rules
- Federal and State Jurisdiction
- Define Surface Water
- Types of Discharges
  - Various Applications
- Required Testing
- Other Permitting Options
- Storm Water Discharges & On-Site Septic

# Railroad Commission (RRC) Responsibility

- Water Protection (Statewide Rule 3.8)

- No person subject to RRC may cause or allow pollution of surface or subsurface water

- No person may dispose of **(or recycle)** oil and gas waste except as authorized or permitted by RRC

# Laws and Rules

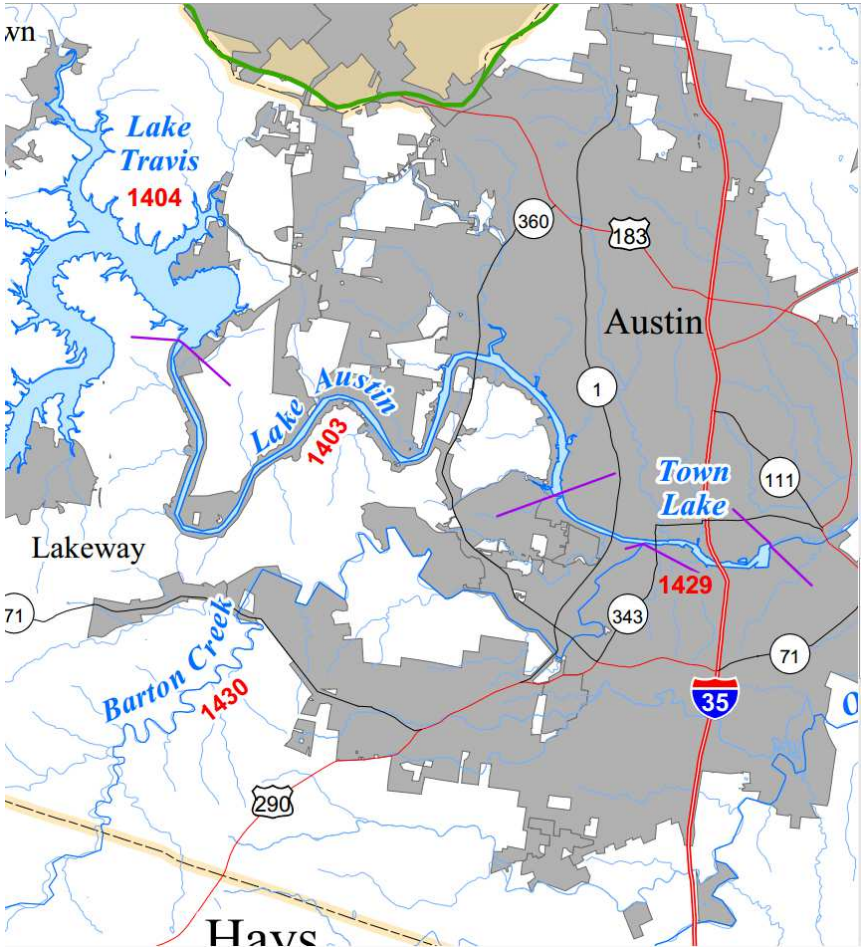
- Clean Water Act (CWA)- primary **federal** law in the U.S governing water pollution. National Pollutant Discharge Elimination System (NPDES) program

- Texas Surface Water Quality Standards(TSWQS) from Texas Commission of Environmental Quality (TCEQ) are in Texas Administrative Code (TAC), Title 30, Chapter 307

- Section 26.131(b) of the Texas Water Code prohibits the RRC from issuing a permit for a discharge that will *cause a violation* of the TSWQS adopted by the TCEQ

# Texas Surface Water Quality Standards

- Establish explicit goals for the quality of streams, rivers, lakes, and bays throughout the state
- Permit restrictions based on water quality and concentration after discharge to the receiving body
- Receiving bodies organized into segments




http://www.tceq.texas.gov/assets/public/waterquality/standards/tswqs_2014/TSWQ2014Rule.pdf

# Federal and State Jurisdiction

- The Environmental Protection Agency (EPA) implements the NPDES permit program
- The RRC regulates the disposal of all oil and gas wastes
- Discharges to surface waters of the State must be permitted by both EPA and RRC

# RRC Definition of Surface Water

Defined by Rule §3.8(a)(29)

- Navigable or non-navigable waters, (unlike CWA) and includes beds and banks of all water courses and bodies of water

- Surface water- lakes, bays, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Gulf of Mexico inside the territorial limits of the state, and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, navigable or nonnavigable, and including **the beds and banks** of all watercourses and bodies of surface water, that are wholly or partially inside or bordering the state or inside the jurisdiction of the state.

