Newfoundland and Labrador Dam Safety Program

October 2015

Department of Environment & Conservation
Water Resources Management Division

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1.0 History of Dam Safety Program

Prior to the creation of the Water Resources Management Division (WRMD) in 1976, dam safety in the province of Newfoundland and Labrador was covered by the *Crown Lands Act*. The current provincial Dam Safety Program under the WRMD has existed since the early 1980's when environmental approvals were first issued under the *Department of Environment Act* for the construction of dams. In 1987, the Minister of Environment authorized the engineering consulting firm Shawmont Newfoundland Ltd. to undertake the development of "Dam Safety Guidelines for the Province of Newfoundland". However, these preliminary guidelines were never officially adopted by the province. Instead, the province adopted the Canadian Dam Association (CDA), *Dam Safety Guidelines* when released in 1999.

The *Water Resources Act* was passed in 2002 with several sections focused on dam safety. In 2004, the scope of the Dam Safety Program expanded with the development of the Dam Inventory Database. This database was developed in-house by the Department of Environment and Conservation (ENVC) and is a web based application. There were extensive efforts to populate the Dam Inventory Database up until 2007 through questionnaires sent to dam owners, and field visits conducted by ENVC staff. From 2008 onwards, records in the database have been updated as new information was received. In 2010, ENVC first initiated work on getting cabinet approval for drafting Dam Safety Regulations. It is expected that a submission will be made to Cabinet in 2015 for the approval of provincial Dam Safety Regulations.

1.1 Purpose of Report

With over 600 dams in the province, the risk posed by these structures needs to be managed and mitigated. There are two elements to this risk: i) the magnitude of the consequences of a dam failure with respect to loss of life, environmental damage, and economic losses; and, ii) the probability of a dam failure occurring. Both of these elements can be better managed to reduce risk through a comprehensive provincial Dam Safety Program.

The main objectives of this report include:

- Providing an overview of the status of dams and dam safety in the province
- Examining dam safety management programs from other jurisdictions
- Establishing basic foundations for the province's dam safety program including legislative authority, definitions, and technical framework
- Examining options and making recommendations for improved dam safety management
- Reviewing actions needed to improve the Dam Inventory Database
- Improving education and outreach on dam safety for both dam owners and the public

2.0 Status of Dams in Newfoundland and Labrador

There are currently 638 known dams listed in the province's Dam Inventory Database. As new dams are identified and old dams are removed from the database, this number will fluctuate. Figure 1 indicates the location of the majority of these dams.

