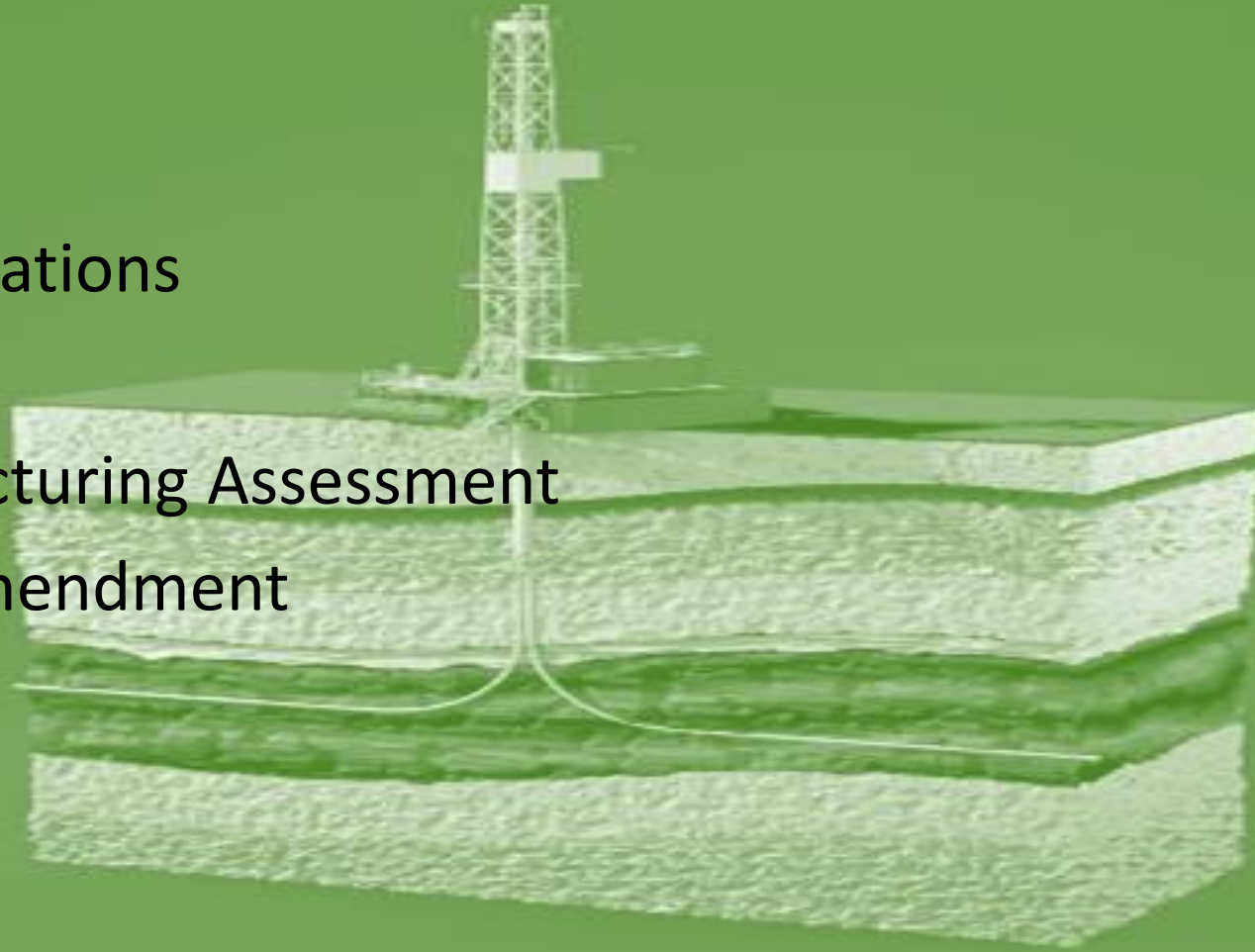


**Zoning Ordinance Amendments:
Oil & Gas Exploration and Development
Public Hearing
October 15, 2018**

TOPICS – OIL AND GAS EXPLORATION

- Background
- Current Regulations
- Moratorium
- Hydraulic Fracturing Assessment
- Ordinance Amendment



- Session Law 2011-276

North Carolina Oil and Gas Study


April 2012

Executive Summary

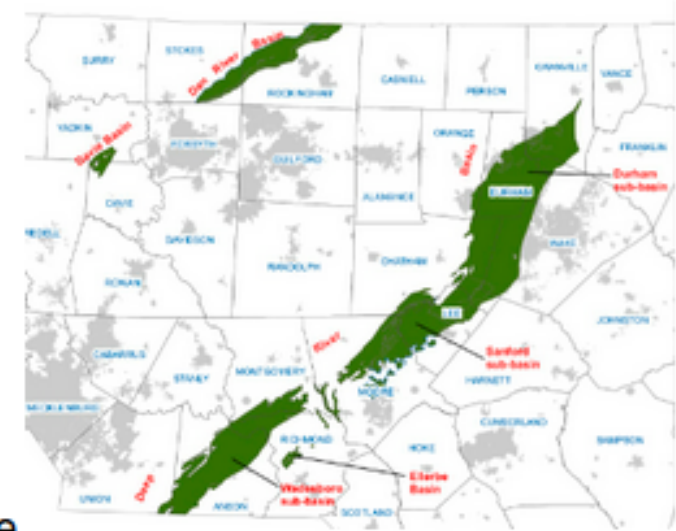
Background

In Session Law 2011-276, the North Carolina General Assembly directed the North Carolina Department of Environment and Natural Resources (DENR), the Department of Commerce (Commerce), and the Department of Justice, in conjunction with the nonprofit Rural Advancement Foundation International (RAFI), to study the issue of oil and gas exploration in the state and specifically the use of directional and horizontal drilling and hydraulic fracturing for natural gas production.

