

North Carolina State Review

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INTRODUCTION

In 1990, the Interstate Oil Compact Commission (IOCC) and the U.S. Environmental Protection Agency (USEPA) jointly published a Study of State Regulation of Oil and Gas Exploration and Production Waste, which contained guidelines for the regulation of oil and gas exploration and production wastes by the IOGCC member states (the “1990 Guidelines”). The published guidelines, developed by state, environmental and industry stakeholders, provided the basis for the State Review Process, a multi-stakeholder review of state exploration and production (E&P) waste management programs against the guidelines. The purposes of the State Review Process are to document the successes of states in regulating E&P wastes and to offer recommendations for program improvement. In 1994, the guidelines were updated and revised (the “1994 Guidelines”) by the IOGCC, now named the Interstate Oil and Gas Compact Commission (IOGCC).

In 1999, administration of the State Review Process devolved to a non-profit, multi-stakeholder organization named State Review of Oil and Natural Gas Environmental Regulations, Inc. (STRONGER). STRONGER again revised, expanded and updated the Guidelines, which were accepted by the IOGCC and published in June 2000 as Guidelines for the Review of State Oil and Natural Gas Environmental Regulatory Programs (the “2000 Guidelines”). In 2005 and 2010, STRONGER again revised, expanded and updated the Guidelines (the “2005 Guidelines” and the “2010 Guidelines”). The 2010 Guidelines were used as the basis of this review.

USEPA and the U.S. Department of Energy have provided grant funding to STRONGER to support its activities. The American Petroleum Institute has also provided no-strings attached funding to support the state review process.

In January 2011, the North Carolina Department of Environment and Natural Resources (DENR) volunteered to have its environmental regulatory programs reviewed by STRONGER. In preparation for the review, DENR completed a questionnaire that had been prepared by the STRONGER Board. STRONGER intended the questionnaire to capture the status of the North Carolina program relative to the 2010 Guidelines. The NCDENR prepared a response to the questionnaire, which was sent to the review team.

In October 2011 through January 2012 an eight-person review team appointed by STRONGER conducted a review to evaluate the DENR programs compared to the 2010 Guidelines. The review team consisted of five members and three official observers. The five team members were: Leslie Savage, Railroad Commission of Texas; Don Garvin, Trout Unlimited; Mariel Escobar, independent North Carolina environmental advocate; Bob Sandilos, Chevron; and Chuck Price, BP. The official observer were: Bruce Moore, USEPA; Jim Collins, Independent Petroleum Association of America; and Hope Taylor, Clean Water for North Carolina. Will Morgan, representing the North Carolina Chapter of the Sierra Club, substituted for Ms. Taylor on one of the three days.

The review team conducted a meeting, the in-state portion of the review, in the conference facilities of the DENR in Raleigh, North Carolina on October 24 through 26,

2011. Ms. Robin Smith, Assistant Secretary for the Environment; Dr. Kenneth Taylor, Chief of the North Carolina Geological Survey; Mr. James Simons, State Geologist and Director of the Division of Land Resources; Mr. Evan Kane of the Division of Water Quality; Mr. William Willets of the Air Quality Division; Mr. Kenneth Pickle of the Division of Water Quality; Ms. Helen Cotton of the Hazardous Waste Program in the Division of Waste Management; Mr. Edward Mussler of the Division of Waste Management; and Mr. Thomas Reeder of the Division of Water Resources, all from NCDENR, and Mr. James Albright and Ms. Diana Sulas of the Radiation Protection Section of the North Carolina Department of Health and Human Services (DHHS) presented overviews of their respective program areas and responded to questions from the review team members and official observers. In addition to the North Carolina state employees who participated in the review and the review team, there were forty-eight attendees who observed at least a portion of the review. Following the meeting and after reviewing the written materials provided by the DENR and the DHHS, the review team members compiled this review report.

This is the report of the review of the North Carolina programs against the 2010 Guidelines of STRONGER. Appendix A is a glossary of acronyms used in the report. Appendix B contains North Carolina's written response to the STRONGER questionnaire.

EXECUTIVE SUMMARY

At the invitation of the North Carolina Department of Environment and Natural Resources (DENR), a multi-stakeholder review team has completed an in-depth review of the North Carolina environmental regulatory programs. The review compared the programs against the 2010 Guidelines for the Review of State Oil and Natural Gas Environmental Programs published by STRONGER. During the review of North Carolina's programs, the review team and official observers were granted full access to DENR staff, and all questions were answered in a responsive and open manner.

The review team has concluded that the DENR environmental programs are mature and the staff has significant experience in their various disciplines. However, while the review team recognized strengths in these programs, the review team also has concluded that DENR programs have not been developed in anticipation of the regulation of oil and gas exploration and production activities. Consequently, the findings in this report reflect the comparison of existing programs against the guidelines. The review team recommendations are given to guide the state in the event that it decides to develop an oil and gas regulatory program.

During the discussions with state officials and the review of documents supporting existing programs, the review team determined that several program areas deserve recognition. Those are summarized below.

Program Strengths

I. Mature Environmental Regulatory Programs

North Carolina has mature environmental regulatory programs staffed with experienced professionals. Consequently, North Carolina has experienced, knowledgeable staff and a sound regulatory foundation upon which to build, should the state decide to develop an oil and gas regulatory program.

II. Good Program Coordination

Most of the state's environmental regulatory programs, including the Division of Land Resources, are located in the Department of Environment and Natural Resources. With the exception of the Radiation Protection Section in the Department of Health and Human Services, programs likely to have a significant role in environmental regulation of oil and gas activities fall under the Assistant Secretary for the Environment in DENR. This organizational structure promotes the opportunity to coordinate programs and activities as evidenced during the in-state portion of the review.

III. No Abandoned or Orphan Wells

There have been 128 wells drilled in North Carolina. The first 126 were drilled between 1925 and 1997. Those wells were plugged according to the standards of the day. The two remaining wells, drilled in 1998, remain under permit and bond even though they are not in commercial production. The Division of Land Resources has files and location information on all of the wells.

Program Recommendations

The review team recognizes that North Carolina is evaluating the potential development of its oil and gas resources and is also evaluating changes that may be appropriate if that development were to occur. While this report makes no recommendations on whether or not such development should occur, the review team has made a number of recommendations for consideration **if** that development occurs. A summary of the more important recommendations follows.

I. Need to Develop Formal Standards

The review team found that there are few standards in place that would be applicable to an oil and gas regulatory program. When asked what standards would apply if an operator wanted to drill a well today, the review team was told that existing statutes and rules would be applied on a case-by-case basis.

The review team recognizes that, while this course of action might be workable when only a few permit applications are anticipated, it would not work well if the permit load increased significantly. Additionally, the potential operator and the public, as well as state agency staff, should know with some certainty what the regulatory expectations are before entering the permitting process. Consequently, the review team recommends that, if North Carolina develops an oil and gas regulatory program, formal standards and technical criteria meeting the Guidelines be developed.

II. Potential Need to Develop Oil and Gas Technical Criteria

While North Carolina has mature environmental regulatory programs, the programs have not needed to focus on regulating the impacts of oil and gas development. That may change depending on decisions made by the state. If North Carolina decides to develop an oil and gas regulatory program, that program should contain criteria to address oil and gas related activities, including administrative criteria, technical criteria related to exploration and production waste management, stormwater management, abandoned sites, naturally occurring radioactive materials, and hydraulic fracturing. The

review team recommends that, should such a program be developed, the Guidelines be used, along with a review of programs of other states.

III. Potential Use of Stakeholder Groups in Program Development

The Department of Environment and Natural Resources generally involves stakeholder groups early in discussions of proposed rules that involve major policy changes or are the subject of significant public interest.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the Department of Environment and Natural Resources continue to use independent scientific advisory groups, local advisory committees, groups of government, public and industry representatives, or other similar mechanisms, to obtain input and feedback in the development of the program.

PROGRAM OVERVIEW

Oil and gas production does not occur in North Carolina at this time. However, between 1925 and 1997, 126 oil and gas wells were drilled in the state. None of the wells produced commercial quantities of oil and gas, and all were plugged according to the standards of the day.

More recently, exploration in Lee and Chatham counties in central North Carolina has given rise to the anticipation of potential shale gas production from the Dan River and Deep River basins. Two exploration wells drilled in 1998 remain under permit and bond, but are not in production. Four companies have leased more than 9,000 acres in the Lee County area. A report by the U.S. Geological Survey assessing the shale formations in the Deep River and Dan River Basins is expected to be released in 2012.

I. GENERAL CRITERIA

The Department of Environment and Natural Resources (DENR) is the agency with primary responsibility for the regulation of oil and gas exploration and production in North Carolina. Within the Department, the Division of Land Resources (DLR) has lead responsibility for the evaluation and exploration of natural gas resources. Other programs, including the Divisions of Water Quality (DWQ), Waste Management (DWM), Air Quality (DAQ), and Water Resources (DWR), share portions of this responsibility for activities that fall within their jurisdictions. These divisions are all under the supervision of the Assistant Secretary for Environment.

Statutory Authority

Oil and gas activities regulated by DENR are conducted under the authority of the Well Construction Act (DWQ), the Oil and Gas Conservation Act (DLR), the Water and Air Resources Act (DAQ, DWR, DWQ), the Air Pollution Control Act (DAQ), the Oil Pollution and Hazardous Substances Control Act (DWM), and the Solid Waste Act (DWM). All of these statutes provide authority to promulgate rules and regulations.

The DLR has the authority to approve, deny, or revoke oil and gas permits. DAQ, DWQ and DWM have similar authority for permits issued under their jurisdictions. All of these programs have authority to assess civil penalties and to seek injunctions against violators. The Division of Waste Management also has the authority to issue administrative orders for compliance. In the case of particularly egregious violations, the divisions may also pursue a criminal enforcement action through the district attorney of the county where the violation occurred.

The Radiation Protection Section in the Division of Health Service Regulation within the Department of Health and Human Services has limited responsibilities relating to oil and gas. Its activities are conducted under the authority of the Radiation Protection Act.

The Oil and Gas Conservation Act (G.S. 113, Article 27) authorizes DENR to process applications to drill, regulate related activities, assess fees, protect landowners, prevent waste, limit production and regulate well construction, abandonment and plugging. The Act also provides authority to penalize operators who do not comply with the regulations. A rule adopted pursuant to the Oil and Gas Conservation Act, 15A NCAC 05D.0107, DRILLING AND COMPLETION, specifies that no well should be constructed that has a vertical variance greater than three degrees from top to bottom.

The Well Construction Act (G.S. 87, Article 7) provides for the regulation of well construction. Oil and gas operators seeking a permit to drill a well must obtain DWQ approval based on a case-by-case assessment of the well construction plan before a drilling permit will be issued by DLR.

The Division of Water Resources regulations require registration of water withdrawals of more than 100,000 gallons of water per day under the Water and Air Resources Act (N.C.G.S. 143, Article 21). The Water and Air Resources Act also provides statutory authority to regulate storm water. In addition, the Water and Air Resources Act prohibits the disposal of water in wells. Rules adopted pursuant to the statute prohibit the initiation and propagation of fractures by injection. DENR currently interprets these statutes and rules to prohibit underground waste disposal and hydraulic fracturing.

North Carolina has received primary enforcement responsibility under the federal Resources Conservation and Recovery Act, Clean Air Act, Clean Water Act and Safe Drinking Water Act (including the Underground Injection Control program). Many environmental standards in North Carolina are equivalent to those set by the USEPA.

Rules and Regulations

In North Carolina, most environmental rules are adopted by citizen boards and commissions. The Environmental Management Commission (EMC), which acts independently, but is organized under DENR, has authority and responsibility to promulgate rules safeguarding water and air resources of the state. EMC members represent all regions of North Carolina; appointments to the 19-member Commission are divided among the Governor, the Senate President Pro-Tempore, and the Speaker of the House. The Commission for Public Health (organized under the Department of Health and Human Resources) has responsibility for rules related to solid and hazardous waste.

A standing Scientific Advisory Board (SAB), whose members are appointed by the Secretary of DENR, advises the EMC in determining concentrations of acceptable ambient levels (AAL) of toxic air emissions within the state. AAL evaluations are made on a chemical-by-chemical basis, and are used by the DAQ and EMC in developing related rules.

The North Carolina Administrative Procedures Act (APA) recognizes three classes of rules. Emergency rules can be adopted without public notification or comment, but may only be adopted in response to "...public health and safety..." emergencies. Temporary rules and permanent rules require public notice, public hearings, and a 30-day period for comment. Once adopted, the Rules Review Commission (RRC) reviews the rule for clarity, necessity, statutory authority and compliance with APA rulemaking procedures. As part of the RRC process, the APA allows members of the public to submit letters of objection to a rule. If ten (10) or more people file objection letters with the RRC, the rule cannot go into effect until the legislature has had a chance to review the rule. The legislature can disapprove the rule, enact legislation that has the effect of changing some or all of the policy decisions set out in the rule, or allow the rule to go into effect. The APA sets specific timelines for legislative action; if the legislature fails to take action within the time allowed, the rule goes into effect as originally adopted. The APA has recently been amended to place additional restrictions on adoption of environmental rules that are more stringent than federal standards.

The Governor has authority to create Executive Orders; an Executive Order cannot override a statute. Under the APA, the Governor may use an Executive Order to put a rule into effect immediately – even though 10 people have objected to the rule – if the Governor finds it to be in the public interest. This kind of Executive Order allows a new rule to go into effect and remain in effect until the legislature disapproves the rule or until the rule would normally go into effect based on the legislature’s failure to act.

Funding and Staffing

As there is no active oil and gas production activity in the state, the DENR currently has no full-time staff members working on oil and natural gas permitting and regulation. In recent years, budget cuts have reduced the number of field inspectors in the Division of Land Resources. The water, air, and waste programs have also lost staff positions due to the economic downturn and resulting loss of tax revenue.

DENR has divided the state into seven regions, with division field staff assigned to the various regional offices. Regional inspectors have authority to assess fines and penalties and initiate penalties for erosion and sedimentation permit violations. DENR programs assign regional office staff based on the nature and volume of each county’s potential shale gas resources. These offices have not been staffed to handle an additional workload associated with natural gas exploration and development.

House Bill (HB) 242, Session Law 2011-276 mandates among other things that DENR, in conjunction with the North Carolina Department of Consumer Protection Section of the State Attorney General’s Office, study potential oil and gas exploration and development in North Carolina. The bill specifically directs the Department to study the use of horizontal drilling and hydraulic fracturing for natural gas development and the potential impacts of these activities. The DENR is gathering information and public input. A report containing the DENR’s findings and recommendations is due to the legislature by May 1, 2012.

Finding I.1.

North Carolina has mature environmental protection and regulatory programs staffed with experienced professionals.

Finding I.2.

All DENR Divisions with current jurisdiction over oil and gas E&P activities are under the supervision of the Assistant Secretary for Environmental Protection. This promotes cooperation and coordination between the programs.

Finding I.3.

