

# ARKANSAS OIL & GAS COMMISSION

Shane E. Khoury  
Deputy Director / General  
Counsel

# AOGC MISSION

**The purpose of the Arkansas Oil and Gas Commission is to prevent waste, encourage conservation, and protect the correlative rights of ownership associated with the production of oil, natural gas and brine, while protecting the environment during the production process, through the regulation and enforcement of the laws of the State of Arkansas.**

# Commission Structure

- **9 Commissioners:**
  - Governor appointed, 6 year terms, no term limitations, member terms staggered. Promulgates regulations.
- **Director:**
  - Hired by Commissioners with approval of the Governor, serves at the pleasure of the Governor. Serves as Commission Secretary, non-voting member. Administers regulatory program.
- **Staff:**
  - Hired by Director, currently authorized 40 full-time employees & 10 “extra help” positions. Implements regulatory program.

# REGULATORY FUNCTIONS

## Issue Permits to drill

oil, natural gas and brine production wells and other exploratory holes.

## Issue Authority to Operate and Produce wells through approval of:

- Authorize production zone completions
- Initial production test to establish production allowable
- Commingling of separate zones of production

## Conduct compliance

inspections during drilling process and operational life of well.

Issue authority to plug and abandoned well, including plugging process approval and staff witness of plugging procedure to insure protection of producing and fresh water zones.

# REGULATORY FUNCTIONS

- Issue Permits to conduct seismic operations for exploration of oil and natural gas.
- Issue Permits to drill and operate Class II UIC enhanced oil recovery injection wells and saltwater disposal wells under authority of US EPA.
  - ADEQ – Surface facilities and disposal of other materials, cuttings, etc.
- Issue Permits to drill and operate Class V UIC brine injection wells for the disposal of spent brine fluids following removal of bromine and other minerals.

# REGULATORY FUNCTIONS

- Issue Permits to Regulate the Gathering Handling, and Transportation of Exploration and Production Fluids. Require each “transporter” using motor vehicles to transport exploration and production fluid (excludes fresh water), to be permitted.
- Issue Permits and Regulate Natural Gas Pipelines, for certain pipelines under the authority of the US DOT, and certain pipelines that are not federally regulated.



# REGULATORY FUNCTIONS

- Classify Wells for Severance Tax Purposes:

- General Rule A-7 – Outlines procedure and how wells are classified.
  - Three different tax categories based on different categories:
    - 1.5% for New conventional wells for 24 months, and new high cost wells for 36 months. High cost can be extended if well hasn't paid out.
    - 5% for Conventional and High Cost after payout.
    - 1.25% for Marginal Conventional (less than 250 mcf per day) and Marginal High Cost (less than 100 mcf per day).

# REGULATORY FUNCTIONS

- Process royalty and working interest owners complaints
  - non-payment, late payment, improper amount.
  - authority to audit in non-compliance situations
  - Investigate improper assessment of expenses
- Investigate Landowner complaints
  - enforce environmental regulations
  - facilitate discussions with operator
- Provide information and presentations to General Public, Legislature, state and federal government agencies, and other stakeholders.



# REGULATORY FUNCTIONS

## Conduct monthly Commission Hearings

- Review and approve regulations
- Create Exploratory Drilling Units
- Establish Field Rules
- Establish well setbacks and spacing
- Hear applications for Integration of interests to protect correlative rights of Mineral interests and leasehold working interests
- Declare certain wells “abandoned.”
- Impose civil penalties and/or compel compliance.

# THE COMMISSION DOES NOT....

- Interpret mineral leases or provide legal advice concerning leases (publications on web page)
- Interpret landowner/operator agreements for land use or determine land damage costs resulting from drilling
- Adjudicate the validity of mineral leases
- Maintain records of mineral lease ownership

# OFFICE LOCATIONS

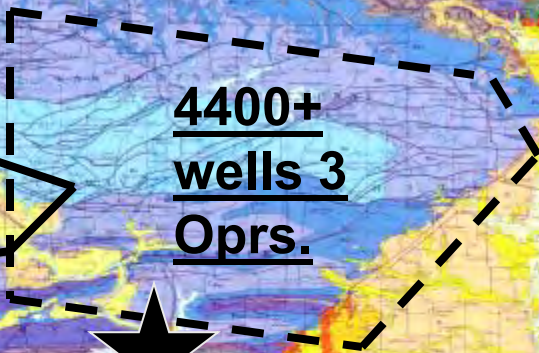
- **Little Rock** – Directors Office
  - Administrative offices, legal staff, fiscal, personnel
- **EL Dorado** – South Arkansas Regional Office
  - Statewide permit issuance, oil and gas production reporting, field inspection/enforcement, well records
- **Fort Smith** – North Arkansas Regional Office
  - Gas production reporting, field inspection/enforcement, well records,
  - Satellite field office in **Conway** for Fay Shale.





4,000+ wells  
100 Oprs.

**Fort Smith**



4400+  
wells 3  
Oprs.



**Little Rock**

Approx.  
48,000 wells  
drilled since  
1925

**El Dorado**



7,200 wells  
200 Oprs.



# Natural Gas Production Information

- **Production Information:**

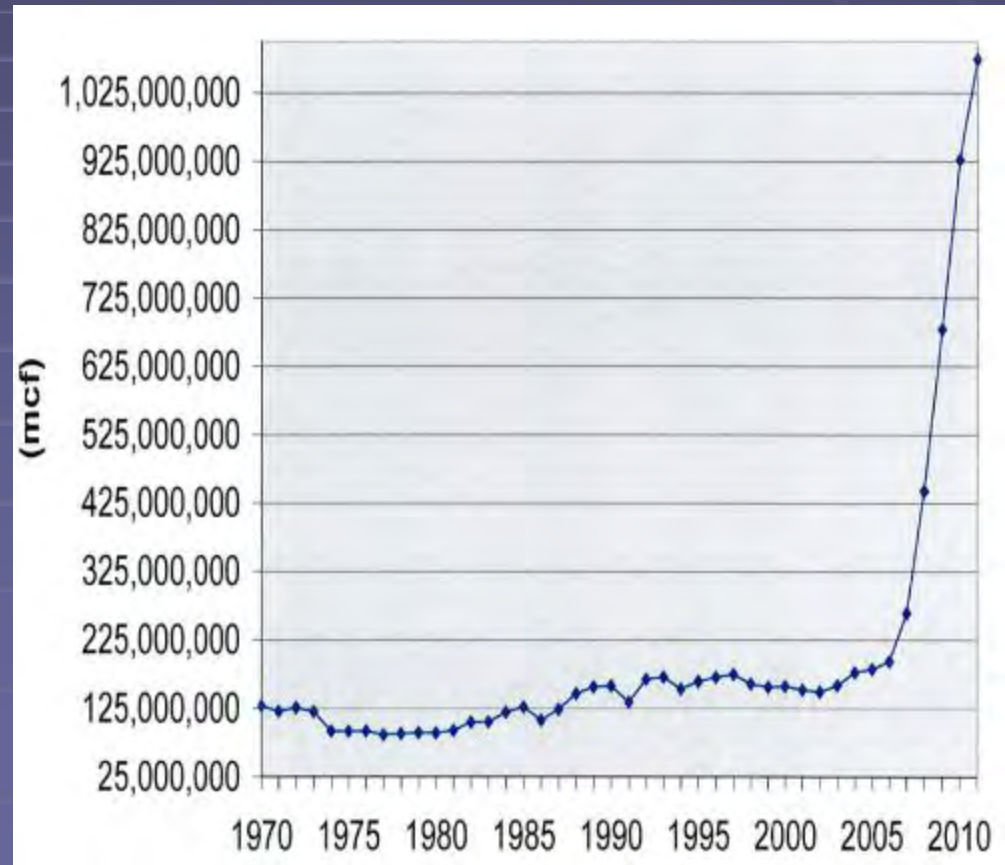
- 2006 – less 200 bcf. 2011– over 1 tcf. Approximately 88% is from the Fayetteville Shale, 12% is from the Arkoma Basin.
  - AR - consume less than 250 bcf per year.

- **# Producing Gas wells in AR:**

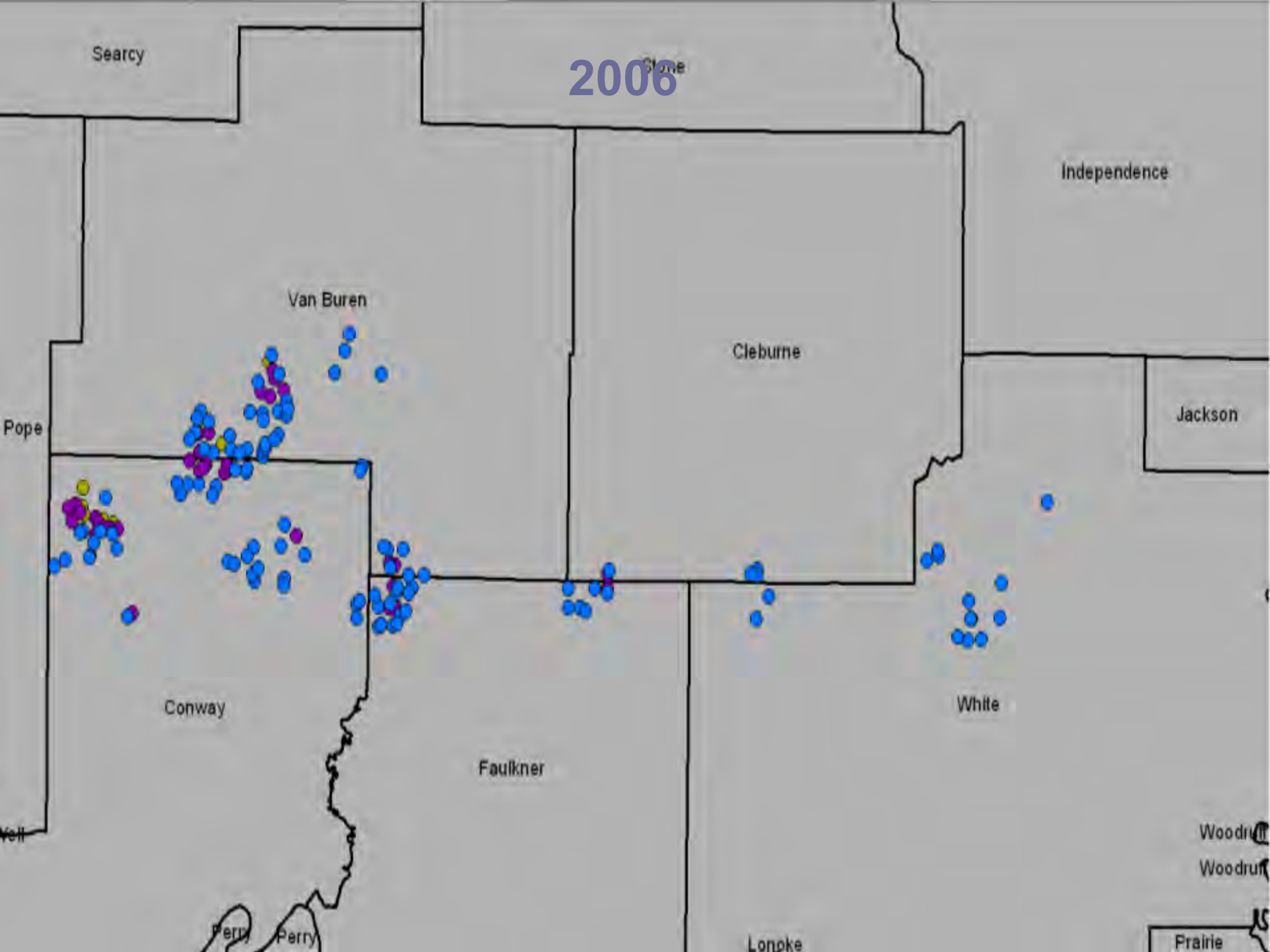
- 2006 3977
- 2007 4641
- 2008 5544
- 2009 6487
- 2010 7112
- 2011 over 8700

