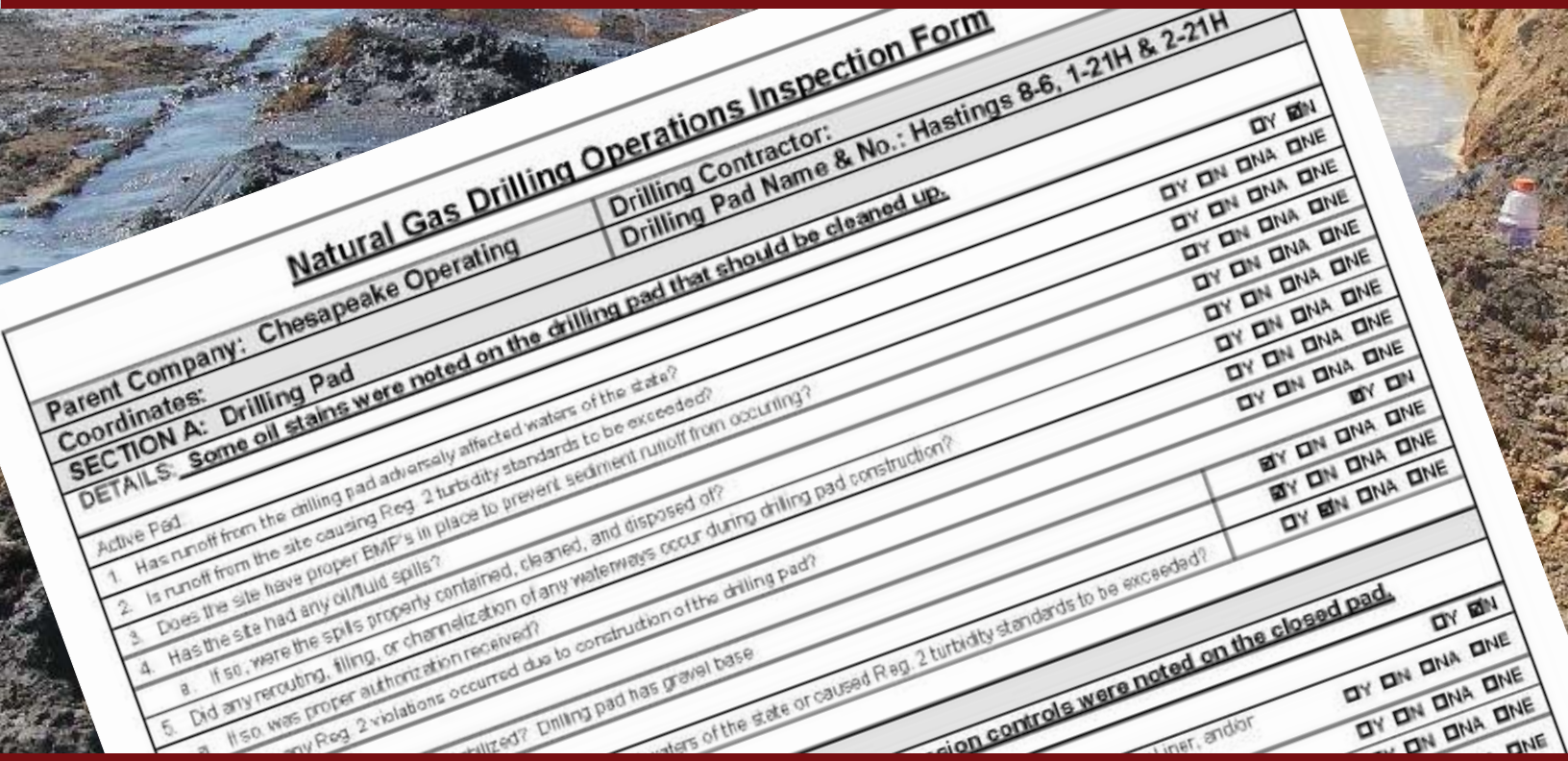


Violations of Water Quality Standards from Gas Production in Arkansas

Arkansas Public Policy Panel

September 2011

"Putting the PUBLIC back in public policy since 1963"

ARKANSAS public policy panel

1308 West Second Street ◆ Little Rock, Arkansas 72201 ◆ 501.376.7913 (ph) ◆ 501.374.3935 (fax)
panel@arpanel.org (e-mail) ◆ ***www.ARPanel.org***

Go to **www.arpanel.org** to find this and other reports on natural gas drilling in Arkansas. Previous reports are:

Arkansas in the Balance:
Managing the Risks of Shale Gas Development in the Natural State

Model Oil and Gas Laws, Regulations and Ordinances

Front cover:

Arkansas Department of Environmental Quality inspection form.

3.13.09 – One of several roll-offs used for the transportation of oil-based mud with mud accumulations on top.

All photos are pulled from ADEQ inspection reports.

Table of Contents

Executive Summary

A new analysis of state inspection records from natural gas drilling and production sites in the Fayetteville Shale contains several startling revelations:

- The industry is responsible for widespread violations of Arkansas clean water standards;
- Companies are not following their own standards and best management practices in most cases;
- The Arkansas Department of Environmental Quality is doing little to enforce these violations or ensure corrective actions are taken to protect water supplies.

Over five hundred individual violations of water and other environmental laws were found in 289 inspections of natural gas drilling and production sites between July 2006 and August 2010. Significant pollution issues were contained in three-quarters of the inspections with violations. Gas companies were out of compliance 54 percent of the times they were inspected. Only 538 inspections were conducted over the four-year period. Violation rates are high for several companies who claim to follow best management practices that are more stringent than state laws.