Air toxics regulated by North Carolina include benzene as well as hydrogen sulfide and other potential constituents of air emissions from oil and gas operations. Air quality standards go beyond those promulgated by the USEPA.

II. ADMINISTRATIVE CRITERIA

Basic Requirements

DENR has been delegated primary enforcement authority for various federal programs, including the federal Clean Air Act, the Resource Conservation and Recovery Act (Solid Waste), the Clean Water Act (for National Pollutant Discharge Elimination System Permits), and the Safe Drinking Water Act (Underground Injection Control Program for injection wells in Classes I-V). The state has basically adopted and enforces the federal regulations, although there are some state-specific programs and requirements. Although a number of these requirements may affect oil and gas activity, very few are specific to these activities. These programs include provisions for permitting, compliance evaluation, and enforcement.

Permitting

For oil and gas permits, the applicant must register, provide a bond, and apply for a drilling permit. An application for permit to drill an oil or gas well triggers a series of other permits, which must be obtained prior to the issuance of a drilling permit. The applicant is required to submit a site plan describing where the drilling is proposed, the proposed depth of the well, the casing and cementing specifications, and the plan for on-site storage of water, wastewater and mud in pits and/or tanks. When the Division of Land Resources receives the drilling permit application, the information is shared with other DENR divisions to identify other issues that must be addressed. The drilling permit is the master permit; an applicant must obtain other state approvals, including a well construction permit, before a drilling permit can be issued. In addition, a sedimentation and erosion control plan is required if more than one acre of land is disturbed (including any access road to the site). The plan must include measures for controlling sediment during land-clearing, grading and construction, and a plan for restoring the site after land-disturbing activity has been completed. Air quality permitting may be required for some oil and gas operations.

The DENR includes conditions in the drilling permit to address site location, endangered or threatened wildlife species, off-site runoff, waste management, inspections and notification. The DENR has the ability to include any conditions it deems necessary within its authority.

The DENR has regulatory mechanisms to assure that wastes are managed in an environmentally responsible manner, however, the programs are not specific to E&P operations. State law defines “solid waste” to include both hazardous and non-hazardous waste, but the definition excludes oils and other liquid hydrocarbons. The definition of solid waste includes the non-oil components of E&P such as the drilling muds and cuttings. Solid wastes that are not RCRA hazardous wastes may go into an industrial landfill that is designed and constructed for that particular waste or may go to a municipal solid waste (MSW) landfill. North Carolina has strong standards for design and

construction of industrial and MSW landfills, but those standards were not developed to address disposal of RCRA hazardous waste. E&P wastes include some wastes that have the characteristics of RCRA hazardous waste, but are not regulated under RCRA because of the RCRA exclusion for E&P wastes. North Carolina does not specifically address disposal of those types of waste.

Without statute or rule changes, all E&P wastes (other than oils and liquid hydrocarbons) that are not classified as RCRA hazardous waste could legally go to a MSW landfill. The landfill operator can exclude wastes otherwise allowed for disposal, however. Wastes that are difficult to handle or that would pose an unusual risk may be turned away.

DENR programs include issuance of individual permits, generally on a case-by-case basis, and registration of operators and facilities. The DENR has the authority to refuse to issue or reissue permits or authorizations. Authority to consider the applicant's outstanding violations, unpaid penalties and past compliance history as factors in permitting varies somewhat among the different DENR regulatory programs. The DENR requires that the applicant comply with federal, local, or other state permits or regulatory requirements.

If DENR refuses to issue or reissue a permit or authorization, state law allows the applicant to appeal the decision by filing a petition for an administrative hearing under General Statute 150B-23, which is part of the state's Administrative Procedures Act. The time allowed for filing the petition may vary, however, from program to program. N.C.G.S. 150B-23 establishes a basic 60-day period (after receipt of the agency decision), but recognizes that other statutes may set different time periods for individual regulatory programs. The Oil and Gas Act allows only 10 days to appeal a decision or order issued under that Act. For water and air quality permits, a petition must be filed within 30 days after the applicant receives the decision.

The DENR issues individual permits for specific facilities or operations for fixed terms, generally five or less years, but in some instances eight years. The DENR programs and processing procedures ensure that, where similar requirements are mandated by two or more regulatory programs, those requirements are combined where feasible.

The DENR has an Environmental Permit Assistance program, whose stated purpose is to provide technical assistance and guidance through regulatory, permitting and compliance processes and to reduce overall environmental impacts. The center has staff representatives across the state and serves as a single point of contact for its customers and a liaison between the customer and the regulatory agencies.

Finding II.1.

The Review Team commends the DENR for its Environmental Permit Assistance Program.

Finding II.2.

The DLR has handled the very small number of oil and gas permits previously issued in the state on a case-by-case basis and coordinated review of those permit applications with other DENR divisions, as necessary. Handling of permit applications in such a manner allows the agencies to consider all aspects of an application and tailor the permit conditions. Such processing is admirable for the management of a small number of facilities.

Recommendation II.2.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DENR adopt more detailed standards and criteria for the potentially large number of permit applications that might be expected during periods of high oil and gas activity to ensure consistency and efficient permit application processing and to provide the regulated industry and the public with an understanding of the standards and criteria that will be used by the agency in reviewing and processing applications. (2010 STRONGER Guidelines, Section 4.1.1. and Section 5.)

Compliance Evaluation

The DENR programs have the authority to carry out inspections and investigations, enter property, examine records, and collect evidence. The DENR has the capability to conduct comprehensive investigations of facilities and activities subject to regulation in order to identify a failure to comply with program requirements by responsible persons.

The DENR has the authority to conduct regular inspections of regulated facilities and activities at a frequency that is commensurate with the risk to the environment that is presented by each facility or activity.

The DENR has the authority and procedures to investigate information obtained from inspections or complaints regarding violations of applicable program and permit requirements. Inspections are prioritized based on risk and may be unannounced. DENR staff has the authority to enter locations where records are kept during reasonable hours for purposes of copying and inspecting the records.

Generally, each DENR regulatory program coordinates the preparation and filing of formal enforcement actions through its headquarters office. Appeals of civil penalty assessments are handled by the Office of Administrative Hearings.

Finding II.3.

Recent state budget issues have impacted the DENR's ability to perform inspections in certain program areas.

Recommendation II.3.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the state provide the DENR with funding adequate to effectively and efficiently perform compliance evaluation of oil and gas activities for the protection of human health and the environment. (2010 STRONGER Guidelines, Section 4.1.2.)

Enforcement

The DENR has enforcement tools, including the authority to issue a notice of violation with a compliance schedule; issue cease and desist orders; revoke, modify, and suspend permits; assess administrative penalties; cause forfeiture of financial assurance instruments; and obtain injunctions. In addition, the DENR has the authority to identify emergency conditions that pose an imminent and substantial human health or environmental hazard that would warrant entry and immediate corrective action by the DENR after reasonable efforts to notify the operator have failed, and to seek reimbursement of the state's costs. State statutes provide the DENR with enforcement authority in the form of civil and criminal penalties, and injunctive relief.

Maximum penalty amounts are set in state statute. N.C. General Statute 113-410 sets penalties for violations of the Oil and Gas Conservation Act. Other DENR regulatory programs (such as water quality, air quality, and solid waste) have similar statutory provisions setting the maximum penalty for an individual violation of those requirements. The statutes also authorize the assessment of daily penalties for continuing violations. Most DENR divisions use a penalty tree to calculate civil penalties for violations of the statutes and rules; however, DENR staff could not remember ever having assessed the maximum penalty for a violation. In assessing penalties, the DENR considers statutory factors including economic benefit resulting from the violation, willfulness, harm to the environment and the public, harm to the ecosystem, and expenses incurred by the state in response and cleanup. N.C.G.S. 143B-282.1 specifically allows consideration of the responsible party's compliance history in determining the amount of a penalty for an air quality or water quality violation. The Oil and Gas Conservation Act does not identify factors to be considered in setting the amount of a penalty for violations of its requirements and simply sets the maximum daily penalty for a single violation at \$1,000.

North Carolina's statutes afford the opportunity to appeal or seek administrative and/or judicial review of agency action.

Finding II.4.

The DENR has the necessary enforcement authority consistent with 4.1.3. of the Guidelines.

Recommendation II.4.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DENR evaluate their enforcement options and policies to assure that the full range of actions available are effectively used to provide compliance incentives for oil and gas activities and adequate to act as a disincentive to non-compliance. (2010 STRONGER Guidelines, Section 4.1.3.)

Contingency Planning and Spill Risk Management

North Carolina has an integrated Emergency Management Program (EMP). State regulations incorporate by reference 40 CFR 264, which is intended for treatment, storage, and disposal of hazardous waste by injection under the federal Resource Conservation and Control Act (RCRA) but serves as the comprehensive template for statewide contingency plan requirements. The State Emergency Operations Plan (SEOP), which lists the hazardous materials plan, includes the response to hazardous materials, suspected hazardous materials and unknowns. North Carolina has a well-defined SEOP and coordinates effectively with USEPA Region IV through the Raleigh office, and through joint action as described below.

The North Carolina EMP is funded by general revenue, which also is available to meet competing state government needs. North Carolina calls upon the USEPA Emergency Response Program to mobilize federal contractors to assist in the response to and remediation of spills as part of the National Contingency Plan, but Federal Emergency Management Agency (FEMA), hazardous materials (HAZMAT), and other federal emergency response funding also is being reduced.

Finding II.5.

The North Carolina State Contingency Plan does not contain criteria for spill response or responsibilities specific to E&P.

Recommendation II.5.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, North Carolina develop E&P-specific contingency plan response criteria and responsibilities. (2010 STRONGER Guidelines, Section 4.2.1.1.)

Finding II.6.

North Carolina does not receive any funding for state contingency or spill response program activities from the oil and gas industry.

Recommendation II.6.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, North Carolina consider development of a plan and incentive for E&P operators to directly fund any critical shortfalls in local direct emergency response and spill prevention capability. (2010 STRONGER Guidelines, Section 4.2.1.1.)

Finding II.7.

The DENR has reduced staff recently due to budget reductions.

Recommendation II.7.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, maintaining staff at a level to provide effective and E&P-specific SEOP capability should be a top priority. (2010 STRONGER Guidelines, Section 4.2.1.1.)

Personnel at the State Emergency Operations Center receive reports related to emergencies. The center is staffed 24 hours a day, 7 days a week. Their telephone number is 1-800-858-0368. In addition, operators or members of the public can contact local emergency services by dialing 911 or by calling the National Response Center. The state maintains seven regional HAZMAT teams.

Finding II.8.

The state maintains effective reporting capability.

Finding II.9.

The state maintains effective interagency coordination within the DENR Divisions. Interagency coordination is described in the state EOP and represents effective integration of USEPA and local LEPC roles and capabilities. The DENR Divisions communicate effectively with each other and with NC DPS on emergency response issues, but roles and responsibilities are diversified.

Recommendation II.9.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DENR, DPS and affected local LEPC/ first responders should develop a Memorandum of Understanding (MOU) concerning E&P activities. The review team further recommends that the state post the EOC Call Center responsibilities for E&P activities online for operators new to the state. (2010 STRONGER Guidelines, Section 4.2.1.3.)

Finding II.10.

Although a site-specific contingency plan may be required as a binding condition of the permit to drill, E&P-specific requirements do not exist.

Recommendation II.10.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the state should adopt and communicate spill prevention and response guidance for E&P operators consistent with API and other industry best practices and standards. The review team further recommends that the state provide for any necessary specialized training and equipment resources consistent with activity and risks associated with oil and gas E&P operations. (2010 STRONGER Guidelines, Section 4.2.1.4.)

Finding II.11.

The state maintains a one-call response center as discussed above. Response measures may be specified as permit conditions, but the state has no adopted minimum E&P-specific prevention measures. The EPA Region IV office in Raleigh maintains responsibility for enforcing the SPCC program, and is a resource on measures specific to upstream oil spill prevention.

Recommendation II.11.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the state develop and adopt guidance relating to planning for and meeting state spill prevention permit conditions. (2010 STRONGER Guidelines, Section 4.2.1.4.2.)

Finding II.12.

State Groundwater Classifications and Standards include general response requirements for corrective action, but these requirements apply only to spills “where groundwater quality has been degraded” and addresses spills to soil only in the context of hazardous waste requirements.

Recommendation II.12.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the state develop and communicate operator corrective action guidance specific to spills of RCRA Subtitle C-exempt E&P wastes, consistent with regulations and risk-based best practices. (2010 STRONGER Guidelines, Section 4.2.1.4.3.)

Finding II.13.

The state EOP outlines reporting, monitoring, and approvals, which are also addressed in regulations. The regulations apply only to spills “where groundwater quality has been degraded” and addresses spills to soil only in the context of hazardous waste requirements.

Recommendation II.13.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the state develop and communicate reporting, monitoring and approval guidance specific to spills of RCRA-exempt E&P wastes. The review team further recommends that the DLR and DWM determine primary responsibilities for E&P spill prevention and response and provide on-line access to spill prevention and response information. The review team further recommends that the state develop and make available to industry an incident review process for determining causation and future prevention measures suitable for E&P operations. (2010 STRONGER Guidelines, Section 4.2.1.4.3.)

Finding II.14.

The state EOP, which outlines general enforcement, damage assessment, responsible party, and reimbursement requirements applicable to E&P operations, meets the guidelines for follow-up action.

Finding II.15.

The state EOP outlines reporting and database requirements; however, the review team could not determine whether the plan includes a provision for periodic analysis of spills and releases, or if this will occur on an as-needed basis.

Public Participation

The DENR requires public notice for some activities for which it requires a permit. Public notice is not the same for all activities, but is determined by the magnitude of the proposed activity and the public interest in the proposed activity. However, notice requirements are not specific to oil and gas permitting.

The state’s rulemaking process can take two or more years. Although the state’s administrative procedures allow for emergency rulemaking when required by a “serious and unforeseen threat to the public health or safety,” the statutes do not provide for emergency rulemaking to address a threat to public welfare.

In addition, DENR staff generally involves stakeholder groups early in discussions of rulemaking activities that involve major changes and/or are the subject of great public interest.

Finding II.16.

The DENR uses stakeholder groups early in the rulemaking process to help it formulate draft rules.

Recommendation II.16.

The Review Team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DENR establish public notice requirements for oil and gas activities and permits because notification to the public and landowners is critical to assuring accountability. (2010 STRONGER Guidelines, Section 4.2.2.1.)

General Statute Chapter 132 defines public records and establishes the requirements for their availability to the public. All public records are available for review at the DENR offices.

Finding II.17.

The DENR meets Section 4.2.2.1. of the Guidelines with respect to public records.

The DENR has outreach programs to educate the regulated industry and the public about its air, hazardous waste, and stormwater programs.

The DENR held a public meeting (which was also webcast) on the shale gas study mandated by Session Law 2011-242 in early October of this year in the area of potential interest (Sanford, N.C.). The purpose of the public meeting was to receive public comments on the draft outline for the study. The Department also accepted written comments. The DENR plans at least one more public meeting in the spring to gather input on the initial draft of the study report.

