

Final Scope

Review of Hydraulic Fracturing in oil and gas operations in Nova Scotia

The Nova Scotia government has announced a joint review by the departments of Energy and Environment to examine the potential impacts of hydraulic fracturing in oil and gas operations in the province.

The team of senior technical and policy staff will work collaboratively to identify potential environmental issues, determine how they are managed in other jurisdictions and identify industry best practices. The team will look at the ongoing technical reviews of other jurisdictions across Canada and in the United States and bring in outside experts in certain subject areas as required. The team will also review the Province's existing regulations and practices and make recommendations to the Ministers to ensure industry and regulatory best practice is being employed in the province.

The scope is focused primarily on issues about water. The review will examine the following potential environmental issues:

Effects on groundwater

The review will assess the short and long-term potential risks to groundwater and water wells, including both water quality and quantity issues. This will involve an evaluation of risks to groundwater at each stage of the hydraulic fracturing water life-cycle, including water acquisition, additives mixing, well injection, flowback/produced water and wastewater management. Specific issues to be considered include, but are not limited to, the need for baseline groundwater monitoring and water well survey data.

Use of and effects on surface water

The review will examine surface water acquisition for hydraulic fracturing operations, including the quantity of water required and potential sources in the areas where exploration activities may take place. This will involve, but not be limited to, an investigation into the potential impact of these withdrawals on other users, including impacts to the aquatic ecosystems, as well as a review of water withdrawal system designs. A comprehensive evaluation of the potential risks to surface water supplies due to location of a hydraulic fracturing operation will also be conducted as part of this review.

Impacts on land, such as potential soil contamination

Impacts on land as a result of hydraulic fracturing will be examined in detail and may include, but not be limited to, impacts of storage and handling of hydraulic fracturing additives; generation, storage and handling of wastes from fracturing operations, as well as the impacts on soils of storage and handling of petroleum products. The review will consider such parameters as site development, proximity to surface and groundwater resources, hydraulic conductivity of soils, as well as the fate and transport of chemicals of concern in the environment.

Management of additives in hydraulic fracturing fluids (disclosure)

The review will assess the additives used in hydraulic fracturing. This will involve evaluation of the potential risks associated with mixing of additives, their life cycle in the environment, storage and handling of these additives as well as potential risks to ground water and surface water supplies. The review will address the requirement for disclosure of the additives used in hydraulic fracturing.

Waste management, including surface ponds of produced waters (treatment and disposal)

The review will assess current and available waste management technologies for treating water used in hydraulic fracturing. An evaluation will be undertaken of the potential risks to the environment associated with each of the technologies reviewed. Specific issues to be considered include but are not limited to, brine storage ponds, deep well injection, chemistry of the wastewaters, presence of naturally occurring contaminants in formation waters, drill fluids and drill muds treatment and disposal, as well as the chemistry of solid wastes associated with the hydraulic fracturing operations.

Site restoration

The review will assess final site restoration requirements. This will include but not be limited to an assessment of well decommissioning, removal of infrastructure, soil assessment, soil remediation, long-term monitoring and assessment of brine storage pond and holding tank decommissioning.

Submission requirements for hydraulic fracturing design

The review will assess the submission requirements for the design of hydraulic fracturing operations, including the chemicals used and the engineered design.

Financial security / insurance that operators are required to provide prior to conducting activity in the province

Financial security may include a form of bond, legal tender assigned by companies in trust to a government department, or other appropriate form of security offered as assurance that the company will properly complete proposed work activities. Financial security is also used as assurance that a company will properly abandon a work site and restore it to its natural state. Financial security is required throughout the different phases of resource development. The review will assess the financial security requirements for hydraulic fracturing activities in Nova Scotia to ensure that the requirements address the relevant risk of the activities being conducted.