Inspections were made because of complaints or reports of incidents, or during routine inspections. Violations were found in more than half of the 247 routine inspections, which emphasizes the importance of frequent routine inspections. If this trend is also true of all uninspected wells during the reporting period, over 1700 wells in Arkansas may have had unreported, continuing violations that put public health, water and air at risk.

In the case of incident reports and complaints, ADEQ met their goal of a 48-hour response time in only 52% of inspections.

The inspection reports that reveal violations seldom include any information on whether violations were remediated or what enforcement actions were taken by ADEQ, such as penalties for violations or evidence of increased scrutiny of the violator's other operations. In fact, ADEQ conducted only nine follow-up inspections despite more than 500 violations over the four-year period.

More than 3,000 current gas wells in Arkansas need more oversight, including associated compressor stations, waste disposal sites and thousands of miles of new roads and pipelines. Thousands more wells are planned. Four new inspectors were added in 2011 to help with the workload, but they are obligated first to oversee drilling activity on Arkansas Game and Fish lands, which are better protected than private lands.

This report adds evidence that Arkansas needs stronger protections for clean water, more manpower and more resources to adequately inspect the current natural gas drilling operations throughout the Fayetteville Shale Play. Further, the Arkansas Department of Environmental Quality needs a stronger commitment to robust inspection and enforcement to protect the state's water resources.

3.5.09

Oily waste under a frac tank from a spill or leak.

Recommendations

1. ADEQ should inspect each well site, compressor station, pipeline, injection well site, land farm and other industry facility at least once annually. Every violation should trigger mandatory follow-up inspections and increased inspections of the violator's other facilities within the state. Repeat violations should result in revocation of permits and a ban on future permits to operate.

2. ADEQ should improve its records so that inspection reports include all information about follow-up remediation and enforcement actions taken as a result of the inspection.

3. ADEQ should create and file an annual report with the Joint Performance Review Committee of the Arkansas Legislature detailing inspections performed, violations found, remediations ordered, and other sanctions proposed and enforced. The report should be easily accessible to the public.

4. ADEQ's oversight of the oil and gas industry should reflect industry growth to ensure that clean air and water are protected for the benefit of all Arkansans.

5. ADEQ should increase cross-training with Arkansas Oil and Gas Commission (AOGC) so that AOGC inspectors can assist ADEQ with environmental impact inspections.

12.30.08
Leaking reserve pit with improper lining.

Correctly lined reserve pit with over 2 feet of freeboard. ***1.13.09***

Introduction

The Arkansas Department of Environmental Quality (ADEQ) creates and enforces standards to protect clean air, water and land in Arkansas. It provides oversight for every major industry, including the natural gas industry. This report aims to analyze the effectiveness of its current inspection and enforcement regime in regulating the natural gas industry.

All complaint, inspection and enforcement files for gas operations within the Fayetteville Shale from 2006 through 2010 were requested from ADEQ. A few of the files received were from outside the Fayetteville Shale area. Each of the 538 files were recorded in a database and analyzed as a whole to create the following report, which provides an assessment of violations and agency response over the past four years. The report shows that the natural gas industry is not operating as responsibly as it claims.

9.9.08

Oil field waste discharging from a drilling pad into a tributary of aptly named Bad Luck Creek.

Drilling fluids running off of a well pad. 10.24.07

A pipe running from a well pad discharges fluid into a drainage ditch.

There were 3,427 permitted gas wells in Arkansas—with all of their attendant compressor stations, waste disposal sites, new roads and pipelines—as of July 2010.

Widespread, Significant Violations

Fifty-four percent of gas facilities violated Arkansas water and other environmental laws between 2006 and 2010. Over a four-year period only 538 inspections of this infrastructure appear to have been conducted by ADEQ, and violations were found in 289 of those inspections. 544 individual violations were documented, including as many as eight different violations at a single site. Serious impacts such as waste spillage or erosion accounted for 75 percent of the violations. Some of the violations included unauthorized discharges into waters of the state (10% of all violations), oil or fluid spills (10%), and erosion from a well site (22%).

Even non-major violations, such as the failure to keep proper records, can pose unacceptable risks to the environment and public health. Several inspection reports noted that well operators did not know the volume and final destination of waste fluids and materials from their sites. Other violations have the potential to cause damage; for example, a waste containment pit without enough freeboard is in danger of overflowing during a storm.

ADEQ recently reported that 488 inspections were performed between January and April 2011, thanks to four new inspectors hired through funding from the Arkansas Game and Fish Commission (AGFC), but these positions are temporary and primarily for inspecting gas wells on AGFC lands that have better protections than private property. Even the greatly increased number of inspections in 2011 left the vast majority of sites uninspected. An analysis of 2011 inspection records is pending.

Number of Inspectors

ADEQ currently employs 17 water inspectors, 10 of whom are responsible for regions of the state that include the Fayetteville shale. They are responsible for monitoring thousands of gas production sites as well as thousands of other types of water permits. Inspectors' work is important because not all operators report leaks or pollution issues as required, many wells are not easily monitored by citizens due to their locations on private land, inaccessible areas or behind locked gates. Some rural residents also fear repercussions if their identities are discovered after reporting incidents, even when filing an anonymous complaint.