- **# of Producing Wells in FS:**

- 2006 165
- 2007 574
- 2008 1290
- 2009 2138
- 2010 3033
- 2011 Over 3800

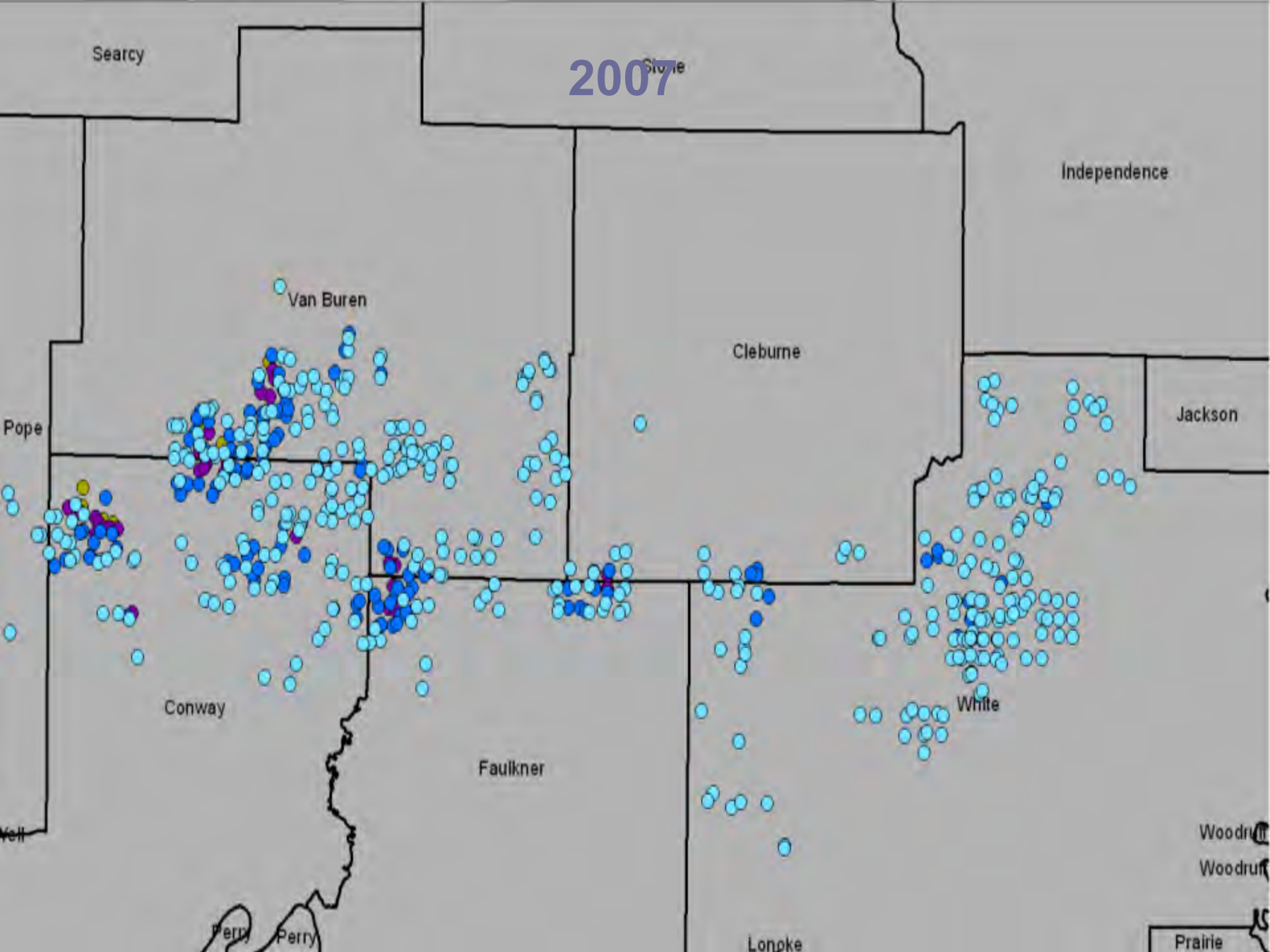


2006

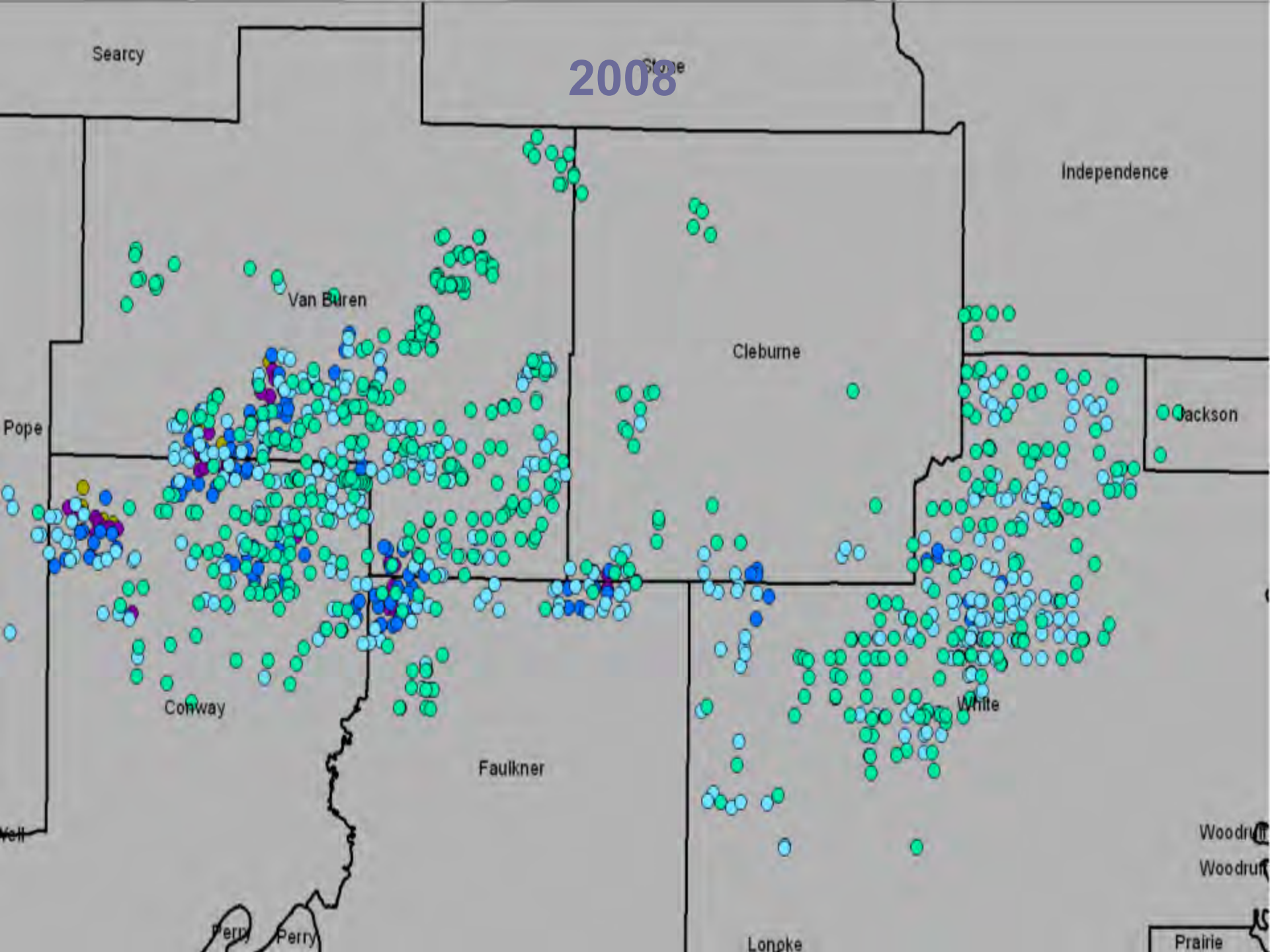




2007

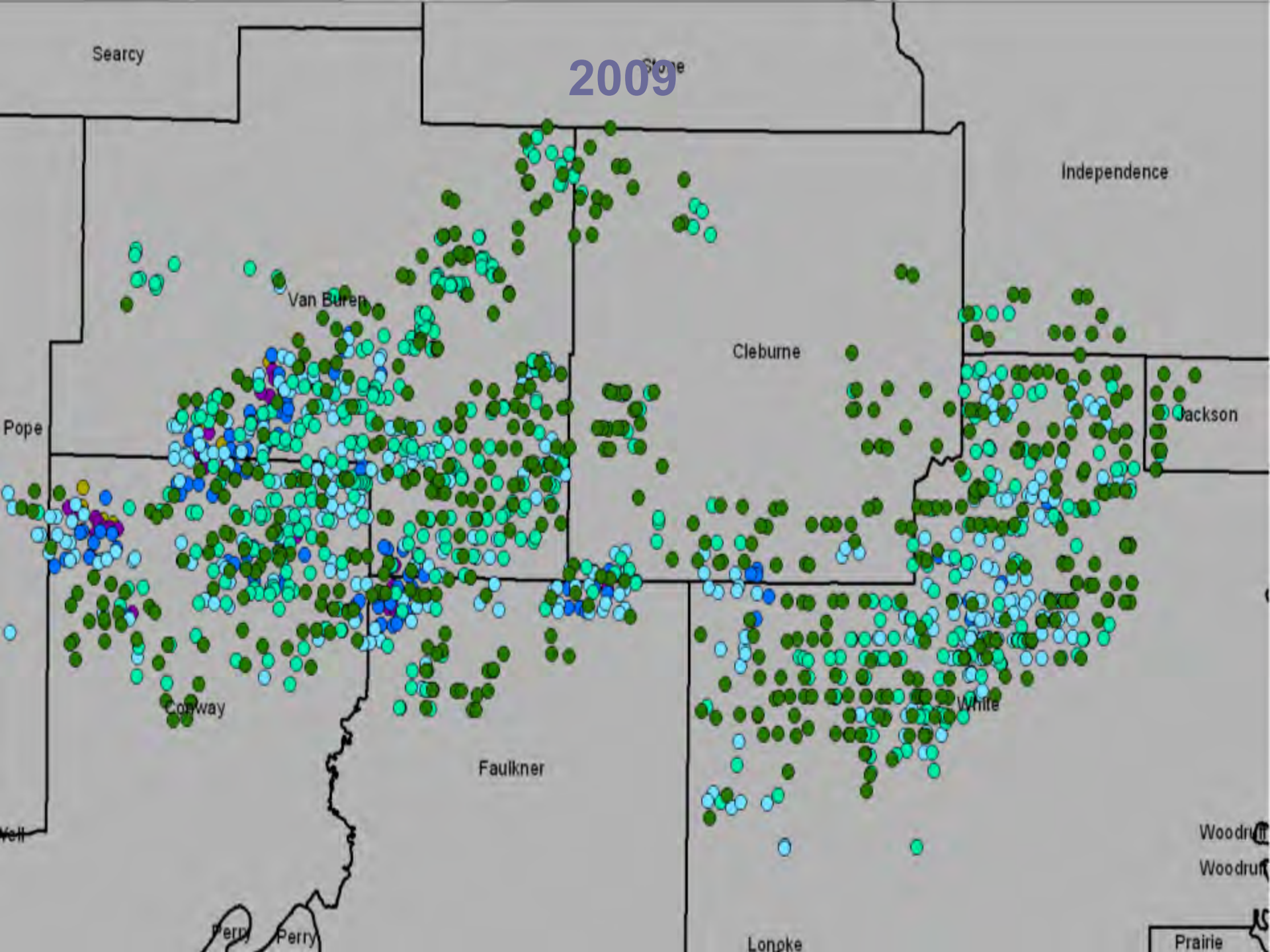


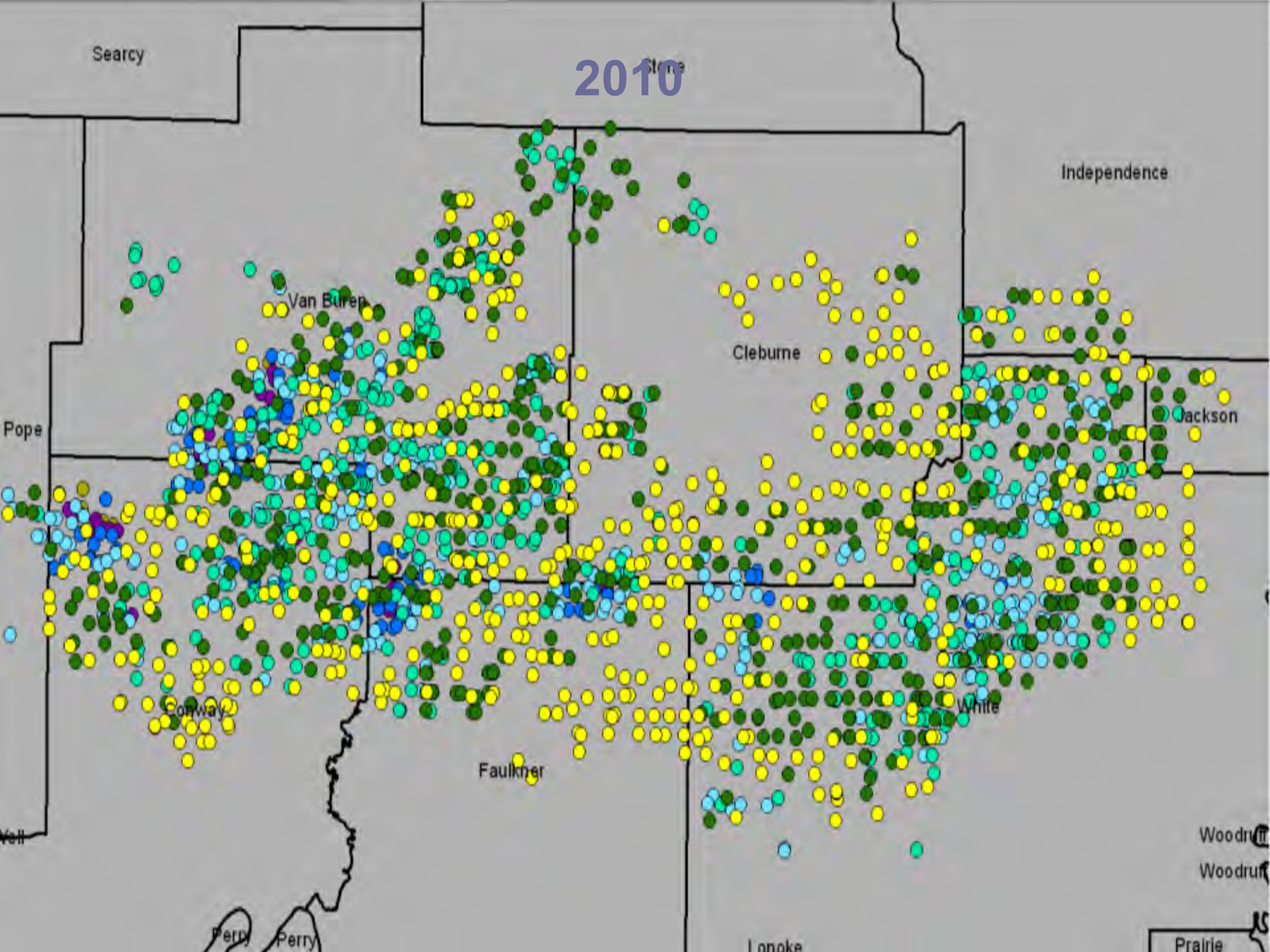
2008



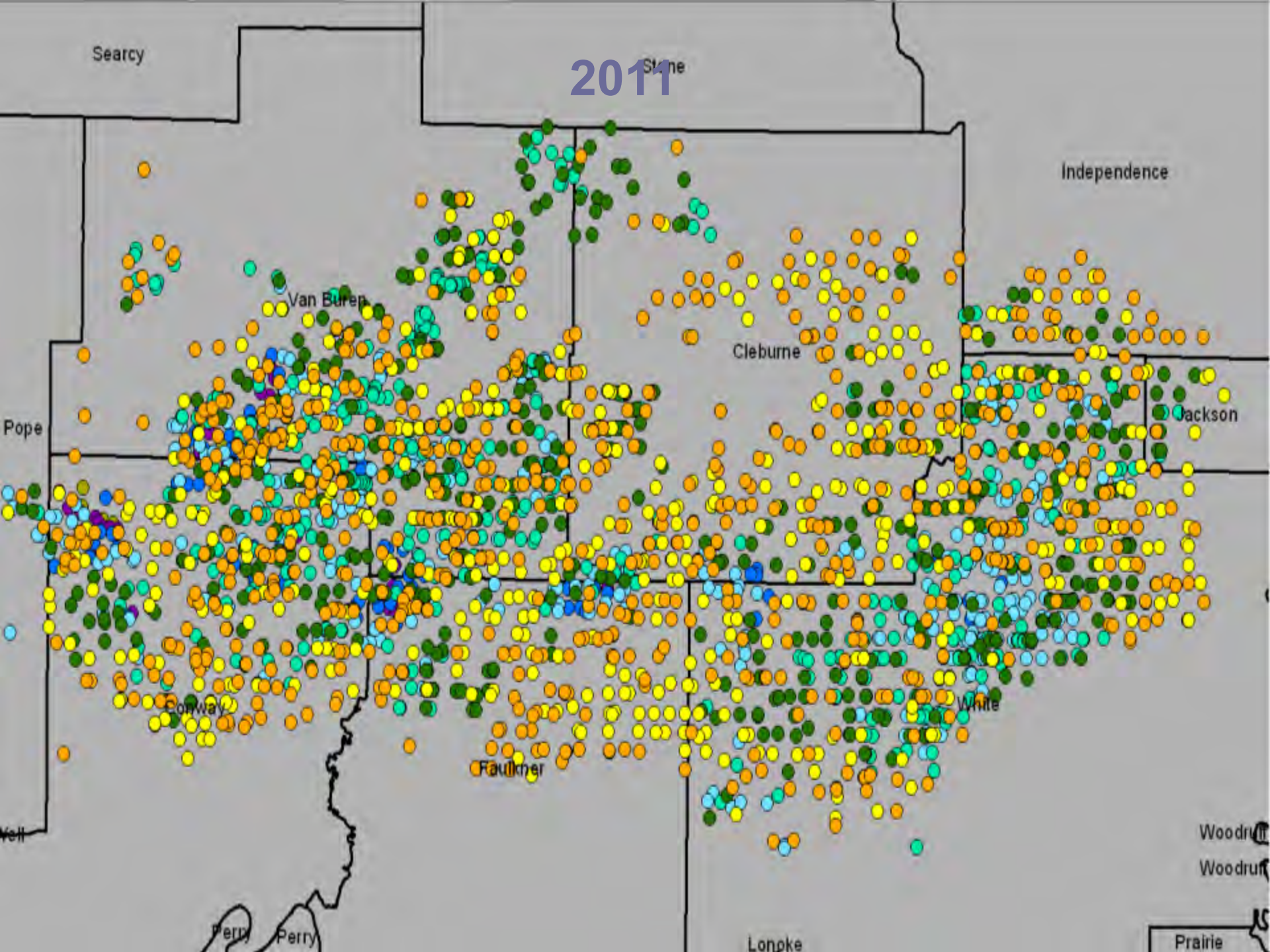


2009

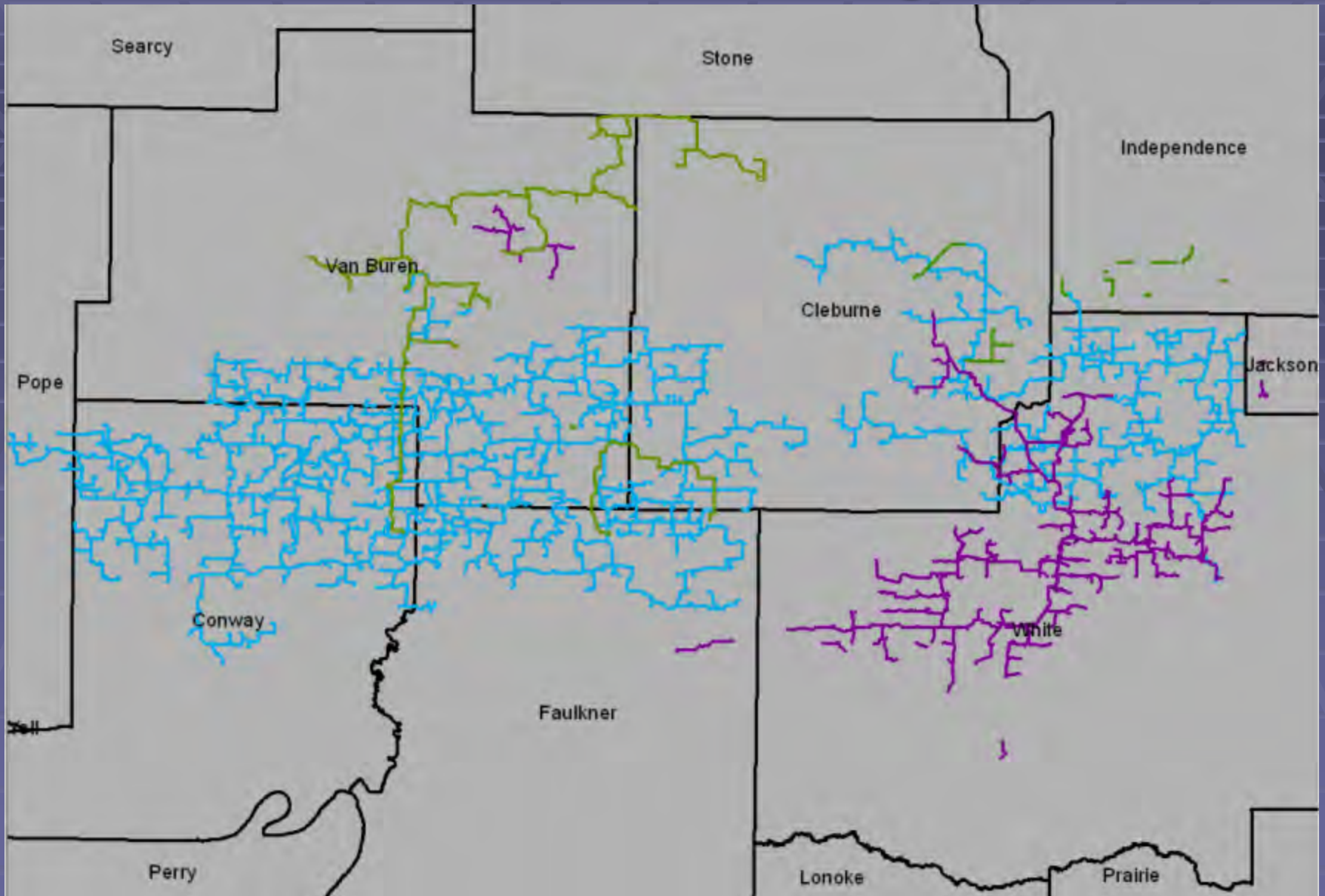








# 2800 Miles Of Gathering Pipeline

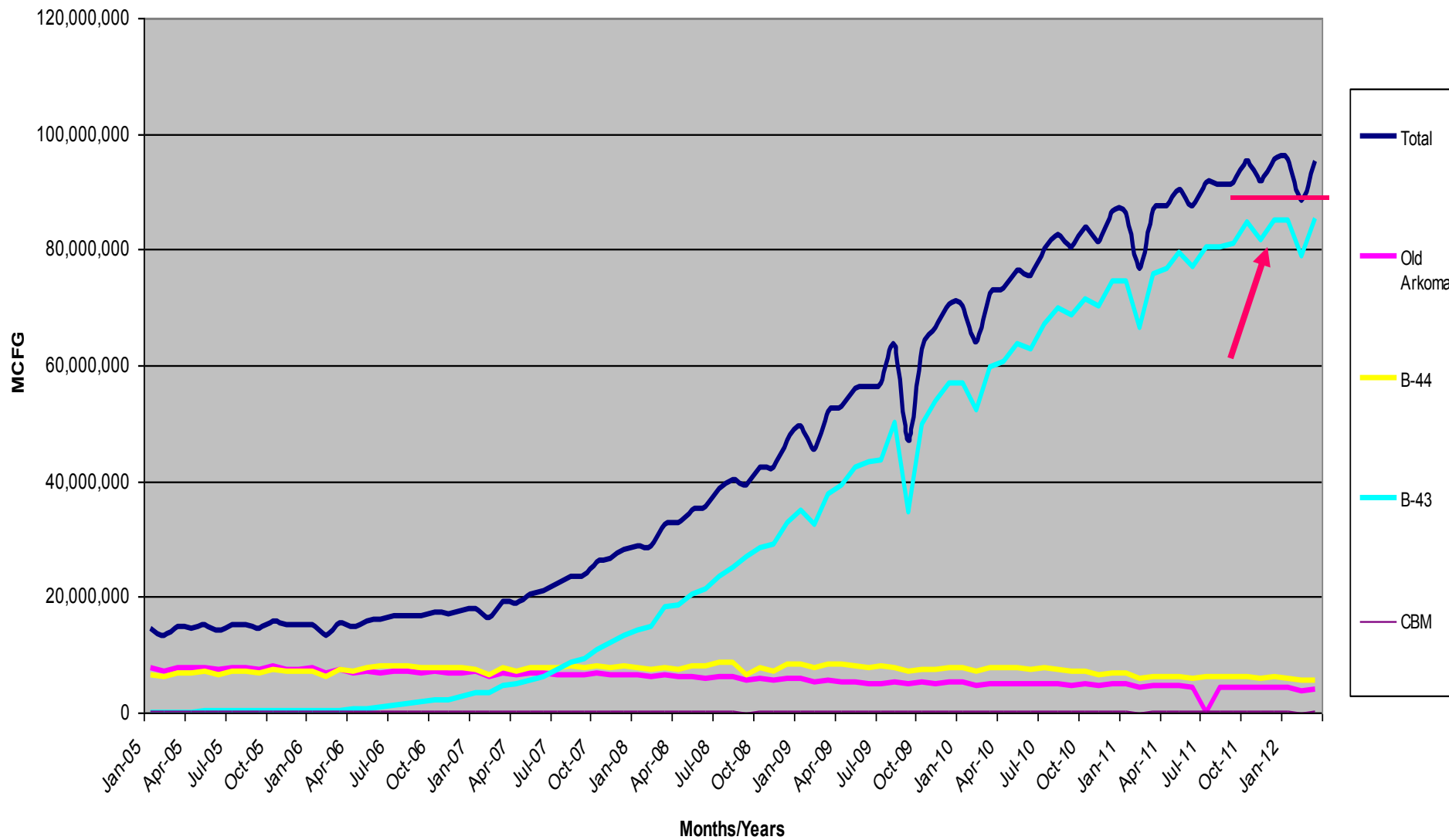


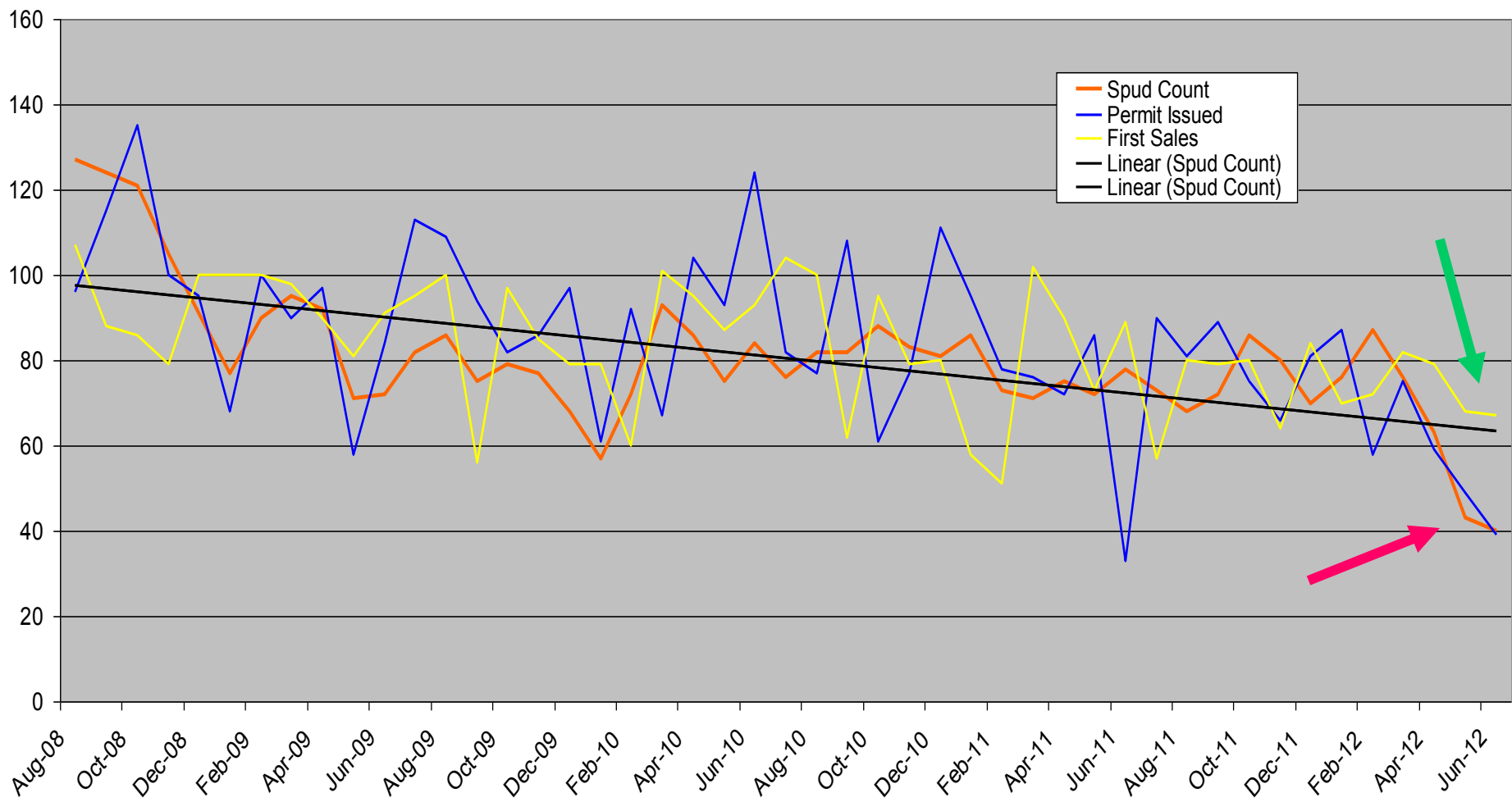


# Drilling and “Fracking” in FS

- Average lateral length – 4517 ft\*
- In terms of frac jobs, average numbers of stages is 11\*
  - bbls of fluids per stage = 1,171\*
  - Lbs of sand per stage = 636,372\*
- \* Based on 1624 wells completed between 12/14/2009 & 12/21/2011
