
FACT SHEET

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Ministry of Forests, Lands, Natural Resource
Operations and Rural Development

Managing Dugouts in Northeast B.C. – Mattison Report

VICTORIA – Dugouts, artificial ponds, are used for water supply and have been a common feature for many years on agricultural lands in B.C. and across the country. In northeast B.C., dugouts have been used for decades, primarily as a water source for livestock, and in recent years, for oil and gas activities.

In response to concerns about potential unauthorized water use and possibly dangerous constructed water storage structures (dams and dugouts), the ministry initiated two projects in 2016. One project involved the analysis of satellite image data to identify constructed water storage structures. The second engaged a consultant, Jim Mattison, to explore the legal, policy, and practical challenges of addressing ‘the dugouts issue’, and to develop recommendations. The report was commissioned by the ministry and was seeking the opinion of the author on the best way to manage and respond to the new *Water Sustainability Act* and what appears to be a proliferation of constructed water storage structures in northeast B.C. Information from the two reports helped inform government’s actions to address ‘the dugouts issue’, starting with priority field assessments during the summer 2017.

The satellite image analysis found approximately 8,000 constructed water storage structures (larger than ~400 m²) in the Northeast Region. Approximately 500 of these were estimated to be larger than 0.5 ha (5,000 m²). The Mattison Report used the preliminary results from the satellite image analysis to scope the issue and support recommendations on how to address it. Jim Mattison was chosen for his extensive experience with water management and regulation in B.C. While the opinions and recommendations do not always align with current legislation or policy but they are valuable in supporting government’s considerations on how to manage and regulate water storage structures in Northeast B.C.

The constructed water storage structures referred to in the Mattison report are regulated by the Oil and Gas Commission (OGC) and by the Ministry of Forests, Lands, Natural Resource Operations and Rural Development. For oil and gas permit holders, water storage structures on Crown land are authorized by the OGC. Other water storage structures on private land or for use by other sectors are regulated by the ministry. This fact sheet clarifies some of the information in the report and corrects some of the data.

Number of Oil and Gas Wells and Activity Level

The introduction to the report correctly identifies advances in hydraulic fracturing or fracking as a major contributor to water use in northeast B.C. The report makes reference to incorrect numbers of wells fractured (1,400 in 2008 and 700 in 2009 for Progress Energy alone per the Report) and a 2009 financial crash. Figure 1 provides the number of wells owned by Progress that have been fracture stimulated year by year since 2008