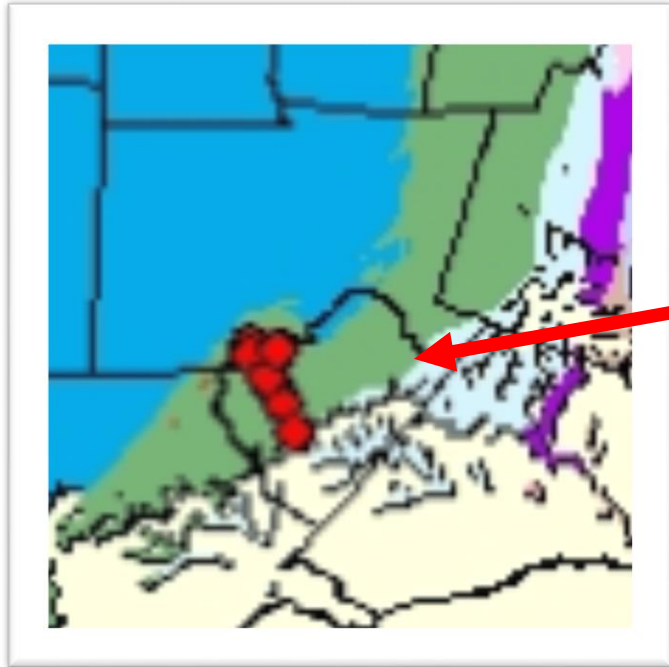
BACKGROUND

The N.C. Geological Survey, housed in the Department of Environmental Quality, has concluded that a viable reserve of natural gas may underlie parts of the state's [Triassic basins](#) . Technically recoverable gas is thought to exist in the Sanford sub-basin (including Lee, Chatham and Moore counties) and possibly the Dan River sub-basin (including Stokes and Rockingham counties). Further information on the geologic survey assessment can be found below.

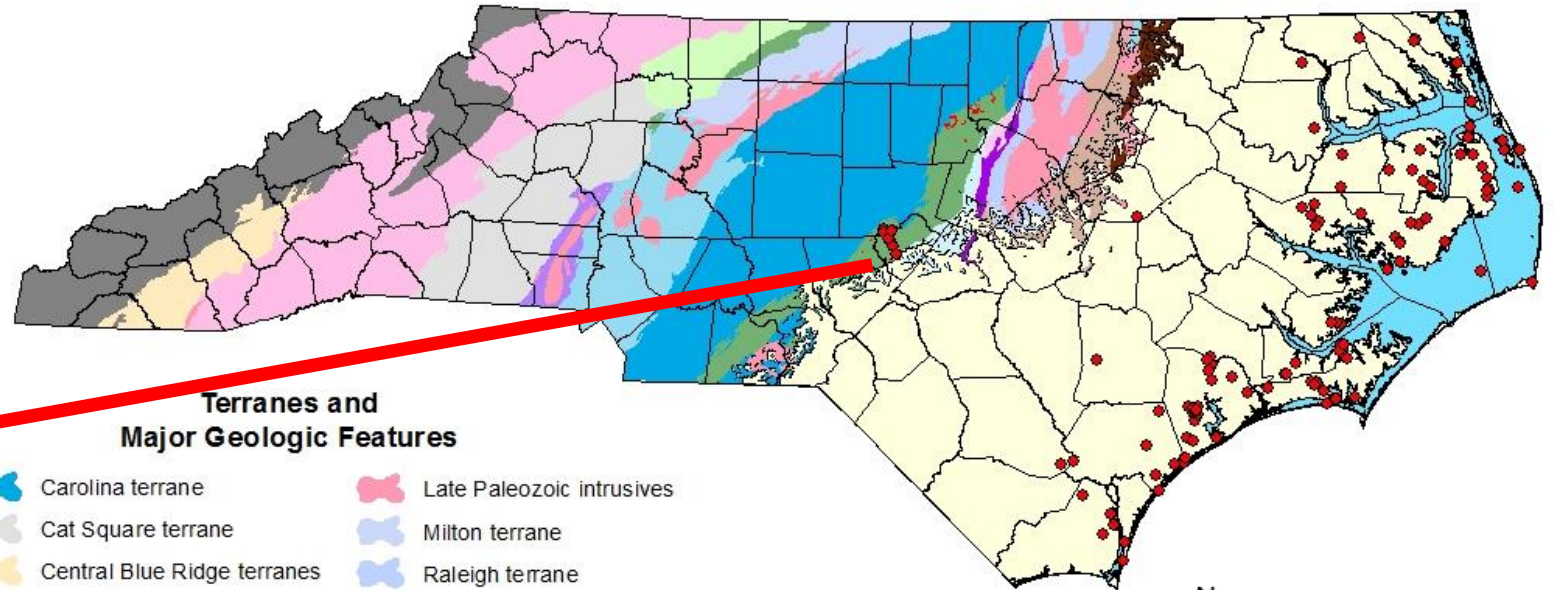
Current technology allows shale gas to be recovered from shale formations with high organic content. Modern exploration and gas production technology, such as horizontal drilling and hydraulic fracturing, has enabled the extraction of shale gas in similar formations in other states. Hydraulic fracturing, also known as hydrofracking or fracking, is a process used to stimulate production of natural gas from shale or other impermeable rock formations. The process involves drilling a well into rock that contains natural gas, injecting fluids under pressure to fracture the rock, and extracting the natural gas from the fractures that are created.