# Types of Discharges

Three most common types of discharges. A discharge may occur at the surface (ground) or be to surface waters:

- Hydrostatic Test Water (HT);
- Gas Plant Effluent (GPE);
- Produced Water (Inland & Offshore)

http://www.rrc.state.tx.us/oil-gas/applications-and-permits/environmental-permit-types-information/discharges/

# Discharge Permit Standards

- May not cause a violation of the Texas Surface Water Quality Standards
- Each discharge has required effluent testing and limitations specific to the location
- Additional testing parameters and limitations may be added based on results of water analysis or chemicals added to the discharge

# Hydrostatic Test (HT) Discharges

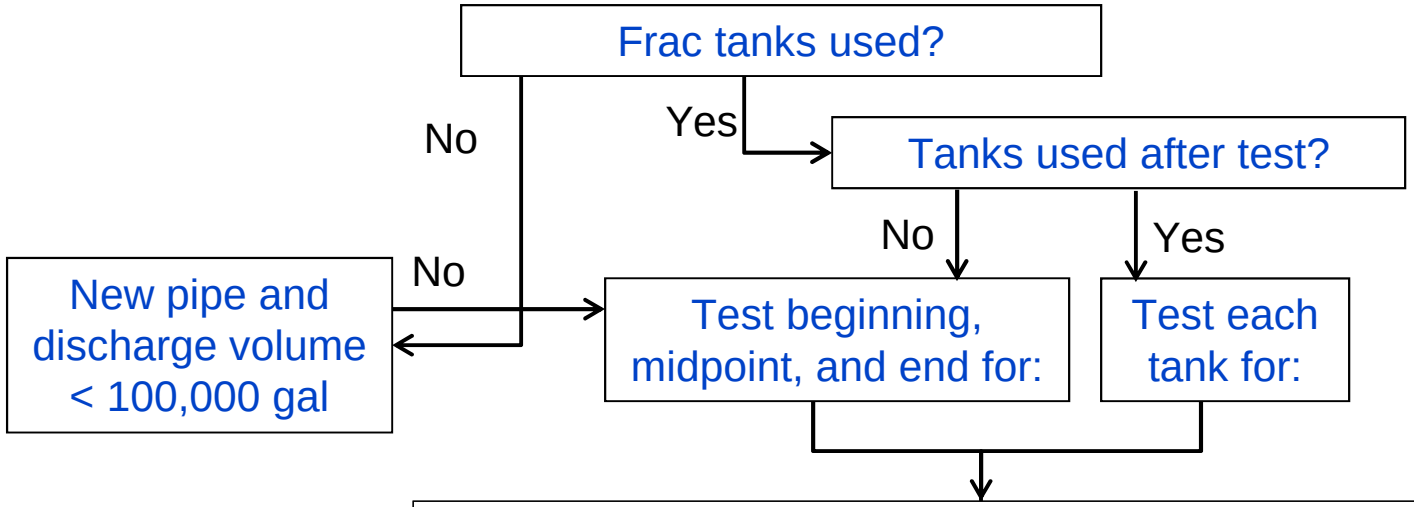
- Hydrostatic tests are preformed to pressure test pipelines and tanks
- Authorized by a minor permit issued from the Austin office and is valid for 60 days. Must file two copies of the applications and attachments
- Contact EPA Region 6 to determine federal permitting requirements

