

Railroad Commission

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<http://www.rrc.state.tx.us>



Field Operations Responsibility

- 7,000 Operators
- 373,489 Total Wells (February 2008)
- Activity in 242 out of 254 Counties
- All facilities and activities associated with
 - Oil & Gas Exploration
 - Production
 - Processing
 - Transportation
 - Waste Handling and Disposal

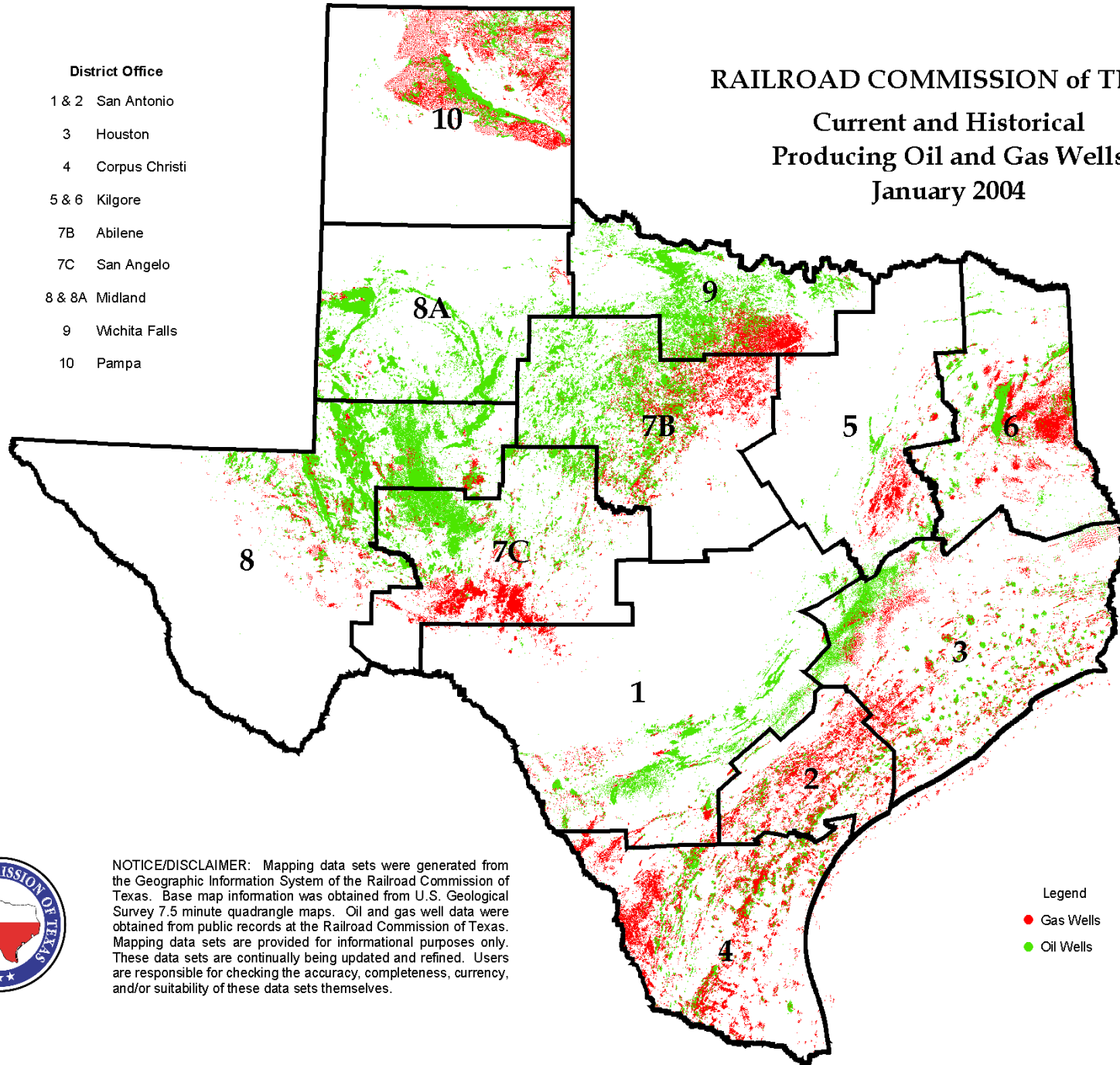
Field Operations Resources

- Staff of 236 in 9 District Offices
 - 83 Field Inspectors (4,499 per inspector)
 - 38 OFCU Fund Pluggers (9,500 orphaned wells)
 - 16 OFCU Fund Cleanup Coordinators
- Staff of 11 in Austin
- Performed 119,131 inspections in FY 2007