BACKGROUND

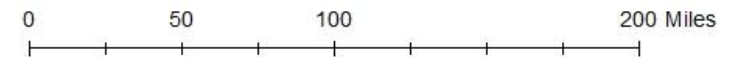


NC Oil and Gas Wells



Terranes and Major Geologic Features

- | | |
|------------------------------|---------------------------------------|
| Carolina terrane | Late Paleozoic intrusives |
| Cat Square terrane | Milton terrane |
| Central Blue Ridge terranes | Raleigh terrane |
| Charlotte terrane | Roanoke Rapids terrane |
| Coastal Plain | Sauratown Mountains Anticlinorium |
| Crabtree terrane | Spring Hope terrane |
| Diabase | Triassic basin - Dan River basin |
| Easternmost Carolina terrane | Triplet terrane |
| Falls Lake terrane | Tugalo terrane (West of Brevard Zone) |
| Kings Mountain terrane | Western Blue Ridge (Laurentia) |



Oil and gas wells are shown as red dots.
Well locations and geology data were provided by the NC Geological Survey.
Initial data entry was performed by Katherine Marciniak, P.G.
Map compilation by Walter T. Haven, P.G., 24 Mar 2016.

Learn More:

- [Assessment of Undiscovered Oil and Gas Resources of the East Coast Mesozoic Basins of the Piedmont, Blue Ridge Thrust Belt, Atlantic Coastal Plain, and New England Provinces, 2011](#) 
- [Shale Gas Potential in Triassic Strata of the Deep River Basin, Lee and Chatham counties, North Carolina with pipeline and infrastructure data](#) 
- [North Carolina's Shale Gas Potential: Who Knew?](#) 
- [Information Circular 36: Natural Gas and Oil in North Carolina](#) 


<https://deq.nc.gov/about/divisions/energy-mineral-land-resources/energy-mineral-land-data/oil-gas-program-geologic-assessment>

BACKGROUND

- Session Law 2012-143

Prior to 2012, North Carolina's laws ([Article 27, G.S. 113-378 through 113-423](#)) regulating oil and gas exploration and production were dated and did not address the technologies commonly used in shale gas exploration and production, such as horizontal drilling and hydraulic fracturing. In July 2012, the General Assembly ratified the "Clean Energy and Economic Security Act," or [Session Law 2012-143](#) . This law reconstituted the state's Mining Commission as the Mining and Energy Commission, and charged the commission with developing a modern regulatory program for the management of oil and gas exploration and development activities in North Carolina, including the use of horizontal drilling and hydraulic fracturing.

BACKGROUND

The Mining and Energy Commission submitted rules to the Office of Administrative Hearings for publication in July 2014. The rules were adopted in November 2014, and were reviewed and approved by the Rules Review Commission at the December 2014 and January 2015 meetings. The Mining and Energy Commission was dissolved July 31, 2015, as directed by [Session Law 2014-4](#)  .

[Final Oil and Gas Rules](#) 

<https://deq.nc.gov/about/divisions/energy-mineral-land-resources/energy-group/oil-gas-program>

BACKGROUND (STATE RULES)

§ 113-415.1. Local ordinances regulating oil and gas exploration, development, and production activities invalid; petition to preempt local ordinance.

(a) It is the intent of the General Assembly to maintain a uniform system for the management of oil and gas exploration, development, and production activities, and the use of horizontal drilling and hydraulic fracturing for that purpose, and to place limitations upon the exercise by all units of local government in North Carolina of the power to regulate the management of oil and gas exploration, development, and production activities by means of ordinances, property restrictions, zoning regulations, or otherwise. Notwithstanding any authority granted to counties, municipalities, or other local authorities to adopt local ordinances, including, but not limited to, those imposing taxes, fees, or charges or regulating health, environment, or land use, **all provisions of local ordinances, including those regulating land use, adopted by counties, municipalities, or other local authorities that regulate or have the effect of regulating oil and gas exploration, development, and production activities within the jurisdiction of a local government are invalidated and unenforceable, to the extent necessary to effectuate the purposes of this Part**, that do the following:

- (1) Place any restriction or condition not placed by this Article upon oil and gas exploration, development, and production activities and use of horizontal drilling or hydraulic fracturing for that purpose within any county, city, or other political subdivision.
- (2), (3) Repealed by Session Laws 2015-264, s. 56.2(a), effective retroactively to June 4, 2014.
- (4) In any manner are in conflict or inconsistent with the provisions of this Article.
- (b), (c) Repealed by Session Laws 2015-264, s. 56.2(a), effective retroactively to June 4, 2014.

BACKGROUND (STATE RULES)

(c1) If a local zoning or land-use ordinance imposes requirements, restrictions, or conditions that are generally applicable to development, including, but not limited to, setback, buffer, and stormwater requirements, and oil and gas exploration, development, and production activities would be regulated under the ordinance of general applicability, the operator of the proposed activities may petition the Oil and Gas Commission to review the matter. After receipt of a petition, the Commission shall hold a hearing in accordance with the procedures in subsection (d) of this section and shall determine whether or to what extent to preempt the local ordinance to allow for the regulation of oil and gas exploration, development, and production activities.

....