# RRC Application for HT Minor Permit

1. Operator information
2. Description of pipeline or tank to be tested
3. $H_2S \geq 100$ ppm?
4. Source of water
5. Chemicals, concentrations, and MSDS
6. Dates of test and discharge
7. Volume and rate of discharge
8. Latitude/Longitude of the discharge
9. Map that shows fill point and discharge point
10. Filtration & dispersal system, erosion control devices etc.
11. Frac tanks? How many?
12. Landowner notification
13. Cleaning information(used)
14. Application fee and surcharge for discharge to surface waters($750)
15. Signature and certification
16. File two copies of the application, including all attachments with Technical Permitting in Austin

http://www.rrc.state.tx.us/oil-gas/applications-and-permits/environmental-permit-types-information/hydrostatic-test-discharges-minor-and-other-permits/hydrostatictestwater1change/

# HT Permit Typical Testing Requirements




| Discharge to surface (ground) | | Discharge to surface (water) | |
|---|---|---|---|
| **Parameter** | **Limitation** | **Parameter** | **Limitation** |
| Benzene | 0.5 mg/l | Benzene | 0.05 mg/l |
| O&G | 15 mg/l | O&G | 15 mg/l |
| COD | Report | COD | Report |
| Conductivity | Report | Conductivity | Report |
| TSS | Report | TSS | Report |

# Reporting Requirements

- Each frac tank must be sampled and analyzed prior to discharge
- Analytical results must be reported within one month after the discharge is complete
- Pictures of the effluent treatment & fluid dispersal system

# Gas Plant Effluent Discharges (GPE)

- Common waste streams include:
  - Cooling tower blow-down
  - Reverse Osmosis (RO) reject stream
  - Compressor condensation
- Individual EPA permit

http://www.houstonchronicle.com/business/energy/article/Two-more-gas-export-plants-proposed-for-Texas-6154035.php

# RRC Application for Gas Plant Effluent Discharge Permit

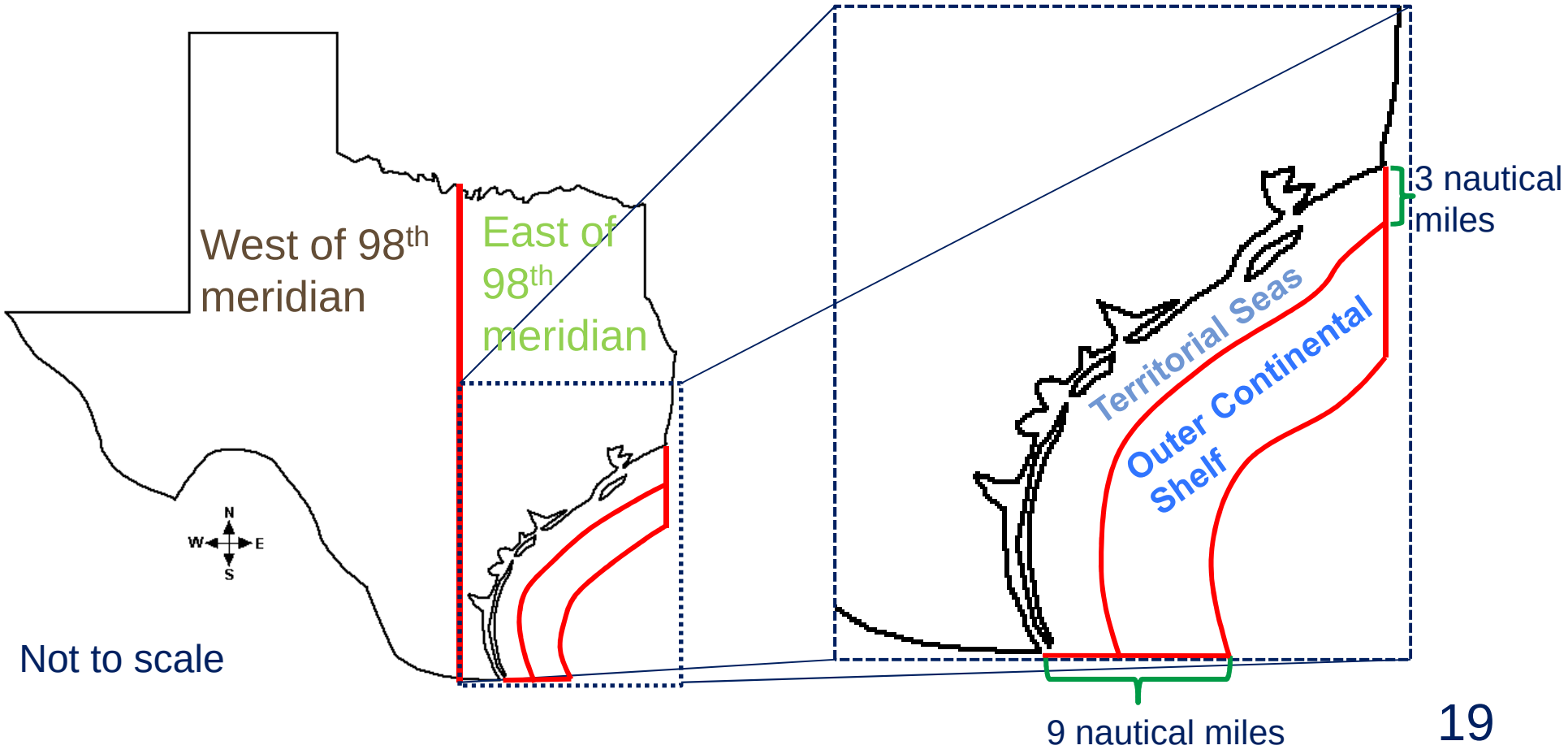
1. Identify the plant by operator information.
2. Indicate the operations carried out at the plant include the type of gas plant and waste stream(s)
3. Drawing and description of any treatments.
4. Pits? Form H-11 required.
5. Identify all chemicals, provide concentration, and **MSDS**.
6. Latitude and Longitude for **each** discharge.
7. Complete Water Analysis.
8. County Highway Map.
9. Plat drawn to scale with tract boundaries and discharge point.
10. Provide notice to waterfront; surface owners from the point of discharge to ½ mile downstream (If to discharge is to watercourse).
11. Permission from flood control owner (if to a ditch or canal).
12. Application fee and surcharge($750).
13. Signature and certification.