Response Time

ADEQ states a goal of investigating complaints within 48 hours, but the compliance records for the past four years show that only about half of complaints are investigated within two days. While 71 percent of complaints were investigated within five days, a substantial number of complaints (29%) were investigated six or more days after a complaint was filed. Many violations are for short term episodes, like a spill into a creek or a ruptured pipeline, where a delayed response makes the problem impossible to document after the damage is done.

Some delays are not ADEQ's fault, especially when a citizen does not contact the correct office or fill out a complaint form. For example, one anonymous complaint alleging a fish kill in a small stream near a gas well was sent via personal email to the wrong department and was investigated 154 days after the complaint was received. Needless to say, the inspector found no evidence of a fish kill after five months.

Response Time	Number of inspections	Percent
0-2 days	108	51.4%
3-5 days	42	20.0%
6-10 days	37	17.6%
11+ days	23	11.0%
Total	**210**	

Table 1. Lag time between complaint date and inspection date from 2006 to 2010. Not all inspections reviewed for this report were triggered by complaints, which explains the lower total number of inspections.

Major Violations:

Type of violation	Number of violations	Percent of all violations
Erosion from well site	121	22.2%
Inadequate liner, trash, or other violations in the reserve pit	89	16.4%
Unauthorized discharge into waters of the state	56	10.3%
Oil/fluid spill or staining	54	9.9%
Waste or reserve pits over capacity	27	5.0%
Secondary containment, such as berms to protect overflow from frac fluid tanks, were out of compliance	25	4.6%
Lack of re-seeding or inappropriate reclamation	16	2.9%
Pooled fluids	9	1.7%
Gathering line neglect	5	0.9%
Excessive turbidity (muddiness of waterways)	4	0.7%
Dumping of sediment leading to erosion	2	0.4%
Sewage overflow from temporary building	1	0.2%
Major Violations	**409**	**75.2%**

Other Violations:

Type of violation	Number of violations	Percent of all violations
Incomplete, missing or improper records	101	18.6%
Poor maintenance of equipment and machinery	10	1.8%
Failure to report spills and discharges to ADEQ	9	1.7%
Entrance gate left unlocked	4	0.7%
Unauthorized alteration of waters of the state (dams, bridges, etc.)	3	0.6%
No monitoring wells have been installed (land farm)	3	0.6%
Holding ponds are out of compliance (injection well sites and land farms)	3	0.6%
Injection into a well without permission	1	0.2%
Dead animals	1	0.2%
Other violations	**135**	**24.8%**
Total violations	**544**	

Table 2. Types of violations found during ADEQ inspections of natural gas production and transportation infrastructure. Significant environmental issues accounted for 75% of violations.

Unreported Violations

Violations were found in 52 percent of routine inspections—those that are not the result of complaints or reported incidents. If this trend is also true of uninspected wells, over 1,700 wells in Arkansas may have unreported, continuing violations that put public health, water and air at risk. Data analysis showed only 25 instances in which an operator knew a violation may have occurred and properly reported the incident to ADEQ as required. In cases where a violation was not reported by an operator but discovered by an inspector or local resident, many operators were quick to respond to fix the problem; however, the problem might have continued unchecked if the proper oversight had not occurred in that situation.

Inspection Type	Number of inspections	Percent
Complaint	255	47.4%
Unasked/Routine	247	45.9%
Self-Reported	25	4.6%
Follow-up	9	1.7%
Requested	2	0.4%
Total	**538**	

Table 3. ADEQ inspections are primarily complaint-driven or routine, with a few incidents self-reported by operators.

The inspection files from July 2006 to August 2010 showed that over half of inspections were initiated by a complaint, request, or when an incident was reported by the operator. The other half of the inspections were performed on an inspector's initiative. Only nine inspections in the four-year period were follow-up inspection to ensure that previous violations were corrected.

Improvement?

Industry representatives acknowledge that mistakes were made early on, but claim that the practices have improved over time and that more experience in the Fayetteville shale has led to increased responsibility and use of industry Best Management Practices (BMP's), which are typically more stringent than Arkansas's rules.

The number of inspections revealing violation did decline in the July 2009 to July 2010 period. An analysis of 2011 inspection records is pending. It is too early to tell whether this improvement is the beginning of a downward trend or a short-term change. Without increased inspections to hold operators accountable, the violation rate is not likely to improve materially. Even with this significant improvement, the violation rate is high (45%, down from 60%). Such a high rate of violation of ADEQ regulations suggests that in some cases neither BMPs nor agency regulations are being followed.

Drilling fluids running down a drainage ditch towards a creek. ***10.24.07***

Unpermited drilling mud bin. ***2.9.09***

	Number of inspections	Number of inspections revealing violations	Violation ratio
July 2006- June 2007	29	17	58.6%
July 2007- June 2008	69	42	60.9%
July 2008- June 2009	194	117	60.3%
July 2009- June 2010	247	113	45.7%

Table 4. Number of inspections revealing violations from July 2006 to July 2010.

