

East Texas Commercial Disposal Permit Modifications Summary

1. **Subject:** "Notice to Operators of Commercial Disposal Wells Injecting into the Rodessa, Glen Rose, Fredricksburg, Duck Creek, Mooringsport, Nacatosh, Goodland Lime and formations deeper than the Rodessa in Harrison, Panola and/or Shelby Counties."
2. There has been an ongoing series of workshops and formal meetings regarding East Texas Commercial Disposal Operations in Harrison, Panola & Shelby Counties to address concerns regarding the over pressurization of various disposal zones in East Texas and the threat posed to freshwater sources:
 - a. **4/11/14** – Produced Water Management in Shelby, Panola and Harrison Counties (Workshop)
 - b. **9/16/14** – AESC/RRC Meeting:
 - i. Key Attendees:
 1. Milton Rister – Executive Director – RRC
 2. Gil Bujano – Director Oil & Gas Division – RRC
 3. David Hill – Manager for Injection – RRC
 - ii. Requested by AESC to seek clarification to Commercial Disposal Permit Modifications issued on 8/15/14 & 9/4/14.
 - c. **10/16/14** – TXOGA/AESC/Operator Meeting to Explore Options and Alternatives to Disposal.
 - d. **11/6/14** – AESC/Operator/RRC Meeting to Discuss Revised Permit Modification Proposal from AESC.
3. Background:
 - a. Disposal Demand in the subject area has increased from 60,000,000 barrels annually in 2005 to approximately 120,000,000 barrels currently (2013).
 - b. Disposal Injection Well Counts in Subject Area
 - i. Commercial - 74 facilities handling appx. ½ of disposal demand
 - ii. Private – 120 facilities handling appx. ½ of disposal demand
 - c. Various Issues have prompted the RRC to consider restrictions on disposal/injection activity in the Counties of Harrison, Panola & Shelby and prompted a "broad based effort to implement changes intended to reduce injection pressures in the formations" of the subject area.
 - i. Threats to surface and subsurface freshwater supplies
 - ii. Surface pollution
 - iii. Confinement of injected fluids in permitted formations (without migration).
 - iv. Drilling Complications thru disposal zones
 1. Heavier Mud Weights
 2. Intermediate Casings
 - v. Pressure on Well Bradenheads
 - vi. P&A Complications
 - vii. Casing Leaks with a heavy concentration occurring in disposal zones
 - viii. Surface Breakouts due to deficient neighboring wellbores
 - ix. **Complications at the Pergan Class I Disposal in Marshall, TX.**

4. In response to the various regional issues encountered due to charged disposal zones:
 - a. The RRC implemented a moratorium on commercial disposal permits in the subject three county area beginning in 2008.
 - b. RRC Issued Permit Modifications to operators of all 74 disposal wells in Harrison, Panola & Shelby Counties:
 - i. 10% Maximum Operating Pressure Reduction to be implemented 90 days after letter date with no protest for most disposals.
 - ii. Proposed new conditions for bottom hole pressure testing, pressure fall off testing and bottom hole pressure limitations.
 1. **The proposed permit modifications for fall off tests 12 months after permit modification would potentially shut down 65-70, of the 74 commercial disposals in the subject area.**
5. During the **9/16/14**, AESC/RRC Meeting, the RRC stated the following:
 - a. The Commission will review disposal permits on a case by case basis for operators whom request a hearing in response to the 8/15/14 letters.
 - b. Contrary to the letters distributed, the Pettit and Travis Peak formations still remains a viable disposal alternatives in East Texas.
 - c. The RRC is working with the EPA to respond to concerns associated with the Pergan Class I disposal north of Marshall.
 - d. The RRCs immediate goal is not to shut down or limit any current disposal capacity or impact production, but does understand that the new permit modifications will put the significant majority of the commercial facilities out of compliance with approximately 12 months.
 - e. The RRC has yet to intervene on private disposal facilities, however that remains a possibility.
 - i. **NOTE: As of 11/6/14, there are several pending, private disposal permits for which the RRC is requiring the bottom hole pressure testing and operational requirements (0.465 x depth to top perforations + 10% depth).**
 - f. The RRC perceives the construction of a pipeline using the I-20 ROW into Smith County as a viable option to reduce disposal demand in the subject area. This project may require the collaboration of service companies, producers, RRC and other entities.
6. **10/16/14** – TXOGA/AESC/Operator Meeting to Explore Options and Alternatives to Disposal
 - a. “Reeves County Option”
 - i. Increased Notification Requirements
 - ii. Increased Area of Review for new permits to ½ mile radius & operator must demonstrate abandoned wells have been properly plugged and all wells have casings cemented thru disposal zones
 - iii. Clusters of Disposals (2 or more disposals within ½ mile of each other) would decrease disposal volume as follows:

Average 12 month disposal volume, bpd (Last Form H10)

 Number of active commercial disposal wells within the Cluster

- iv. Pros:
 - 1. Allows us a procedure to keep current wells injecting;
 - 2. Gives the Commission technical data and argument to EPA that fresh water aquifers are protected; and
 - 3. Protects us as to concerns over fresh water aquifers.
- v. Cons:
 - 1. Can we get permission to re-enter the wells that we do not have data on or we have questions about as to integrity
 - 2. Need to address potential liability & funding issues for re-entry.
- b. Deeper Injection – Pettit & Travis Peak
 - i. Pros: Gives us another option for disposal of water from existing and new production wells, however expected lower volumes and higher pressures
 - ii. Cons:
 - 1. Some have active production, so we should anticipate operator opposition.
 - 2. **Unknown if RRC will require – 0.1 x depth + normal gradient of 0.465.**
- c. Pipeline West to Smith County
 - i. Pros: Provides an alternative
 - ii. Cons:
 - 1. Extremely large financial investment with anticipated cost in excess of \$100 million. May be more since the entity would not have eminent domain authority;
 - 2. Unable to complete in the time frame of one year that we are facing
- d. Reuse/Recycling/Treatment of Flowback and Production Water Streams:
 - i. Pros - Reduces Disposal Demand
 - ii. Cons:
 - 1. Logistics of Storage & Transportation
 - 2. Hesitancy of Operators to Utilize Reuse Fluid on Completion activities & Redesigning of Fracs.
 - 3. Higher initial costs until area gets geared up.
- e. Implement Restrictions on Louisiana Water Being Disposed of In Texas
 - i. Pros – Reduces Disposal Demand
 - ii. Cons :
 - 1. Economic Impact on Service Companies providing these services
 - 2. Impacts operators who are often active on both sides of the state line.
 - iii. Potential Legislation required to enforce fees on Louisiana water

7. 11/6/14 – AESC/Operator/RRC Meeting to Discuss Revised Permit Modification Proposal from AESC and Various Clarifications.

- a. RRC Attendees:
 - i. David Hill
 - ii. James Huie
 - iii. Leslie Savage
 - iv. Craig Pearson
 - v. Jim Moore
 - vi. Adam Goodlett
 - vii. Haley Cochran
 - viii. Kathy Keils
- b. Gil Bujano is leaving the RRC in January 2014. David Hill (RRC Manager of Injection) will have a larger decision making role in this initiative.
- c. Prior to this meeting, several disposal operators have petitioned the RRC to not exercise the 10% pressure reduction to no avail.
- d. 10% pressure decrease may be implemented 90 days after 8/15/14 letter.
- e. Downhole pressure and fall off testing requirements may be initiated 12 months later for those operators who already submitted bottom hole pressures in 2012.
- f. Decisions regarding permit revisions requiring bottomhole pressure limitations (10% of depth + 0.465 x depth to top perforations) may not be made until late next year in conjunction with the next round of bottom hole testing with operator able to request a hearing.
- g. The RRC expects to be issuing a revised permit modification letter in early December.

8. Conclusion:

- a. The proposed permit modifications, as written in their current state, would render the majority of the commercial disposal capacity in Harrison, Panola and Shelby Counties out of compliance.
- b. It does not appear that the RRC will relax the 10% reduction to the operating surface pressure to the disposal wells as this has been already been denied.
- c. Alternatives that have been presented to the RRC to extend the areas of review and provide documentation that area wellbores are sufficiently plugged and cemented appear to have been rejected by the RRC.
- d. It appears that the new bottom hole pressure and testing requirements will be applicable to permits in the Pettit and Travis Peak formations which may render them unviable for future disposal.
- e. The final state of the pending permit modifications is not yet known. The RRC expects to distribute the next revision of the permit modifications in early December.