http://www.rrc.state.tx.us/oil-gas/applications-and-permits/environmental-permit-types-information/discharges/gasplanteffluent/

# Gas Plant Effluent Required Testing and Limitations

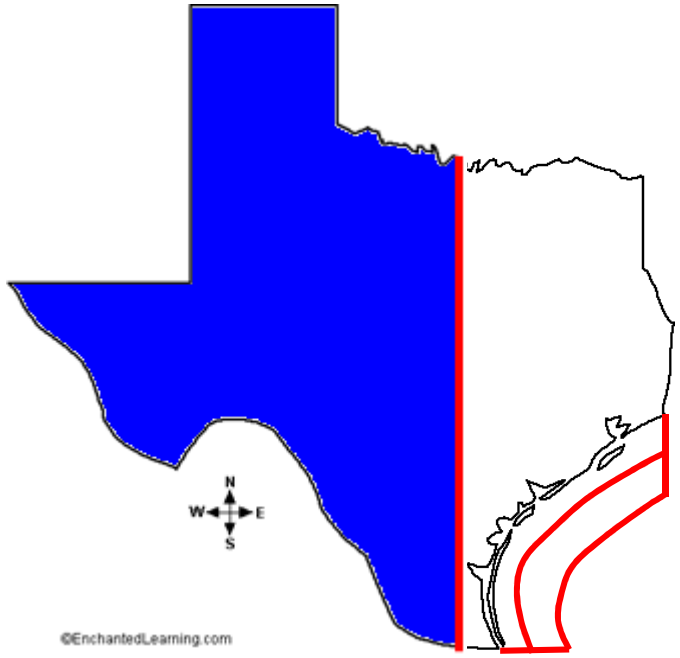
- pH: 6.0 to 9.0
- Biochemical Oxygen Demand (BOD)
  - Daily max: 30 mg/l
  - Monthly average: 20 mg/l
- Additional testing parameters and limitations may be added based on the results of Water Analysis or chemicals added to discharge.