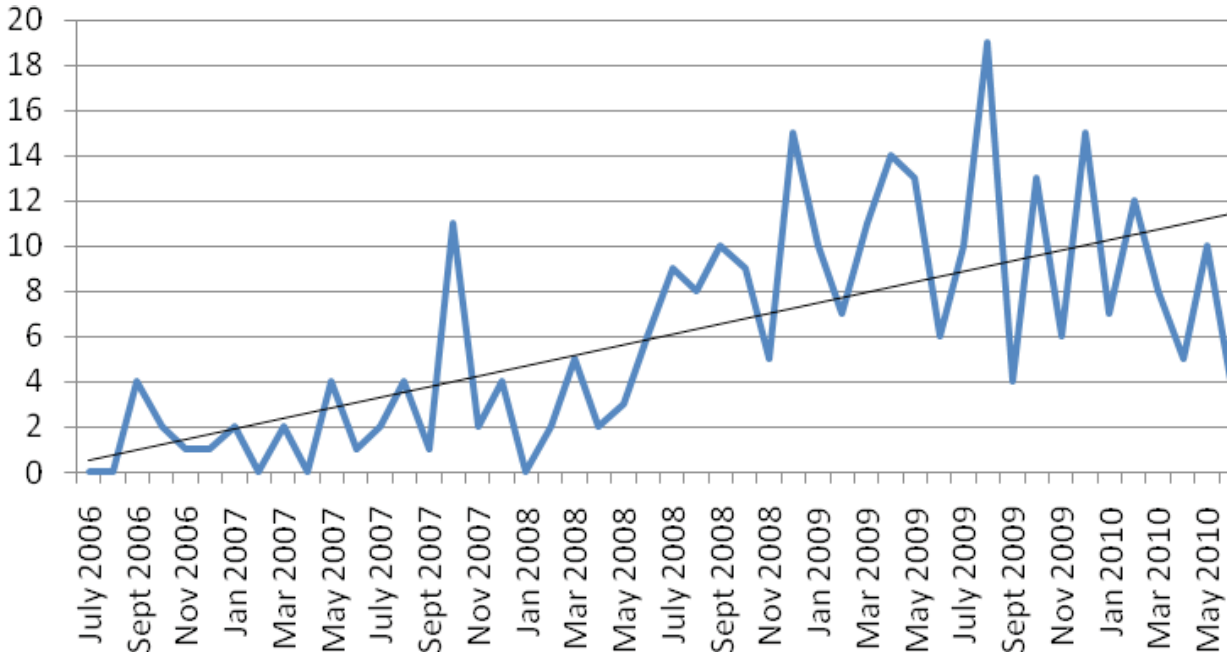


Figure 1. Number of inspections revealing violations by month.

Violation Rates Vary by Company

Violation rates varied widely from company to company. Looking only at companies who had at least 5 inspections during the reporting period, the Big Mack Tank Trucks (100% violation rate from 5 inspections), Environmental Solutions and Services (86% violation rate from 7 inspections) and XTO Energy (80% violation rate from 45 inspections) had the highest percentage of violations at their facilities. In most cases, a single company has multiple permitted sites.

Petrohawk (19% violation rate from 16 inspections), Arkansas Midstream Gas Services Corporation and Arkansas Reclamation (both 17% violation rate from 6 inspections) had the lowest percentage of violations.

The most frequently inspected companies, reflecting their dominant positions in the Fayetteville Shale, were SEECO/Southwestern Energy (53% violation rate from 160 inspections) and Chesapeake (46% violation rate from 89 inspections). These companies have thousands of sites within Arkansas, most of which were never inspected.

Lack of enforcement

Seventy-three percent of the inspection files lacked acknowledgement of corrective action or evidence of a final release from ADEQ.

A complete file should include:

- documentation of a complaint or reported incident,
- an inspection form with pictures or other evidence,
- a letter from the inspector informing the operator whether violations were found and the date by which any violations must be remediated,
- evidence from the operator showing proper remediation, and
- a final letter from ADEQ closing the case.

Many files were missing final documentation from the operator and/or proof of remediation accepted by ADEQ. Other files showed that ADEQ enforcement staff had difficulties achieving satisfactory compliance from an operator but indicated no further action beyond letter writing. Follow-up inspections were rare—only 9 were conducted, of 289 cases. Finally, the files did not document which cases were subject to penalties, the penalty amount or if payment of fines was made.

ADEQ appears to have major shortcomings in their enforcement division. It is possible that ADEQ's performance is better than what this report could find, but the records were disorganized or not kept at all. These conclusions are based on the inspection records provided by ADEQ. From those it appears that the agency needs to vastly improve not only its inspection program, but its enforcement and record-keeping operations as well. This kind of information should be readily available to citizens concerned about operations near their homes. The best inspectors and protections mean little if they are not enforced.

County	Number of inspections
Van Buren	115
White	86
Conway	69
Cleburne	64
Faulkner	54
Logan	37
Sebastian	34
Franklin	20
Unknown	14
Johnson	9
Lonoke	9
Pope	8
Scott	6
Crawford	3
Jackson	2
Phillips	2
Stone	2
Woodruff	2
Yell	2
Total	**538**

Table 5. Inspections by county.

Unpermitted tank and pit storage system. ***3.5.09***

Violations by Company

Drilling mud leaking from tanks at a land farm that has since been shut down.

1.11.07

Drilling fluids leaked or spilled on the ground.