Finding II.18.

None of the DENR's public education and outreach programs relate to oil and gas activities.

Recommendation II.18.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DENR develop education and outreach programs for operators and the public for oil and gas activities. (2010 STRONGER Guidelines, Section 4.2.2.2.)

The DENR uses an independent Science Advisory Committee to aid it in determining program requirements. In addition, the DENR uses stakeholder groups early in the rulemaking process.

Furthermore, a small group of legal, scientific and technical experts will be asked to serve as advisors on the shale gas study mandated by Session Law 2011-276 (House Bill 242). This group will include people with expertise in local government law, environmental law and policy, energy development, hydrology, geology, and economic development. Advisors also will include representatives from the Department of Commerce, the Consumer Protection Division of the North Carolina Attorney General's Office, and the Rural Advancement Foundation International.

Finding II.19.

The review team commends the DENR for using advisory groups, particularly the independent Science Advisory Committee and the advisors with specific expertise related to the shale gas study.

Recommendation II.19.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DENR continue to use advisory groups of industry, government, and public representatives, or other similar mechanisms, to obtain input and feedback in the development of and the state programs for the management of E&P wastes. (2010 STRONGER Guidelines, Section 4.2.2.3.)

Program Planning and Evaluation

The DENR performs strategic planning periodically to identify issues and define goals and objectives, set priorities, and evaluate the clarity, efficiency, and effectiveness of its programs.

The 2009-2013 strategic plan states the DENR's mission and values and its goals for DENR programs over the coming years. The DENR's primary mission is to "conserve and protect North Carolina's natural resources and to maintain an environment of high quality by providing valuable services that consistently support and benefit the health and economic well-being of all citizens of our state". The plan includes actions such as "Improve the state's response to groundwater contamination incidents through improved coordination among state agencies and local governments, stronger enforcement policies, and increased public education." The latest strategic plan states that the DENR should "continue and support the evaluation and exploration of natural gas resources in the state."

Finding II.20.

The review team commends the DENR for including discussion of natural gas development in its latest strategic plan.

Recommendation II.20.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DENR include oil and gas activities in its strategic planning. (2010 STRONGER Guidelines, Section 4.2.3.1.)

Finding II.21.

The DENR publishes a “State of the Environment” report every 2 years. The latest report (2011) includes discussion of the issues the DENR faces, including the emerging issue of potential shale gas exploration and development, and outlines the DENR’s plans to address those issues.

Recommendation II.21.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DENR obtain an environmental baseline and develop a process for continually evaluating how well the oil and gas program protects human health and the environment. (2010 STRONGER Guidelines, Section 4.2.3.2.)

Financial Assurance

Prior to drilling an exploratory well for oil or gas, current statutes require an operator to secure up-front financial assurance in the form of a bond in the amount of \$5,000 plus \$1 per foot of depth to ensure that wells are properly plugged. However, there are no statutory or regulatory requirements for financial assurance for other activities, such as land application of waste, site reclamation and closure, or remediation of environmental damage (such as soil or groundwater contamination). Since the bond amount is set by statute, the DENR does not have authority to expand bonding requirements or update bond amounts without additional legislative action.

Finding II.22.

The DENR does not have specific statutory or regulatory requirements relating to financial assurance for oil and gas activities other than bonding to ensure the proper plugging of an oil or gas well. Existing statutory authority would not allow the DENR to require a bond sufficient to cover site reclamation and closure or remediation of contamination.

Recommendation II.22.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the state give the DENR the authority to require additional financial assurance for site remediation, closure and remediation, to determine the form of the financial assurance, to set the amount of the financial assurance based on potential risk, and to access financial assurance when an operator fails to meet its obligations covered by the financial assurance instrument. (2010 STRONGER Guidelines, Section 4.2.4.)

Recommendation II.23.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DENR periodically review the amount of required financial assurance to determine if the amount is adequate to provide incentive for proper plugging of a well and reclamation of a site, and to assure proper management of E&P wastes. (2010 STRONGER Guidelines, Section 4.2.4.)

Waste Hauler Certification

Finding II.24.

The DENR does not require certification or permitting of waste haulers or registration of vehicles. Solid waste regulations require manifesting of wastes consistent with federal requirements. Manifests must be available on site.

Recommendation II.24.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DENR consider a certification program that requires training of oil and gas waste haulers and registration of all vehicles involved in the commercial hauling of oil and gas wastes. (2010 STRONGER Guidelines, Section 4.2.5.)

Location of Closed Disposal Sites

State statute requires notice of inactive hazardous substance or waste disposal sites. DENR maintains records of all closed disposal sites for programs under its jurisdiction. Land disposal of solid wastes must be recorded on the deed.

Finding II.25.

The Review Team finds that the DENR meets Section 4.2.6. of the guidelines.

Data Management

The DLR- N.C. Geological Survey maintains copies of all permits/reports for all oil and gas wells. These records are available for public review. Staff located and provided the Review Team the records of the two wells drilled in 1998.

The DENR's Division of Water Quality also maintains a Well Construction Database for water wells. The DENR regulations require that water well drillers submit a well construction record for every well they drill. The records include information on the driller and well owner, well location, well construction characteristics, and the driller's log. Drillers submit this information on paper and DWQ staff enters the information into the database. Most of this information is subject to public disclosure upon request, but none is posted on the Internet or made available without a request.

In addition, the DWQ maintains and uses the Basin-wide Information Management System to track data on permits and compliance for the NPDES wastewater and storm water, non-discharge wastewater, UIC (Class V), and well permitting programs. Nearly all data is submitted to the DWQ on paper and entered manually into the database, with the exception of a pilot project to provide electronic submissions for some major NPDES permits. All information is public record. The DWQ makes limited permit information available on its website.

The Division of Waste Management (DWM) maintains publicly available databases related to underground storage tanks, land application sites and active and closed permitted landfills

The Division of Air Quality (DAQ) maintains publicly available databases related to air quality permits.

Finding II.26.

The DENR has no computer data management capabilities with respect to oil and gas activities.

Recommendation II.26.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DENR consider developing an on-line permitting and reporting data management system to efficiently track oil and gas activities. (2010 STRONGER Guidelines, Section 4.2.7.)

Personnel and Funding

The DENR has well-qualified employees dedicated to the goals and objectives of its programs. Staff includes administrative personnel, field inspectors, geologists, engineers,

toxicologists, and health science specialists. As currently organized, responsibilities with respect to regulation of oil and gas activities are carried out through a coordinated review process involving program staff in multiple divisions.

The DENR has several regional offices that support headquarters. Inspectors for the various programs are assigned to areas based on the locations of the permitted facilities.

Currently there are no staff dedicated to E&P environmental regulatory program implementation; duties are distributed among existing staff in multiple divisions. A UIC grant from the EPA provides funding for one position in the DWQ. However, this position is not dedicated to E&P program implementation and North Carolina currently does not allow Class II wells.

Legal needs are filled by the DENR General Counsel and the North Carolina Attorney General's office. The State Office of Administrative Hearings provides hearing officers for appeals of permitting and enforcement decisions.

Technical personnel are capable of mapping hydrologically sensitive areas and areas containing treatable water, and provide guidance in waste handling.

Field personnel are responsible for conducting routine inspections of regulated facilities and activities to assure compliance with program requirements. In addition, field personnel are among the state agency's on-site representatives to witness critical regulated activities and to observe or supervise clean-up or remedial actions. Field personnel also are involved in the assembly of evidence for enforcement actions and in the state agency's community relations.

Finding II.27.

The review team found DENR staff directly involved in the review to be aware of and knowledgeable about issues related to shale gas development. These staff members are educating themselves on the issues, but represent a very small number of total DENR staff. The department lacks practical experience related to management of shale gas exploration and development activities.

Recommendation II.27.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DENR staff of the appropriate Divisions visit shale gas drilling and production sites in neighboring states to gain familiarity with E&P practices.

While DLR's Erosion & Sedimentation Control has a concerted training program, other training of DENR staff is generally performed on-the-job.

Finding II.28.

DENR does not have training competency requirements.

Recommendation II.28.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DENR provide for staff training regarding the regulations, policies, and criteria applicable to E&P waste management. (2010 STRONGER Guidelines, Section 4.3.1.5.)

The DENR programs currently are funded through appropriations, permit fees, and federal grants. The state statutes provide for severance taxes, which is dedicated to the implementation of the oil and gas conservation laws. However, the amount was set in 1945 and is one tenth of one cent per thousand cubic feet of natural gas. Penalties that the DENR collects are deposited in the Civil Penalty and Forfeiture Fund. Monies in the fund are distributed to the local school systems and cannot be used for operation of environmental programs.

Finding II.29.

Recent state budget issues have resulted in decreased funding for the DENR. Budget reductions have affected all of the regulatory programs with potential responsibilities for E&P activities. For example, the DLR had a decrease of 17 field staff across the division as a whole and the DWQ lost 30 positions.

Recommendation II.29.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the state provide the DENR with funding mechanisms that will provide funding adequate to create and maintain an effective E&P waste management program at a level sufficient to allow it to accomplish its environmental protection goals and objectives. Potential funding mechanisms include user fees and levies on production. The state may also want to consider dedication of fees and other revenue streams to special accounts. (2010 STRONGER Guidelines, Section 4.3.2.)

Coordination Among Agencies

The DENR has jurisdiction over oil and gas wells, impoundments, waste disposal, discharge, spill prevention and response, storm water, erosion and sediment control, and air. Radiation is regulated by the Department of Health and Human Services (DHHS). The DENR divisions coordinate their respective activities and coordinate with the DHHS Division of Health Service Regulation's Radiation Protection Section with respect to radiation issues.

Most of the regulatory programs in North Carolina are implemented under the DENR, with the exception of the Radiation Protection Section. Each division has its own administrative requirements relating to permitting, operational requirements, and financial assurance, and develops its own budget priorities. Each division has its own inspection and enforcement authorities. However, the various divisions within DENR have developed a high level of interagency coordination to avoid duplication of effort and conflicting standards for the regulated community and the public. The coordination also allows the various divisions to draw on expertise of other divisions as necessary. Where necessary, the divisions adopt memoranda of understanding. For example, the DWM and DWQ adopted a MOA in 2007 that specifies responsibilities of each division for managing contaminated sites.

In addition, the Interagency Leadership Team (ILT) is a group of agencies that coordinate to identify concerns and issues facing transportation, the environment, and the economy in North Carolina.

And, the DENR has permit coordinators who help industry determine up front what permits are necessary for a given project.

Finding II.30.

Most of the regulatory program is implemented under a single department. The Radiation Protection Section, if involved, is the only exception. The Review Team was encouraged by the good communication between all of the divisions of the DENR.

Finding II.31.

The DENR Divisions coordinate inspection activities wherever possible to avoid duplication of effort and to increase efficiencies.

Recommendation II.31.

The review team recommends that the DENR review existing agreements to ensure that they are current and effective and consider developing interagency mechanisms, such as formal meetings among the divisions, to facilitate the sharing of information among and between involved divisions with respect to E&P activities. (2010 STRONGER Guidelines, Section 4.4.)

III. TECHNICAL CRITERIA

General

North Carolina has extensive hazardous waste and solid waste management requirements but does not have specific technical criteria for E&P waste management, and does not have either a certification process for non-hazardous waste haulers or a formal waste tracking process for E&P exempt and non-hazardous solid wastes.

Currently, North Carolina law prohibits disposal of E&P wastes in solid waste landfills. Removal of that prohibition would require both legislative action and rule change. The state does not currently have siting or other technical criteria specific to E&P waste management facilities. Local zoning consistency determinations also may affect availability of future E&P waste management facilities.

The DENR has the authority to “regulate and, if necessary in its judgment for the protection of unique environmental values, to prohibit the location of wells in the interest of protecting the quality of the water, air, or any other environmental resource against injury, or damage, or impairment.”

Setbacks and water table separation requirements in 15A NCAC 2T for land application of wastewater or wastewater treatment residuals may apply to land-spreading of E&P wastes. State rules also include setbacks and rock/water table separation requirements for landfills.

Various existing riparian and water table siting requirements may apply to E&P wastewater management or disposal facilities. Oil and gas drilling and completion regulation 15A NCAC 05D.0107 uses the term “fresh water” with respect to surface casing requirements, but the term is not defined in law or regulation for any purpose. North Carolina considers all groundwater to be “fresh water,” but has two different groundwater classifications based on the salinity of the groundwater.

Finding III.1.

North Carolina does not have technical criteria specific to E&P waste management.

Recommendation III.1.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DENR develop and adopt E&P waste management standards and design specifications based on site-specific geology, hydrology, climate, and waste characteristics consistent with the Guidelines. (2010 STRONGER Guidelines, Section 5.1.)

Finding III.2.

North Carolina does not have a certification or formal waste tracking process for non-hazardous waste haulers, or siting or other technical criteria specific to E&P waste management facilities.

Recommendation III.2.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DENR develop and adopt E&P waste hauler certification and E&P waste tracking programs consistent with the Guidelines. (2010 STRONGER Guidelines, Section 5.1.) Existing land-farming facilities are most likely to initially receive E&P exempt wastes. The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DENR develop management and siting criteria specific to E&P activities prior to drilling permit issuance and initial waste generation. (2010 STRONGER Guidelines, Section 5.1.)

Finding III.3.

There are limited siting criteria concerning Deep River Basin sensitive areas, surface waters, and depth and quality of groundwater.

Recommendation III.3.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the state evaluate current requirements based on characterization of anticipated E&P wastes and operations, communicate guidance to operators for drilling and production program planning, and provide public notice of such siting requirements. The state should define “fresh water” for purposes of the Oil and Gas Act and ensure that the definition is consistent with the state’s water quality classifications and standards. Groundwater with a naturally occurring concentration of chloride greater than 250 mg/l is GSA, or groundwater “for potable mineral water and conversion in fresh waters.” Groundwater with less than 250 mg/l of naturally occurring chloride is class GA, fresh water intended for use as drinking water. State water quality standards include standards for chloride and for total dissolved solids (TDS) that are applicable to each classification. (2010 STRONGER Guidelines, Section 5.1.)

Waste Characterization

The DENR implements general solid waste management standards and definitions consistent with federal regulations, but focused on RCRA hazardous waste treatment, storage, and disposal. The DWQ regulations specify requirements for chemical, physical, or biological analyses to determine conformity with surface water quality standards (15 NCAC 2B.0103) and wastewater quality for land-applied wastewater. There are currently no authorized commercial E&P waste management facilities, although current

land-farming disposal sites may accept non-hazardous E&P wastes. Federal hazardous waste determination, treatment, disposal, and analytical requirements under 40 CFR 262 are adopted by reference.

Finding III.4.

North Carolina has not developed regulations specific to treatment, storage, and disposal facilities for E&P waste.

Recommendation III.4.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the appropriate rulemaking bodies should establish regulations specific to treatment, storage, and disposal facilities for RCRA-exempt and non-hazardous E&P wastes, including drilling fluids, cuttings and produced water. (2010 STRONGER Guidelines, Section 5.2.1.)