# Produced Water Discharge Zones



# Produced Water Discharged West of 98th Meridian

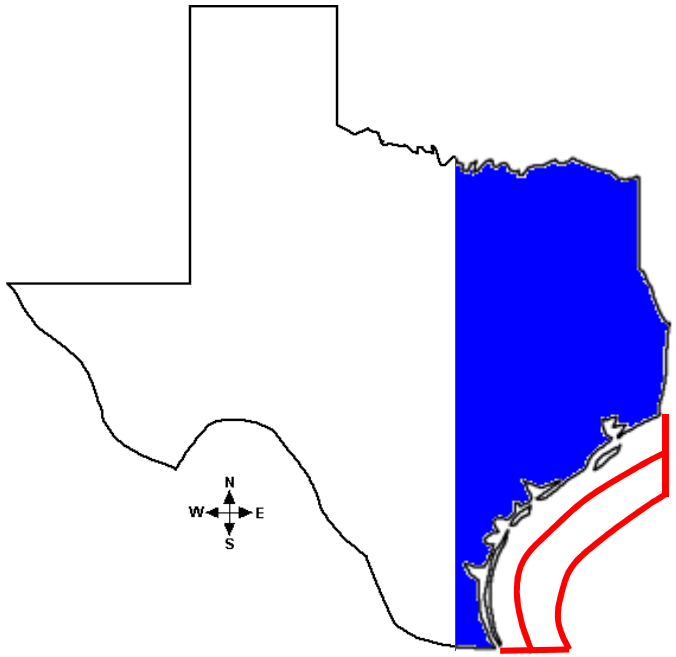
- Not covered by an EPA general permit; but under effluent guidelines in 40 CFR Part 435, Subpart E.
- Individual EPA Permit may be required
- Produced water must be beneficially used for agricultural or wildlife use when discharged into **navigable** waters




http://www.rrc.state.tx.us/oil-gas/applications-and-permits/environmental-permit-types-information/discharges/producedtoinland/

# Produced Water Discharged East of 98th Meridian

- EPA General Permit TXG 330000. (new general permit issued Sept. 11, 2014) includes **re-defined** Whole Effluent Toxicity “WET” testing
- Notice of Intent (NOI)
- Produced water must be from Carrizo/Wilcox, Reklaw, or Bartosh formations
- Discharges into impaired waters may require an individual permit (zinc, mercury, other metals)



# RRC Application for a Permit to Discharge Produced Water to Inland Waters

1. Operator Information.
2. Indicate county, field, lease identification, well numbers for the produced discharge.
3. Include the average and maximum water production rates, well-by-well.
4. Drawing and description of any treatments.
5. Pits? Form H-11 required.
6. Identify any chemicals, provide concentration, and MSDS.
7. Complete Water Analysis
8. Latitude and Longitude.
9. County Highway Map.
10. Provide notice to waterfront surface owners from the point of discharge to ½ mile downstream (If to discharge is to watercourse).
11. Permission from flood control owner (if to ditch or canal)
12. Application fee and surcharge ($750). **Except for West of 98th**.
13. Is the water for agricultural or wildlife use? (West of the 98th).
14. Signature and certification.

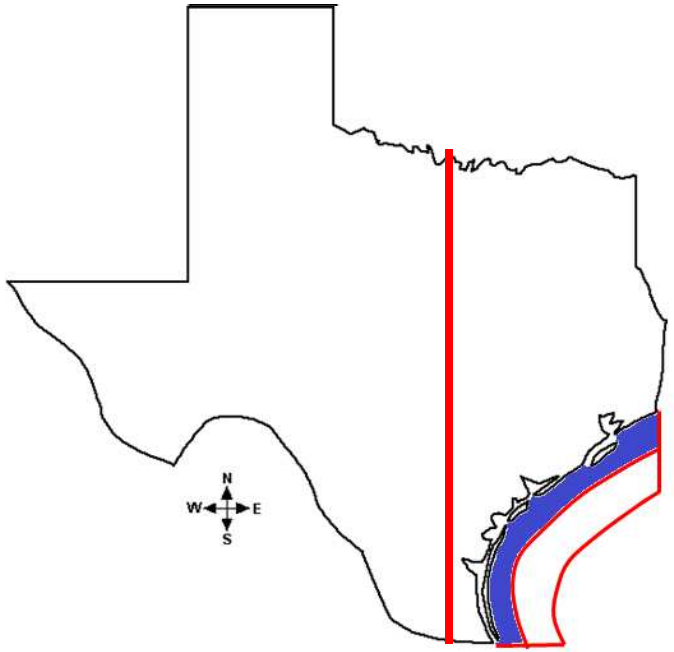
http://www.rrc.state.tx.us/oil-gas/applications-and-permits/environmental-permit-types-information/discharges/producedtoinland/

