



**Responsible Environmental Management of
Oil and Gas Activities in New Brunswick**
Executive Summary of Recommendations

New Brunswick Natural Gas Group
May 2012

Introduction

Some New Brunswickers might be surprised to learn that their province has hosted its own oil and natural gas industry for well over a century. It dates back to 1859, when one of the first oil wells drilled in Canada was constructed near the community of Dover. Since that time about 320 oil and natural gas wells have been drilled in New Brunswick; of these, 82 were drilled in the last two decades. Today, there are 16 wells producing oil in the Hillsborough area, while 30 natural gas wells are in production near Sussex.

There are already environmental protection measures in place that address New Brunswick's oil and gas industry. However in recent years, exploration and production of unconventional oil and natural gas have begun to take place the province. New Brunswick therefore stands on the threshold of what might eventually become an expanded oil and gas industry based on technologies such as horizontal drilling and hydraulic fracturing. It is now appropriate to review and where appropriate, strengthen existing environmental and technical standards to ensure continued responsible environmental management of this industry, both now and in the future.

In January of 2011, the Government of New Brunswick established a Natural Gas Steering Committee and directed it to prepare an Action Plan to ensure that any expansion of the natural gas industry in the Province will take place in a careful and responsible manner. With this goal in mind, the Steering Committee assembled the Natural Gas Group, comprised of experts drawn from within the provincial government and assigned it the task of developing the Action Plan.

The Recommendations

This executive summary provides an overview of the contents of a public discussion document that has been prepared by the Natural Gas Group

as part of the above mentioned Action Plan. It presents 12 key principles for achieving responsible environmental management of both oil and natural gas activities in New Brunswick and summarizes a set of recommendations for putting the principles into operation. These recommendations are now being released for public comment. The detailed recommendations are provided in [Responsible Management of Oil and Gas Activities in New Brunswick: Recommendations for Public Discussion](#).

The recommendations summarized in the following pages are not the product of a single author. They were prepared using advice from a broad cross-section of New Brunswickers via the Provincial Forum on Natural Gas held on June 23, 2011, as well as input from departments and agencies of the Provincial government. Valuable information was also obtained from a review of scientific studies, critiques, model standards, best management practices and evolving regulatory regimes in other North American jurisdictions.

A total of 116 recommendations have been prepared. They include:

- a) 104 [short-term recommendations](#) that could be phased in over approximately the next 1 to 2 years; and
- b) 12 [longer term recommendations](#) that could be considered over approximately the next 3 or more years, if it becomes apparent that the scale and extent of oil and gas activities will expand significantly in New Brunswick in the future.

An Opportunity to Provide Your Comments

Responsible Environmental Management of Oil and Gas Activities in New Brunswick: Recommendations for Public Discussion has been prepared by the Natural Gas Group to assist the public in becoming familiar with the measures and recommendations being proposed and also to obtain public comment.

Comments can be submitted until July 18, 2012, by mail, fax or email using the following contact information:

Natural Gas Group
1350 Regent Street,
Room 150
Fredericton, NB
E3C 1G6
Fax: (506) 453-3671
Email: naturalgas@gnb.ca

An on-line form is also available and can be used to submit comments. The form and an electronic version of this document are available at: www.gnb.ca/naturalgas

There will also be a series of public events beginning in early June. A schedule will be available on the website noted above.

Following the conclusion of the review period a summary of comments received will be prepared and posted on the above website.

Next Steps

All comments received about these proposals will be reviewed and considered by Government. Once the review period has concluded, it is anticipated that the contents of this document will be finalized and subsequently implemented according to a schedule to be determined by Government.

The Need for Continuous Improvement

Developing a plan for the responsible environmental management of oil and gas activities in New Brunswick is not a one-time activity. Technology relating to unconventional oil and gas development is evolving rapidly. In addition, future experience with oil and gas activities in New Brunswick and elsewhere may

suggest additional responses. It is anticipated that the measures adopted by the Province will be regularly revisited, as new information, technology and best management practices become available.

Summary of Recommendations

The principles and recommendations are as follows:

1.0 ADDRESSING POTENTIAL CONCERNS ASSOCIATED WITH OF GEOPHYSICAL (SEISMIC) TESTING

Implementing measures to reduce risks to public safety private property and the environment during seismic testing.

Short term recommendations include:

- Enhanced set-backs between seismic sources and structures;
- Measures to protect surface water and groundwater during seismic testing;
- Measures to respond to naturally occurring methane when encountered during seismic testing; and
- Measures to ensure proper abandonment of holes drilled for seismic testing.