Finding III.5.

The DENR implements solid waste management characterization requirements consistent with federal regulations, surface water analytical requirements, and land-application criteria.

Recommendation III.5

Because existing waste characterization requirements focus on RCRA hazardous wastes and municipal solid waste, if North Carolina decides to develop an oil and gas regulatory program, the review team recommends that the state develop E&P exempt and non-hazardous solid waste characterization protocols, including for NORM. (2010 STRONGER Guidelines, Section 5.2.2.)

Finding III.6.

The state has adopted general solid waste management quality control provisions consistent with federal regulations.

Recommendation III.6.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DENR evaluate quality control requirements to ensure that they meet needs unique to E&P waste testing. (2010 STRONGER Guidelines, Section 5.2.3.)

Waste Management Hierarchy

The North Carolina General Statutes spell out a standard waste management hierarchy as the preferred method of waste management in the state, with source reduction first, followed by recycling and reuse, composting, incineration with energy recovery, incineration without energy recovery, and landfilling. However, there are no state statutes or policies that specifically promote source reduction and recycling for the oil and gas industry. The Division of Environmental Assistance and Outreach develops and maintains programs that provide technical assistance on the reduction and recycling of wastes and emissions, but has had little experience with oil and natural gas operations and resulting waste streams. Some generic waste streams possibly generated by oil and gas operations (e.g., waste oil, oil filters, and wooden pallets) are banned from solid waste disposal in North Carolina.

Finding III.7.

North Carolina statutes integrate the waste management hierarchy into other elements of the DENR programs for management of wastes.

Recommendation III.7.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DENR integrate the waste management hierarchy into any oil and gas programs consistent with 5.3. of the Guidelines.

Technical Criteria for Pits

Under North Carolina law, drilling of an oil or gas well cannot start until any associated pits have been installed to the satisfaction of the regulatory agency. The state has not developed any specific pit program requirements; the regulatory agencies determine requirements on a case-by-case basis.

Finding III.8.

The review team found that the state has no specific technical requirements in place for pits.

Recommendation III.8.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DENR develop a specific regulatory program that includes technical requirements for pits associated with E&P activities that meet the criteria of sections 5.51-5.55 of the Guidelines when oil and gas development begins. (2010 STRONGER Guidelines, Section 5.5.)

LANDSPREADING (Non-Commercial)

The DENR regulates land-spreading as soil remediation under 15A NCAC 2T.1500 or as a residual under 15A NCAC 2T.110. Approvals are required for each land-spreading event.

Finding III.9.

The review team found that there are no naturally occurring radioactive materials (NORM) action levels for land-spreading of E&P waste.

Recommendation III.9.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program and determines that oil and gas NORM waste is an issue, the state develop NORM action levels for land-spreading. (2010 STRONGER Guidelines, Section 5.6.1.c.)

Finding III.10.

The review team found that there are no specific land-spreading practices defined for E&P sites that address the operational requirements of section 5.6.3 of the guidelines.

Recommendation III.10.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DENR develop a more comprehensive land-spreading policy that meets the guidelines. (2010 STRONGER Guidelines, Section 5.6.)

Technical Criteria for Burial and Landfilling

The DENR permits solid waste landfills. However, current state law and DENR regulations prohibit the disposal of petroleum wastes in landfills. Road-spreading of E&P wastewaters would be subject to design criteria, use requirements, and requirements for operational plans for reclaimed water systems.

Finding III.11.

The state has no technical criteria for burial, landfill, or road-spreading specific to E&P wastes. State requirements and laws prohibit landfills from accepting any petroleum or E&P waste.

Recommendation III.11.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the state should develop and adopt technical requirements for burial, landfilling, and road-spreading specific to E&P wastes consistent with the 2010 STRONGER Guidelines. (2010 STRONGER Guidelines, Section 5.7.)

Technical Criteria for Tanks

The DENR would regulate the location and size of tanks at E&P sites through conditions in the master drilling permit. General tank requirements are determined as part of the master drilling permit application, on a case-by-case basis by the DLR in coordination with the DWM and DWQ. Related impoundment and other containment facility hazardous waste permit requirements are contained in 40 CFR 270.14, which has been adopted by reference, but there are currently no long-term hazardous waste disposal facilities in the state.

Finding III.12.

The state does not currently have E&P-specific tank requirements.

Recommendation III.12.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the state should adopt siting, safety, environmental, reporting and administrative requirements for operational oil and produced water tanks and for RCRA Subtitle C exempt E&P waste management consistent with the Guidelines. (2010 STRONGER Guidelines, Section 5.9.)

Finding III.13.

North Carolina does not have standards for spill prevention, preventive maintenance or inspections for tanks used for E&P.

Recommendation III.13.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DENR adopt E&P-specific oil and produced water tank spill prevention, preventive maintenance, and inspection best practice guidance or standards consistent with the Guidelines. (2010 STRONGER Guidelines, Section 5.9.)

Finding III.14.

The state does not have E&P-related tank construction and operating standards. Such standards are determined on a case-by-case basis by the DLR in coordination with the DWM and the DWQ.

Recommendation III.14.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DENR adopt E&P tank construction and operating standards, including measures for secondary containment and control of hydrogen sulfide (if appropriate) consistent with the Guidelines. (2010 STRONGER Guidelines, Section 5.9.)

Finding III.15.

The state program does not have E&P-related tank removal and closure requirements. E&P tank standards will be determined on a case-by-case basis by the DLR in coordination with the DWM and the DWQ.

Recommendation III.15.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DENR adopt E&P tank removal and site closure standards consistent with the Guidelines. (2010 STRONGER Guidelines, Section 5.9.)

IV. ABANDONED SITES

Between 1925 and 1997, 126 oil and gas wells were drilled in North Carolina, but none of the wells produced commercial quantities of oil and gas and they were plugged according to the standards of the day. In 1998, two exploratory wells were drilled in central North Carolina, but are not in production and remain under permit and bond.

The Oil and Gas Conservation Act requires that all wells be sealed completely from the bottom to the top. The DENR maintains records, locations and other miscellaneous well data for all wells completed.

The state also currently has funding mechanisms for plugging abandoned wells as bonding requirements are currently in place. The state requires a bond in the amount of \$5,000 plus \$1 per linear foot for any proposed wells to be drilled. The bonds cover only the proper plugging of the well. The last two wells drilled in 1998 still have open bonds to cover any damage.

The Oil & Gas Conservation Act (G.S. 113 Article 27) defines certain E&P terms, such as "oil and gas developer or operator," "developer or operator," "oil and gas operations," or "activities". However, neither the statutes nor the regulations include any definitions pertaining to abandoned sites.

North Carolina public records law requires agencies to maintain state records and make nearly all of those records available to the public. There are limited exceptions for trade secrets. Oil and gas files are maintained by the North Carolina Geological Survey and are filed by location in file cabinets at the North Carolina Geologic Survey Field Office and Core Repository.

When abandoning a well, a log of the drilling and development of each well is required by G.S. 113-379. G.S. 113-391 requires a reasonable bond condition for the performance of the duty to plug each dry or abandoned well. G.S. 113-395, as amended by S.L. 2011-276, requires notice that the well is to be abandoned and requires a \$450 fee.

Finding IV.1.

The review team commends the DENR for its recordkeeping and file maintenance.

Finding IV.2.

The review team commends the DENR staff for its openness and transparency with regards to sharing records and for its strong collaborative effort.

Finding IV.3.

The review team found that the State of North Carolina currently has no abandoned oil and gas sites in the state.

Recommendation IV.3.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DENR consider defining terms associated with abandoned E&P sites. The review team further recommends that the state consider developing a process for prioritizing and ranking both the 126 existing plugged wells and wells permitted in the future based on potential risk. In addition, the state may want to consider cutting well casings to 3 ft. below plow depth in areas of agricultural use. (2010 STRONGER Guidelines, Section 6.3. and Section 6.5.)

V. NATURALLY OCCURRING RADIOACTIVE MATERIAL

With little or no drilling activity in North Carolina in recent years, oilfield NORM has not been an issue at the DENR.

However, in 2011 the North Carolina General Assembly passed Session Law 2011-276 (House Bill 242), which directs the DENR to study the issue of oil and gas exploration in the state, specifically the use of horizontal drilling and hydraulic fracturing, and report back to the legislature by May 1, 2012. Part of that study will include testing for NORM.

Earlier this year, the Geologic Survey Division of the DLR conducted initial surveys of shale outcrops in the Sanford and Dan River basins and reports finding radioactivity levels 2.5 times the background levels, but well below levels of concern for public health. The DLR also has collected additional samples (164 from Sanford and 165 from Dan River) for further testing.

The Radiation Protection Section of the Division of Health Services Regulation in the Department of Health and Human Services regulates radiation in North Carolina (Radiation Protection Act: G.S. 104E), but does not regulate NORM unless the radioactivity exceeds an action level. The action level differs for each radioactive element.

North Carolina radiation protection rules at 15A NCAC 11 state that, if NORM is concentrated by natural means above the action level, shielding to protect persons from accidentally exposing themselves would be required. In addition, if NORM is concentrated by mechanical or chemical means above the action level (technologically enhanced), that process of concentration would require a permit from RPS. These technologically enhanced materials would be considered by-product materials.

While the state does have storage facilities for radioactive waste materials, they do not have disposal facilities for this material. All such waste is shipped out of state.

Finding V.1.

The DLR is conducting a study to determine the extent and potential impacts of oil field NORM.

Recommendation V.1.

If North Carolina decides to develop an oil and gas regulatory program, and if the state determines that NORM is an issue in E&P activities, the review team recommends that the state develop an E&P regulatory program consistent with Section 7 of the Guidelines.

VI. STORMWATER MANAGEMENT

General

The state's Sedimentation Pollution Control Act of 1973 governs all land-disturbing activities except those associated with agriculture and mining. Mining activities are regulated under the Mining Act of 1971. Erosion and sedimentation control are required regardless of the size of the area disturbed. The law requires the landowner to plan and implement effective temporary and permanent control measures to prevent accelerated erosion and off-site sedimentation. The DLR erosion and sediment control program maintains extensive web-based material available for industry and public stakeholder education and outreach.

The state maintains primacy for all federal storm water programs, but does not have E&P-specific stormwater permitting requirements. In addition to construction stormwater requirements (largely implemented through the state sedimentation program), E&P activities may also be subject to post-construction stormwater control requirements in some areas of the state. Post-construction stormwater requirements do not apply statewide and are implemented through a number of different programs – both federally delegated (such as the Phase II stormwater program) and “state only” programs. The “state only” post-construction stormwater permitting programs typically apply to new development activity within certain sensitive areas or in areas draining to impaired waters. Examples would be nutrient sensitive river basins and water supply watersheds. These programs are implemented by the DWQ or by local governments with oversight by the DWQ. Since post-construction stormwater requirements do not apply statewide, E&P activities in many areas of the state would not require stormwater controls after completion of initial construction. Pollutants in stormwater leaving the site after construction would not be regulated until a water quality impact actually occurred.

The state also has the authority to issue Water Quality Certifications under Section 401 of the federal Clean Water Act; under Section 401, an applicant seeking a Federal Section 404 Permit to discharge to navigable waters (which includes certain wetlands connected to those waters) must provide a certification that the discharge will meet state water quality standards. A State Isolated Wetlands and Waters Permit is required to impact isolated wetlands or waters that fall outside federal jurisdiction under Section 404.

Finding VI.1.

The combination of the DWQ state stormwater and DLR erosion/ sediment control programs are adequate to meet the General criteria of the Guidelines.

Recommendation VI.1.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DENR develop an operator and public on-line resource

identifying the E&P stormwater permit requirements and the best management practices for the E&S program. (2010 STRONGER Guidelines, Section 8.1.)

State Regulatory Program Elements

The state does not have E&P specific regulatory or best practice stormwater minimization requirements, but the extensive DLR Erosion and Sediment Control program, pursuant to 15A NCAC Ch. 4, appears to be an industry standard for sediment and erosion control. The E&S program includes regular training, guidance on inspection, auditing, and reporting, and community outreach.

State stormwater programs that address post-construction stormwater do not have E&P-specific regulatory standards or best management practice stormwater minimization requirements. In areas where the existing state stormwater programs apply, the programs establish best management practices (BMPs) and methods for minimizing environmental impacts from stormwater pollution. The programs also provide training, guidance on inspections, auditing, reporting and community outreach.

Finding VI.2.

The state partially meets Section 8.2 of the Guidelines related to state stormwater management regulatory program elements.

Recommendation VI.2.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DENR review and consider incorporating the appropriate elements of the comprehensive E&S program to meet the Guidelines (see note below). (2010 STRONGER Guidelines, Section 8.2.)

Agency Regulatory Program Criteria

All surface waters in North Carolina are classified as to best use. In areas where the use is threatened because of impaired water quality or maintenance of an existing use (such as water supply) measures to address nonpoint source pollution are required. There are restrictions on development in the contributing watersheds and/or restrictions as to permissible storm water or wastewater pollutant discharges. Discharges may be restricted based on classifications: Outstanding Resource Waters, High Quality Waters, Trout Waters, Water Supply I – V, Critical Area, Shell-fishing Waters, Nutrient Sensitive Waters, and zero-flow streams.

The state does not have E&P-specific standards or best stormwater management minimization requirements, but the state's existing programs cover many of the activities associated with E&P. The state's Stormwater BMP Manual and rules address many of the stormwater control measures identified in the Guidelines. In areas of the state where

no state stormwater standards apply, only sediment pollutants and stormwater impacts associated with later phases of E&P activity would be addressed in existing rules.

Finding VI.3

There are gaps in the state’s regulation of stormwater pollution outside the initial land-clearing and construction phase. In many areas of the state, stormwater generated during well drilling and production would not be addressed by the state’s existing programs and only sedimentation impacts would be regulated during the construction phase.

Recommendation VI.3.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DLR and DWQ should work together to develop standards to address gaps in the state’s existing stormwater program to ensure that stormwater from all phases of E&P and all potential pollutants from E&P are addressed in accordance with the Guidelines. (2010 STRONGER Guidelines, Section 8.3.2.)

Finding VI.4.

The DENR E&S control design manual and other resources are extensive, and address planning, construction standards, operation, maintenance, restoration, and reclamation criteria related to erosion and sedimentation control. The manual does not contain E&P-specific standards and does not address pollutants other than sediment.

Recommendation VI.4.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DLR combine E&P-related best management practices from the design manual into an oil and gas guidance document to facilitate use by the industry. (2010 STONGER Guidance, Section 8.3.)

VII. HYDRAULIC FRACTURING

Currently, shale gas development in most areas of the country relies heavily on the use of horizontal well drilling and hydraulic fracturing technologies.

Rule 15A NCAC 05D.0107(e) states “All wells shall be drilled in such a manner so that vertical deviation of the hole does not exceed three degrees between the bottom of the hole and the top of hole, and shall not deviate in such a manner as to cross property or unit lines, unless an exception is granted by the director. An inclination survey shall be filed with the director for each well subsequently produced for oil or gas.” The DENR has interpreted this regulation to prohibit the drilling of horizontal oil and gas wells.