Company List	Number of violations	Number of inspections	Number of inspections revealing violations	Percent
Seeco/Southwestern	143	160	85	53%
Chesapeake	90	89	41	46%
XTO Energy, Inc.	62	45	36	80%
Eastern Tank Services, Inc.	20	15	8	53%
Big Mac Tank Trucks, LLC	18	5	5	100%
Environmental Solutions & Services, Inc.	16	7	6	86%
Enviro-Disposal LLC.	14	5	4	80%
Highland Oil & Gas LLC	14	7	5	71%
Fayetteville Shale Land Farm	13	9	5	56%
Stephens Production Company	11	16	7	44%
Potoco	10	6	4	67%
Desoto Gathering Co.	8	15	7	47%
Central Ark Disposal	7	6	4	67%
Forest Oil Corporation	7	8	5	63%
Superior Oilfield Services	7	2	2	100%
Capstone Oilfield Disposal of Arkansas, LLC	6	4	3	75%
Deep Six Water Disposal Services, LLC	6	1	1	100%
Express Energy Services	6	3	3	100%
Hanna Oil & Gas	6	3	3	100%
Hogback Exploration, Inc.	5	7	5	71%
Sedna Energy, Inc.	5	3	2	67%
Petroshell, Inc.	4	1	1	100%
SH Exploration, LLC	4	2	2	100%
Graco Oilfield Services	3	1	1	100%
Nighthawk Oilfield Services	3	4	1	25%
Petrohawk Energy Corporation	3	16	3	19%
Poseidon Energy Services, LLC	3	1	1	100%

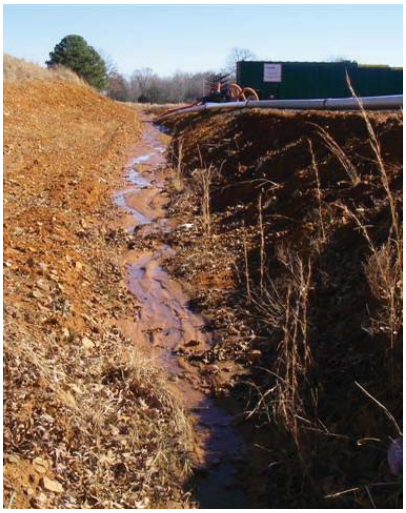
Company List	Number of violations	Number of inspections	Number of inspections revealing violations	Percent
Apex Environmental Services, LLC	2	1	1	100%
B&B Gas Well Services	2	2	2	100%
Complete Vacuum & Rental, LLC	2	2	1	50%
Frank Gardner Construction	2	2	1	50%
Fugo Services, LLC.	2	1	1	100%
Hallwood Petroleum, LLC	2	5	2	40%
Houston Exploration Co.	2	3	2	67%
JM Oilfield Services	2	2	1	50%
KCS Resources	2	2	1	50%
Lancer Energy Services	2	4	1	25%
Max Extract	2	2	2	100%
One Tec Operating, LLC	2	2	1	50%
Penn Virginia MC Energy, LLC	2	1	1	100%
Quick Lay Pipe, LLC	2	1	1	100%
Storm Cat Energy	2	1	1	100%
Triple Transport, Inc.	2	2	2	100%
Alta Operating Company, LLC	1	2	1	50%
AOK Energy Services, LLC	1	1	1	100%
Arkansas Midstream Gas Services Corp.	1	6	1	17%
Arkansas Reclamation	1	6	1	17%
Arrington Oil and Gas, Inc.	1	1	1	100%
Artexoma Logistics, Inc.	1	1	1	100%
Calfrac Well Services	1	1	1	100%
David Arrington Oil and Gas, Inc.	1	1	1	100%
Edge Petroleum Corporation	1	1	1	100%
J&C Oil Filed Services	1	1	1	100%
Kerogen Resources, Inc.	1	1	1	100%
Mo-Vac Service Co., Inc.	1	1	0	0%

12.30.08

Spill observed on pad.

12.30.08

Sediment erosion from west edge of the pad.



12.30.08

Sediment erosion from north edge of the pad.

12.30.08

Evidence of sediment runoff west of pad continues into grassy field.

Company List	Number of violations	Number of inspections	Number of inspections revealing violations	Percent
New Prospect Company	1	1	1	100%
Nomac/Chesapeake	1	1	1	100%
Red Rock Oil Field Hauling, LLC	1	1	1	100%
S & W Environmental Solutions	1	1	1	100%
Unknown	1	7	1	14%
West-Ark Oilfield Services, LLC	1	1	1	100%
Arkana Operating Company	0	1	0	0%
Arkansas Oklahoma Gas	0	1	0	0%
Arkansas Resources Management	0	2	0	0%
Diamond K	0	1	0	0%
Flying Pig Pipeline	0	1	0	0%
FracTech Services, LLC	0	1	0	0%
Gas Well Production	0	1	0	0%
Green Grow Disposal	0	2	0	0%
H & P	0	1	0	0%
Johnson County Disposal Service, Inc.	0	2	0	0%
KB Amber Operating, Inc	0	1	0	0%
Maverick Oil and Gas	0	1	0	0%
Merit Energy Company	0	2	0	0%
Petroleum Development	0	1	0	0%
Quick Transports of Arkansas	0	1	0	0%
Spectra Energy	0	1	0	0%
SWN Midstream Co	0	1	0	0%
Terra Renewal Services, Inc.	0	1	0	0%
Texas Gas Transmission, LLC	0	1	0	0%
Texas Transco, Inc.	0	3	0	0%
Typhoon Energy, LLC	0	2	0	0%
URS Corporation	0	1	0	0%
Total	**544**			

Table 6. Violations by company.

The Arkansas Department of Environmental Quality (ADEQ) and the Arkansas Oil and Gas Commission (AOGC) have regulatory authority over the natural gas industry under the Arkansas Water and Air Pollution Control Act of 1949. AOGC enforces rules regarding the specifications of equipment used in the drilling process while ADEQ oversees water and air pollution. The agencies sometimes join forces to share oversight of certain activities, such as the regulation of waste pits. This report, however, focuses only on enforcement records from ADEQ because that agency is responsible for inspection and enforcement of pollution issues such as unauthorized discharges from waste pits or erosion from pipeline rights of way, and occasional air pollution issues. The ADEQ water division must "protect and enhance the water quality of the State of Arkansas in a manner consistent with the economic well-being of all Arkansans." Water inspectors work primarily within the regulatory authority of Regulation No. 2: Establishing Water Quality Standards for Surface Waters of the State of Arkansas.