(f) A local zoning or land-use ordinance is presumed to be valid and enforceable to the extent the zoning or land-use ordinance imposes requirements, restrictions, or conditions that are generally applicable to development, including, but not limited to, setback, buffer, and stormwater requirements, unless the Oil and Gas Commission makes a finding of fact to the contrary. The Commission shall determine

whether or to what extent to preempt local ordinances so as to allow for the establishment and operation of the facility no later than 60 days after conclusion of the hearing. The Commission shall preempt a local ordinance only if the Commission makes all of the following findings:

- (1) That there is a local ordinance that would regulate oil and gas exploration, development, and production activities, or use of horizontal drilling or hydraulic fracturing for that purpose.
- (2) That all legally required State and federal permits or approvals have been issued by the appropriate State and federal agencies or that all State and federal permit requirements have been satisfied and that the permits or approvals have been denied or withheld only because of the local ordinance.
- (3) That local citizens and elected officials have had adequate opportunity to participate in the permitting process.
- (4) That the oil and gas exploration, development, and production activities, and use of horizontal drilling or hydraulic fracturing for that purpose, will not pose an unreasonable health or environmental risk to the surrounding locality and that the operator has taken or consented to take reasonable measures to avoid or manage foreseeable risks and to comply to the maximum feasible extent with applicable local ordinances.

BACKGROUND

SUBCHAPTER 05H – OIL AND GAS CONSERVATION

SECTION .0100 – TERMS OF REFERENCE

- State regulatory framework
 - Financial bond requirements and reclamation
 - Well site construction standards (includes prohibited substances .1604)
 - Setback distances
 - Pit and tank construction standards
 - Well site maintenance and security
 - Closure requirements
 - Chemical disclosure
 - Environmental testing
 - Water management plan requirements
 - Waste management plan requirements
 - Well site reclamation
 - Operation and Production requirements for wells

BACKGROUND

SUBCHAPTER 05H – OIL AND GAS CONSERVATION

SECTION .0100 – TERMS OF REFERENCE

Setback distances

SECTION .1600 – WELL CONSTRUCTION AND COMPLETION

15A NCAC 05H.1601 SETBACK DISTANCES

(a) Each oil or gas well, production facility, tank, tank battery, or pit shall comply with the following setback distances as measured from the center of a wellhead and the edge of the pit, production facility equipment, tank, or tank battery closest to the features below:

- (1) occupied dwellings and high occupancy buildings: 650 feet;
- (2) edge of a public road, highway, utility or railroad track right-of-way, or other right-of-way: 100 feet;
- (3) a perennial stream, river, watercourse, pond, lake, or other natural and artificial bodies of water, including wetlands and trout stream: 200 feet;
- (4) intermittent stream: 100 feet;
- and
- (5) a public or private water well intended for human consumption or household purpose: 650 feet.

(b) The permittee shall ensure a minimum setback of 100 feet from the center each oil or gas wellhead, and the closest edge of a tank, tank battery, or pit to the edge of the mapped 100-year floodplain and floodway.

(c) The permittee shall ensure a minimum setback of 1,500 feet downgrade from each oil or gas wellhead, tank, tank battery, pit, or production facility to the edge of any surface water impoundment that serves as a municipal drinking water supply or to the edge of any river having a drainage area greater than 140 square miles and upstream of a municipal drinking water supply point. For surface water impoundments, the edge shall be measured from the nearest point of the most landward limit of the normal water level or the rooted herbaceous vegetation. For any river upstream of a municipal drinking water supply point, the edge shall be measured from the nearest, most landward limit of the bank or the rooted herbaceous vegetation.

(d) Nothing in this Rule prohibits a local government exercising its existing authority consistent with G.S. 113-415.1.

History Note: Authority G.S. 113-391(a)(5)d;
Eff. March 17, 2015.