Rule 15 NCAC 02C.0213(e)(1), relating to the operation of Class V injection wells, requires that “Pressure at the well head shall be limited to a maximum which will ensure that the pressure in the injection zone does not initiate new fractures or propagate existing fractures in the injection zone, initiate fractures in the confining zone, or cause the migration of injected or formation fluids outside the injection zone or area.” The DENR has interpreted this to prohibit hydraulic fracturing of oil and gas wells.

Finding VII.1.

The DENR currently believes that horizontal drilling and hydraulic fracturing are prohibited under North Carolina regulations.

Recommendation VII.1.

The review team recommends that, if North Carolina decides to develop an oil and gas regulatory program, the DENR obtain legal opinions from the Attorney General regarding the interpretation of Rule 15A NCAC 05D.0107(e) and Rule 15 NCAC 02C.0213(e)(1). If the Attorney General’s opinions concur with the current DENR interpretations, the DENR should develop regulations for horizontal drilling and hydraulic fracturing that meet the criteria contained in Section 9 of the Guidelines. (2010 STRONGER Guidelines, Section 9.)

APPENDIX A

Acronyms

AAL	Accepted Ambient Levels
APA	Administrative Procedures Act
CFR	Code of Federal Regulations
DAQ	Division of Air Quality
DENR	Department of Environment and Natural Resources
DHHS	Department of Health and Human Services
DLR	Division of Land Resources
DPS	Department of Public Safety
DWM	Division of Waste Management
DWR	Division of Water Resources
DWQ	Division of Water Quality
E&P	Exploration and Production
EMP	Emergency Management Plan
EOC	Emergency Operations Center
FEMA	Federal Emergency Management Agency
HAZMAT	Hazardous Materials
ILT	Interagency Leadership Team
IOCC	Interstate Oil Compact Commission
IOGCC	Interstate Oil and Gas Compact Commission
LEPC	Local Emergency Planning Committee
NORM	Naturally Occurring Radioactive Materials

MOU	Memorandum of Understanding
RCRA	Resource Conservation and Recovery Act
RPS	Radiation Protection Section
RRC	Rules Review Commission
SAB	Science Advisory Board
SEOP	State Emergency Operations Plan
SPCC	Spill Prevention, Control and Countermeasures
STRONGER	State Review of Oil and Natural Gas Environmental Regulations, Inc.

APPENDIX B

INFORMATION FOR THE REVIEW OF STATE OIL AND GAS ENVIRONMENTAL REGULATORY PROGRAMS IN STATES WITH A SMALL NUMBER OF WELLS

State: North Carolina

Completed by NC Department of Environment and Natural Resources

Address 1601 Mail Service Center
Raleigh, NC 27699-1601

Telephone (919) 715-2613 Fax (919) 715-3060

Questionnaire Coordinator/Contact: Trina Ozer

INSTRUCTIONS: The primary basis for this review is the document, Guidelines for State Review of Oil and Natural Gas Environmental Regulatory Programs (2010). Please provide the information requested herein and be prepared to describe and discuss the additional information as requested. However, avoid providing background information, data, regulations or statutes that do not address issues in the Guidelines or are not related to the state's oil and gas environmental programs. (For example, regulation of underground fuel storage tanks is not addressed in this review.) Terms used in this questionnaire have meanings consistent with those contained in the Guidelines. Citations appearing in brackets (e.g., [5.3.]) refer to the applicable section or sections of the Guidelines.

REQUESTED BACKGROUND INFORMATION

1. Please provide a brief history or other description of the oil and gas industry in your state, its regulation by state agencies, and recent E&P trends.

Though natural gas and oil are known to occur in North Carolina, they are not currently produced in the state. Natural gas and oil can potentially be produced in commercial quantities from two general geologic regions: 1) the Mesozoic basins that are exposed in the Piedmont or lie buried beneath the Atlantic Coastal Plain, and 2) the Atlantic Outer Continental Shelf.

The history of oil and gas exploration in North Carolina spans over 80 years, with the earliest oil well drilled in 1925 in Craven County. Oil and gas exploration wells have been drilled in 23 counties across the state. The most active exploration years, those with ten or more wells completed, were: 1971 with 19, 1969 with 13, 1958 with 11, and 1966 with 10. To date, 127 oil and gas exploration wells have been completed in North Carolina. Since 1974, seven wells have been drilled, all in Lee County. The most recent oil and gas wells were drilled in 1998 in Lee County.

People interested in drilling an exploratory well for oil or gas are required to register with DENR, post a bond, and submit an application for a drilling permit to the Division of Land Resources (DLR). The bond is \$5,000 plus \$1 per linear foot proposed to be drilled. A permit is also required for all geophysical exploration work, including seismic explorations. Explorations are defined as geological, geophysical and other surveys and investigations, including seismic methods for the discovery and location of oil, gas or other mineral prospects, and which may or may not involve the use of explosives.

Recently, companies have approached landowners in Chatham, Lee and Moore Counties about leasing their mineral rights, and many of these landowners have signed lease agreements.

2. Please also include a copy of the following:
 - A. Organization chart(s) showing the structure of all agencies responsible for the management and disposal of exploration and production (E&P) wastes, abandoned oil and gas sites, oil-field NORM (naturally occurring radioactive materials), storm water management and hydraulic fracturing.

There is an org chart for DENR attached. The units involved in the management of E&P wastes are the Division of Waste Management, the Division of Water Quality, the Division of Water Resources, the Division of Land Resources, and the Division of Air Quality. In addition to DENR divisions, the Radiation Protection Section (RPS) of the Division of Public Health in the Department of Health and Human Services would be involved. Org charts for each of these divisions are also attached.

- B. Statutes, rules, regulations and orders applicable to the management and disposal of oil and gas E&P waste, abandoned oil and gas sites, NORM from oil and gas production, storm water management and hydraulic fracturing.
- C. Any memoranda of understanding or similar agreements between state agencies or between the state and any other governmental entities (BLM, EPA, Indian Tribes, local jurisdictions) pertaining to the management and disposal of E&P wastes, abandoned sites, NORM from oil and gas production, storm water management and hydraulic fracturing.

UIC: The 1984 Memorandum of Agreement between EPA and North Carolina for the UIC Program is attached. The state applied for renewal of its UIC primacy in 2002, but EPA is still reviewing the application. The 2002 Memorandum of Agreement is also attached, but has not been signed by EPA.

NPDES: The 2007 Memorandum of Agreement between EPA and North Carolina for the NPDES Program is attached. This MOA covers the NPDES wastewater, NPDES stormwater, and pretreatment programs.

- D. Any written mission statement(s), goals, objectives and policies applicable to oil and gas E&P waste management and disposal activities, abandoned sites, NORM from oil and gas production, storm water management and hydraulic fracturing.

The [DENR 2009-2013 Strategic Plan](#) states DENR's mission and values (see introduction) and also states that DENR should "continue and support the evaluation and exploration of natural gas resources in the state" (p. 5). Other sections have broader relevance. For instance, the Plan includes actions such as: "Improve the state's response to groundwater contamination incidents through improved coordination among state agencies and local governments, stronger enforcement policies and increased public education" (p. 2) and "Partner with business, the Department of Transportation and the Department of Commerce to effectively reduce diesel emissions from the movement of freight and limit diesel emissions from construction activities" (p. 4).

- 3. Also, please include on a separate page any other relevant practices, program measures, guidelines or controls applicable to your state.

Session Law 2011-276 directs DENR to study the issue of oil and gas exploration in the state, specifically the use of directional and horizontal drilling (see <http://www.ncleg.net/Sessions/2011/Bills/House/PDF/H242v7.pdf>).

- 4. The next pages contain a matrix to be used to summarize E&P waste management practices. It is recognized that further explanation will likely be necessary. Don't try to capture everything or give precise numbers if not readily available - give only the big picture in the matrix.

E&P Waste Management Matrix

Waste Management Practices	Number of Facilities	Volume Managed Annually	Basis for Volume Determination
Pits:			
Drilling	0		
Production	0		
Special Use	0		
Landspreading	0		
Roadspreading	0		
Tanks	0		
Commercial Facilities:			
Multipractice	0		
Landfarms	0		
Tank Bottom Reclaimers	0		
UIC Surface Facilities	0 (Class II)		
Oil-Field NORM	0		
Centralized Facilities (non-NORM)	0		
Oil-Field NORM	0		
Municipal Landfills Accepting E&P Waste	0		
Underground Injection Surface Facilities	0 (Class II)		
Abandoned Sites	0		
Other	0		

E&P Waste Management Matrix (cont.)

Waste Management Practice	Principal Agency	Primary Statute	Primary Rules, Regulations, or Orders	Applicable Guidelines
Pits:				
Drilling	DLR	Chapter 113, Article 27 (see attached document)	15A NCAC .05D	
Production	DLR	Same as above		
Special Use	DLR	Same as above		
Landspreading	DWQ	G.S. 143-215.1	15A NCAC 2T	
Roadspreading	DWQ	G.S. 143-215.1	15A NCAC 2U	N/A
Tanks (produced water, production tanks)	Depends on contents – DLR, DWM		DWQ – none, DWM: 15A NCAC 13A .0113	
Commercial Facilities: (facilities used by multiple operators)				
Multipractice	DWM			
Landfarms	DWQ or DWM depending on specifics	G.S. 143-215.1	15A NCAC 13B 15A NCAC 2T	
Tank Bottom Reclaimers	DWM			
UIC Surface Facilities	DWQ	G.S. 143-214.2(b)	15A NCAC 2C .0209(b)	N/A
Oil-Field NORM	DHHS-RPS	G.S. 104E	15A NCAC 11	
Centralized Facilities (non-NORM)	DLR or DWM			
Oil-Field NORM	DLR, DHHS-RPS	G.S. 104E	15A NCAC 11	
Municipal Landfills Accepting E&P Waste	DWM - would have to be legislative and/or rule making			

	enacted. Landfills do not currently accept petroleum wastes.			
Underground Injection Surface Facilities	DWQ	G.S. 143-214.2(b)	15A NCAC 2C .0209(b)	N/A
Abandoned Sites	DLR	G.S. 113, Article 27		
Other	TBD			
Wastewater Pump & Haul Permits	DWQ	G.S. 143-215.1	15A NCAC 2T .0200	N/A
Other non-discharge wastewater systems	DWQ	G.S. 143-215.1	15A NCAC 2T	N/A

During the in-state review, please be prepared to describe and discuss the following if they are applicable in your state:

I. GENERAL CRITERIA

1. The **statutory authority** upon which your E&P environmental regulatory program is based. [3.1.a]
 - Well Construction Act: [G.S. 87, Article 7](#) (well construction standards, injection wells)
 - Oil & Gas Conservation Act: [G.S. 113, Article 27](#) (issues related to exploration and production)
 - Water and Air Resources Act: [G.S. 143, Article 21](#) (issues related to protection of air and water resources; wastewater and stormwater management)
 - Air Pollution Control: [G.S. 143, Article 21B](#)
 - Oil Pollution and Hazardous Substances Control: [G.S. 143, Article 21A](#)
 - Oil Spill Contingency Plan: [G.S. 166A](#)
 - Solid Waste: [G.S. 130A, Article 9](#)
 - Radiation Protection Act: [G.S. 104E](#)

2. Authority for the **promulgation of rules and regulations**. [3.1.b]
 - [G.S. 87-87](#) (EMC authority to adopt well construction rules)
 - [G.S. 113-391\(c\)](#) (Department authority to adopt rules under Oil & Gas Conservation Act)
 - [G.S. 143-215.3\(a\)\(1\)](#) (EMC authority to promulgate rules under G.S. 143 Articles 21 – water and air resources, 21A – oil pollution and hazardous substances control, 21B – air pollution control and 38 – water resources)
 - [G.S. 143B-282](#) (Creation of EMC)
 - Solid Waste [G.S. 130A-29](#)
 - Oil Spill Contingency Plan: [G.S. 166A](#)
 - Radiation Protection [G.S. 104E-7](#)

3. The **definitions** of terms necessary for program implementation. [3.1.c]
See above. Terms are defined within each statute and administrative code

4. The adequacy of **levels of funding and staff** provided for E&P environmental regulatory program implementation (differentiate between UIC and non-UIC program funding and staffing levels if applicable to your program). [3.1.d, 4.3.2]
Currently there are no staff dedicated to E&P environmental regulatory program implementation; duties are distributed among existing staff in multiple divisions. A UIC grant from EPA provides funding for one position in DWQ. However, this position is not dedicated to E&P program implementation and North Carolina currently does not allow Class II wells.

5. Mechanisms for the **coordination** of E&P environmental regulatory program activities among the public, government agencies and the regulated industry. [3.1.e, 4.4]

Most of regulatory program is implemented under a single department (Radiation Protection, if involved, the only exception). A 2007 MOA between DWM & DWQ (attached) specifies the responsibilities of each division for managing contaminated sites. North Carolina has primacy for the UIC program for all classes of injection wells.

6. The **goals or objectives** of the E&P environmental regulatory program (including how the goals and objectives relate to protection of human health and the environment). [3.2]

The Water & Air Resources Act, in G.S. 143-211, establishes the broadest goals and objectives for the state's environmental protection programs:

143-211. Declaration of public policy.

(a) It is hereby declared to be the public policy of this State to provide for the conservation of its water and air resources. Furthermore, it is the intent of the General Assembly, within the context of this Article and Articles 21A and 21B of this Chapter, to achieve and to maintain for the citizens of the State a total environment of superior quality. Recognizing that the water and air resources of the State belong to the people, the General Assembly affirms the State's ultimate responsibility for the preservation and development of these resources in the best interest of all its citizens and declares the prudent utilization of these resources to be essential to the general welfare.

(b) It is the public policy of the State to maintain, protect, and enhance water quality within North Carolina....

(c) ...It is the intent of the General Assembly, through the duties and powers defined herein, to confer such authority upon the Department of Environment and Natural Resources as shall be necessary to administer a complete program of water and air conservation, pollution abatement and control and to achieve a coordinated effort of pollution abatement and control with other jurisdictions. Standards of water and air purity shall be designed to protect human health, to prevent injury to plant and animal life, to prevent damage to public and private property, to insure the continued enjoyment of the natural attractions of the State, to encourage the expansion of employment opportunities, to provide a permanent foundation for healthy industrial development and to secure for the people of North Carolina, now and in the future, the beneficial uses of these great natural resources. It is the intent of the General Assembly that the powers and duties of the Environmental Management Commission and the Department of Environment and Natural Resources be construed so as to enable the Department and the Commission to qualify to administer federally mandated programs of environmental management and to qualify to accept and administer funds from the federal government for such programs.

The [Well Construction Act of 1967](#) (G.S. 87, Article 7) establishes “the policy of this State to require that the location, construction, repair, and abandonment of wells, and the installation of pumps and pumping equipment conform to such reasonable requirements as may be necessary to protect the public welfare, safety, health and groundwater

resources.”