# Produced Water Required Testing and Limitations

- Oil and Grease
  - Daily max: 35 mg/l
  - Monthly average: 25 mg/l
- Total Dissolved Solids (TDS) < 3,000 mg/l (Produced water East of 98th meridian)
- 24-hour acute WET test required for East of 98th meridian
- Additional testing parameters and limitations may be added based results of Water Analysis or chemicals in the discharge

# Produced Water Discharged to the Territorial Seas

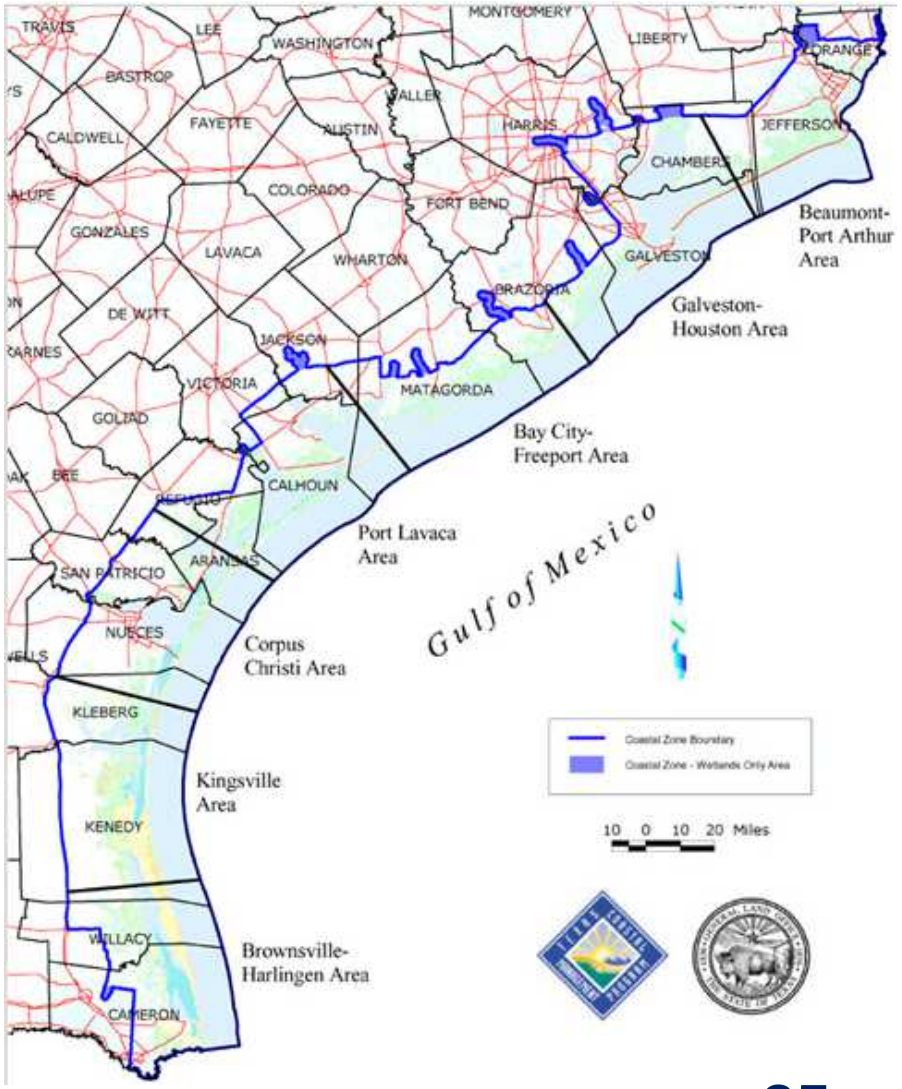
- Covered by EPA General Permit TXG260000
- Notice of Intent (NOI)
- Authorized discharge of produced water
- RRC and EPA require the discharge to pass WET testing
- Must pass both acute and chronic Toxicity Tests prior to any discharge




http://www.epa.gov/region6/water/npdes/genpermit/txg260000/txg260000_2012_finalpermit.pdf