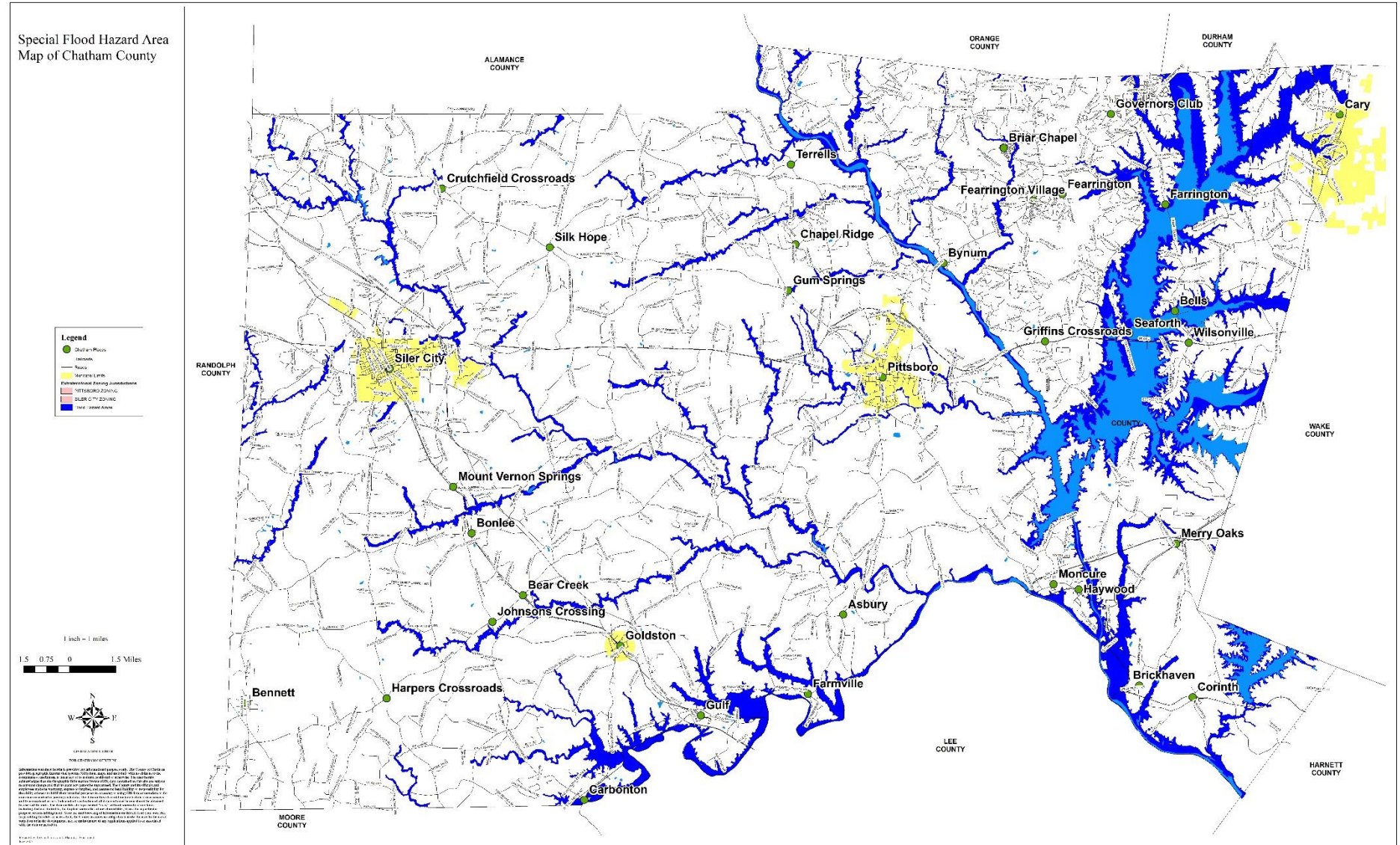
CURRENT REGULATIONS

- The county currently has regulations in place that apply to oil and gas exploration and development activities
 - Flood Damage Prevention Ordinance (adopted February 17, 1997)
 - Watershed Protection Ordinance (adopted Dec. 6, 1993 and effective January 1, 1994)
- Recall 15A NCAC 05H .1601(d)

(d) Nothing in this Rule prohibits a local government exercising its existing authority consistent with G.S. 113-415.1.

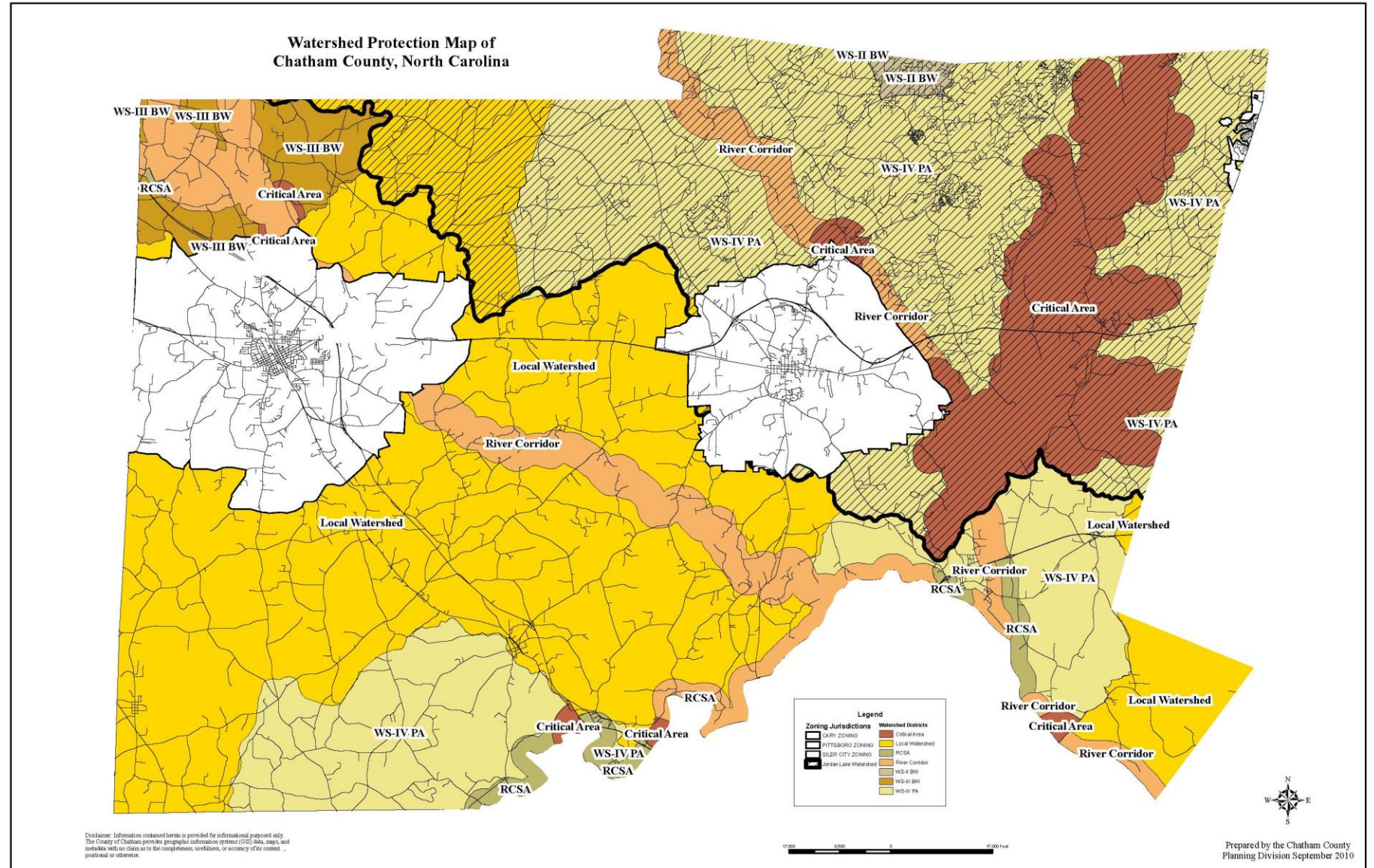
CURRENT REGULATIONS (WILL REMAIN IN PLACE)