- Oil & Gas Conservation Act: [G.S. 113-382](#) and as amended by [S.L. 2011-276](#)
 - See list of statutory authorities in the table above.
7. Any **flexibility** in determining the criteria applicable to E&P environmental activities (e.g., variation in criteria dependent on region of the state or other factors). [3.3]
- Customized permit conditions (DLR)
 - Most regulatory programs administered by NC DENR include provisions for the issuance of variances when compliance with standards is not technically feasible or when a greater level of protection can be provided through alternatives that do not otherwise comply with standards. Statutory variance authorities include:
 - [G.S. 143-215.3\(e\)](#), for variances from standards established by the EMC under [G.S. 143-215.1](#) (Control of sources of water pollution).
 - In addition to these statutory authorities, variance authority is found in the following administrative code rules:
 - [15A NCAC 2B .0226](#) (Variance from surface water standards)
 - [15A NCAC 2C .0118](#) (Variances from well construction standards)
 - [15A NCAC 2C .0215](#) (Variances from injection well rules)
 - [15A NCAC 2L .0113](#) (Variances from groundwater standards)
 - [15A NCAC 2T .0105\(b\)](#) (Variances from design criteria for non-discharge wastewater)

II. ADMINISTRATIVE CRITERIA

1. Mechanisms for **approval of permits, registration, notification**) to assure that E&P environmental impacts are managed responsibly. [4.1.1]

For oil and gas permits the applicant must register, provide a bond, and then apply for the permit. For other waste management and wastewater issues, existing processes for industrial facilities would be used.

An application for a drilling permit for an oil or gas well triggers a series of other permits which must be obtained prior to the issuance of a drilling permit. The applicant submits a site plan, which entails describing where the drilling is proposed, how deep the drilling is planned, the casing specification for the well, and the plan for on-site storage of water, wastewater and mud in pits and/or tanks.

As soon as the Division of Land Resources receives the drilling permit application, that information is shared with other NC DENR divisions to determine what other issues must be addressed. The drilling permit is the master permit and as such, the applicant must obtain a well construction permit before receiving a drilling permit. In addition, a sedimentation and erosion control permit is also required if more than one acre of land is

disturbed (this includes the access road to the site). The S&EC permit requires a site plan and a site restoration plan after the disturbance is completed.

Conditions are placed on the drilling permit that address site location, endangered or threatened wildlife species, off-site runoff, waste management, inspections and notification.

2. The **authority to refuse** to issue or reissue permits or authorizations. [4.1.1]

DLR issues a drilling permit when all conditions and requirements of the permit have been addressed to the satisfaction of the permitting authority. Under [G.S. 113-402](#), “a party who is dissatisfied with a decision or order of the Department under this Article may obtain administrative review of the decision by filing a petition for a contested case hearing under [G.S. 150B-23](#) within 10 days of the decision or order is made. Other facilities (well construction, solid waste, wastewater, etc) do have authority in statutes above.

3. Any notice of the permittee's obligation to comply with other federal, state or local requirements. [4.1.1]

The permit conditions of the master drilling permit require the applicant to comply with existing law. [G.S. 113-408](#) allows the Department to bring suit in Superior Court to restrain people from continuing violations or from carrying out the threat of violations. The requirements of DLR’s permit are listed in the Well Construction rules at [15A NCAC 2C .0100](#).

4. Fixed terms and renewal procedures for individual permits. [4.1.1]

Drilling permits are for a single use. Once bonded, a site should be drilled because the erosion and sedimentation control permit and other permits expire. Other waste facilities have a five-year permit cycle, except for a few programs which allow up eight years.

5. Your **compliance evaluation program** for:

- a. Receipt, evaluation, retention, and investigation of required notices and reports. [4.1.2.1]
- b. Inspection, sampling and surveillance procedures for facility monitoring, periodic inspections, comprehensive surveys, and violation investigation. [4.1.2.1.b]
- c. Public complaint and follow-up, including response times. [4.1.2.1.c]
- d. Authority to conduct unannounced inspections and investigations. [4.1.2.1.d]
- e. Right of entry for inspection and copying of records. [4.1.2.1.e]
- f. Chain of custody/evidence gathering. [4.1.2.1.f]

Oil & Gas Conservation:

- [G.S. 113-391](#) describes DENR’s authority to make appropriate inquiries to

determine whether or not waste (as defined at [G.S. 113-389](#)) exists or is imminent.

Solid Waste:

- Statutory authorities: [G.S. 130A-294](#)
- Right of entry: [G.S. 130A-17](#)

Water Quality and Air Quality:

- [G.S. 143-215.3\(a\)\(2\)](#) - authority for DWQ to carry out investigations and inspections, enter property, examine records and collect evidence related to determining the condition of the air and water resources of the state and the condition of any pollution control equipment.

Well Construction

- [G.S. 87-90](#) – authority for DWQ to carry out investigations and inspections, enter property, examine records and collect evidence related to determining compliance with the Well Construction Act

6. The **enforcement actions** can be taken for violations of E&P environmental regulatory requirements, including the number of times these enforcement actions have been taken by the state over the past two years (number or frequency), or an indication which of these actions the state uses more often. [4.1.3.1]

Oil & Gas Conservation:

- Level of activity is N/A.
- [G.S. 113-408](#) gives DENR authority to obtain injunctions when it appears the statute is being violated.
- [G.S. 113-409](#) makes evading any rule under Article 27 or falsifying information a Class 2 misdemeanor.
- [G.S. 113-410](#) describes penalties for violations.
- [G.S. 113-411](#) discusses illegal oil and gas.

Solid Waste:

- Determining penalties for violations of the Solid Waste Management Act: [15A NCAC 13B.0702 - .0706](#).
- Guidelines for transporting, collecting or recycling used oil (violation is a misdemeanor): [G.S. 130A-309.17](#).

Well Construction:

- [G.S. 87-94 and 87-95](#) provide authority for civil penalties and injunctive relief, respectively, for violations of the Well Construction Act.

Water & Air Quality:

- [G.S. 143-215.6A](#), [G.S. 143-215.6B](#), and [G.S. 143-215.6C](#) provide enforcement authority in the form of civil penalties, criminal penalties, and injunctive relief for violations under the Water & Air Resources Act.

7. Any **formula for calculation of penalties**, its regulatory basis, and the penalties assessed and collected over the past two years. [4.1.3.2]

Maximum fines are set in statute for wastewater, wells, waste management, and oil and gas wells. [G.S. 130A-22\(a\)](#) describes administrative penalties related to the Solid Waste Management Act. [G.S. 87-94](#) establishes maximum fines for violations of the Well Construction Act. [G.S. 143-215.6A](#) establishes maximum fines for violations under the Water & Air Resources Act. [G.S. 113-410](#) sets penalties for violations of the oil & gas conservation act.

8. Any **right of appeal** for review of actions. [4.1.3.3]

- Solid waste: [G.S. 150B-23](#) (referred to in G.S. 130A-22(e))
- [G.S. 87-92](#) provides for appeals of any agency decision under the Well Construction Act.
- [G.S. 143-215.5](#) provides for judicial review of any agency decision under the Water & Air Resources Act.

9. The **state contingency plan** for response to spills and releases, including volumes that trigger a response, time in which notification and clean-up is to occur, and criteria (i.e., cleanup standards) used to assure that remediation was accomplished. [4.2.1.1.a]

Under the State Emergency Management program, the State Emergency Operations Plan lists the hazardous materials plan which includes the response to hazardous materials, suspected hazardous materials and unknowns. That Tab of the State EOP is attached.

10. Any **funding** provisions to enable the state to respond to spills and releases in the event a responsible operator cannot be located or is unwilling or unable to respond, and any provisions for reimbursement of the state for monies so expended. [4.2.1.1.b]

The State of North Carolina calls upon the US EPA Emergency Response Program to mobilize federal contractors to assist in the response and remediation of spills as part of the National Contingency Plan.

11. Any mechanisms for the operators or public to report spills and releases. [4.2.1.2]

Reports are taken by the State Emergency Management personnel at the 24-7 State Emergency Operations Center. Their telephone number is 1-800-858-0368. In addition, operators or members of the public can contact local emergency services by dialing 911 or calling the National Response Center.

12. Any interagency **coordination of actions** between agencies having jurisdiction for response to spills and releases. [4.2.1.3]

Interagency coordination is described in the State EOP.

13. Any **requirements for operators** to prevent and respond to spills and releases. [4.2.1.4]

The conditions of the drilling permit are binding.

14. Any **general state contingency program elements** that address:
 - a. Facilities, materials and equipment that may pose a significant threat. [4.2.1.4.1.a]
 - b. The various environments at risk. [4.2.1.4.1.a]
 - c. Measures to address public and responder safety concerns. [4.2.1.4.1.a]
 - d. The operator's incident command structure. [4.2.1.4.1.b]
 - e. Equipment, manpower and services to respond to spills and releases. [4.2.1.4.1.b]
 - f. Opportunities for coordination of response actions. [4.2.1.4.1.b]
 - g. Procedures for communication with threatened parties. [4.2.1.4.1.b]
 - h. Methods of containment. [4.2.1.4.1.b]
 - i. Methods of disposal of materials. [4.2.1.4.1.b]
 - j. Responder training. [4.2.1.4.1.c]

A site-specific contingency plan may be required as a binding condition of the permit.

15. Any **spill prevention measures** that may include:
 - a. Secondary containment measures. [4.2.1.4.2.a]
 - b. Tertiary containment or monitoring systems in high risk areas. [4.2.1.4.2.b]
 - c. Inspection, testing and maintenance procedures. [4.2.1.4.2.c]
 - d. Site security measures as necessary. [4.2.1.4.2.d]
 - e. Periodic review of opportunities to reduce future spills and releases. [4.2.1.4.2.e]

These may be specified by conditions in the permit.

16. Any **spill response measures** that may include:
 - a. Agencies and parties to be notified. [4.2.1.4.3.a]
 - b. Type of reporting (verbal, written) required. [4.2.1.4.3.a]
 - c. Reporting time requirements. [4.2.1.4.3.a]
 - d. Reporting thresholds. [4.2.1.4.3.a]
 - e. Type of information to be reported. [4.2.1.4.3.a]

These may be specified by the conditions in the permit.

17. Any **state guidance for containment, abatement and remediation** of spills and releases including:

- a. Clean-up standards. [4.2.1.4.3.b]
- b. Required sampling and analyses. [4.2.1.4.3.b]
- c. Any approved non-mechanical response actions. [4.2.1.4.3.b]

The Groundwater Classifications and Standards include general requirements for corrective action in [15A NCAC 2L .0106](#).

- 18. Any **final reporting, site monitoring requirements and necessary agency approvals** following the response to spills and releases. [4.2.1.4.3.c]

The Hazardous Materials Tab of the State EOP outlines these requirements.

- 19. Any **follow-up actions by the state**, including enforcement, assessment of damages, and reimbursement of costs for responding to spills and releases. [4.2.1.5]

The Hazardous Materials Tab of the State EOP outlines these requirements.

- 20. Any **database** that includes information on spills and releases. [4.2.1.6]

The Hazardous Materials Tab of the State EOP outlines these requirements.

- 21. Any **public participation** activities related to E&P environmental activities, such as public notice and comment requirements prior to permit issuance, availability of agency records for public review, public outreach to affected parties, and the use of any advisory groups. [4.2.2]

There are public notice allowances for wastewater and solid waste permits. [G.S. Chapter 132](#) defines public records and sets requirements for their availability to the public. The specific rules for solid waste management can be found in [15A NCAC 13A.0109](#), see (r), additional location standards for facilities, and 15A NCAC 13A.0109(r)(7)A-E. [G.S. 143-215.1\(c\)](#) specifies requirements for public hearings prior to the issuance of permits for discharges to surface waters.

- 22. The **program planning and evaluation process** including:
 - a. Any short-term and long-term strategic planning for regulatory development. [4.2.3.1]
 - b. Program evaluation of program effectiveness in protecting human health and the environment. [4.2.3.2.a]
 - c. Data management capabilities to enable assessment of program effectiveness and timeliness. [4.2.3.2.b]
 - d. Establishment of a baseline against which to compare future performance. [4.2.3.2.d]

As we do not yet have an established E&P program, we do not have program planning

and evaluation yet. However, S.L. 2011-276 does direct DENR to study the potential oversight and administrative issues associated with an oil and gas regulatory program.

23. Any **financial assurance** requirements for E&P environmental regulatory activities or facilities, the activities for which financial assurance is required, the scope of coverage, the types of financial assurance instruments accepted, and procedures to access the assurance funds when necessary. [4.2.4]

The binding conditions of the drilling permit could include bonding of the company to address the financial assurance of the drilling company.

24. Any **waste hauler training and certification** requirements for commercial transportation of E&P wastes. [4.2.5]

None. Manifests must be available on site.

25. Any program relating to identification of the **location of closed disposal sites**, including any provisions making this information available for public review. [4.2.6]

Solid waste notice of inactive hazardous substance or waste disposal sites: [G.S. 130A-310.8](#)

26. The **data management** systems in place in your state for information related to E&P environmental regulatory program activities, including a description of the data elements, the extent to which the program utilizes electronic data management systems, and what information is or is not made available to the public. [4.2.7]

DLR:

Copies of all permits/reports for all oil and gas wells are maintained by DLR – N.C. Geological Survey and are available for public review under the public records laws of North Carolina.

DWM:

DWM has databases related to USTs available at:
<http://portal.ncdenr.org/web/wm/ust/database>.

DWQ:

Basinwide Information Management System is used to track data on permits and compliance for the NPDES wastewater and stormwater, non-discharge wastewater, and UIC and well permitting programs. Nearly all data in this database is submitted on paper records and is entered manually, with the exception of a pilot project to provide electronic submission for some major NPDES permits. Under North Carolina public records law, all data within BIMS is publicly available upon request. DWQ makes available limited permit information from BIMS on its website.

Well Construction Database: Well drillers are required by 15A NCAC 2C .0114 to submit a well construction record to the Division of Water Quality for every well they

drill. These records are entered into DENR's Well Construction Database and include information on the driller and well owner, well location, well construction characteristics, and driller's log. Data in this database is submitted on paper records and is entered manually. Most of this information is subject to public disclosure upon request, but none is currently posted on the internet or otherwise made available without a request.

27. The **administrative support** assigned to the E&P environmental regulatory program, including the number, classifications, functions and duties, and minimum experience and training requirements for these positions, and any additional training that is made available to them. [4.3.1.1]

None currently assigned. Responsibilities carried out by program staff in multiple divisions.

28. How **legal support** is provided to the E&P environmental regulatory program. [4.3.1.2]

DENR Office of the General Council and the State Attorney General's office provide support to each division.

29. The **technical staff** assigned to provide geological or engineering support to the E&P environmental regulatory program, including the number, classifications, functions and duties and minimum experience and training requirements for these positions, and any additional training that is made available to them. [4.3.1.3]

None currently assigned. Responsibilities carried out by program staff in multiple divisions.