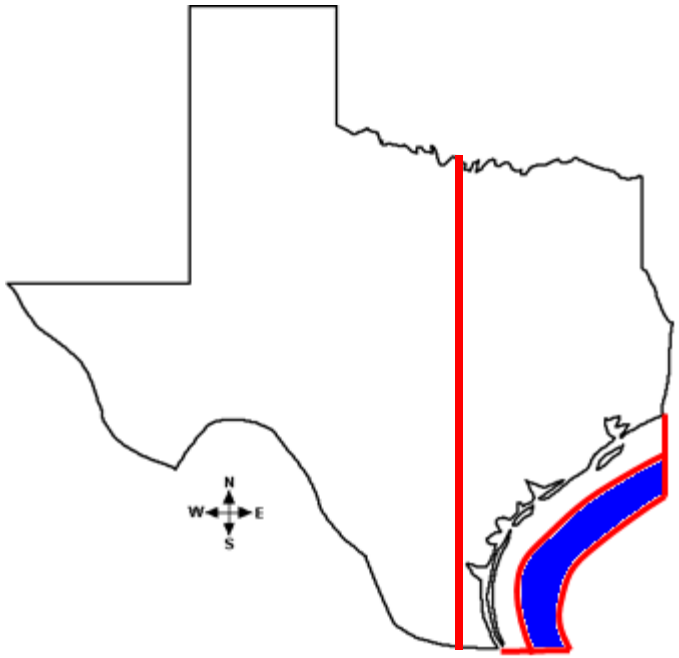
# Coastal Management Program

- Discharges must not adversely affect any critical area
- Examples of critical areas are a coastal wetland, oyster reefs, hard substrate reefs, submerged aquatic vegetation, or tidal sands or mud flats
- Discharge of produced water to bays, estuaries, and tidal areas, with the exception of the Gulf of Mexico, is no longer permitted



# Produced Water Discharged to the Outer Continental Shelf

- Covered by EPA General Permit GMG290000
- Notice of Intent (NOI).
- Authorized discharges for drilling fluids, drill cuttings, and produced water
- RRC and EPA require the discharge to pass WET testing.
- Must pass a 7-day chronic Toxicity Testing.




http://www.epa.gov/region6/water/npdes/genpermit/gmg290000final/gmg290000finalpermit2012.pdf

# RRC Application for a Permit to Discharge Produced Water to Gulf of Mexico

1. Operator Information.
2. Indicate county, field, lease identification, well numbers for the produced discharge.
3. Include the average and maximum water production rates, well-by-well.
4. Depth at which the discharge occurs.
5. Drawing and description of any treatments.
6. Identify any chemicals, provide concentration, and **MSDS**.
7. Complete Water Analysis.
8. Latitude and Longitude for each outfall.
9. Application fee and surcharge($750).
10. Signature and certification.

http://www.rrc.state.tx.us/oil-gas/applications-and-permits/environmental-permit-types-information/discharges/produced-water-to-gom/

# Offshore Produced Water Required Testing and Limitations

- Oil and Grease
  - Daily max: 42 mg/l
  - Monthly average: 29 mg/l
- 7-day chronic WET test
- 24-hour acute WET test (Territorial Seas only)

Daphnid (Ceriodaphnia dubia)

Pimephales promelas

http://water.epa.gov/scitech/methods/cwa/wet/index.cfm

# Whole Effluent Toxicity

- Whole Effluent Toxicity (WET) refers to the aggregate toxic effect to aquatic organisms from all pollutants contained in a facility's wastewater (effluent)

- In a WET test, aquatic organisms from fresh or saline water are placed in a mixture of the receiving water diluted with the discharged effluent

- WET tests determine the acute and chronic effects on the aquatic organisms

- A WET test is passed by recording No Observable Effect Concentration at the calculated critical dilution concentration