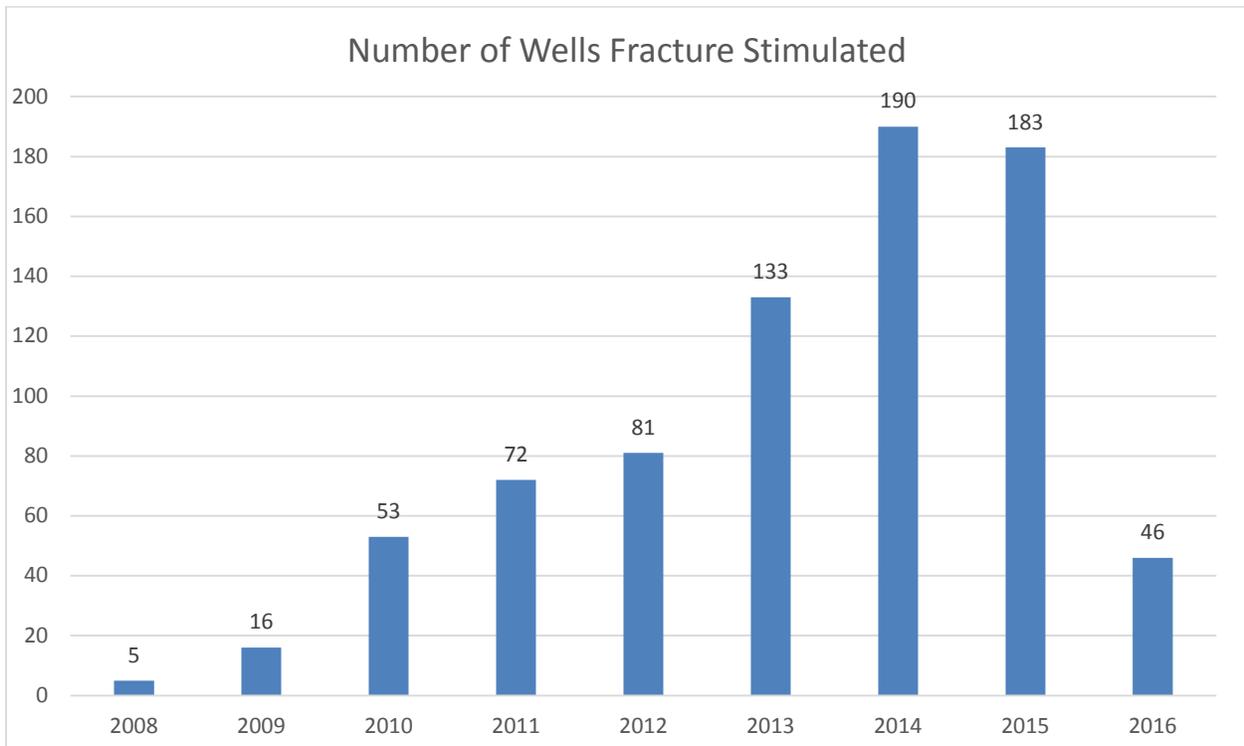


Figure 1

Water Use

Water used for oil and gas activities (including hydraulic fracturing) is obtained from a variety of sources and increasingly makes use of recycled water from post fracture flow back, produced reservoir fluids and grey water from the city of Dawson Creek.

The report notes produced water may be discharged to the surface under a permit issued under section 12 of the *Environmental Management Act*. No such permits have been issued to date, and the Province placed a prohibition on surface discharge of certain types of produced water in 2007. Further, there is a policy prohibiting the reintroduction of produced water to the environment. Work is underway to consider reintroduction of produced water and flow back water to the environment if it can be demonstrated that the treatment and discharge will achieve the standards established by the Ministry of Environment and Climate Change Strategy and be consistent with applicable water quality objectives and guidelines.

How recommendations in the Mattison report are being used by government staff

Observation and Information Gathering

1. Create a senior-level Steering Committee

A steering committee has been established with representation at the Executive Director and Director levels. Reporting links to government's Natural Resource Sector (NRS) Assistant Deputy Ministers and the Deputy Ministers Committee on Natural Resources (DMCNR)) have also been established. A project manager and working level team have been established to manage the planning and operational aspects of the field assessments.

2. Create a Dugout Database

As part of the remote sensing analysis, a spreadsheet was created containing information on all of the 'constructed water bodies' found in the satellite image data. This information is being used to set priorities and plan the field assessment work. Information available from the satellite data (location, ~size) was populated. Additional information from field assessments and other data sources is being collected and recorded as appropriate. Existing databases include: Applications & Authorizations, and Dam Safety components of e-Licensing. Data management will be carefully considered to avoid duplicating effort and to ensure linkages between separate databases are maintained.

Of note, any water withdrawals from dugouts constructed by oil and gas activity permit holders requires permitting and volume reporting. These volumes are reported quarterly by the OGC. If water is taken from a dugout without the appropriate permits in place, enforcement actions are taken.

3. Determine land ownership

This work is ongoing. Land ownership is available through the Land Registry. Dugout-Dam ownership or responsibility is more complex. The ministry is working with the OGC to clarify and avoid any gaps.

4. Determine a Responsibility Center for each dugout

Generally the OGC is responsible for dugouts built on Crown land by oil and gas company clients. The ministry is responsible for dugouts constructed on Crown land by non-oil and gas companies and for dugouts constructed on private land. In a few cases, leasing arrangements or complexities around dugout construction and use of water challenge the straightforward determination of responsibility. The ministry and the OGC are working together to clarify and avoid any gaps. Also see Recommendation #10.