- Average cost of a FS wells is approx. 3.5 million dollars. (Estimated)

## Dry Gas Production in Arkansas





# Commission Response

(since 2006)

- **12 staff positions added**  
(technical, legal and field)  
Requesting 4 more in next session.
- **Fayetteville Shale area field office established**
- **107 rule modifications**
  - At least 30 obsolete rule repeals
  - 8 new rules adopted
  - 69 amendment to existing rules
    - B-43 – Amended 5 times since 2006.

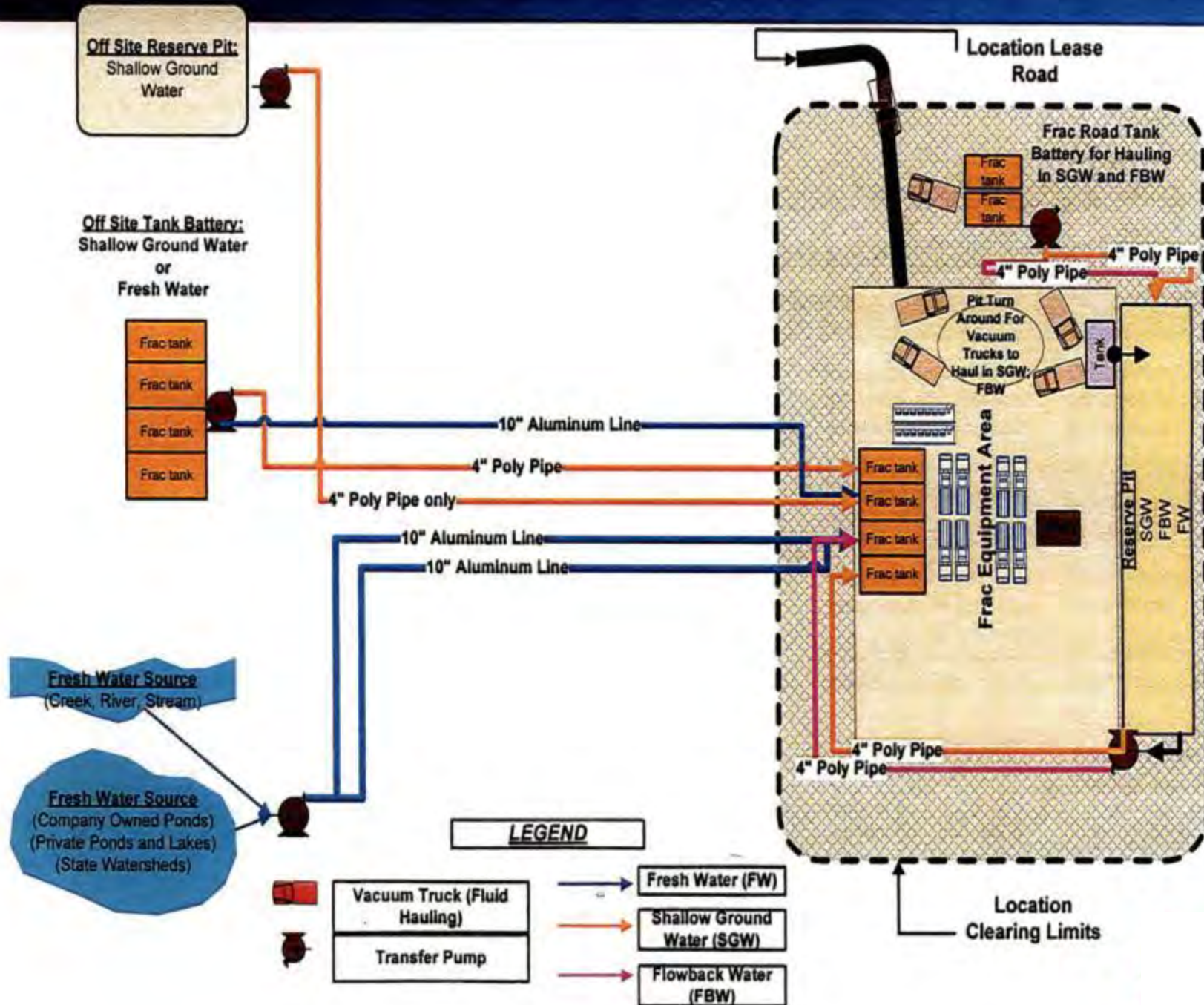
# Examples of Arkansas Modern Regulations

- Revised Drilling Pit Regulations Providing for Recycling of Hydraulic Fracture Flowback Fluids to Reduce Water Use—**General Rule B-17.**
- Public Disclosure of Contents of Hydraulic Fracture Fluids —**General Rule B-19.**
- Cross-unit Wells — **General Rule B-43.**
- New Rule Regulating Noise Levels at Non-Wellhead Compressor Stations— **General Rule D-20.**
- Moratorium — Disposal Wells — Amendment to **General Rule H-**

# **B-17: Well Drilling Pits & Completion Pits Requirements**

- **ADEQ Regulation 34 and AOGC General Rule B-17 are the same.**
  - Most all forms and contact for industry is with AOGC
- **Memorandum of Understanding between ADEQ & AOGC**
  - Onsite – AOGC. Offsite – ADEQ (except WMA)
- **Key Elements:**
  - **Applicability:** Applies to all pits completed during drilling, completion, and testing of oil, gas, or Class II disposal wells;
  - **Enforcement responsibilities shared between AOGC and ADEQ;**
  - **Defines pit types and manner of construction and closure requirements;**
  - **Allows for pit extended use when utilizing frac flowback recycling procedures;**