- Flood Damage Prevention Ordinance
 - State rules require “a minimum setback of 100 feet from the center of each oil or gas wellhead, and the closest edge of a tank, tank battery, or pit to the edge of the mapped 100-year floodplain and floodway.



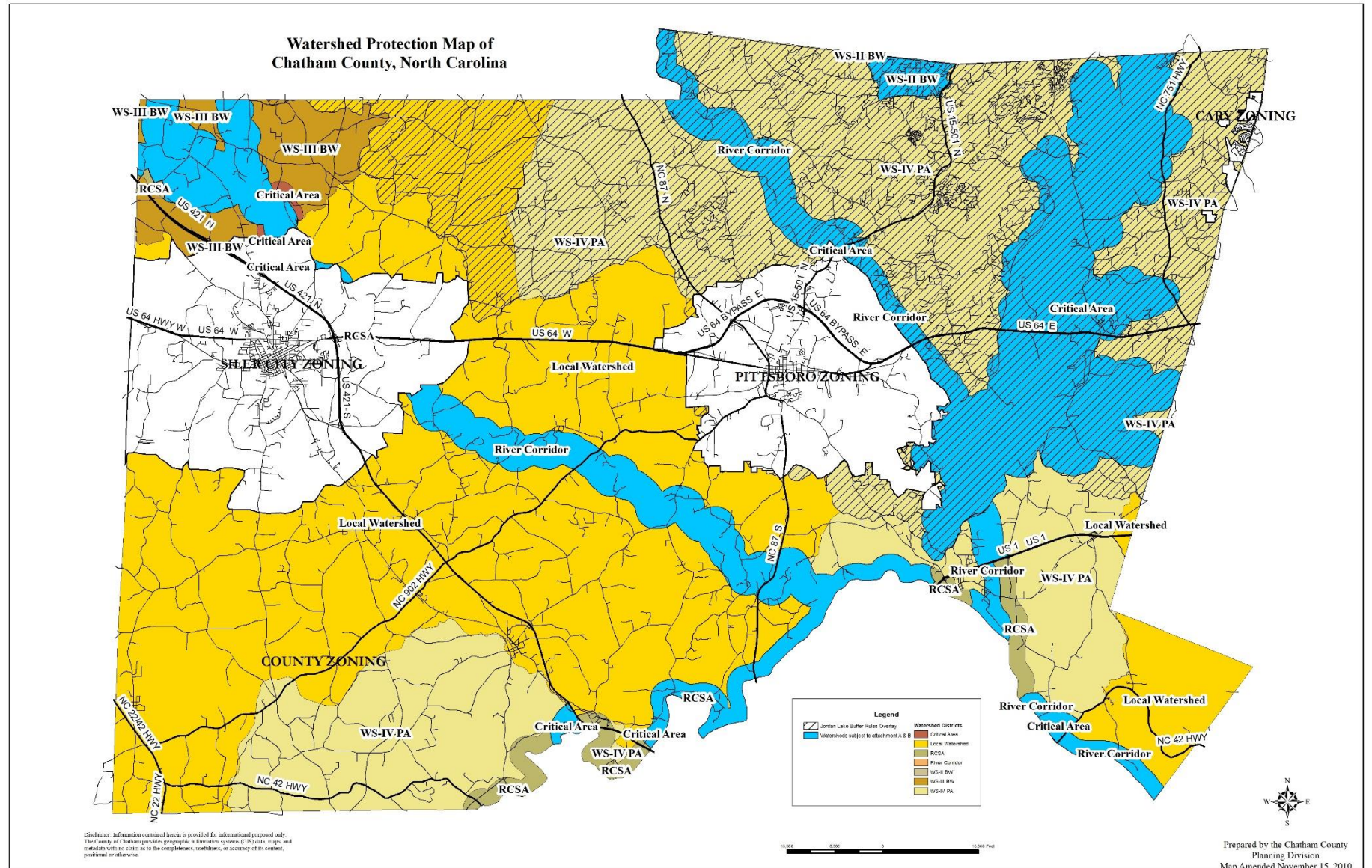
CURRENT REGULATIONS (WILL REMAIN IN PLACE)

- Watershed Regulations
 - Since 1994
 - Approved by the EMC
- Oil & Gas Exploration not allowed in:
 - River Corridor
 - WS-III Critical Area
 - WS-IV Critical Area
 - WS-II Balance of Watershed



CURRENT REGULATIONS (WILL REMAIN IN PLACE)

- Watershed districts with use limitations
 - River Corridor (2500' of the river)
 - WS-III Critical Area
 - WS-IV Critical Area (1 mile of water intakes and ½ mile of normal pool elevation of Jordan Lake)
 - WS-II Balance of Watershed (University Lake drainage)