2.0 PREVENTING POTENTIAL CONTAMINANTS FROM ESCAPING THE WELL BORE

Maintaining well bore integrity and reducing the potential for unintentional releases of substances such as fracture fluids, drilling fluids, flowback water, produced water and natural gas from the horizontal or vertical segments of oil and gas wells.

Short term recommendations include:

- Requiring the use of water-based or other prescribed drilling fluids until the surface casing is installed;
- Enhanced standards for oil and gas well casings and casing joints;
- Enhanced well design for wells subject to hydraulic fracturing;
- Requiring the use of surface casing vents to direct stray gas away from groundwater;
- Setting enhanced standards for cementing of well bore casings;
- Ensuring that the surface casing depth of an oil or gas well is sufficient to protect groundwater;
- Requiring cement evaluation logs (testing the integrity of well bore cement);
- Requiring remedial cementing when necessary to ensure the integrity of the well bore;
- Requiring the submission of a fracturing treatment plan by the well operator;
- Requiring the completion and signing of a hydraulic fracturing checklist and certification by the well operator before hydraulic fracturing can begin;
- Requiring pressure testing of the well bore and surface equipment prior to hydraulic fracturing;
- Requiring that the hydraulic fracturing pressure does not exceed the test pressure;
- Requiring monitoring of well bore pressure during hydraulic fracturing;
- Requiring that hydraulic fracturing be terminated if pressure is lost;
- Requiring sealing off and abandonment of defective oil and gas wells that cannot be properly repaired;
- Requiring the use of certified well drilling personnel;
- Enhanced blow-out protection measures;
- Developing stray gas investigation and response guidelines;
- Enhanced well plugging and abandonment standards; and
- Encouraging the use of technologies and additives with the smallest possible environmental footprint.

3.0. ASSESSING GEOLOGICAL CONTAINMENT OUTSIDE THE WELLBORE

Reducing the potential for the escape of substances such as fracture fluids, drilling fluids, and natural gas via underground fractures, faults, abandoned oil or gas wells, or a confining layer that is otherwise inadequate.

Short term recommendations include:

- Requiring an assessment of geological containment prior to hydraulic fracturing, including an analysis of fracture fluid mobility;
- Requiring an analysis of the response of geological formations to hydraulic fracturing including a report that identifies the extent of the fractures that were created; and
- Setting restrictions and special requirements in relation to shallow hydraulic fracturing.

4.0 MANAGING WASTES AND PREVENTING POTENTIAL CONTAMINANTS FROM ESCAPING THE WELL PAD

Reducing the potential for escape of substances due to spills, leaks, improper storage and handling of chemicals, and/or inadequate treatment or disposal of wastes such as flowback water and produced water.

Short term recommendations include:

- Measures to prevent the downward migration of contaminants from well pads;
- Use of “closed loop” (pitless) drill fluid systems;
- Provisions for emergency containment of hydraulic fracturing fluid;
- Waste management plans that will require the characterization (chemical analysis) of all wastes and approval of disposal locations before wastes leave the site;
- Requiring the use of closed containers for handling flowback water and produced water (no pits);
- Requiring oil and gas operators to follow waste management guidelines addressing flowback water, naturally occurring radioactive materials, etc.;
- Establishing requirements that must be met regarding the use of existing waste water treatment facilities to treat flowback water and produced water;
- Requiring oil and gas operators to plan for spill and leak prevention, notification and response;
- Run-off management plans for rainfall and snowmelt;
- Setting requirements for the transportation and storage of fracture fluids and other chemicals;
- Setting standards for storage tanks (e.g. leak detection systems and secondary containment); and

- Enhanced precautions for sour gas (natural gas that contains hydrogen sulphide).
- Potential longer term responses include:
- Identifying additional wastewater treatment and disposal options.

5.0 MONITORING TO PROTECT WATER QUALITY

Monitoring groundwater and surface water to: a) ensure that water-related safeguards are effective; and b) provide early warning of any problems. Monitoring at oil and gas wells to detect problems that may affect water quality.

Short term recommendations include:

- Mandatory, industry-funded water well testing before* and after nearby seismic testing;
- Mandatory, industry-funded water well testing before* and after nearby drilling and hydraulic fracturing;
- Establishing surface water and groundwater monitoring requirements for oil and gas well locations; and
- Establishing monitoring requirements at oil and gas wells for leaks, corrosion or deterioration.

* Announced on June 23, 2011

Potential longer term responses include:

- Enhancing the provincial water monitoring network.