# Complete Water Analysis

| General Parameters | |
|---|---|
| Temperature (°F) | Calcium |
| pH (standard units) | Magnesium |
| Dissolved Oxygen | Sodium |
| Hardness (mg/l as $CaCO_3$) | Potassium |
| Total Suspended Solids | Iron |
| Total Dissolved Solids | Manganese |
| Chlorides | Oil & Grease |
| Sulfates | Total Organic Carbon |
| Sulfides | Phenols |
| Ammonia Nitrogen | Naphthalene |

| Parameter | MAL(mg/l) |
|---|---|
| Aluminum | 0.03 |
| Arsenic* | 0.01 |
| Barium* | 0.01 |
| Benzene | 0.01 |
| Cadmium* | 0.001 |
| Chromium* | 0.01 |
| Hexavalent* Chromium | 0.01 |
| Copper | 0.01 |
| Cyanide | 0.02 |
| Lead* | 0.005 |

| Parameter | MAL(mg/l) |
|---|---|
| Mercury* | 0.0002 |
| Nickel | 0.01 |
| Selenium* | 0.01 |
| Silver* | 0.002 |
| Zinc | 0.005 |

# Quarterly Reporting Requirements

- Cover letter, Summary table of test results, Complete laboratory analytical report and corresponding Chain of Custody
- Report noncompliance issues
- May submit copies of the completed EPA Discharge Monitoring Reports

# Land Apply Produced Water

- Beneficial for wildlife or agricultural uses
  - Associated pits
  - Irrigation
  - Reverse osmosis (gas plants)

- Soil and complete water analyses required
- Prevent runoff

http://www.rrc.state.tx.us/oil-gas/applications-and-permits/environmental-permit-types-information/landfarms-and-landtreatment-facilities/landapply/

# Land Apply Permit Considerations

- Water quality of the effluent
- Soils/acreage to be irrigated
- Annual precipitation/evaporation
- Application method (sprinklers, gate valves..)
- Run-off prevention
- Soil sampling parameters are based on the water quality

# Storm Water Discharges

**Permits will distinguish between contact storm water and non-contact storm water**

- Non-contaminated storm water may be discharged without a permit from RRC. A permit from EPA may be required
- Contact storm water detention ponds (permitted as pits)
- Discharge of contact storm water must be permitted
- Best Management Practices (BMPs) should be followed when managing non-contact storm water

# Best Management Practices

**These apply to all RRC authorized and permitted facilities**

- Use of berms, grading or curbing to prevent runoff of contaminated fluids
- Secondary containment requirements for storage tanks, frac tanks or other vessels containing wastes
  - 120% total capacity is recommended, however a minimum capacity consistent with the U.S. Environmental Protection Agency's rules governing Spill Prevention, Control, and Countermeasure Plans (40 CFR Part 112), is acceptable that will capture 100% and the 25 year/ 24-hour rainfall event.
- Good Housekeeping and Inspections

# On-Site Sewage Facility (OSSF)

- Are under the jurisdiction of the Texas Commission on Environmental Quality (TCEQ).

- **Unless** the OSSF is located at a well site or a RRC-permitted facility, then it falls under RRC

- Preferred management practice for domestic sewage is “pump and haul”. Sludge haulers are regulated by TCEQ, under Title 30, Texas Administrative Code (TAC), Chapter 312, Subchapter G.

# On-Site Sewage Facility (OSSF)

**Do not need a RRC permit if;**

- The waste is not commingled with any other waste stream;
- designed by a professional engineer or sewage system installer; **AND**
- the construction, operation, and maintenance of the OSSF complies with all applicable local, county, and state requirements.

http://www.rrc.state.tx.us/media/25720/2014-12-17-notice-to-operators-domestic-sewage.pdf

# Review and Additional Comments

- Contact storm water should not be commingled with the effluent prior to the discharge point
- Septic and gray water should not be commingled with the effluent prior to the discharge point
- Technical Permitting does not allow any additives that contain chromium or zinc to be discharged

# Summary

- Roles of the EPA,RRC, and TCEQ
- Discharge types and applications
  - Common errors in applications
- Water quality testing and parameters
  - Required testing and limitations
- Storm Water/OSSF

# Contact Information

## Environmental Permits & Support

512-463-3840 (Main)

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