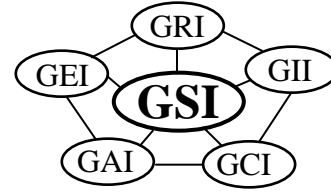


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GRI White Paper #21

“State Regulatory Departments Involved in Shale Gas Permitting”

by

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Background

Although shale gas plays (consisting of vertical and horizontal drilling, hydrofracking, withdrawal, and pipeline transportation off site) have been ongoing in the central southern states (mainly Texas and Oklahoma) for some twenty years, the situation is much more recent elsewhere. In particular, the northeastern states with their massive Marcellus and Devonian (Ithaca) formations have had intense activity over the last five-plus years. The current activity in America is shown in Figure 1. It should be mentioned that the situation is worldwide as well, but this survey is for the United States only.

This intense activity has created a degree of uncertainty in many state departments as to the permitting processes required for construction and operations to take place. Stated differently, just what department(s) within any given state has jurisdiction for reviewing and granting permit(s) for operations to occur?

We have been asked to answer this question and felt that a survey of U.S. state environmental departments was appropriate. The survey has led to this white paper.

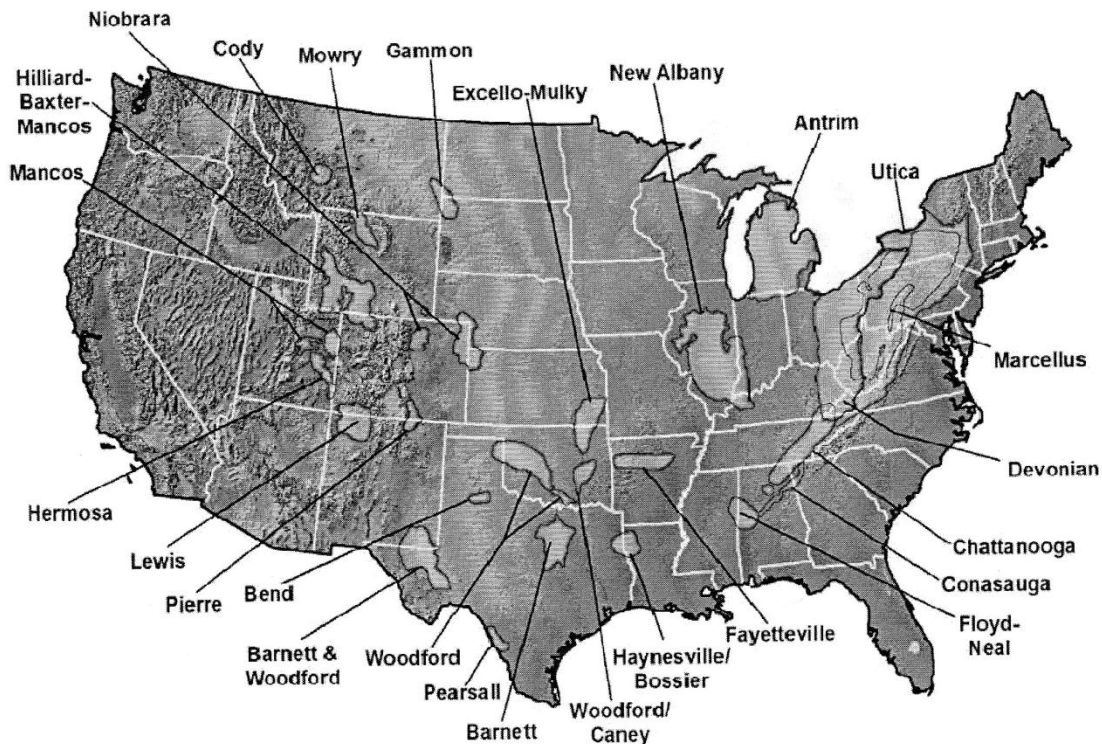


Figure 1 – U.S. Shale Gas Resources (ref. ICF International)

Data Collection Method

All fifty U.S. states have very complete websites which formed a base line for the information to follow. However, the relative newness of the technology in many states has resulted in either incomplete information or none at all. This, in turn, has led us to direct contacting of individuals in various state departments as to the manner of their handling of the situation.

As survey data began to develop, it appeared that many states handle the entire permitting within a single department. Yet, those states which are relatively new to shale gas plays have several departments from which individual permits must be obtained. More specifically, we grouped the departments according to the necessary activities that are involved; namely,

- Siting of well pads (Figure 2a)
- Withdrawal and storage of fresh water (Figure 2b)
- Containment and disposal of flowback/product water (Figure 2c)
- Disposal of well cuttings (Figure 2d), and
- Other aspects of the activity



(a) Well pad protection



(b) Fresh water storage pond



(c) Frack (flowback) water storage



(d) Cuttings from well drillings

Figure 2 – Critical aspects of shale gas plays

See the following table of each state's response for these results.