MORATORIUM

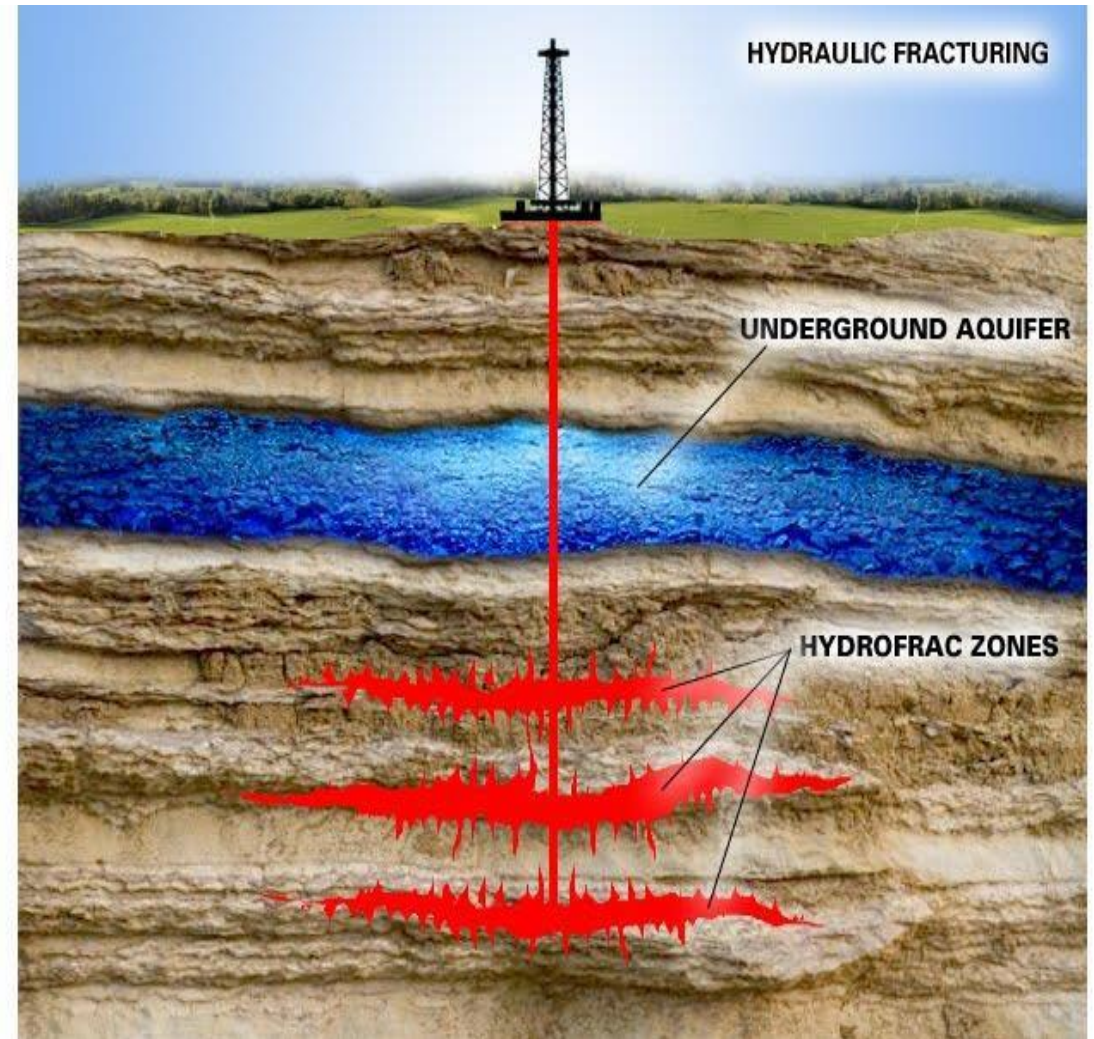
- August 2015
- July 2017 – one year extension
- June 2018 - extended to January 31, 2019

(a) Studies. The Board of Commissioners will hire a consultant or consultants with expertise regarding fracking and other oil and gas development activities and their impacts on the natural, man-made, and social environments and its economic benefits and costs. The consultant(s) will be tasked to study Chatham County and to analyze state and federal regulatory programs and to prepare a report for the Board regarding the full range of expected impacts on Chatham County, including financial impacts. The study will include the most current analysis of impacts in localities similar to Chatham County in other states and the effectiveness of local ordinances in managing those impacts. This study and report should be completed within the first year of the moratorium and will include the consultant's conclusions as to whether additional time is needed for thorough study.

(b) Development of Conditional Use Ordinance. Upon completion of the study and report, the Board intends to develop a draft conditional use ordinance and/or other ordinances based on the report and the consultant's advice which will be coordinated with the revisions to the County's comprehensive zoning ordinance. The draft ordinance will be made available for public review and comment and at least one public hearing will be held. Based on public comments the Board will finalize the ordinance and initiate the adoption procedure. Development of the ordinance and final approval is estimated to take one year.