5. Create an Administrative Team

A working level team has been formed including a project lead, subject matter experts (dam safety, water authorizations, compliance & enforcement) and logistics support staff. Team members have the ability to maintain and add to the dugout database. The administrative requirements of authorizations and dam safety will be integrated into the current, and new (see recommendation 7) work teams in the Northeast Region.

6. Recruit a water manager for the Fort St. John office

The ministry has designated a Water Manager and an Assistant Water Manager based in the Northeast Region. A support network consisting of experienced water managers and senior advisors has been put in place. The OGC has Water Managers and Assistant Water Managers actively involved in water regulation for the oil and gas sector.

7. Immediately recruit and train two new Dam Safety Officers for the Fort St. John office

The ministry has recruited one new dam safety officer who started in Fort St. John in September. The need for a second dam safety officer will be re-evaluated as part of a progress and policy review. The OGC has one dam safety officer and a dam integrity engineer. Both are actively involved in this issue and the regulation of dams for the oil and gas sector.

8. Share the “OG Dugout” Information with the Oil and Gas Commission

The ministry and OGC share information and work in close collaboration on field assessments that have been conducted in summer 2017 and gather further information as required.

9. Share the entire Dugout Database with the OGC

The ministry and OGC are sharing data from the satellite image analysis and are working collaboratively to fill any information gaps. Both OGC and ministry staff involved in water authorizations and dam safety have access to the relevant e-licensing components.

10. Negotiate a protocol with the OGC for dugout responsibility and dugout assessment on gas leases

The ministry and OGC are sharing information and working to clarify the appropriate authorizations for land tenure, water use, and storage of water and ensure consistency in authorizations. As a result, there will be very clear responsibilities and processes between FLNR and OGC respecting gas leases. Also see Recommendation #4.

11. Investigate and discuss joint assessments with OGC staff

The ministry and OGC have conducted joint Dam Safety training and joint field assessments on priority OGC dam sites. Both are represented on the Dugouts Working Group and in executive briefings. Coordination will continue through the field assessment period and during follow up work on policy, regulatory, compliance and enforcement responses.

Awareness and Education

12. Create public messaging

The steering committee has developed communications to help inform the public, First Nations and stakeholders about dams and dugouts in the Northeast. Longer term communications plans and products will be considered in concert with the follow up work on policy, regulatory, compliance and enforcement responses. The OGC is working with their communications department to provide additional details specific to that sector.

13. Seek a regulation to exempt small dugouts

An exemption for small dugouts for the purposes of livestock watering is already under consideration. Other potential policy and regulatory changes will be considered as further work on the issue progresses. Many of the small dugouts detected in the satellite imagery were borrow pits for material used in road or pipeline construction that subsequently filled with water. Authorization is required to withdraw water from these structures.

14. Communicate inside government about the Dugout activities

The steering committee includes representation from key agencies and the OGC and participants are charged with communicating within their organizations.

Seeking Compliance

15. Create a policy for seeking compliance and undertaking enforcement

A policy regarding the authorization of water diverted by or stored in a dugout was in place under the previous *Water Act*, and policies to reflect the new *Water Sustainability Act* requirements came into effect in October. The Dam Safety Compliance and Enforcement Policy and Strategy and Procedures for Compliance and Enforcement will be followed for issues related to compliance with the Dam Safety Regulation. The priority for the field assessment period was to identify and address any imminent risks to public safety, property and infrastructure as well as significant risks to the environment. A secondary objective of the field assessments was to gather additional information on the scope of unauthorized water use and works. The field assessments did not find any structures posing a significant public safety risk and relatively few potential risks to the environment. Action has now been taken to address these sites. Future work will deal with unauthorized water diversion and use.

16. Seek to get Administrative Penalty Regulation completed and brought into force

The development of an Administrative Penalty Regulation is planned for the *Water Sustainability Act*. The OGC has administrative penalty provisions under the Oil and Gas Activities Act.

17. Directly contact owners of large dugouts that are unlicensed or for which there is no application in the ministry or the OGC

Following the field assessments, direct contact is being made with owners where unauthorized water diversion or dam safety issues were detected. Longer term education and awareness efforts will encourage all dugout owners to comply with legal requirements. Further compliance and enforcement actions will be undertaken where voluntary compliance is not obtained.