While AOGC performs regularly scheduled inspections, ADEQ does not. ADEQ typically responds to complaints and reports, or may show up unasked when an inspector suspects a problem or has extra time.

Permits

In addition to investigating compliance with statutes, rules and regulations, ADEQ inspectors also ensure compliance of permitted facilities. Not all natural gas production, transportation and waste disposal activities require permits from ADEQ.

Inspection, December 2008

Upon referral from an AOGC inspector because of a containment pit leak, an ADEQ inspector visited a Chesapeake-owned well site. The inspector found not only a leak, but also multiple erosion problems, an inadequate pit liner, trash in the pit, oil run-off from the gas pad, unauthorized physical alteration of a creek and multiple important plan documents and certificates missing from the site. The company agreed to fix the fluid leak problem by constructing an emergency overflow pit, but a follow-up visit found a leak sprung from the emergency pit and its liner bunched up in a corner. In addition, oily foam was seen in the original pit. The inspection file did not include any final documentation that these problems were eventually remedied, or that the company ever faced a fine or other enforcement action.

Oil and trash observed in a reserve pit.

Sediment from a pad runs to a creek, shown in the upper left of photo.

Sediment erosion from a drilling pad.

Those that do require permits are:

- Any activity conducted in any water which might cause a violation of the Arkansas Water Quality Standards, including debris removal, movement of machinery into the water or bridge construction that disturbs the water (Short Term Activity Authorization)
- Facilities over one acre (NPDES General Construction Stormwater Permit)
- Industrial facilities where all industrial materials and activities are protected from exposure to rain, snow, snowmelt and/or runoff (No Exposure Certification)
- Natural gas compressor stations (Air Permit for Minor Source Natural Gas Compressor Stations)
- Commercial land farms and other waste disposal facilities (Permit for Land Application of Drilling Fluids)
- Truck washing and tanker cleaning operations (Authorization to Discharge)
- Reserve pits (Authorization to Construct, Operate, and Close the Pits Associated with Oil and Gas Well Exploration)

The issue is murky when it comes to ADEQ's authority to regulate the federal environmental impacts of the actual drilling, production and transportation of natural gas. Congress has exempted the oil and gas industry from certain environmental laws pertaining to air and water pollution. For example, the 2005 Energy Bill expanded the exemption for construction of oil and gas facilities from the requirements of the Clean Water Act's storm water pollution prevention program. Likewise, the Clean Air Act prohibits aggregating emissions from gas well sites for purposes of regulating air emissions from these facilities. The Arkansas Water and Air Pollution Control Act (Act 472 of 1949) grants the Arkansas Pollution Control & Ecology Commission broad authority to regulate air and water pollution. However, before promulgating a regulation that is more stringent than its federal counterpart, state law requires the Commission to consider the economic impacts and environmental benefits of such regulation. The Commission has not attempted to promulgate regulations for storm water pollution or air emissions from oil and gas drilling sites in the absence of clear direction from the Arkansas Legislature.

Oil-based mud spill at a wellhead. ***6.2.09***

Inspection

ADEQ does not currently require routine natural gas production inspections. When a local resident, drill site worker or other individual observes a problem, he or she can report the possible violation via mail, fax, phone or the ADEQ website. An inspector may also take the initiative to visit other natural gas industry infrastructure while in the area in order to maximize efficiency.

After a complaint has been received, the case will be assigned to the inspector responsible for that subject and geographic region. The inspector visits the site for an investigation of the alleged violation to observe and determine whether:

- Sediment runoff from the drilling pad or well site has infiltrated streams or other waters of the state
- Turbidity standards are at acceptable levels
- Erosion and sediment controls are in place and maintained in good condition

- A storm water erosion and sediment control plan is prepared
- Evidence of oil or fluid spills exists and, if so, whether reporting and cleanup were proper
- Alterations of waters of the state were not properly authorized
- Chemicals on site are stored properly
- The waste fluid pits are covered by an active permit
- Pit construction meets requirements and is structurally sound
- Containers for fluids are leak-free
- Pits have appropriate liners that are not torn or cracked
- Unauthorized discharges or overflows are issuing from pits or containers and, if so, whether reporting and cleanup were proper
- Sufficient freeboard—at least 2 feet of space—from the top of a waste pit to the fluid level
- Unapproved fluids or materials exist on site
- Site supervisor knows how and where fluids were disposed of
- All wastes have been properly removed from site after completion
- Waste pit has been properly closed, reclaimed and reseeded after completion

Corrective action

Once an inspection is completed, the inspector sends a letter to the operator of the site informing them of any violations found. If remediation is required, the operator is given a deadline by which proof of compliance (usually photographs) must be furnished to the Enforcement Branch of the ADEQ Water Division. The operator makes the necessary changes and submits evidence of the changes. If the efforts are deemed sufficient, the case is closed. If further work is required, the Enforcement Branch will work with the operator or possibly issue a penalty.

For water violations, penalties cannot exceed $10,000 per violation, but each day that the violation continues can be considered a separate violation. If a penalty is imposed, the amount of the penalty will be determined by considering factors outlined in Regulation Number 7, such as: the seriousness of the noncompliance and its effect upon the environment, whether the cause of the noncompliance was an unavoidable accident or an intentional act or omission, and the history of a violator in taking all reasonable steps or procedures necessary or appropriate to correct any noncompliance.