HYDRAULIC FRACTURING ASSESSMENT

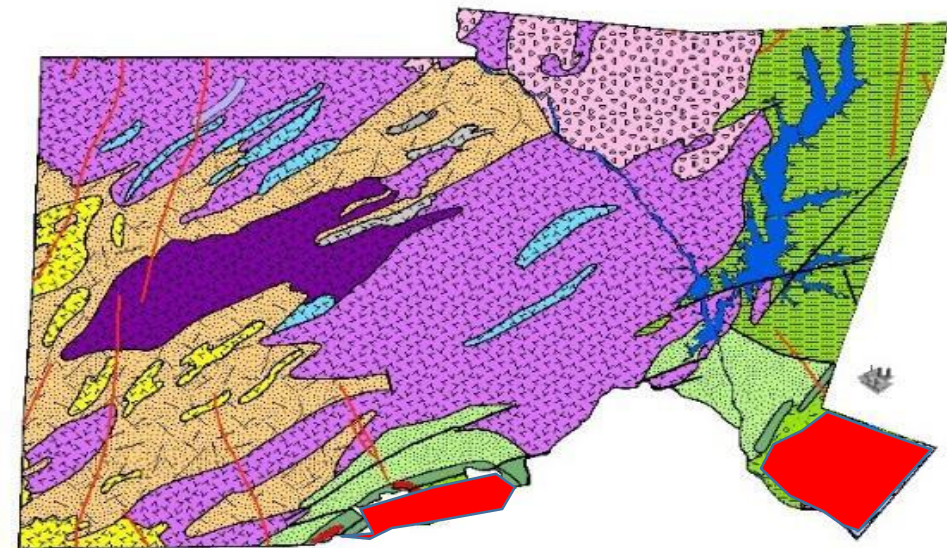
- Presented October 2017
- Charles Yuill, Environmental Consultant
- Evaluated
 - Brief history of fracking
 - Fracking and Chatham County
 - State Regulations
 - Recommendations



HYDRAULIC FRACTURING ASSESSMENT

- Hydraulic fracturing is unlikely to occur in Chatham County. This is due to the relatively small acreage of the Cumnock Formation present in the County, which is really the only candidate shale formation for fracking in the County.
- The relatively shallow depths of the Cumnock Formation in Chatham County would create conditions for what is known as “shallow fracking”. Shallow fracking is where well depths are generally less than 3,000 feet.
- Significantly higher risks of groundwater pollution are present with shallow fracking because of the relatively short distances between the bottom elevations of zones of concern (such as with groundwater aquifers) and the top elevation of the formations to be fracked.

Chatham County Geologic Map



Legend	
— Fault	Metamorphosed gabbro and diorite
Blue wavy pattern	Metamorphosed granitic rock
Green wavy pattern	Metamudstone and meta-argillite
Light green wavy pattern	Metavolcanic epi-clastic rock
Dark green wavy pattern	Pekin Formation
Red wavy pattern	Phyllite and schist
Purple wavy pattern	Sanford Formation
Light blue wavy pattern	Volcanic metaconglomerate
Dark purple wavy pattern	Harris Nuclear Plant

ORDINANCE AMENDMENT

- Chatham and Lee Counties worked in a partnership with Poyner and Spruill to draft standards.
 - Discussions included whether to focus on specific standards to address areas not covered by state rules or develop a broader approach to deal with individual sites.
 - EIA required under existing ordinance can be a vehicle for assessing potential impacts of individual sites, but state statute limits EIA to sites greater than 10 acres.

View from the road – a fracking well with multiple laterals in production mode with recent pipeline regrading in the background



Venting and flaring stacks



ORDINANCE AMENDMENT

- Approach

- Include new uses in the Table of Permitted Uses
 - Oil & Gas Exploration and Development
 - Natural gas compressor station
 - Both uses require a conditional use permit within any zoning district
- New Section 17.9
 - Special study to compile information to determine if the use is consistent with the findings for a conditional use permit
 - Study to be done by a consultant that is mutually acceptable to the county and applicant
 - Applicant pays a fee to cover the cost of the study
 - Study is submitted with the conditional use permit application

Pipeline construction on a steeper hillside – view from the road



ORDINANCE AMENDMENT

- Approach

- The special study requirement proposed to apply to several high impact uses.
 - Asphalt manufacture or refining
 - Cement, lime, plaster manufacture
 - Coal or coke yards
 - Electric light and power generation
 - Flammable liquids – bulk plants and storage
 - Foundaries
 - Garbage and waste incinerators
 - Industrial chemical manufacture
 - Mining
 - Natural gas compressor station
 - Oil and Gas Exploration and Development
 - Rodenticide, insecticide and pesticide mixing plants
 - Sanitary landfills
 - Tanneries and tanning operations
 - Tar and waterproofing materials manufacture
 - Textile manufacture

Gathering facility construction



ORDINANCE AMENDMENT (NO CHANGE PROPOSED TO THIS SECTION)

Conditional Use Permit Standards (Section 17.1 of the Zoning Ordinance)

In granting a conditional use permit, the Board of Commissioners shall make the following affirmative findings:

- The use requested is among those listed as an eligible conditional use in the district in which the subject property is located or is to be located.
- The requested conditional use permit is either essential or desirable for the public convenience or welfare.
- The requested permit will not impair the integrity or character of the surrounding or adjoining districts, and will not be detrimental to the health, safety or welfare of the community.
- The requested permit will be consistent with the objectives of the Land Use Plan.
- Adequate utilities, access roads, storm drainage, recreation, open space, and other necessary facilities have been or are being provided consistent with the County's plans, policies and regulations.

In granting a conditional use permit, the Board of Commissioners may impose such additional restrictions and requirements upon such permit as it may deem necessary in order that the purpose and intent of this Ordinance are served, public welfare secured and substantial justice done. If all requirements and conditions are accepted by the applicant, the Board of Commissioners shall authorize the issuance of the conditional use permit, otherwise the permit shall be denied. Any conditional use permit so authorized shall be perpetually binding upon the property included in such permit unless subsequently changed or amended by the Board of Commissioners, as provided for in this Ordinance.