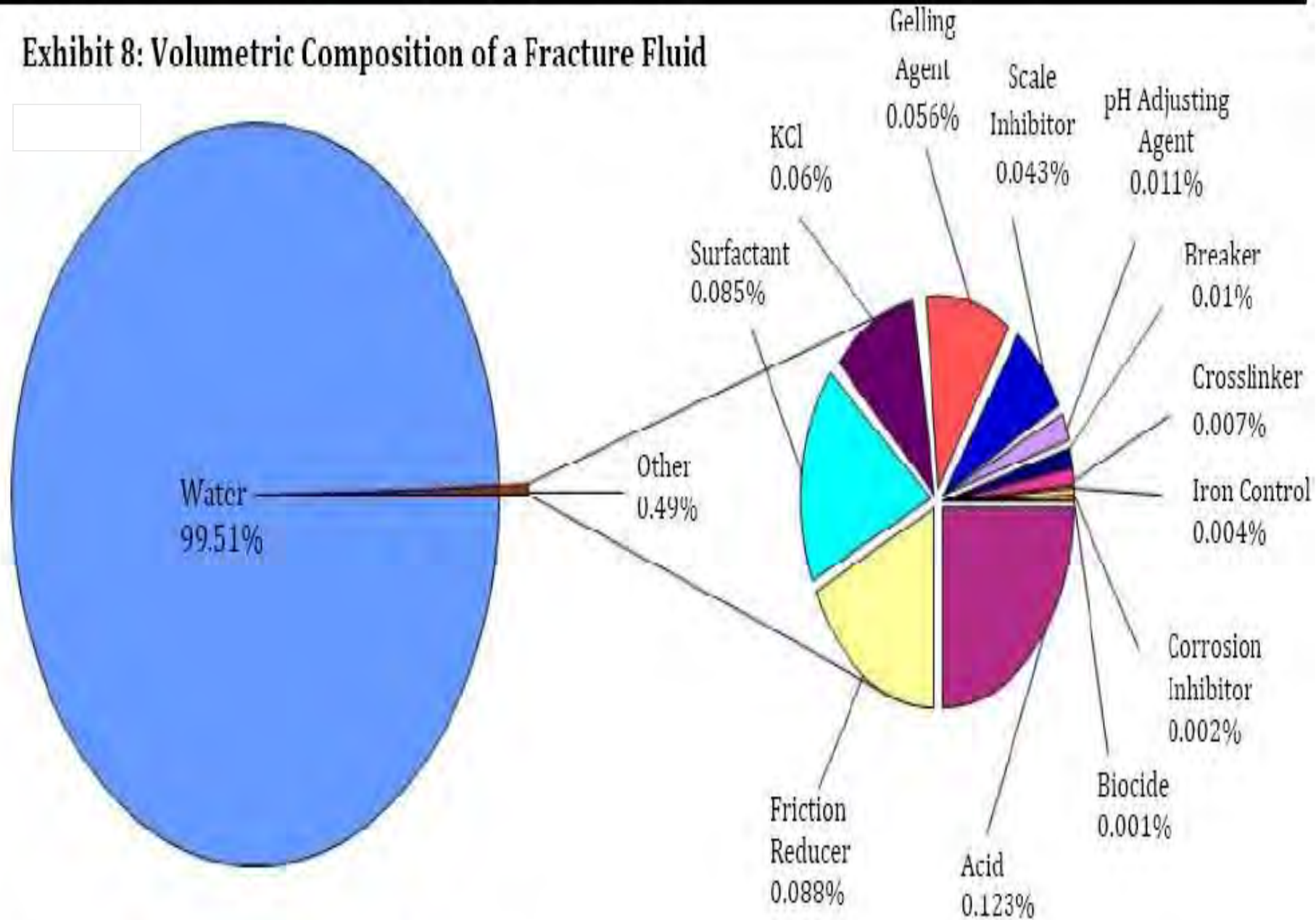




# Increased Public Awareness with Disclosure of Frac Chemicals – General Rule B-19



**Exhibit 8: Volumetric Composition of a Fracture Fluid**



Source: Compiled from Data collected at a Fayetteville  
Shale Fracture Stimulations by AII Consulting 2008

# **RULE B – 19 REQUIREMENTS FOR WELL COMPLETION UTILIZING FRACTURE STIMULATION**

January 15, 2011

- Only applies to new wells, for which an initial drilling permit is issued on or after Jan. 15, 2011.
- PH is required to indicate intent to perform hydraulic fracture treatment. If the PH didn't indicate this at the time of drilling permit application, PH must send in required information prior to commencement of hydraulic fracture treatment.
- PH must report the type of well (vertical, horizontal, directional); estimated true vertical and measured depths of production casing; and casing grade and minimum yield pressure for the production casing utilized.



# RULE B – 19 REQUIREMENTS FOR WELL COMPLETION UTILIZING FRACTURE STIMULATION

January 15, 2011

- PH must submit the proposed cement formulations minimum compressive strength and estimated top of cement for production casing string.
  - June of 2011 - Production Casing for Fay. Shale wells is required to cemented from top of Fay. Shale to surface.
- Requires surface casing to be set in accordance with applicable Commission rules, and must have sufficient internal yield pressure to withstand anticipated maximum pressures.
  - June of 2011 – Fay Shale Well General Rq. = 500 ft below lowest elevation within 1 mile, with a minimum of 1000 feet of surface casing to be set and cemented back to surface.
  - If PH encounters a fresh water zone (prior to the setting of surface casing), or gains knowledge that freshwater will be encountered from a deeper zone that was specified on the permit, the PH is required to set surface casing to 100 feet below the deepest encountered zone.

## RULE B – 19 REQUIREMENTS FOR WELL COMPLETION UTILIZING FRACTURE STIMULATION

### DISCLOSURE PROVISIONS

- Persons performing Hydraulic Frac Treatments must register with AOGC.
- Violation to use any person or company not registered with AOGC.
- If Perform Hydraulic Frac Treatments, must disclose and maintain three separate master lists,
  - All Hydraulic Frac Fluids used
  - All Additives used
  - All Chemical Constituents and associated CAS numbers utilized, (or Chemical Family Name if it qualifies for protection as a trade secret exemption under 42 U.S.C. 11042)



## **RULE B – 19 REQUIREMENTS FOR WELL COMPLETION UTILIZING FRACTURE STIMULATION**

- After Completion of Hydraulic Frac Treatment, PH must report:
  - Max pump pressure during each stage; types and volumes of Frac Fluid and proppant used for each stage, calculated frac height and estimated TVD of top of frac;
- PH required to provide AOGC for each well all:
  - Frac Fluids actually used
  - Additives used (specified by type) & actual rate or concentration for each additive, expressed as pounds per thousand gallons or gallons per thousand gallons, and as percent by volume of the total frac fluids and additives
  - Chemical constituents and associated CAS, or chemical family name if constituent qualifies for protection as a trade secret exemption.
    - Rule requires disclosure of chemical constituents to health care professional, a doctor, or a nurse, even if it qualified for protections as a trade secret.



[Pipeline Info](#)



[Rules & Regs](#)

[Forms](#)

[Permit Completion Report](#)

[Annual Report](#)

[Permits](#)

[County Gas Sales](#)

[Operator Information](#)

[Field Rule Summaries](#)

[Our Mission](#)

[State Resources](#)

[Industry Resources](#)



## Commission News and Alerts

[2012 Hearing Schedule](#)

[Fayetteville Shale Casing Requirements as of June 1, 2011](#)

[Online Payment Service](#)

[Permanent Disposal Well Moratorium Area](#)

[2011 Hearing Schedule](#)

### Proposed Rules

[Notice of Rule Change - General Rule B-17 \(Well Drilling Pits & Completion Pits Requirements\) Public Comment Ends January 17, 2011](#)

[General Rule B-17 Draft \(Well Drilling Pits & Completion Pits Requirements\) Public Comment Ends January 17, 2011](#)

### New Final Rules

[Rule A-5 \(Enforcement Procedures\) Effective February 2, 2012](#)

[Rule H-1 \(Class II Disposal And Class II Commercial Disposal Well Permit Application Procedures\) Effective February 2, 2012](#)

[Rule D-20 - \(Noise Level Requirements for Non-Wellhead Compressor Facilities\) - Effective November 1, 2011](#)

[Rule B-17 - \(Drilling Pit and Completion Pit Requirements\) - Effective October 3, 2011](#)

### Operator Procedural Information

[General operator requirements for a permit to drill or transfer a Well](#)

To report emergencies, incidents, spills, spill activity, file Form 2A, 11, or well bore information for north Arkansas please contact the Fort Smith Regional office [via email](#) or by calling 479-646-6611

To report emergencies, incidents, spills, spill activity, file Form 2A, 11, or well bore information for south Arkansas please contact the El Dorado Regional office please contact [via email](#) or by calling 870-862-4965

[Commissioners](#)

[Staff Concern](#)

[Regional Office Division Map](#)



[Discretion Office](#)

[201 Natural Resources Dr.  
Ste 102  
Little Rock, AR 72205  
501-683-5814  
501-683-5815 \(Fax\)](#)



[El Dorado Regional Office](#)

[2215 West Hillberry  
El Dorado, AR  
71730  
870-862-4965  
870-862-8823 \(Fax\)](#)



[Ft. Smith Regional Office](#)

[2209 Phoenix Ave.  
Ft. Smith, AR  
72303  
479-646-6611  
479-649-7636 \(Fax\)](#)

## Well Fracture Information

### Wells Permitted with Intent of Fracture Stimulation

Only wells subject to General Rule B-19 are contained in the file. The well records consist of the Form 2 - Drilling Permit Application and Form 3A - Well Fracture Stimulation Report. Well files not yet containing a Form 3A have not yet been fracture stimulated. A well file designated as "Amended" indicates the original permit application has been amended and the copy shown is the amended Form 2.

Companies Performing Fracture Treatments	Form 1	Chemical List	Form 37
Calfrac Well Services Corp. - Denver, CO	<a href="#">Form 1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
Schlumberger Technology Corporation - Sugarland, TX	<a href="#">Form 1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
Multi-Chem Group, LLC - San Angelo, TX	<a href="#">Form 1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
Cudd Pumping Services, Inc. - Houston, TX	<a href="#">Form 1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
Halliburton Energy Services, Inc. - Houston, TX	<a href="#">Form 1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
Weatherford Artificial Lift Systems, Inc. - Houston, TX	<a href="#">Form 1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
Superior Well Services, Inc - Indiana, PA	<a href="#">Form 1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
Baker Hughes Oilfield Operations, Inc. - Houston, TX	<a href="#">Form 1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
Gore Nitrogen Pumping Service, LLC - Seiling, OK	<a href="#">Form 1</a>	<a href="#">Chemical List</a>	N/A

### Rule B-19

Form 1 - Required Registration for Performing Fracture Stimulation		
Form 2 - Permit Form Required to Perform Fracture Treatment		
Form 3A - Well Fracture Stimulation Report		
Form 37 - Request for Trade Secret Exemption		



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## Well Fracture Information

### Wells Permitted with Intent of Fracture Stimulation

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Companies Performing Fracture Treatments	Form 1	Chemical List	Form 37
Calfrac Well Services Corp - Denver, CO	<a href="#">Form1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
Schlumberger Technology Corporation - Sugarland, TX	<a href="#">Form1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
Multi-Chem Group, LLC - San Angelo, TX	<a href="#">Form1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
Cudd Pumping Services, Inc. - Houston, TX	<a href="#">Form1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
Halliburton Energy Services, Inc. - Houston, TX	<a href="#">Form1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
Weatherford Artificial Lift Systems, Inc. - Houston, TX	<a href="#">Form1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
Superior Well Services, Inc - Indiana, PA	<a href="#">Form1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
Baker Hughes Oilfield Operations, Inc. - Houston, TX	<a href="#">Form1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
Gore Nitrogen Pumping Service, LLC - Sealing, OK	<a href="#">Form1</a>	<a href="#">Chemical List</a>	N/A

### Rule B-19

Form 1 - Required Registration for Performing Fracture Stimulation.		
Form 2 - Permit Form Required to Perform Fracture Treatment		
Form 3A - Well Fracture Stimulation Report		
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Calfrac Well Services Corp. - Denver, CO	<a href="#">Form1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
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Gore Nitrogen Pumping Service, LLC - Sealing, OK	<a href="#">Form1</a>	<a href="#">Chemical List</a>	N/A

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Plant Name	Registered By
Wisteria	Cheney
W. sinensis	3/20/2008

Address Number	Addition Description	Addition Amount	Address Description
4251	Emergency Services	100	Police Station
4254	Public Works	100	City Engineer
4256	City of Agawam	100	City Engineer
4257	Public Works	100	City Engineer
4258	Public Works	100	City Engineer
4259	Public Works	100	City Engineer
4260	Public Works	100	City Engineer
4261	Public Works	100	City Engineer
4262	Public Works	100	City Engineer
4263	Public Works	100	City Engineer
4264	Public Works	100	City Engineer
4265	Public Works	100	City Engineer
4266	Public Works	100	City Engineer
4267	Public Works	100	City Engineer
4268	Public Works	100	City Engineer
4269	Public Works	100	City Engineer
4270	Public Works	100	City Engineer
4271	Public Works	100	City Engineer
4272	Public Works	100	City Engineer
4273	Public Works	100	City Engineer
4274	Public Works	100	City Engineer
4275	Public Works	100	City Engineer
4276	Public Works	100	City Engineer
4277	Public Works	100	City Engineer
4278	Public Works	100	City Engineer
4279	Public Works	100	City Engineer
4280	Public Works	100	City Engineer
4281	Public Works	100	City Engineer
4282	Public Works	100	City Engineer
4283	Public Works	100	City Engineer
4284	Public Works	100	City Engineer
4285	Public Works	100	City Engineer
4286	Public Works	100	City Engineer
4287	Public Works	100	City Engineer
4288	Public Works	100	City Engineer
4289	Public Works	100	City Engineer
4290	Public Works	100	City Engineer
4291	Public Works	100	City Engineer
4292	Public Works	100	City Engineer
4293	Public Works	100	City Engineer
4294	Public Works	100	City Engineer
4295	Public Works	100	City Engineer
4296	Public Works	100	City Engineer
4297	Public Works	100	City Engineer
4298	Public Works	100	City Engineer
4299	Public Works	100	City Engineer
4300	Public Works	100	City Engineer

\* In some instances, you're assisted by our members. When this occurs, we'll let you know.