5.21.09

A transport truck applying reserve pit wastewater onto a road.

Conclusion

With a violation rate of over 50%, legislators and regulators should be scrambling to improve oversight of natural gas industry activities in Arkansas. The cumulative impacts of this booming industry on Arkansas landowners, roads, air and water demand action.

Some operators appear to be more responsible than others; violation ratios range from 0 to 100 percent depending on company, but better oversight of the entire industry is needed (See Table 6). Stronger regulations and oversight would cause minimal inconvenience to the good actors already using Best Management Practices, reporting incidents promptly to regulators, maintaining proper records and permits and protecting public health and the environment. Bad actors, however, would be prevented from causing harm to residents and the state. Even good actors sometimes need reminders, correction or education about rules and regulations.

Only a small fraction of the needed oversight of the industry is occurring in Arkansas. ADEQ cannot rely on citizen complaints in a sparsely populated region with isolated infrastructure to report violations that occur on sites often located behind locked gates or on private property. Operators have not proven to be sufficiently reliable at reporting incidents that occur on their watch either. ADEQ must develop a more comprehensive inspection and enforcement regime in order to effectively protect clean air, water and land in Arkansas from the impacts of natural gas development.

9.9.08

Unpermitted discharge of drilling fluids flowing into a tributary.

Recommended Action

Each well site, compressor station, pipeline, injection well site, land farm and industry facility should be inspected at least once annually. ADEQ should inspect well sites more often when processes underway pose a higher risk of water or air pollution, such as during drilling pad and pipeline construction. To institute a more comprehensive inspection regime, ADEQ will need to permanently hire more inspectors specifically assigned to the Fayetteville Shale region. ADEQ must determine the staffing, technical capacity and funding needed to perform such an inspection program. Further cross-training between AOGC and ADEQ inspectors may ease some of the staffing pressure.

ADEQ should also create and file an annual report with the Joint Performance Review Committee of the Arkansas Legislature stating the number of inspections performed, the number of inspections that found violations, a description of each violation and the action taken by ADEQ to resolve each violation. This report should parallel the creation of a user-friendly violations database searchable by geographic location, facility name, and operator. Each case file should be archived in full so that the public can clearly determine how each situation was resolved and confirm that a final release or penalty was issued by ADEQ.

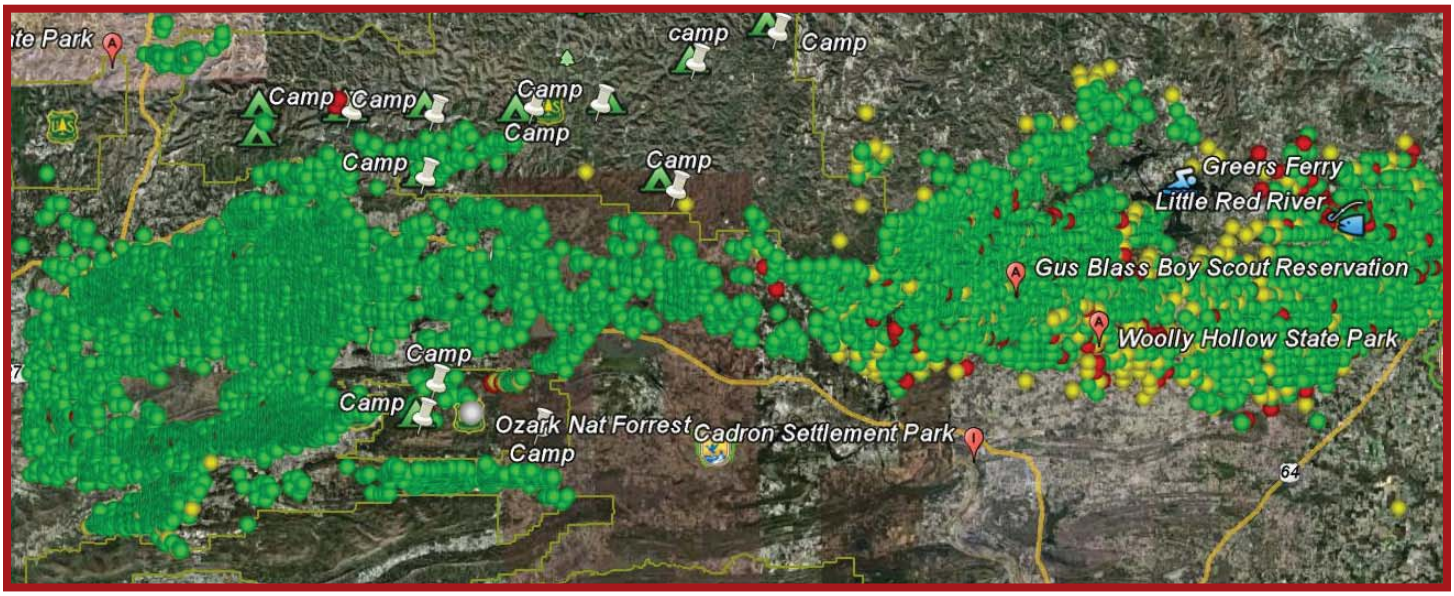
As the industry grows to a projected 14,000 gas wells and associated infrastructure in the Fayetteville shale, inspection and enforcement efforts must be increased to meet the increased potential for pollution and safety concerns. If even half of those facilities have violations that need attention from regulators, the current 150-per-year inspection rate would not put a significant dent in fixing those problems. Oversight must scale up alongside industry growth to ensure that clean air and water are protected for the benefit of all Arkansans.