Table 1 - Shale Gas Permitting Departments Within Each State					
State	Siting of Well Pads	Withdrawal and Storage of Fresh Water	Containment of Flowback/Product Water	Disposal of Well Cuttings	Other
AL	State Oil and Gas Board	State Oil and Gas Board	State Oil and Gas Board	State Oil and Gas Board	
AR	Oil and Gas Commission Dept. of Environmental Quality	Oil and Gas Commission	Oil and Gas Commission	Oil and Gas Commission ADEQ- Subtitle D landfills	
AZ	Dept. of Environmental Quality Aquifer Protection Permit	Dept. of Water Resources	Dept of Water Resources	Dept. of Environmental Quality	No applications
CA	Dept. of Oil, Gas, Geothermal Resources, Dept. of Conservation	Dept. of Oil, Gas, Geothermal Resources	Dept. of Oil, Gas, Geothermal Resources	Dept. of Oil, Gas, Geothermal Resources	
CO	Oil & Gas Conservation Comm.	State Engineers Office of Water Rights	Oil & Gas Conservation Comm. Water Quality Control Division	Colorado Oil & Gas Conservation Comm. Solid Waste Unit	
FL	Dept. of Environmental Protection for ERP Permit	Water Management District	Dept. of Environmental Protection for NPDES permit	Solid Waste Unit	No applications
ID	Dept of Lands - Oil and Gas Conservation Comm.	Dept of Lands - Oil and Gas Conservation Comm.	Dept of Lands - Oil and Gas Conservation Comm.	Dept of Lands - Oil and Gas Conservation Comm.	No applications
IL	Dept. of Natural Resources OMM Division of Oil and Gas	OMM Division of Oil and Gas	Environmental Protection Agency involved if NPDES permit is needed	OMM Division of Oil and Gas	
IN	Dept. of Natural Resources Oil and Gas Division	Dept. of Natural Resources Oil and Gas Division	Dept. of Natural Resources Oil and Gas Division	Dept. of Natural Resources Oil and Gas Division	
KS	Kansas Corporation Commission	Dept. of Health and Environment	Dept. of Health and Environment	Dept. of Health and Environment	
KY	Division of Oil and Gas	Division of Oil and Gas	Division of Oil and Gas	Division of Oil and Gas	
LA	Dept. of Natural Resources Office of Conservation - Engineering Division Oil and Gas Compact Commission	DNR - Environmental Division Office of Coastal Management	Office of Conservation - Engineering	Office of Conservation - Engineering	
MD	Dept. of Environment Department of Natural Resources Mining Program	Dept. of Environment Department of Natural Resources Mining Program	Dept. of Environment Department of Natural Resources Mining Program	Dept. of Environment Department of Natural Resources Mining Program	No applications
MA	Dept. of Environmental Protection	Dept. of Environmental Protection	Dept. of Environmental Protection	Dept. of Environmental Protection	No applications
MI	Office of Oil, Gas and Minerals Petroleum and Mining Geology	Office of Oil, Gas and Minerals Petroleum and Mining Geology	Office of Oil, Gas and Minerals Petroleum and Mining Geology	Office of Oil, Gas and Minerals Petroleum and Mining Geology	
MT	MBOGC - Board of Oil and Gas Conservation	MBOGC - Board of Oil and Gas Conservation	MBOGC - Board of Oil and Gas Conservation	MBOGC - Board of Oil and Gas Conservation	