CAS Number	Chemical Name
10341-17-1	Carbon tetrachloride
101-76-6	$CH_2Cl_2$ (m) (distilled)
107-15-7	Prop 2-yn-1-ol
10897-44-8	4-Methyl-2-penten-3-one, 2-methyl-, 2-methyl-, 2-methyl-
11-49-8	Diethylaluminum chloride
120-78-9	Benzoic acid
1405-86-4	Isobutyl trimethylsilyl ether
1515-70-2	Acetone hydrate
156-45-8	Solvent mixture
157-49-8	Isobutyl trimethylsilyl ether
160-7-5	Aluminum trimethyl ether
1470-47-7	Chloroform
1765-91-6	Diethyl ether, 2-methyl-
18106-13-6	Diethyl ether, 2-methyl-
18106-03-3	Diethyl ether, 2-methyl-
1846-76-0	Diethyl ether, 2-methyl-
411-56-1	Diethyl ether, 2-methyl-
52-51-7	Diethyl ether, 2-methyl-
52-81-5	Diethyl ether, 2-methyl-
54-45-9	Diethyl ether, 2-methyl-
11729-13-3	Diethyl ether, 2-methyl-
6981-77-7	Diethyl ether, 2-methyl-
64-01-6	Diethyl ether, 2-methyl-
14742-07-8	Diethyl ether, 2-methyl-
58743-02-8	Diethyl ether, 2-methyl-
58744-04-7	Diethyl ether, 2-methyl-
58745-74-3	Diethyl ether, 2-methyl-
57-14-1	Diethyl ether, 2-methyl-
57-60-0	Diethyl ether, 2-methyl-
4007-107-1	Diethyl ether, 2-methyl-
4007-107-2	Diethyl ether, 2-methyl-
4007-107-3	Diethyl ether, 2-methyl-
4007-107-4	Diethyl ether, 2-methyl-
4007-107-5	Diethyl ether, 2-methyl-
4007-107-6	Diethyl ether, 2-methyl-
4007-107-7	Diethyl ether, 2-methyl-
4007-107-8	Diethyl ether, 2-methyl-
4007-107-9	Diethyl ether, 2-methyl-
4007-108-0	Diethyl ether, 2-methyl-
4007-108-1	Diethyl ether, 2-methyl-
4007-108-2	Diethyl ether, 2-methyl-
4007-108-3	Diethyl ether, 2-methyl-
4007-108-4	Diethyl ether, 2-methyl-
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4007-108-8	Diethyl ether, 2-methyl-
4007-108-9	Diethyl ether, 2-methyl-
4007-109-0	Diethyl ether, 2-methyl-
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4007-109-2	Diethyl ether, 2-methyl-
4007-109-3	Diethyl ether, 2-methyl-
4007-109-4	Diethyl ether, 2-methyl-
4007-109-5	Diethyl ether, 2-methyl-
4007-109-6	Diethyl ether, 2-methyl-
4007-109-7	Diethyl ether, 2-methyl-
4007-109-8	Diethyl ether, 2-methyl-
4007-109-9	Diethyl ether, 2-methyl-
4007-110-0	Diethyl ether, 2-methyl-
4007-110-1	Diethyl ether, 2-methyl-
4007-110-2	Diethyl ether, 2-methyl-
4007-110-3	Diethyl ether, 2-methyl-
4007-110-4	Diethyl ether, 2-methyl-
4007-110-5	Diethyl ether, 2-methyl-
4007-110-6	Diethyl ether, 2-methyl-
4007-110-7	Diethyl ether, 2-methyl-
4007-110-8	Diethyl ether, 2-methyl-
4007-110-9	Diethyl ether, 2-methyl-
4007-111-0	Diethyl ether, 2-methyl-
4007-111-1	Diethyl ether, 2-methyl-
4007-111-2	Diethyl ether, 2-methyl-
4007-111-3	Diethyl ether, 2-methyl-
4007-111-4	Diethyl ether, 2-methyl-
4007-111-5	Diethyl ether, 2-methyl-
4007-111-6	Diethyl ether, 2-methyl-
4007-111-7	Diethyl ether, 2-methyl-
4007-111-8	Diethyl ether, 2-methyl-
4007-111-9	Diethyl ether, 2-methyl-
4007-112-0	Diethyl ether, 2-methyl-
4007-112-1	Diethyl ether, 2-methyl-
4007-112-2	Diethyl ether, 2-methyl-
4007-112-3	Diethyl ether, 2-methyl-
4007-112-4	Diethyl ether, 2-methyl-
4007-112-5	Diethyl ether, 2-methyl-
4007-112-6	Diethyl ether, 2-methyl-
4007-112-7	Diethyl ether, 2-methyl-
4007-112-8	Diethyl ether, 2-methyl-
4007-112-9	Diethyl ether, 2-methyl-
4007-113-0	Diethyl ether, 2-methyl-
4007-113-1	Diethyl ether, 2-methyl-
4007-113-2	Diethyl ether, 2-methyl-
4007-113-3	Diethyl ether, 2-methyl-
4007-113-4	Diethyl ether, 2-methyl-
4007-113-5	Diethyl ether, 2-methyl-
4007-113-6	Diethyl ether, 2-methyl-
4007-113-7	Diethyl ether, 2-methyl-
4007-113-8	Diethyl ether, 2-methyl-
4007-113-9	Diethyl ether, 2-methyl-
4007-114-0	Diethyl ether, 2-methyl-
4007-114-1	Diethyl ether, 2-methyl-
4007-114-2	Diethyl ether, 2-methyl-
4007-114-3	Diethyl ether, 2-methyl-
4007-114-4	Diethyl ether, 2-methyl-
4007-114-5	Diethyl ether, 2-methyl-
4007-114-6	Diethyl ether, 2-methyl-
4007-114-7	Diethyl ether, 2-methyl-
4007-114-8	Diethyl ether, 2-methyl-
4007-114-9	Diethyl ether, 2-methyl-
4007-115-0	Diethyl ether, 2-methyl-
4007-115-1	Diethyl ether, 2-methyl-
4007-115-2	Diethyl ether, 2-methyl-
4007-115-3	Diethyl ether, 2-methyl-
4007-115-4	Diethyl ether, 2-methyl-
4007-115-5	Diethyl ether, 2-methyl-
4007-115-6	Diethyl ether, 2-methyl-
4007-115-7	Diethyl ether, 2-methyl-
4007-115-8	Diethyl ether, 2-methyl-
4007-115-9	Diethyl ether, 2-methyl-
4007-116-0	Diethyl ether, 2-methyl-
4007-116-1	Diethyl ether, 2-methyl-
4007-116-	









## Well Fracture Information

### Wells Permitted with Intent of Fracture Stimulation

Only wells subject to General Rule B-19 are contained in the file. The well records consist of the Form 2 – Drilling Permit Application and Form 3A – Well Fracture Stimulation Report. Well files not yet containing a Form 3A have not yet been fracture stimulated. A well file designated as “Amended” indicates the original permit application has been amended and the copy shown is the amended Form 2.

Companies Performing Fracture Treatments	Form 1	Chemical List	Form 37
Calfrac Well Services Corp - Denver, CO	<a href="#">Form1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
Schlumberger Technology Corporation - Sugarland, TX	<a href="#">Form1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
Multi-Chem Group, LLC - San Angelo, TX	<a href="#">Form1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
Cudd Pumping Services, Inc. - Houston, TX	<a href="#">Form1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
Halliburton Energy Services, Inc. - Houston, TX	<a href="#">Form1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
Weatherford Artificial Lift Systems, Inc. - Houston, TX	<a href="#">Form1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
Superior Well Services, Inc - Indiana, PA	<a href="#">Form1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
Baker Hughes Oilfield Operations, Inc. - Houston, TX	<a href="#">Form1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
Gore Nitrogen Pumping Service, LLC - Sealing, OK	<a href="#">Form1</a>	<a href="#">Chemical List</a>	N/A

### Rule B-19

Form 1 - Required Registration for Performing Fracture Stimulation.		
Form 2 - Permit Form Required to Perform Fracture Treatment		
Form 3A - Well Fracture Stimulation Report		
Form 37 - Request for Trade Secret Exemption		



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ARKANSAS OIL AND GAS  
COMMISSION

FORM 37

Claim of Entitlement to Withhold the Identity of a Chemical Constituent as a Trade  
Secret OR Request for Trade Secret Exemption

Submit Form To:

Oil Service Regional Office  
P. O. Box 19497  
Ottawa, Arkansas 71701

RECEIVED  
MAR 20 2011

SECTION A - Classification of Trade Secret

☐ Invention ☒ Process-Performing Hydraulic Fracturing ☐ Other - Specify in Detail:

SECTION B

Company: Schlumberger Technology Corporation  
Address: 100 Schlumberger Dr., MD-27  
City: Sugar Land State: Texas Zip: 77478  
Phone: (281) 285-8040 Fax: (281) 285-6598  
Email: ckenebrew@slb.com  
Parent/Owner (Full Name):

Section C

In accordance with General Rule 8-16, a person shall disclose a list of all Chemical Constituents contained in all such Additives, provided, however in those limited situations where the specific identity of any such Chemical Constituent and associated CAS number is entitled to be withheld as a trade secret under the criteria set forth in subsection (a)(2) of 42 U.S.C. § 11042. In such cases, the Chemical Family associated with such Chemical Constituent shall be provided.

Chemical Family associated with the Chemical Constituent: Anionic Polymer

Does the Chemical Constituent, and associated CAS number, qualify for withholding as a trade secret? ☒ Yes ☐ No

In order to claim that the Chemical Constituent and associated CAS number is entitled to protection as a trade secret, you must include specific information regarding each of the following. (Please check all that apply):

- ☒ 1. You have not disclosed the information to any other person, other than a member of a trade association serving constituents, an officer or employee of the United States or a State or local government, an employee of such person, or a person who is bound by a confidentiality agreement, and such person has taken reasonable measures to protect the confidentiality of such information and works to continue to take such measures.
- ☐ 2. The information is not required to be disclosed, or otherwise made available, to the public under any other Federal or State law.
- ☒ 3. Disclosure of the information is likely to cause substantial harm to the competitive position of such person.
- ☒ 4. The chemical identity is not readily discernable through reverse engineering.

CERTIFICATE

I declare under the penalty of perjury that this report has been completed by me and to the best of my knowledge is true, correct and complete.

*Christina Kenebrew*  
NORTH CAROLINA

Christina Kenebrew

State or County Residence

APPROVED ☒ Yes ☐ No

*6/7/11*  
Per state agency  
Division of Production and Conservation

6/7/11

30117











## Well Fracture Information

### Wells Permitted with Intent of Fracture Stimulation

Only wells subject to General Rule B-19 are contained in the file. The well records consist of Form 2 - Permit Application and Form 3A - Well Fracture Stimulation Report. Well files not yet containing a Form 3A have not yet been fracture stimulated. A well file designated as "Amended" indicates the original permit application has been amended and the copy shown is the amended Form 2.