30. The **field personnel** assigned to conduct inspections and assure compliance with the E&P environmental regulatory program, including the number, classifications, functions and duties and minimum experience and training requirements for these positions, and any additional training that is made available to them. [4.3.1.4]

None currently assigned. Responsibilities carried out by program staff in multiple divisions.

31. Your program for **training** agency personnel on the regulations, policies and criteria applicable to E&P environmental regulatory activities. [4.3.1.5]

DLR's Erosion & Sedimentation Control has a concerted training program; otherwise, no formal training.

32. The methods used for **funding** the E&P environmental regulatory program in your state. [4.3.2]

Appropriations, permit fees, federal grants, portion of severance tax.

33. Any mechanisms to ensure **coordination among state agencies** on E&P environmental regulatory issues and, if your state has large tracts of federally administered public lands and/or tribal lands, any formal or informal mechanisms in which E&P environmental regulatory programs are coordinated with federal and/or Indian agencies. [4.4]
- The Interagency Leadership Team (ILT) is a group of agencies that have work sessions to identify concerns and issues facing transportation, the environment and the economy in North Carolina.
 - Most of the regulatory programs are implemented under a single department (Radiation Protection, if involved, is the only exception).
 - A 2007 MOA between DWM & DWQ specifies responsibilities of each division for managing contaminated sites.
 - See previous section on EPA

III. TECHNICAL CRITERIA

A - GENERAL

1. Any **general performance or design standards** applicable to E&P waste management practices used in your state. [5.1.a]

Generic criteria would apply until specific E&P waste management criteria are developed.

2. Conditions, if any, under which disposal of E&P waste in **municipal solid waste landfills** allowed. [5.1.c]

Legislative changes or rulemaking would need to occur.

3. Provisions in the siting, construction or operation criteria for **variances, waivers, or other flexibility** to address site specific or regional conditions. [5.1.d]

N/A

4. Any **siting** criteria for E&P waste management facilities. [5.1.e]

Solid waste rules for [issuing a permit to a hazardous waste facility](#).

Siting requirements that might apply to wastewater management or disposal facilities include:

- Riparian Buffer rules in [15A NCAC 2B](#) apply to most development and require vegetated buffers to be maintained adjacent to surface waters in some river basins.
- Setbacks and water table separation requirements in [15A NCAC 2T](#) for land application of wastewaters and wastewater treatment residuals.

5. Any **waste characterization** requirements, including sampling, analysis and quality control procedures. [5.2]

Solid Waste:

- Hazardous waste determination - 40 CFR 262.11 is adopted by reference at [15A NCAC 13A .0107](#).
- Standards for owners and operators of hazardous waste storage, treatment and disposal, including waste analysis plan for permitted facilities - 40 CFR 264.13 is adopted by reference at [15A NCAC 13A .0109](#)

DWQ:

- [15A NCAC 2B .0103](#) specifies requirements for any chemical, physical, or biological analyses used to determine conformity with surface water standards.
- [15A NCAC 2T](#) includes design criteria which specify wastewater quality requirements for each type of land-applied wastewater (e.g. 15A NCAC 2T .0505, Design Criteria for Wastewater Irrigation Systems).
- [15A NCAC 2U .0301](#) specifies effluent standards for reclaimed wastewater systems.

6. Any **air emission control** requirements applicable to E&P waste management facilities. [5.1.a and 5.10.2.2.c]

Air pollution control rules cover compressors over certain size, dehydration units for drying gas, drilling rigs, other heavy equipment, off-road general permits, etc. These rules are in [15A NCAC 2D](#).

7. Any programs promoting a **waste management hierarchy** that includes:
 - a. source reduction opportunities. [5.3.1]
 - b. recycling opportunities. [5.3.2]

The NC General Statutes spell out a standard waste management hierarchy that is the preferred method of waste management in the state, with source reduction first, followed by recycling and reuse, composting, incineration with energy recovery, incineration without energy recovery, and landfilling (see [G.S. 130A-309.04](#)). To our knowledge, there are no state statutes or policies that specifically promote source reduction and recycling for the oil and gas industry, such as specific requirements to adopt and implement such strategies, requirements for source reduction or recycling plans, reporting mechanisms on the use of source reduction or recycling techniques, or specific goals related to the reduction of oil and gas waste, especially as a condition of permitting. The Division of Environmental Assistance and Outreach has programs that provide technical assistance on the reduction and recycling of wastes and emissions, although to date the Division has had little experience with oil and natural gas operations and some of the resulting waste streams. Some generic waste streams possibly generated by oil and gas operations (e.g., waste oil, oil filters, and wooden pallets) are banned from solid waste disposal in North Carolina.

8. Any **program elements** that encourage E&P waste source reduction and recycling through policy, training, technical assistance or incentives. [5.3.3]

To our knowledge, there are no program elements that specifically pertain to oil and gas exploration and production. There would be opportunities to place in statute or as permitting and compliance conditions many of the source reduction and recycling best management practices articulated in the STRONGER 2010 Proposed Guidelines, but it seems the authority or ability to do so would possibly have to be created. The Hazardous Waste Section would address some of the liquid wastes that would result from oil and gas operations that would be deemed hazardous. We are not aware of any immediately available incentives to encourage adoption of source reduction and recycling techniques at oil and gas operations – those, too, may have to be created in statute and/or rules or policy. Reporting requirements would also seem critical to develop and implement.

B – PITS

As listed earlier, the master drilling permit application requires a site plan, drilling plan, drilling specification, and the location and size of proposed mud pits. The DLR in coordination with Waste Management, Water Quality, Air Quality and other federal agencies would put binding conditions on the drilling permit to address pits. That permit regulates mud pits. Conditions on the size, volume, lining, security, potential offsite disposal, chemical content, testing requirement of the pit contents and abandonment of pits are part of the drilling permit. In law, drilling cannot start until the pits have been installed to the satisfaction of the regulatory agency.

9. Technical criteria for **pits**. [5.5.1]

This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.

10. How pits are **permitted**. [5.5.2.a]

This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.

11. If pits are **permitted by rule**, any requirements or limitations that are applicable. [5.5.2.b]

This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.

12. Whether pits are **permitted individually** and/or as part of **facility, operational or general permits**. [5.5.2.c]

This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.

13. Any **notification** required prior to construction and operation of rule-authorized pits. [5.5.2.d]

This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.

14. Any provisions concerning the issuance and use of **emergency permits** for pits. [5.5.2.e]

This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.

15. Any requirements included in statewide regulations regarding the size, depth, berm height and other **construction** parameters for pits. [5.5.3.a]

This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.

16. Any requirements to assure that there is no adverse **impact to ground water or surface waters** from use of the pit. [5.5.3.b]

This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.

17. Any requirements to assure **structural integrity** of pits. [5.5.3.c]

This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.

18. How construction requirements assure that pits are designed to accommodate **fluids** which are intended to be contained in them. [5.5.3.d]

This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.

19. If construction standards for pits differ depending on the **waste characteristics** of materials they are to receive, the circumstances under which variances or special conditions are used. [5.5.3.e]

This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.

20. Conditions under which **pit liners** or **tanks** are required in lieu of pits. [5.5.3.e]

This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.

21. Any requirements for **fencing, netting and caging** of pits. [5.5.3.f]

This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.

22. Any requirements for the **placement of reserve pits** relative to drilling equipment. [5.5.3.g]

This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.

23. Any restrictions placed on the **type and characteristics of wastes** that can be placed in pits. [5.5.4.a]
This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.
24. Any **security** guidelines or requirements are in place regarding pits. [5.5.4.b]
This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.
25. Any requirements for maintaining a **freeboard** level in pits and how is this level calculated. [5.5.4.c]
This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.
26. How **liner integrity** is maintained and assured in lined pits. [5.5.4.d]
This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.
27. Any routine **inspections or monitoring and reporting** required by the operator to assure that pit operational and structural integrity requirements are being met. [5.5.4.e]
This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.
28. Any requirements for the **removal/disposal/recycling of hydrocarbons** that accumulate in pits. [5.5.4.f]
This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.
29. Any requirements for the **removal of separated oil or wastes** from unlined skimming/settling pits. [5.5.4.g]
This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.
30. If **produced water pits** are allowed in your state, the requirements for disposal of the water? [5.5.4.h]
This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.
31. Any restrictions concerning the use of **percolation pits**. [5.5.4.i]
This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.
32. Any maintenance requirements for **evaporation pits**. [5.5.4.j]
This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.

33. Any restrictions placed on the use of **emergency pits**, and any notification of the regulatory agency and removal of fluids required when they are used. [5.5.4.k]
This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.

34. Any prohibition against the use of **unlined basic sediment pits** for oily wastes. [5.5.4.l]
This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.

35. Any limitations placed on the operation of **workover pits**. [5.5.4.m]
This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.

36. Any time limit placed on the **closure of reserve pits**. [5.5.5.b]
This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.

37. Any **testing of pit liquids is required before pit closure**, and if on-site disposal of pit liquids is authorized, what criteria apply to such disposal. [5.5.5.c]
This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.

38. Conditions under which pit **liquids must be removed** before closure. [5.5.5.d]
This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.

39. The requirements for **closure and reclamation** of pit sites. [5.5.5.e]
This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.

40. The **records** to be kept of pit sites and their availability to the public. [5.5.5.f]
This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.

C - LANDSPREADING (Non-Commercial)

41. Any **criteria for landspreading** of E&P wastes. [5.6.1.b]

If there were landspreading of drilling wastes, this activity could be subject to permitting under either Soil Remediation in [15A NCAC 2T .1500](#) or possibly as a Residual under [15A NCAC 2T .1100](#). This scenario does not fit perfectly into either of these two categories, but we have precedents of flexibility for other waste streams. Soil remediation permits are issued by either the UST Section of DWM or the Aquifer Protection Section of DWQ, depending on the source of the waste. At this time, approvals would be

required for each landspreading event. Residuals permits are issued by the Aquifer Protection Section of DWQ. Statutory authority of [G.S. 143-215.1](#) applies in either case.

42. Any prohibitions on **landspreading of waste containing NORM** above action levels. [5.6.1.c]

Unknown.

43. Any **operational requirements** applicable to landspreading. [5.6.3]
The UST Section of DWM regulates land farming in the state, and at this time, approvals would be required for each event.

D - BURIAL AND LANDFILLING (Non-Commercial)

44. Any **regulatory requirements** for burial or landfilling of E&P wastes. [5.7.2]

These requirements would have to be created by legislation or rulemaking. Landfills do not currently accept petroleum wastes.

Neither oil nor oil filters can be disposed of in landfills in North Carolina.

45. Any **operational requirements** applicable to burial or landfilling. [5.7.3]

See question 44.

E – ROADSPREADING

46. Any **regulatory criteria** for roadspreading of E&P wastes. [5.8.2]

Roadspreading of produced waters or other E&P wastewaters would be subject to permitting as a reclaimed water system under [15A NCAC 2U](#).

47. Any **operational requirements** applicable to roadspreading. [5.8.3]

Roadspreading of produced waters or other E&P wastewaters would be subject to design criteria, utilization requirements, and requirements for operational plans for reclaimed water systems in [15A NCAC 2U](#).

F – TANKS

48. Any requirements pertaining to the **location, use, capacity, age and construction of E&P waste tanks**, including registration, inventories, etc. [5.9.2.a]

This will be determined on a case by case basis in coordination with the Division of Waste Management and the Division of Water Quality. Solid waste: hazardous waste permits (40 CFR 270.14(b)(1) and 270.16 are adopted by reference at [15A NCAC 13A.0113](#))

49. Any state program pertaining to **pollution prevention requirements relating to tanks**. [5.9.2.c]

This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.

50. Any **construction and operation requirements** applicable to E&P waste tanks. [5.9.3]

This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.

51. Any tank **removal and closure** requirements. [5.9.4]

This will be determined on a case by case basis by DLR in coordination with the Division of Waste Management and the Division of Water Quality.

As listed earlier, the master drilling permit application requires a site plan, drilling plan, drilling specification, and the location and size of proposed tanks. The DLR in coordination with Waste Management, Water Quality, Air Quality and other federal agencies would put binding conditions on the drilling permit to address tanks. Conditions on the size, volume, lining, security, potential offsite disposal, chemical content, testing requirement of the pit contents and abandonment of tanks are part of the drilling permit. In law, drilling cannot start until the tanks necessary to support the drilling have been installed to the satisfaction of the regulatory agency.

G - COMMERCIAL AND CENTRALIZED DISPOSAL FACILITIES

There are no specific facilities now, but DWM would be responsible if any were developed/proposed.

52. Which agency (agencies) has (have) regulatory **jurisdiction** over these facilities. [5.10.1]

The Division of Waste Management.

53. If you have any centralized or commercial E&P waste disposal facilities, **how many, and of what type**, and how many are associated with UIC sites. [5.10.1]

There are none associated with UIC Class II sites.

54. The **regulatory requirements** related to permits, acceptable types and volumes of wastes, and waste characteristics as related to disposal facility compatibility. [5.10.2]

The attached document, Landfill Requirements Disposal Facility, outlines these requirements.

55. A description of **what wastes are acceptable** for disposal (i.e., do any of these facilities accept RCRA nonexempt wastes or wastes from other than oil and gas exploration and production activities). [5.10.2]

Yes, North Carolina facilities accept RCRA nonexempt wastes.

56. The **disposal and treatment methods** employed at these facilities. [5.10.2]

North Carolina does not have any commercial disposal facilities. Treatment methods employed by commercial facilities in North Carolina include:

- Aqueous inorganic treatment
- Aqueous organic treatment
- Energy recovery
- Fuel blending
- Incineration
- Land treatment/application/farming
- Landfill/surface impoundment
- Metals recovery
- Other treatment
- Sludge treatment
- Solvents recovery
- Stabilization
- Storage and/or transfer

57. The elements required as part of the **permit** application (e.g., siting plan, construction plan, operating plan, closure plan, etc.). [5.10.2.2.a]

See the attached document “Permitting Requirements.”

58. Any permit application requirements for **siting**. [5.10.2.2.b]

Yes. There are requirements for issuing a permit to a hazardous waste facility, described in the following locations:

- Location standards are listed in: <http://portal.ncdenr.org/web/wm/hw/rules/addrequirements#additionallocationstandards>.
- Areas where a hazardous waste landfill, long-term storage, or a surface impoundment facility cannot be located are listed in: [15A NCAC 13A .0109\(r\)\(4\)\(A\)](#)
- Minimum separation distances for hazardous waste facilities are found in: [15A NCAC 13A.0109\(r\)\(2\)\(C\)](#)
- A requirement to make monthly reports is found in [GS 130 A-294\(c\)\(18\)](#)

59. Any **construction** requirements that will minimize or prevent releases to surface water, ground water, soil and air. [5.10.2.2.c]

40 CFR 270.21(b) requirements are incorporated by reference at [15A NCAC 13A .0113](#)

and 40 CFR 264.301(d) and 40 CFR 264.301(e) requirements are incorporated by reference at [15A NCAC 13A .0109](#).