RAILROAD COMMISSION of TEXAS

Current and Historical Producing Oil and Gas Wells January 2004

- District Office**
- 1 & 2 San Antonio
 - 3 Houston
 - 4 Corpus Christi
 - 5 & 6 Kilgore
 - 7B Abilene
 - 7C San Angelo
 - 8 & 8A Midland
 - 9 Wichita Falls
 - 10 Pampa



NOTICE/DISCLAIMER: Mapping data sets were generated from the Geographic Information System of the Railroad Commission of Texas. Base map information was obtained from U.S. Geological Survey 7.5 minute quadrangle maps. Oil and gas well data were obtained from public records at the Railroad Commission of Texas. Mapping data sets are provided for informational purposes only. These data sets are continually being updated and refined. Users are responsible for checking the accuracy, completeness, currency, and/or suitability of these data sets themselves.

- Legend**
- Gas Wells
 - Oil Wells

Field Operations Activities

- Regulatory Activities:
 - Monitor/Respond to Emergency Operations 24/7
 - Blowouts
 - Fires
 - Hydrocarbon Spills
 - Witness Industry Operations & Tests (Priority Jobs)
 - Surface Casing
 - Well Pluggings
 - Mechanical Integrity Tests of Injection and Disposal Wells
 - Fluid Level Tests of Inactive Wells
 - Operator Cleanups

Field Operations Activities

– Field Inspections

- Lease
- Drilling Rig
- Plant (Gas, H₂S Processing, Reclamation, Cycling)
- Pit
- Commercial Waste and Saltwater Disposal Facilities

– Complaint Investigations

- Conducted by the District Offices
- Monitored by Field Operations Austin

Newark, East (Barnett Shale) Field Wells and Permits

- Discovery date : October 15, 1981
- As of January 23, 2008, there are a total of 7,170 gas wells entered on RRC records.
- There are 4,350 permitted locations
- This field produces in eighteen (18) counties.

Johnson County Inspections Statistics

- As Well count has increased since FY 2002, we have seen a corresponding increase in RRC inspections and jobs witnessed.

| | | FY 2002 | FY 2003 | FY 2004 | FY 2005 | FY 2006 | FY 2007 |
|-------------------------------|--------------|---------|---------|---------|---------|---------|---------|
| No. Wells | Gas | 3 | 14 | 63 | 154 | 411 | 861 |
| | Oil | 1 | 1 | 0 | 0 | 3 | 8 |
| | Total | 4 | 15 | 63 | 154 | 414 | 869 |
| Total Inspections/Jobs | | 36 | 41 | 119 | 162 | 465 | 865 |

Greatest Risk in life of Gas Well

- Well Control during Drilling
 - Well Control during Initial Completion
 - Well Control during Fracturing
 - Well Control during Workovers
 - Well Control during Plugging
-
- The Root cause typically involves Human Error and/or Equipment Failure.

Statewide Rule 13: Drilling, Casing, and Well Control

- SWR 13: Rule 13(b)(1)(B), “*Wellhead assemblies shall be used on wells to maintain surface control of the well...*”
- Rule 13(b)(1)(C), “*A blowout preventer or control head and other connections to keep the well under control at all times shall be installed as soon as surface casing is set...*”



SWR 13: Public Safety:

- In the event of a release or blowout, public safety is the primary concern of the RRC
- RRC expects responsible party to take all steps necessary to accommodate and protect public,
- 29 well control incidents in FY 2007 with 800-900 drilling rigs active on a daily basis, plus 1000s of workover rigs.
- If the operator fails to respond, the RRC will take over.

Statewide Rule 13: Casing & Cementing

- Well must be cased and cemented to:
 - Protect all usable-quality ground water
 - Protection depth established by the Texas Commission on Environmental Quality (TCEQ)
 - Isolate all productive intervals (prevent vertical migration of fluids behind pipe)
 - Requires 3rd Party (cementer) certification – Technical data reviewed by RRC for all new drills in Texas to ensure compliance with SWR 13.