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Cudd Pumping Services, Inc. - Houston, TX	<a href="#">Form 1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
Halliburton Energy Services, Inc. - Houston, TX	<a href="#">Form 1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
Weatherford Artificial Lift Systems, Inc. - Houston, TX	<a href="#">Form 1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
Superior Well Services, Inc. - Indiana, PA	<a href="#">Form 1</a>	<a href="#">Chemical List</a>	<a href="#">Form 37</a>
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Gore Nitrogen Pumping Service, LLC - Seiling, OK	<a href="#">Form 1</a>	<a href="#">Chemical List</a>	N/A

### Rule B-19

Form 1 - Required Registration for Performing Fracture Stimulation		
Form 2 - Permit Form Required to Perform Fracture Treatment		
Form 3A - Well Fracture Stimulation Report		
Form 37 - Request for Trade Secret Exemption		



## Search in Rule B19

Click left of database field,  
to sort list by this field

<input type="radio"/> Permit	44398
<input type="radio"/> Operator	
<input type="radio"/> Section	
<input type="radio"/> Township	
<input type="radio"/> Range	
<input type="radio"/> Document	
<input type="radio"/> API_Well_Number	
<input type="radio"/> Fulltext	







☐ Selective selection

Start search

Re

[Logout](#) [Select file cabinet](#) [Storage menu](#)

## Result list Rule B19

Permit	Operator	Section	Township	Range	Document	API_Well_Number		
 44398	SEECO, Inc.	3	9N	14W	Form 2	0314111177		
 44398	SEECO, Inc.	3	9N	14W	Form 3a	0314111177		

1-2 from 2 | 1

[Logout](#) [Select file cabinet](#) [New search](#) [Storage menu](#)

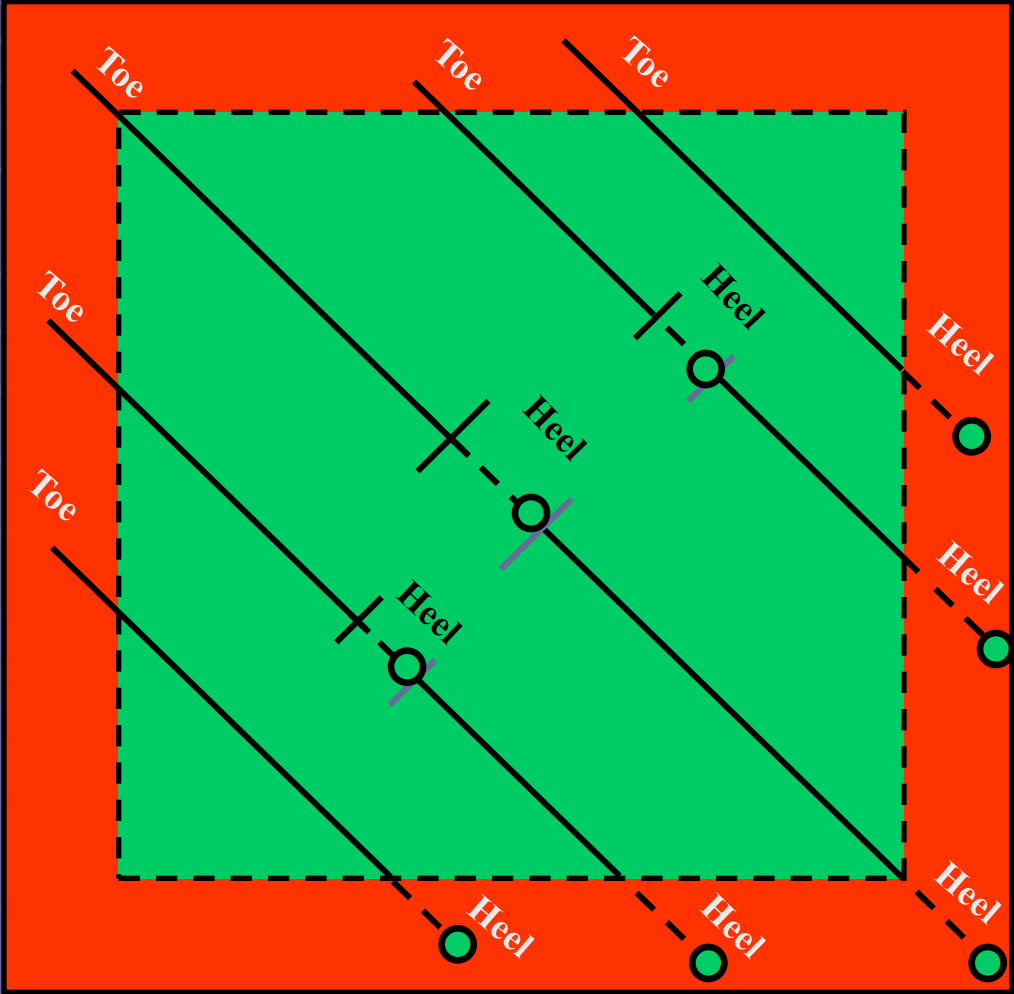
[illegible][illegible][illegible][illegible][illegible][illegible]



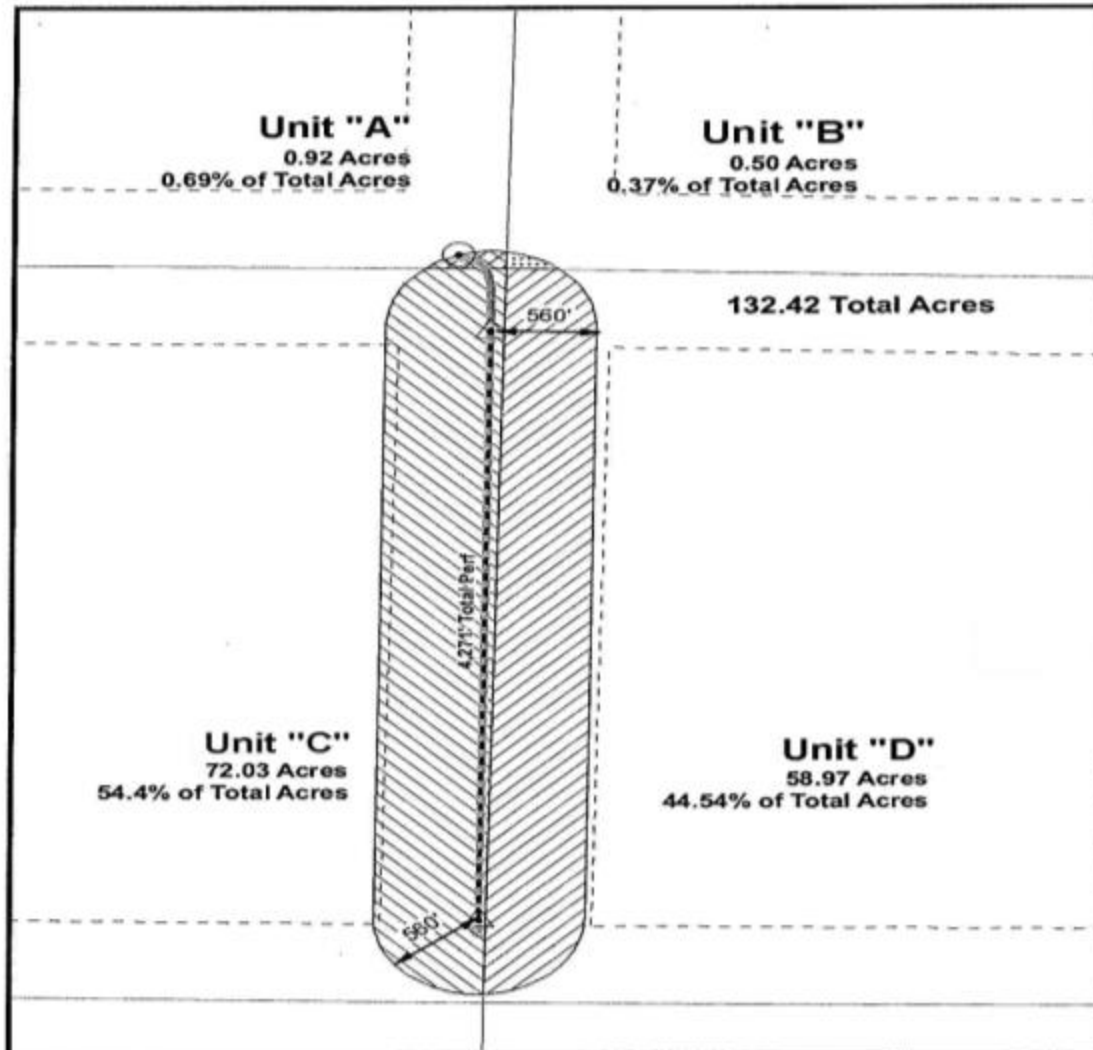
## Fayetteville Shale Development General Rule B-43

- Defines Fayetteville Shale Producing Area
- Establishes 640 Acre Units Drilling Units, classified as either Established or Exploratory
- Establishes Well Setback and Maximum Wells Per Unit (16 wells, per unit, per reservoir, 560' setback from unit boundaries, 448' setback between entirely in-unit wells)
- Procedure for Commission Handling of Competing Integration Applications
- No Allowable
- **Authorizes shared Cross Unit Wells** and Establishes Methodology for Sharing Royalty and Expenses – Minimize Footprint.