60. Any permit application requirements for **operating**. [5.10.2.2.d]

See the attached Contingency Plan, Inspection Requirements, and Waste Analysis documents.

61. Any **closure and post-closure monitoring** and maintenance requirements, including duration of post-closure care and financial assurance release schedules. [5.10.2.2.e]

See the attached Closure and Post Closure document.

62. For wastes not moved by pipeline, any requirements for **waste tracking**. [5.10.2.3]

Waste tracking is done by using the manifest system that inspectors review during an inspection.

63. Any **waste haulers** permitting or licensing program. [5.10.2.3]

Transporters of hazardous waste are required to get an EPA Identification Number: <http://www.epa.gov/osw/inforesources/data/form8700/forms.htm>.

IV. ABANDONED SITES

1. Any state program to **inventory, prioritize and remediate** (as necessary) abandoned oil and gas sites. [6.1]

There are no abandoned oil and gas sites in the State. If we had one we would seal it as the Oil and GAS Conservation Act requires for all wells – it is sealed completely from the bottom to the top.

2. Reference to any **definitions** pertaining to abandoned sites or your abandoned well site program, including the types of facilities included in the definitions. [6.2]

There are definitions in the Oil & Gas Conservation Act (G.S. 113 Article 27). Some of these are available at G.S. 113-27, but the S.L. 2011-276 additions are:

Unless the context otherwise requires, the words defined in this section shall have the following meaning when found in this law:

(7a) "Oil and gas developer or operator" or "developer or operator" shall mean a person who acquires a lease for the purpose of conducting exploration for or extracting oil or gas.

(7b) "Oil and gas operations" or "activities" shall mean the exploration for or drilling of an oil and gas well that requires entry upon surface estate and the production operations directly related to the exploration or drilling.

(15) "Surface owner" means the person who holds record title to or has a purchaser's interest in the surface of real property.

3. Your program for **identification, inventory and ranking** of abandoned sites. [6.3]
None

4. Any **funding** mechanisms available to the state for abandoned site remediation. [6.4]
None

5. The criteria used in your **abandoned site prioritizing** system. [6.5]
None

6. The state's abandoned site remediation **goals** and how progress is measured. [6.5.1]
None

7. The state's program relating to establishing **liability** for the remediation of abandoned sites. [6.5.2]
None

8. Any **standards for abandoned site remediation**. [6.6]

9. The state's **abandoned well remediation** program, including any flexibility allowed in plugging procedures. [6.6.1]

10. The state's program for **surface remediation** of abandoned sites, including any requirements regarding present or future land use and consultation with surface owners. [6.6.2]

11. The program for **maintenance of records** of remediated sites, including public access. [6.6.3]

Regulatory records are required to be maintained and available for the public under the North Carolina public records law. Oil and Gas files are maintained by the N.C. Geological Survey and are filed by location in file cabinets at the NCGS Field Office and Core Repository. When abandoning a well, a log of the drilling and development of each well is required by [G.S. 113-379](#). [G.S. 113-391](#) requires a reasonable bond condition for the performance of the duty to plug each dry or abandoned well. G.S. 113-395, as amended by [S.L. 2011-276](#), requires notice that the well is to be abandoned and requires a \$450 fee.

12. Any **public participation** activities associated with the abandoned sites program, including public access to information, public participation in rulemaking

associated with the program, and participation regarding the priority of sites on the inventory and level of remediation. [6.7]

V. NATURALLY OCCURRING RADIOACTIVE MATERIAL

1. Any activities the state has undertaken to determine the **occurrence and need for regulation** of NORM. [7.2]

Study under H242 will include testing for NORM.

2. Any **program elements** applicable to the NORM regulatory program, including:
 - a. Definitions. [7.3.1]
 - b. Action levels. [7.3.2]
 - c. Surveys. [7.3.3]
 - d. Worker protection. [7.3.4]
 - e. Licensing/permitting. [7.3.5]
 - f. Removal/remediation standards. [7.3.6]
 - g. Storage. [7.3.7]
 - h. Transfer for continued use. [7.3.8]
 - i. Release of sites, materials and equipment. [7.3.9]
 - j. Disposal. [7.3.10]
 - k. Interagency coordination. [7.3.11]
 - l. Public participation. [7.3.12]

The Radiation Protection Section of the Division of Public Health in the Department of Health and Human Services does not regulate NORMs. Existing state laws do not allow RPS to regulate NORMs unless the radioactivity exceeds an action level. The action level differs for each radioactive element. Should the NORMs be concentrated by natural means above the action level, shielding to protect persons from accidentally exposing themselves would be required. Should NORMs be concentrated by mechanical or chemical means above the action level, that process of concentration would require a permit from RPS.

VI. STORMWATER MANAGEMENT

1. Any state program for the **management of storm water** and the basis for its development. [8.1]

North Carolina implements the following state programs for stormwater management:

- The federal NPDES Phase I permitting program for stormwater discharges from industrial activities.
- The federal NPDES Phase I permitting program for stormwater discharges from construction activities.
- The federal NPDES Phase I and Phase II stormwater permitting programs for local governments operating MS4s.
- A state post-construction stormwater permitting program for new development

- not captured by the NPDES Phase II program but within certain areas.
- A state stormwater management permitting program for new development in the 20 coastal counties and especially protected waters including Outstanding Resource Waters and High Quality Waters (under [S.L. 2008-211](#)).
- State rules for the protection of Nutrient Sensitive Waters are applicable to several river basins and large reservoirs in the state and establish protective restrictions on stormwater discharges to be implemented by local jurisdictions.
- A state program supporting the protection of Water Supply Watersheds that includes some elements for stormwater management. Implemented by local governments; audited by DWQ
- Stormwater requirements are frequently included in the state 401 certification for the protection of wetlands.

The state stormwater program is implemented under [G.S. 143-214.7](#) to regulate site development and post-construction stormwater runoff control. Stormwater Management rules in [15A NCAC 2H .1000](#) have been adopted in order to implement the state program. Areas subject to these permit programs include all 20 coastal counties, and various other counties and watersheds (such as water supply watersheds, high quality waters, and outstanding resource waters) throughout the state. While the state program does not specifically refer to hydrocarbon exploration and production, certain provisions may apply when these operations are located in the areas subject to the state program. The state has authority to require corrective action for conditions causing violations of a water quality standard even if the activity is not covered by an existing program; however, this authority can only be used after standard violation has occurred.

Under [Session Law 2006-246](#), the Phase II program builds upon the existing Phase I program by requiring certain smaller communities (<100,000) and public entities that own and operate a municipal separate storm sewer system (MS4) to apply and obtain an NPDES permit for stormwater discharges. Certain urbanized areas of counties are also regulated by this law. The session law defines the communities that are required to obtain a Phase II permit, the process for including new communities, and the general requirements for compliance with a Phase II permit. Each community that is subject to Phase I and Phase II is required to meet the following six minimum measures:

- Public education and outreach on stormwater impacts.
- Public involvement/participation.
- Illicit discharge detection and elimination.
- Construction site stormwater runoff control.
- Post-construction stormwater management in new development and redevelopment.
- Pollution prevention/good housekeeping for municipal operations.

In addition to the state program, Section 401 of the Clean Water Act delegates authority to the states to issue a 401 Water Quality Certification for all projects that require a Federal Section 404 Permit due to impacts to wetlands or waters of the State. A 401 Water Quality Certification is also required to impact isolated wetlands, which are not covered under Section 404. The 401 Certification is verification by the Division of Water

Quality that a given project will not degrade waters of the State or otherwise violate water quality standards. The rules for issuance of a 401 certification are found in [15A NCAC 02H .0500](#). These rules and the stormwater requirements associated with receiving a 401 Certification can be found on the Division of Water Quality's web site at: <http://portal.ncdenr.org/web/wq/swp/ws/401>.

2. Any state regulatory **program mechanisms** for storm water management or erosion control such as permits/authorizations, compliance evaluation, outreach and training, and program evaluation. [8.2]

Erosion and sedimentation control permits, as described on pages 10 and 11. North Carolina has adopted requirements for stormwater permits for new development in 15A NCAC 2H.1000. In addition, as mentioned above, each MS4 that is subject to Phase I and Phase II is required to meet the following six minimum measures:

- a. Public education and outreach on stormwater impacts.
- b. Public involvement/participation.
- c. Illicit discharge detection and elimination.
- d. Construction site stormwater runoff control.
- e. Post-construction stormwater management in new development and redevelopment.
- f. Pollution prevention/good housekeeping for municipal operations.

3. Any regulatory **program criteria**, including:

- a. Planning requirements with respect to site development. [8.3.1]
- b. Construction standards or management practices appropriate for the area. [8.3.2]
- c. Operation and maintenance measures to control sediment until the site is restored. [8.3.3]
- d. Restoration and reclamation standards. [8.3.4]

The erosion & sedimentation control design manual addresses all of these.

Under [Session Law 2006-246](#), Phase II local governments are required to implement stormwater planning requirements for site development, construction standards and best management practices, and post-construction stormwater management measures. Requirements within the 20 coastal counties are described in [S.L. 2008-211](#).

All surface waters in North Carolina are classified as to best use. Some classifications are especially protected, and there are restrictions on development in the contributing watersheds and/or restrictions as to permissible stormwater or wastewater pollutant discharges. Discharges may be restricted based on classifications: Outstanding Resource Waters, High Quality Waters, Trout Waters, Water Supply I – V, Critical Area, Shellfishing Waters, Nutrient Sensitive Waters, and zero-flow streams.

In addition to broad restrictions based on classification, some few waters in North Carolina have special management strategies in place that may limit allowable stormwater or wastewater discharges. Special management strategies are tabulated in North Carolina regulations at [15A NCAC 2B .0200](#).

In addition, stream segments with threatened or endangered species, both on the federal list and the North Carolina list, may be subject to additional constraints on discharges.

VII. HYDRAULIC FRACTURING

1. Has the state evaluated potential **risks associated with hydraulic fracturing**, taking into account factors such as depth of the reservoir to be fractured, proximity of the reservoir to fresh water resources, well completion practices, well design, and volume and nature of fluids? [9.2]

No. A study is currently underway.

2. Has the state developed **standards to prevent the contamination** of groundwater and surface water from hydraulic fracturing? [9.2]

Injection well rules currently prohibit injection pressures from initiating or propagating fractures.

3. Describe how state standards for **casing and cementing** meet anticipated pressures associated with hydraulic fracturing to protect other resources and the environment. [9.2.1]

Current casing & cementing standards were not developed with hydraulic fracturing in mind.

4. Discuss how the program identifies and, where deemed appropriate, manages risks associated with **potential conduits for fluid migration** in the area of hydraulic fracturing. [9.2.1]

N/A – all hydraulic fracturing is currently prohibited.

5. Describe program requirements that address actions to be taken in **response to unanticipated operational or mechanical changes** encountered during hydraulic fracturing that may cause concern. [9.2.1]

N/A – all hydraulic fracturing is currently prohibited.

6. Briefly describe how **surface controls** associated with hydraulic fracturing, such as dikes, pits or tanks, meet Sections 5.5 and 5.9 of the guidelines. [9.2.1]

The master drilling permit application requires a site plan, drilling plan, drilling specification, and the location and size of proposed mud pits. The DLR in coordination with Waste Management, Water Quality, Air Quality and other federal agencies would put binding conditions on the drilling permit to address pits and tanks. That permit regulates mud pits. Conditions on the size, volume, lining, security, potential offsite disposal, chemical content, testing requirement of the pit contents and abandonment of pits and tanks are part of the drilling permit. In law, drilling cannot start until the pits and tanks have been installed to the satisfaction of the regulatory agency.

7. Briefly describe how **contingency planning and spill risk management** procedures related to hydraulic fracturing meet Section 4.2.1 of the guidelines. [9.2.1]

N/A

8. Briefly discuss how hydraulic fracturing **waste characterization requirements**, including, as appropriate, testing of fracturing fluids, are consistent with Section 5.2 of the guidelines. [9.2.1]

N/A

9. Briefly describe how the **waste management hierarchy** contained in Section 5.3 of the guidelines (source reduction, recycling, treatment and disposal), including the provisions relating to toxicity reduction, are promoted for hydraulic fracturing. [9.2.1]

N/A

10. Briefly describe how the **tracking of hydraulic fracturing waste** disposed at commercial or centralized facilities meets the requirements of Section 5.10.2.3 of the guidelines. [9.2.1]

N/A

11. Briefly describe how procedures in place for receipt of **complaints** related to hydraulic fracturing are consistent with Section 4.1.2.1 of the guidelines. [9.2.1]

N/A

12. Describe any required **notification** prior to, and reporting after completion of hydraulic fracturing operations. [9.2.2]

N/A

13. Is notification sufficient to allow the **presence of field staff** to monitor hydraulic fracturing activities? [9.2.2]

N/A

14. Describe **reporting requirements** for hydraulic fracturing activities and whether they include the identification of materials used, aggregate volumes of fracturing fluids and proppant used, and fracture pressures recorded. [9.2.2]

N/A

15. Describe any mechanisms for **disclosure of information on chemical constituents** used in hydraulic fracturing fluids to the state in the event of an investigation or to medical personnel in the event of a medical emergency. [9.2.2]

N/A

16. Briefly describe how hydraulic fracturing information submitted that is of a **confidential business nature**, is treated consistent with Section 4.2.2 of the guidelines. [9.2.2]

Not currently applicable, but [G.S. 132-1.2](#) specifies the characteristics of information that is not subject to public disclosure.

17. Briefly discuss if, in addition to the personnel and funding recommendations found in Section 4.3 of the guidelines, **state staffing levels** sufficient to receive, record and respond to complaints of human health impacts and environmental damage resulting from hydraulic fracturing. [9.2.3]

N/A

18. Describe staff **training** to stay current with new and developing hydraulic fracturing technology. [9.2.3]

None

19. Briefly describe how the state agency provides for **dissemination of educational information** regarding well construction and hydraulic fracturing to bridge the knowledge gap between experts and the public as provided in Section 4.2.2.2 of the guidelines. This is especially important in areas where development has not occurred historically and in areas where high volume water use for hydraulic fracturing is occurring. [9.2.4]

None

20. Fundamental differences exist from state to state, and between regions within a state, in terms of geology and hydrology. Describe how the state evaluated and addressed, where necessary, the **availability of water for hydraulic fracturing** in the context of all competing uses and potential environmental impacts resulting from the volume of water used for hydraulic fracturing. [9.3]

Under review; to be determined by DWR as part of required study under H242.

21. Describe how the availability and use of alternative water sources for hydraulic fracturing, including recycled water, is encouraged. [9.3]

N/A

22. Briefly describe how **waste** associated with hydraulic fracturing is managed consistent with Section 4.1.1 and Section 7 of the guidelines. [9.3]

N/A

23. Discuss how the state encourages the efficient development of adequate **capacity and infrastructure** for the management of hydraulic fracturing fluids, including the transportation, recycling, treatment and disposal of source water and hydraulic fracturing wastes. [9.3]



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