Injection and Disposal Well Issues

- State Primacy from EPA-April 23, 1982
- RRC gains authority over all Class II wells
- State regulations must be as stringent as the federal requirements, but *may be* more stringent (Statewide Rules 9 and 46).
- UIC wells have many specific requirements designed to ensure environmental protection and public safety

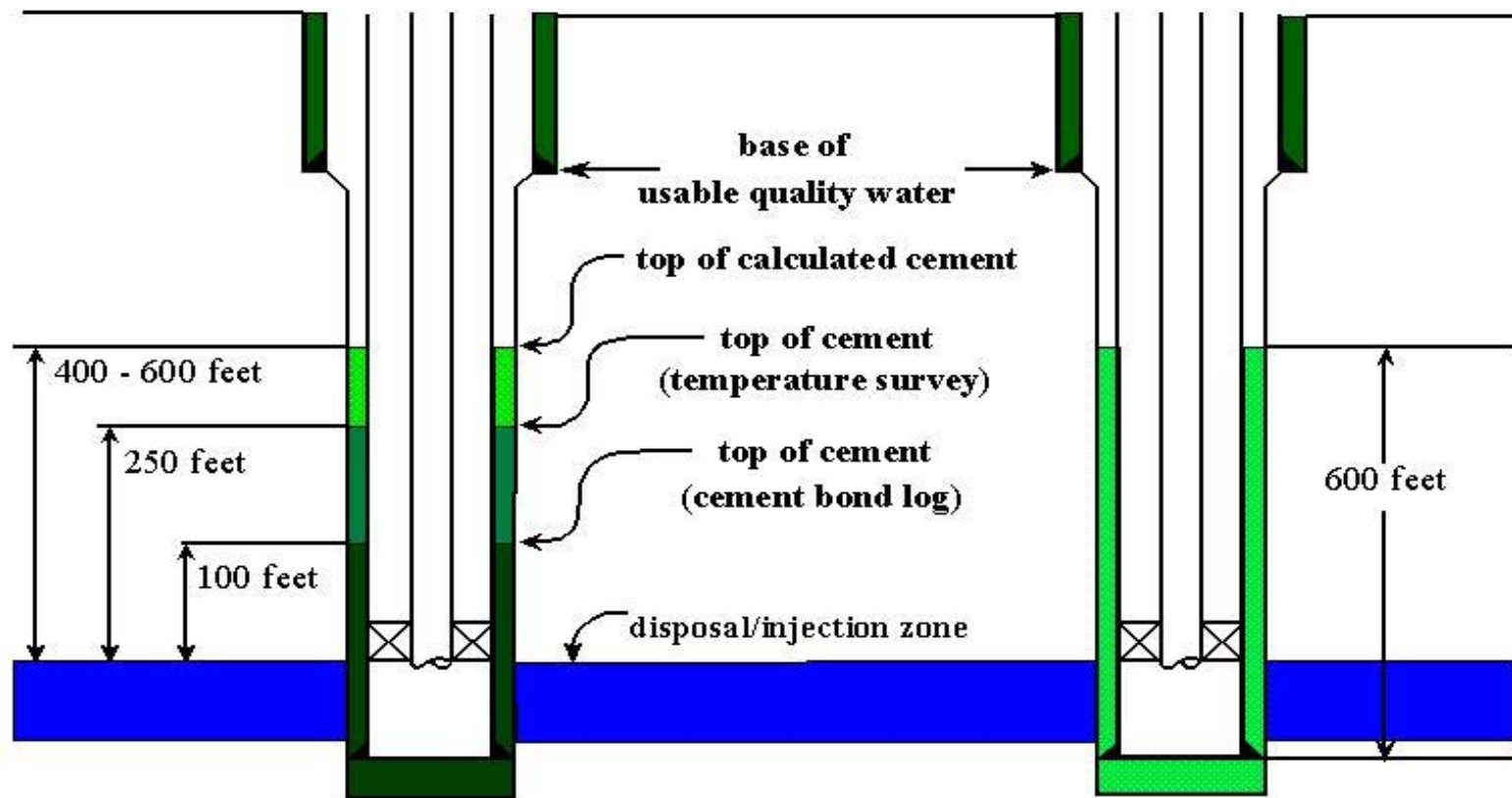
The Population of Injection wells

- Texas has 50,650 injection and disposal wells in service at any given time.
- 38,000 of these wells are injection wells used for secondary recovery purposes.
- 11,700 of these wells are disposal wells used to dispose of oilfield brine.
- 800 of these wells are hydrocarbon storage wells
- 150 brine mining and other misc. wells