Appendix I

Who regulates what?

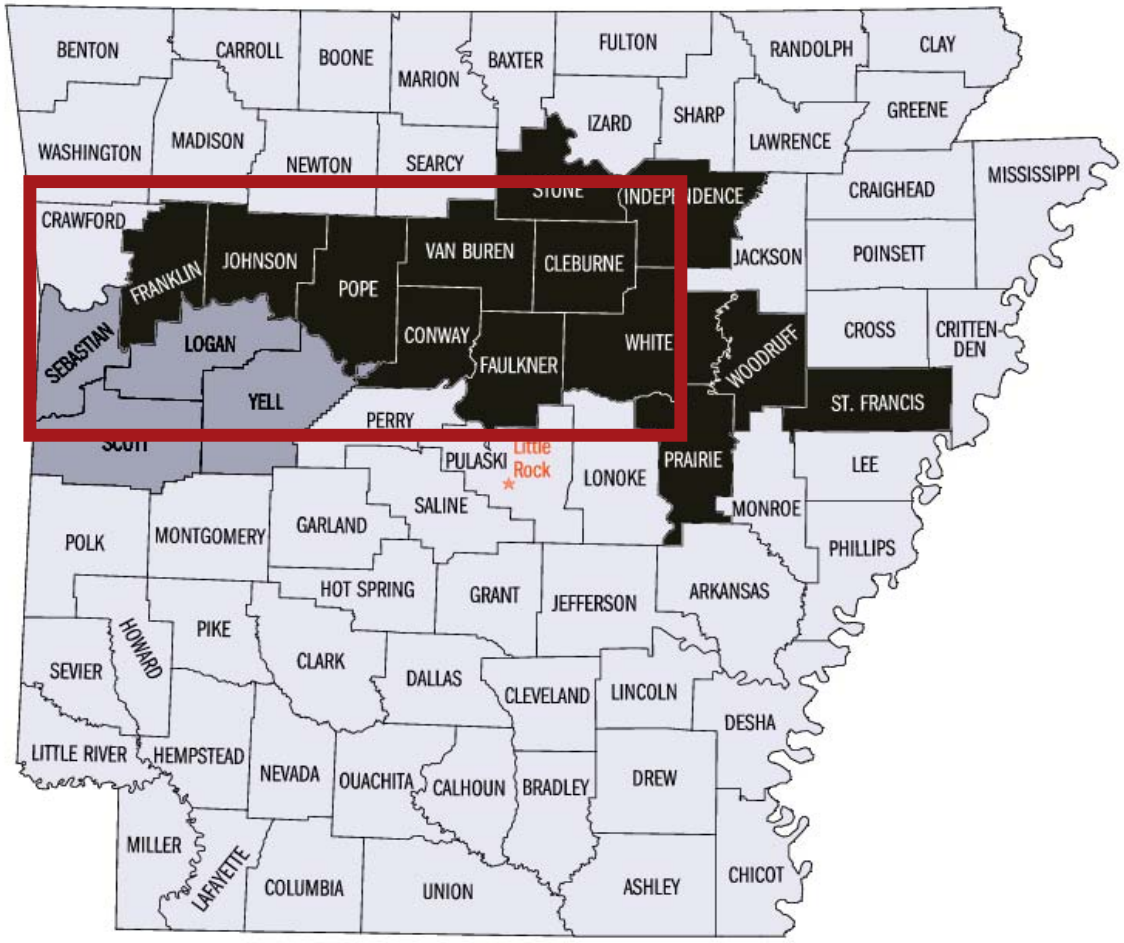
	Regulated by
Well construction and operation	AOGC
Operator registration	AOGC
Financial assurance	AOGC
Seismic testing	AOGC
Waste pits	ADEQ, AOGC
Production of gas and metering	AOGC
Water withdrawals	ANRC
Hydrogen Sulfide concentrations in air	AOGC, ADEQ
Hydraulic fracturing	AOGC
Chemical disclosure	AOGC
Alteration of surface water	ADEQ
Stormwater discharge prevention	ADEQ
Runoff and erosion	ADEQ
Well pressure	AOGC
Well transfer or name change	AOGC
Leak, spill, blow-out	ADEQ, AOGC
Pipeline construction and operation	AOGC
Comingling gas from different formations	AOGC
Compressor stations	ADEQ
Disposal of pit fluids	AOGC
Commercial land farms	ADEQ
Abandoning and plugging wells	AOGC
Air and surface water pollution	ADEQ
Venting and flaring of wells	Unregulated
Drinking water	ADH, AOGC, ADEQ
Greenhouse gas emissions	Unregulated
Noise	Unregulated

Map of the Fayetteville Shale



Each dot, above, represents a gas well in the Fayetteville Shale area.

Image from the Arkansas Oil and Gas Commission



Commissioned and Released by the Arkansas Public Policy Panel

The Panel is a statewide 501(c)(3) organization dedicated to achieving social and economic justice by organizing citizen groups around the state, educating and supporting them to be more effective and powerful, and linking them with one another in coalitions and networks. The Panel seeks to bring balance to the public policy process in Arkansas.

Research assistance for this report was provided by **Stephen S. Gross**, and Panel interns **Acadia Roher** and **Jane Derrick.**

Back cover photo:

8.9.07 – Unauthorized reserve pit, improper waste disposal.

Arkansas Department of Environmental Quality investigation report.