# 640 Acre Governmental Section Drilling Unit In Fayetteville Shale Showing EALRY Horizontal Well Development Plan

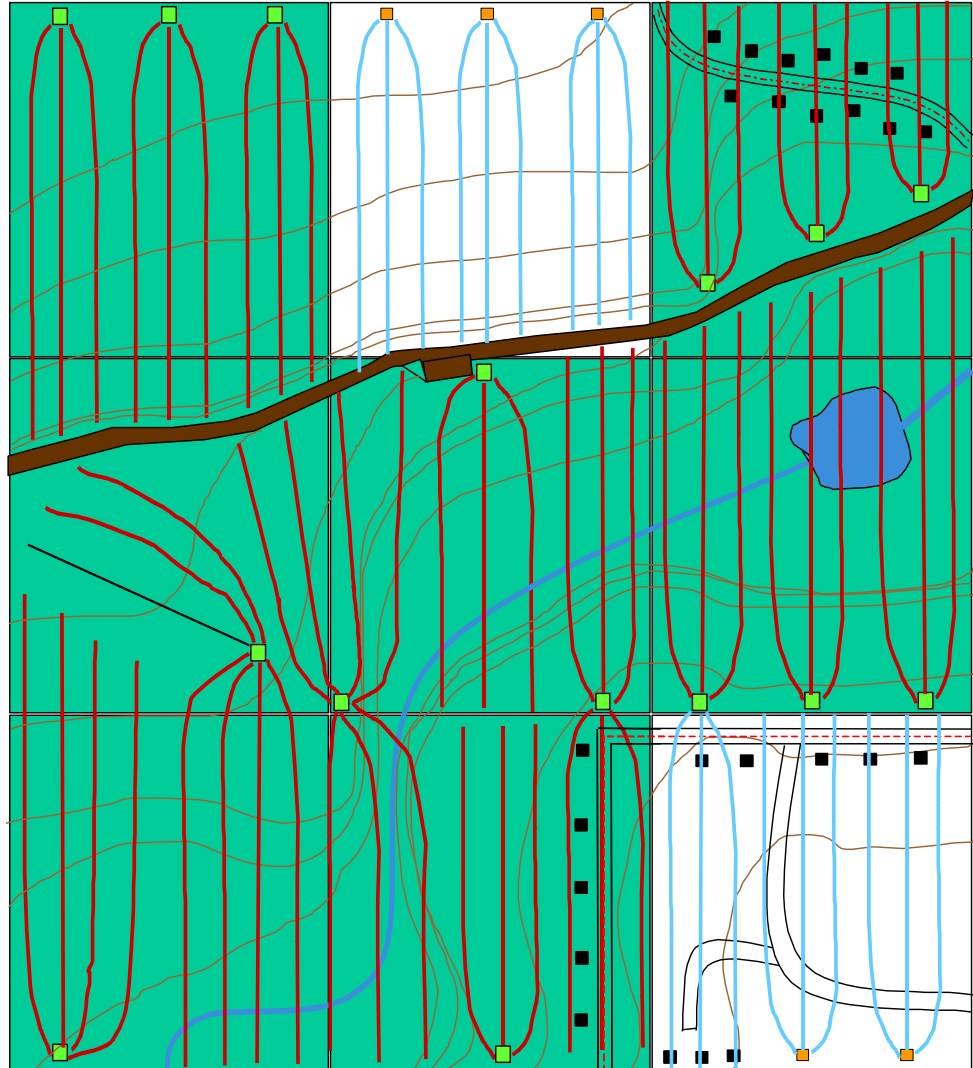


# Hypothetical Band-aide Map with Four Affected Units

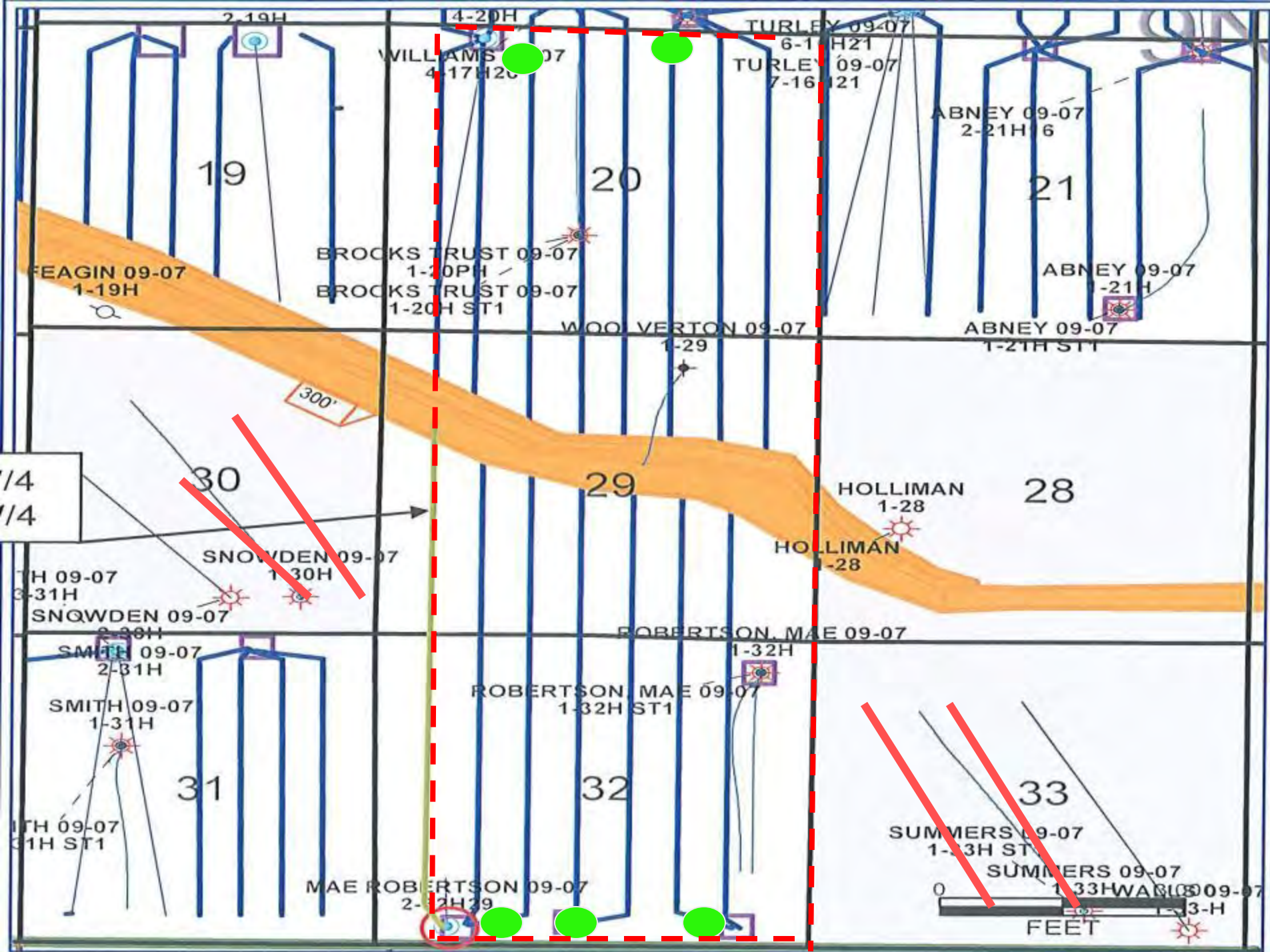


# End-of-Game Development Picture

- Resource is prudently developed
- No Waste; surface or subsurface
- Surface disturbance is minimized
- Correlative rights are protected
- Cooperation among operators (Company A operates Shaded Units; Company B operates White Units)
- 9+ Sections Developed
- 20 Pads Required
- 75 Wells
- ~ 100% Coverage







# Actual Usage in Fayetteville Shale

- In 2010, less than six years after the first horizontal Fayetteville Shale well was drilled, over 50% of all Arkansas horizontal well permits issued were for cross-unit wells.
- In 2011, estimated that over 85% of horizontal Fayetteville Shale wells were cross-unit wells.

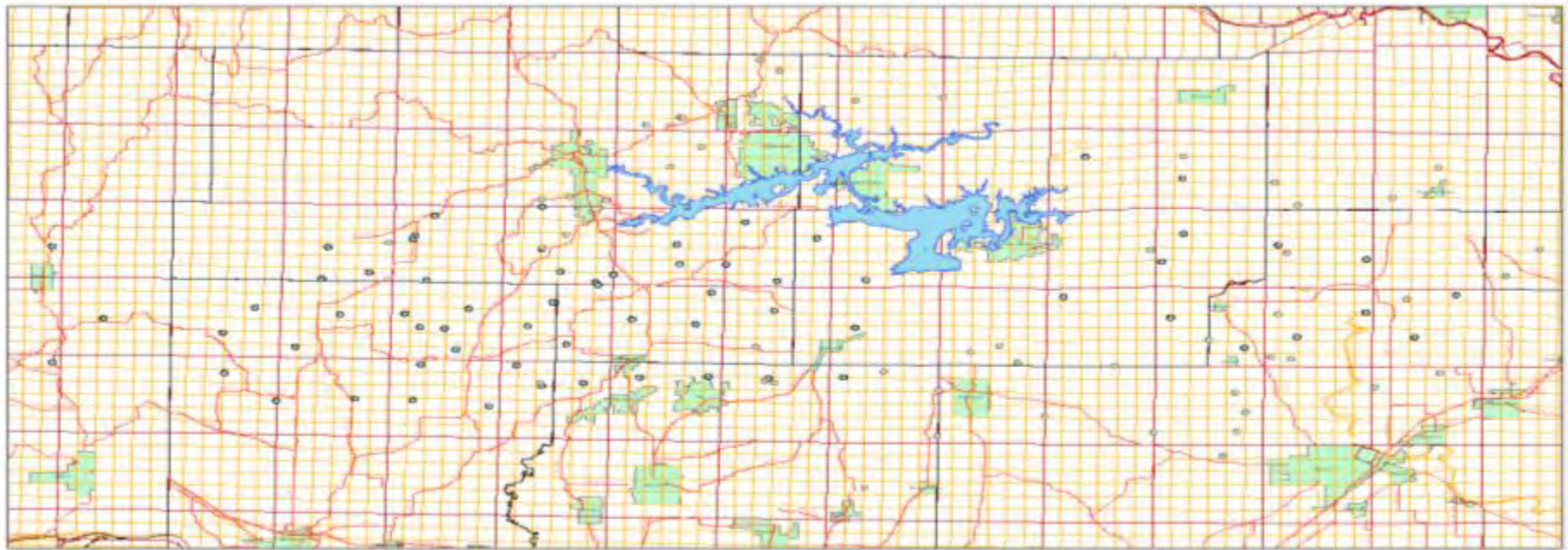
## **D-20 NOISE LEVEL REQUIREMENTS FOR NON-WELLHEAD COMPRESSOR FACILITIES**

**(Final 11/1/2011)**

- Based on the proposed language of SB 870 (failed to make it out of committee during the last regular session)
  - Several members of the Senate Committee who voted against the bill either supported, or at least did not oppose, General Rule D-20 at the Rules Committee. One Senator said that although she did not support the bill, she was in favor of the rule, as rules can be amended easier than laws.
- Rule sets a maximum noise limit as 55 dB(A) Leg, as measured for the exterior of the nearest pre-existing noise sensitive areas for non-well head compressor facilities.
  - Noise sensitive areas include schools, hospitals, churches, nursing homes, and structures regularly used for overnight accommodation.
- Newly constructed facilities have a year from commencement of construction to comply, and all existing facilities subject to the provisions of this rule have until July 1, 2012 to comply.



# Compressor Sites in Fayetteville Shale Play – Approximately 130



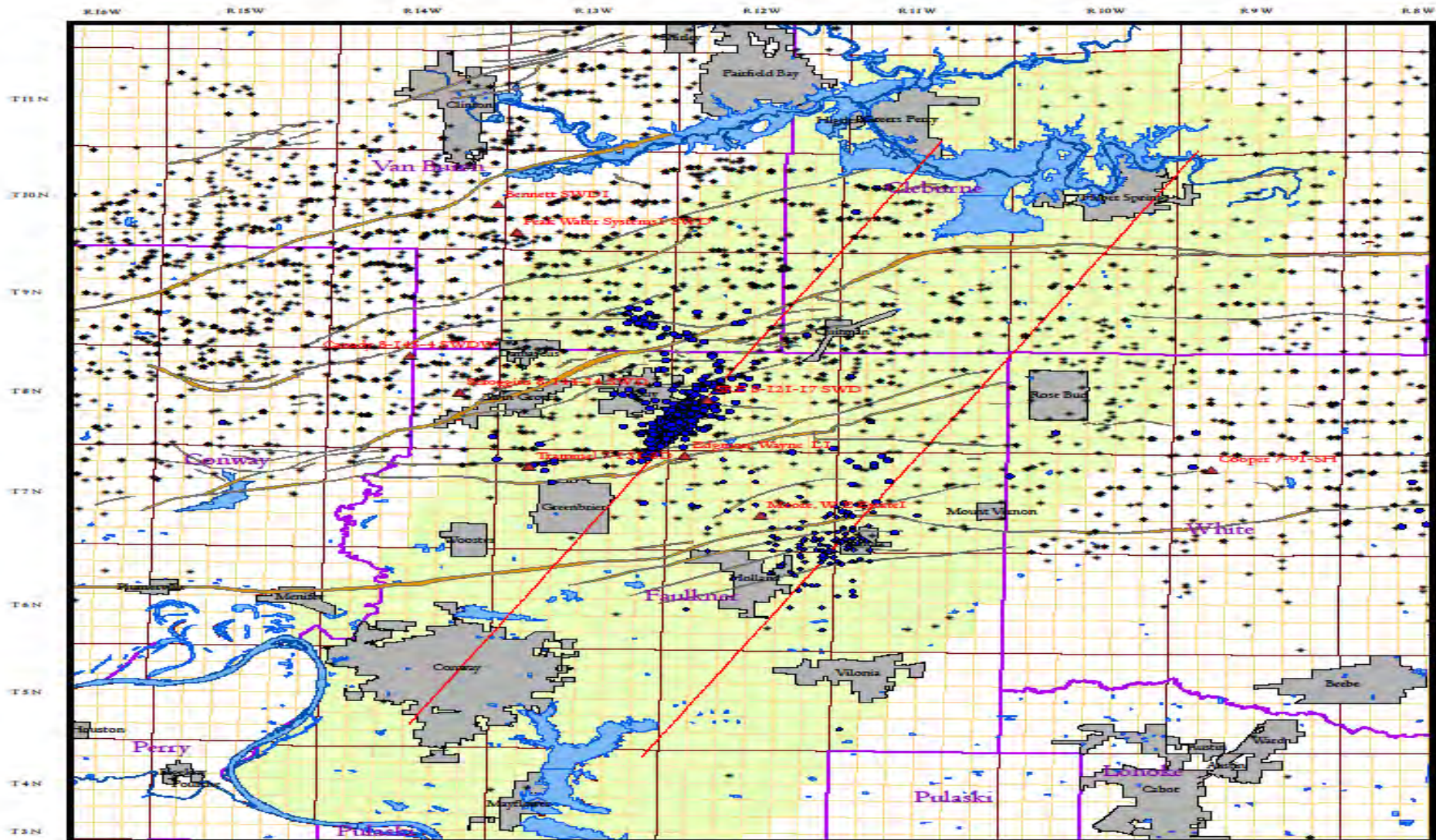
## H-1 – CLASS II DISPOSAL AND CLASS II COMMERCIAL DISPOSAL WELL PERMIT APPLICATION PROCEDURES

Final – 2/17/2012

- Proactive - Rule amended to provide setbacks from Faults and Other Disposal Wells.
- Requirements to submit seismic and other related information indicating unknown faults in the area of proposed Disposal Wells in the Fayetteville Shale area.



# Permanent Disposal Well Moratorium Area



Arkansas Oil and Gas Commission  
Lawrence Bengal, Director



## Legend

▲ Disposal Wells



## About the Map

The faults depicted on this map are based on available field data on file at the Arkansas Geological Survey (AGS) and the Arkansas Oil and Gas Commission (AOGC). Faults provided by the AOGC were compiled from information furnished by various geologists of the companies operating in the Fayetteville Shale Gas Area. These faults are the best available information and may not represent all faults in a given location in the entire Fayetteville Shale Gas Area.

## DISCLAIMER

Maps are for general purposes only. They do not represent a legal survey. Although this map was compiled from digital data that were previously processed as a computer system using ESRI ArcView 3.2a software, the Arkansas Oil and Gas Commission (AOGC) does not warrant, represent or implied, in whole or in part, the accuracy of the data on any other system, nor shall the act of distribution constitute any such warranty. While every effort has been made to ensure that these data are accurate and reliable within the limits of the current state of the art, AOGC cannot assume liability for any damages or losses, in whole or in part, resulting from the use of this data, nor as a result of the failure of the data to conform to a particular system. AOGC makes no warranty, expressed or implied, nor does the fact of distribution constitute such a warranty.

North American Datum 1983  
Arkansas Geographic Information



# Arkansas Hydraulic Fracturing State Review

February, 2012



## Report concluded:

**“regulatory program well managed and professional” with rule amendments, water well complaint protocol and AOGC web page cited as program strengths.**

## Primary recommendations:

- Conduct inspections during active hydraulic fracturing operations – **Implemented**
- Notice – **Implemented – Pending Rule**
- Increase staffing to provide additional field inspection capability – **Requested in FY 14 Budget**

QUESTIONS ?