18. Create a field assessment plan

The field assessment plan was implemented with helicopter flights from July through September 2017; see #20 below for a summary. The high priority sites were assessed and the information gathered will be used to plan subsequent assessments.

19. Create an assessment team or teams

A three-person team consisting of: a Dam Safety Officer, a Water Authorizations Specialist, and a Natural Resource Officer conducted the 2017 field assessments. The OGC also conducted assessments using their field assessment team. For joint assessments, both the ministry and OGC participated.

20. Assess all 363 Large and 149 Very Large dugouts

The remote sensing analysis picked up a number of large water storage structures that are already under appropriate regulation. These include structures on mines and mill sites, municipal wastewater lagoons, and structures that the OGC has already taken action on. These were not included in the field assessment plan to avoid duplication. The field assessments targeted the remaining large and very large structures and a significant sample of the medium size structures that fell within reasonable proximity to the flight paths for the large and very large structures.

In addition to the remote sensing analysis undertaken by the ministry, the OGC completed a desktop GIS exercise that reviewed 640 water bodies using the OGC's high resolution orthophoto imagery and the ministry's constructed water impoundment analysis. Of the 512 large and very large dugouts (waterbodies in excess of 0.5ha in size and identified in the ministry's review), 434 were reviewed including 268 that were deemed to be oil and gas related (as they are proximal to oil and gas infrastructure) and 166 that were associated with resource roads. In addition, 206 medium sized dugouts were included in the review as they could be readily addressed in conjunction with the larger dugouts. The GIS and orthophoto review determined that 583 of the 640 water bodies do not have dams. These sites include borrow pits, sumps, produced water ponds, and lease water runoff ponds.

In May, the OGC and the ministry undertook joint helicopter and field assessments of 48 oil and gas water structures with dams (a subset of dugouts) and the OGC field team assessed another 7 suspected dams.

Field inspections were conducted on 220 sites during July and August. Of those sites, 182 were determined to be ministry responsibility and 38 sites as the responsibility of OGC. The field assessment found 80 of the 220 sites had dams as part of the water impoundment works.

- 41 sites were identified as having a "regulated" dam under Part 3 of the Dam Safety Regulation;
- 33 sites were considered as "minor" dams;
- 6 of the sites were considered to be OGC related activity.
- None of the sites assessed were determined to have a public safety hazard and only two sites were noted to require immediate follow-up action because of a large environmental hazard. The Hazard Consequence of the 41 regulated dams are High (1); Significant (18); Low (22).

21. Assess medium dugouts that are easily accessible

Many medium size impoundments were also assessed during the field work. The summary provided above includes the information collected regarding medium sized impoundments.

22. Create a plan to assess the remaining medium dugouts as time and resources permit over the subsequent years

Plans for future and annual field assessments as well as compliance, enforcement, policy, and regulatory follow-up are being developed.

23. Log all assessment findings into the Dugout database

Field assessment and other available information will be recorded in appropriate databases.

Enforcement

24. Involve OGC and ministry Compliance and Enforcement Branch in assessment planning

Compliance and Enforcement (C&E) are represented on the steering committee and the working group. C&E staff are actively involved in the field assessments and will be involved in the follow up planning and policy analysis sessions scheduled for the fall, 2017.

25. Ensure assessment staff are all familiar with the Compliance and Enforcement Policy

The working group has developing clear and consistent processes for initiating Orders under the *Water Sustainability Act* and for C&E Investigations. This will ensure timely, effective, consistent response to significant risks to safety or the environment.

26. Take enforcement action as necessary in accordance with the policy

The OGC has taken enforcement action on seven dams to date. Further enforcement actions will be taken on sites and situations that present a significant risk to public safety or the environment. A longer term compliance and enforcement plan will be developed for sites and situations of non-compliance that do not present a significant or immediate risk.

27. Prepare a quarterly report for the ADM

Frequent, timely reporting to natural resource sector ADMs is occurring for the planning and field assessment periods, and as actions are taken to address authorization and dam safety issues.

For more information visit: <https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/drought-flooding-dikes-dams/dam-safety>