Permitting Requirements

- Notice and Hearing Opportunity
 - Surface owner, offset operators, local government, publication in newspaper.
 - Commissioners carefully review/scrutinize each protested application.
- Area of Review – All wells within ¼ mile
- Geologic Requirements – Overlying Strata for Isolation of injected fluids.
- Three Layers of Protection
 - Surface Casing – Protect Usable-Quality GW
 - Production Casing
 - Tubing and Packer Requirements

Criteria for Determining the Adequacy of Cement



Barnett Shale Disposal Permitting Criteria (2004)

- Doubled the area of review around proposed injection wells from $\frac{1}{4}$ mile to $\frac{1}{2}$ mile
- Reduced maximum injection pressure by 50%; limited maximum injection rate (5,000 barrels/day) for wells injecting above the Barnett Shale
- Not more than 25,000 barrels/day at an injection pressure of .5 psig/ft for deeper disposal
- Encouraged disposal into the Ellenberger formation, below the Barnett Shale (

Statewide Rule 9/46

Permit Conditions

- Permit will specify authorized interval, injection pressure, & injection volume
- Requires injection through tubing & packer
- Pressure observation valves are required on the tubing and each casing annulus (for detection of down hole mechanical problems).
- Requires initial & periodic mechanical integrity tests (typically every 5 years).

Commercial Disposal Operations

- Commercial if fluids are trucked in and a disposal fee is charged.
- Expanded Notice Requirement to include adjoining surface owners.
- Special Operating Conditions Apply
 - 24 hour security
 - Tank level indicators
 - Catch basins at offload valves
 - Secondary containment around tanks

152 Commercial Disposal Wells Barnett Shale Area

- Montague - 21
- Palo Pinto - 10
- Parker - 13
- Somervell - 5
- Tarrant - 3
- Wise - 28
- Cooke - 7
- Denton - 4
- Erath - 1
- Grayson - 1
- Hamilton - 2
- Hood - 18
- Jack - 17
- Johnson - 22
- Total: 152

Statewide Rule 14(b)(2)

- SWR 14(b)(2) Compliance :
 - Inactive Well: A well that has been shut-in for 12 consecutive months
 - Inactive wells must be plugged or otherwise brought into compliance by one of the following methods:
 - Return to active status
 - Obtain Extension

Plugging Requirements

- Proposed procedure must be approved by RRC (Form W-3A) in advance.
- Must use RRC approved plugger.
- Isolate all productive horizons.
- Isolate all usable quality water zones.
- Cut off three feet below ground surface.
- When last well on lease is plugged, remove all tanks and vessels within 120 days (effective Sept 1998).
- **Requires 3rd Party (cementer) certification – Technical data reviewed by RRC for all well plugging in Texas to ensure compliance with SWR 14.**

Compliance/Enforcement

- Violation Notices – Verbal/Written
- P-4 Cancellation/Well Seal In
- Request for Administrative Penalty Action
- Request for OFCU Funding – only in emergency situations, or after all means of obtaining compliance from responsible party have been exhausted

Compliance/Enforcement (cont.)

- Referral to Attorney General's Office
 - Administrative Penalty Action Case for enforcement of RRC Order and collection of administrative penalties
 - Reimbursement Case for collection of plugging expenses
 - Both assess and collect additional civil penalties, court costs, and attorneys fees Reimbursement and Collection of penalties
- All Collections deposited into OFCU Fund for plugging of orphaned wells and site clean up.

§ 81.0531. Administrative Penalty

- (a) If a person violates provisions of this title which pertain to safety or the prevention or control of pollution or the provisions of a rule, order, license, permit, or certificate which pertain to safety or the prevention or control of pollution and are issued under this title, the person may be assessed a civil penalty by the commission.
- (b) The penalty may not exceed **\$10,000** a day for each violation. Each day a violation continues may be considered a separate violation for purposes of penalty assessments.