Table 1 - Shale Gas Permitting Departments Within Each State (Cont.)					
State	Siting of Well Pads/Frack Tanks	Withdrawal and Storage of Fresh Water	Containment of Flowback/Product Water	Disposal of Well Cuttings	Other
NE	Oil and Gas Conservation Comm. Dept. of Environmental Quality	Oil and Gas Conservation Comm. Dept. of Environmental Quality	Oil and Gas Conservation Comm. Dept. of Environmental Quality	Oil and Gas Conservation Comm. Dept. of Environmental Quality	
ND	Dept. of Mineral Resources Oil and Gas Division	Dept. of Health Water Quality Division Oil and Gas Division	Dept. of Health Water Quality Division Oil and Gas Division	Dept. of Health Waste Management Division Oil and Gas Division	
NV	Division of Minerals - BLM	Division of Water Resources Dept. of Environmental Protection	Division of Water Resources Dept. of Environmental Protection	Division of Minerals Bureau of Mines and Geology	
NJ	*Fracking ban in New Jersey			Dept. of Environmental Protection Case by case	
NM	State lands - Oil Conserv. Div. Federal lands- Bureau of Land Mng Tribal lands- reg by tribe	State lands - Oil Conserv. Div. Federal lands- Bureau of Land Mng Tribal lands- reg by tribe	State lands - Oil Conserv. Div. Federal lands- Bureau of Land Mng Tribal lands- reg by tribe	State lands - Oil Conserv. Div. Federal lands- Bureau of Land Mng Tribal lands- reg by tribe	
NY	Dept. of Env. Conservation Mineral Resources	Delaware and Susquehanna River Basin Commission	Delaware and Susquehanna River Basin Commission	Dept. of Environmental Conservation	
OK	Oklahoma Corporation Commission Dept. of Natural Resources	Oklahoma Corporation Commission Oil and Gas Division	Oklahoma Corporation Commission Oil and Gas Division	Oklahoma Corporation Commission Oil and Gas Division	
OH	Department of Natural Resources	Department of Natural Resources	Department of Natural Resources	Department of Natural Resources	
PA	Dept. of Environmental Protection Office of Oil & Gas Management	Dept. of Environmental Protection Delaware and Susquehanna River Basin Commission	DEP- Clean Streams Law Delaware and Susquehanna River Basin Commission	Dept. of Environmental Protection Solid Waste Division	
RI	Dept. of Environmental Mngmt.	Dept. of Environmental Mngmt.	Dept. of Environmental Mngmt.	Dept. of Environmental Mngmt.	No applications
SC	Underground injection control Program	Water withdrawal program NPDES permit	Water withdrawal progrm NPDES permit	landfill disposal program	No applications
SD	Minerals and Mining Program	Dept. of Environment and Natural Resources - Water Rights Program	Surface Water Quality Program Ground Water Quality Program	Minerals and Mining Program	
TX	Railroad Commission of Texas Commission of Env. Quality	Commission on Environmental Quality Water Quality Division	Commission on Environmental Quality Water Quality Division	Commission on Env. Quality	Air Quality/odor TCEQ
UT	Division of Oil, Gas and Mining	Division of Oil, Gas and Mining	Division of Oil, Gas and Mining	Division of Oil, Gas and Mining	No applications
VA	Division of Mining and Minerals	Division of Mining and Minerals	Division of Mining and Minerals	Division of Mining and Minerals	
WV	Office of Oil and Gas Well Work permit needed	Division of Water Resources	Office of Oil and Gas	Well Work permit	

Table 1 - Shale Gas Permitting Departments Within Each State					
<u>State</u>	<u>Siting of Well Pads/Frack Tanks</u>	<u>Withdrawal and Storage of Fresh Water</u>	<u>Containment of Flowback/Product Water</u>	<u>Disposal of Well Cuttings</u>	<u>Other</u>
WA	Dept of Nautural Resources Oil and Gas Division	Dept of Nautural Resources Oil and Gas Division	Dept of Nautural Resources Oil and Gas Division	Dept of Nautural Resources Oil and Gas Division	
WI	Dept. of Natural Resources Bureau of Waste & Materials Mgt.	Dept. of Natural Resources Bureau of Waste & Materials Mgt.	Dept. of Natural Resources Bureau of Waste & Materials Mgt.	Dept. of Natural Resources Bureau of Waste & Materials Mgt.	No applications
WY	no dept set up - group of eng. review application to drill	State Engineers Office of Water Rights Environmental Protection Agency	Oil and Gas Conservation Commission	Dept. of Environmental Quality	

Discussion of Results

Of course, the simplest permitting structure by any given state is to have a single department handle the entire permitting process. This appears to be the case in 16 states, but recognize that 4 of these states have never had any applications to begin with. One state, New Jersey, has a ban on any form of fracking.

Of the remaining states surveyed, (35 responded in all), there were 18 states which have multiple departments permitting different aspects of the enterprise. In this regard, nine states have two departments involved, six states have three departments involved and three states have four departments involved. In addition, one state (Texas) has an imposed air quality/odor criterion, see Figure 3.

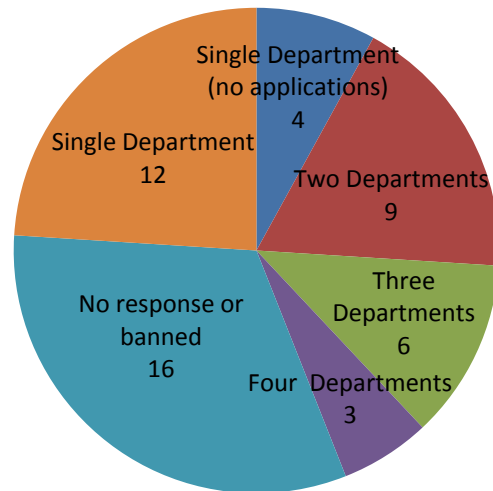


Figure 3 -
Survey results by number of State Departments involved

Thus it is seen that 16 states view permits for shale gas plays as a single regulatory unit, whereas others have separate departments permitting various aspects of the activity.

Acknowledgements

GSI expresses sincere appreciation to the many state regulatory personnel who took time and effort to respond to our questions and inquiries.