6.0 PROVIDING FOR THE SUSTAINABLE USE OF WATER

Implementing measures in relation to oil and gas activities that will reduce freshwater consumption, conserve New Brunswick's potable water, and require the sustainable use of water by the operators of oil and natural gas activities.

Short term recommendations include:

- Identifying recycling and re-use as the preferred method of managing flowback water and produced water;
- Establishing a hierarchy of preferred water sources for drilling and hydraulic fracturing;
- Mandatory assessments of proposed water sources, that consider the needs of other water users, including ecological needs; and
- Water use planning and reporting by the operators of oil and gas activities.

Potential longer term responses include:

- The development of a water management strategy for oil and gas activities in the province ; and
- Establishment of a water use permitting and approval process for large volume water users.

7.0 ADDRESSING AIR EMISSIONS INCLUDING GREENHOUSE GASES

Setting emission limits, monitoring emissions and planning for emission reductions.

Short term recommendations include:

- Emission limits;
- Emission monitoring and ambient air quality monitoring;
- Emission reduction plans; and
- Reporting of greenhouse gas emissions.

Potential longer term responses include:

- Enhanced ambient air quality monitoring by the province.

8.0 ADDRESSING PUBLIC SAFETY AND EMERGENCY PLANNING

Planning for public safety and emergency response.

Short term recommendations include:

- Setting standards for mandatory security and emergency planning by oil and gas operators.

9.0 PROTECTING COMMUNITIES AND THE ENVIRONMENT

Addressing challenges that oil and gas development may represent for social and physical environments that are valued by New Brunswickers.

Short term recommendations include:

- Restrictions on oversize and overmass loads;
- Haul route planning by oil and gas operators to address environmental and safety issues;
- Road use agreements and road system integrity studies to: a) identify costs of road repair and upgrades necessary to accommodate oil and gas activities; and b) assign these costs to oil and gas operators;
- Enhanced noise level limits;
- Noise mitigation and monitoring;
- Visual impact mitigation plans;
- Siting restrictions and set-backs for oil and gas activities; and
- Establishing post-project site restoration and remediation requirements.

10.0 REDUCING FINANCIAL RISKS TO LANDOWNERS AND THE PROVINCE AND PROTECTING LANDOWNER RIGHTS

Addressing financial risks that may result from oil and gas activities in New Brunswick, and recognizing that government has a role to play in protecting the rights of private landowners.

Short term recommendations include:

- A comprehensive set of industry-funded financial securities including: a) a financial security for damage*; b) mandatory liability insurance coverage for oil and gas operators; c) an enhanced well abandonment financial security; and d) an orphan oil and gas well fund;
- A water supply replacement protocol for establishing the conditions under which funds from the above financial security for damage would be used to replace or restore an impaired water supply;
- Revenue sharing with communities and landowners that host natural gas production*; and
- Adopting land agent licensing and standards of conduct.

Potential longer term responses include:

- Guidelines for lease agreements between landowners and the oil and gas industry;
- An enhanced occurrence management system;
- A new conflict resolution mechanism; and
- An environmental contingency fund.

* Announced on June 23, 2011

11.0 SHARING INFORMATION

Ensuring that regulators, industry and all New Brunswickers have access to a common set of accurate information about oil and gas activities in New Brunswick.

Short term recommendations include:

- Providing a comprehensive, plain language description of the Province's environmental requirements for oil and gas activities;
- Providing greater public access to environmental assessment information;
- Setting a prescribed public notification radius for proposed oil and gas facilities;
- Setting a prescribed public notification radius for seismic testing;
- Mandatory disclosure of fracture fluid additives used in New Brunswick *; and
- Public liaison committees in relation to oil and gas projects.

Potential longer term responses include:

- Providing enhanced public access to project-specific information about oil and gas activities in New Brunswick.

* Announced on June 23, 2011

12.0 MAINTAINING AN EFFECTIVE REGULATORY FRAMEWORK

Fostering an informed, enforced and continuously improving set of environmental rules governing oil and gas activities in New Brunswick.

Short term recommendations include:

- Continuing to enable phased reviews of proposed oil and gas facilities under the Environmental Impact Assessment Regulation, Clean Environment Act;
- Assessing enforcement capabilities;
- Timely implementation of the recommendations contained in this document;
- Gathering additional information about hydraulic fracturing using research and monitoring based in New Brunswick; and
- Continuous improvement of standards and regulations in light of experience and research in New Brunswick and elsewhere.