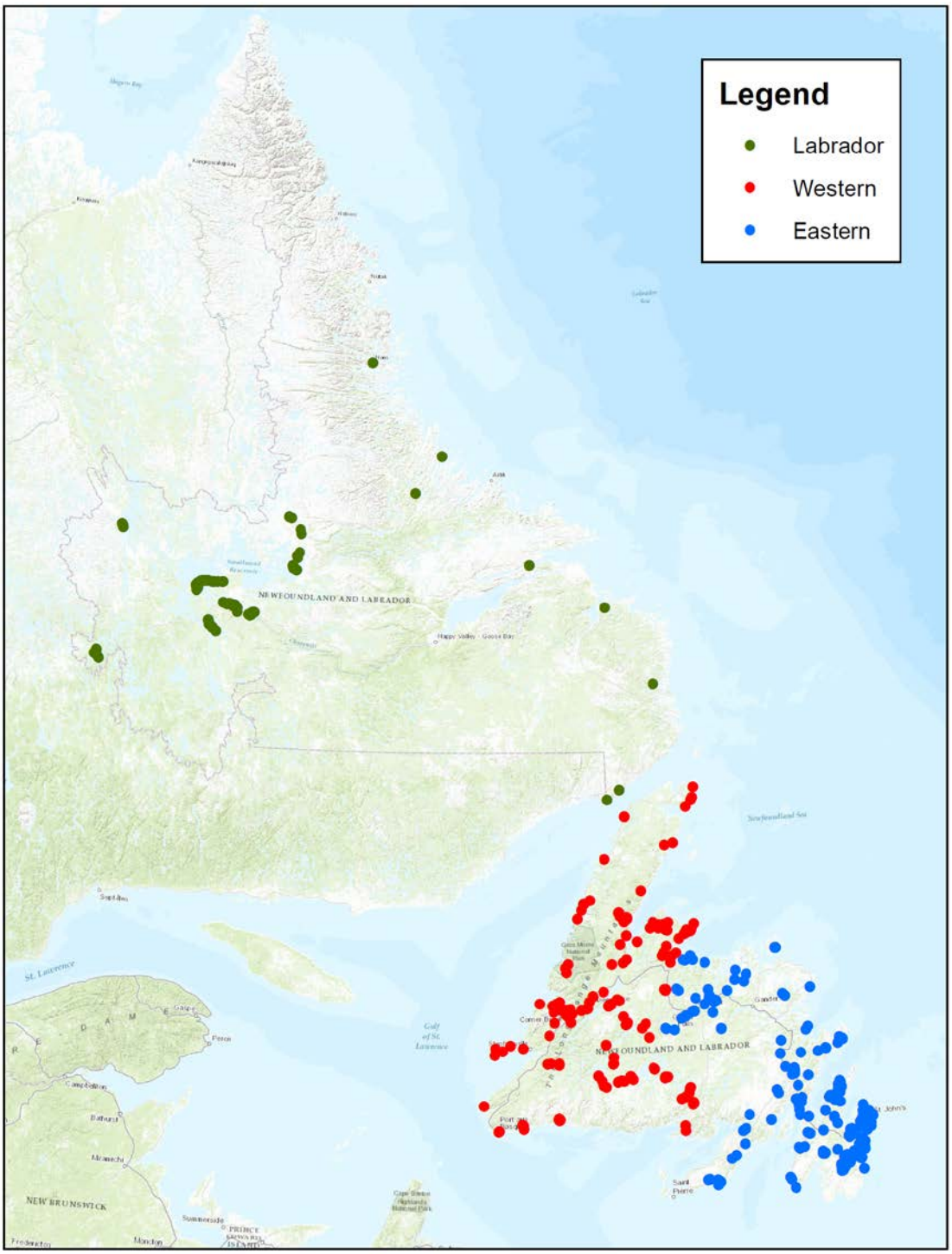

Figure 1: Location of dams in NL by region

As indicated in Figure 2, the majority of dams are located on the Island, approximately 46% in the Eastern region and 35% in the Western region. Only approximately 19% of the province's dams are located in Labrador.

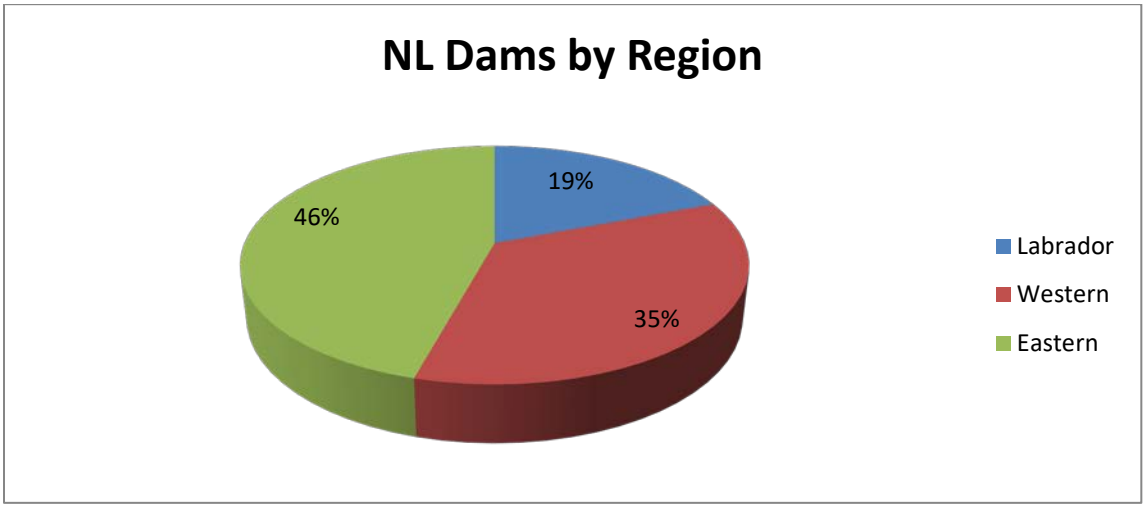

Figure 2: NL dams by region

Figure 3 indicates the primary purpose of dams in the province. The majority of dams are used in hydro developments, followed by drinking water supply dams, and dams used at mining facilities. A handful of other dams in the province are used for recreational purposes, industrial water supplies, flood management, agriculture, habitat enhancement, and academic research.

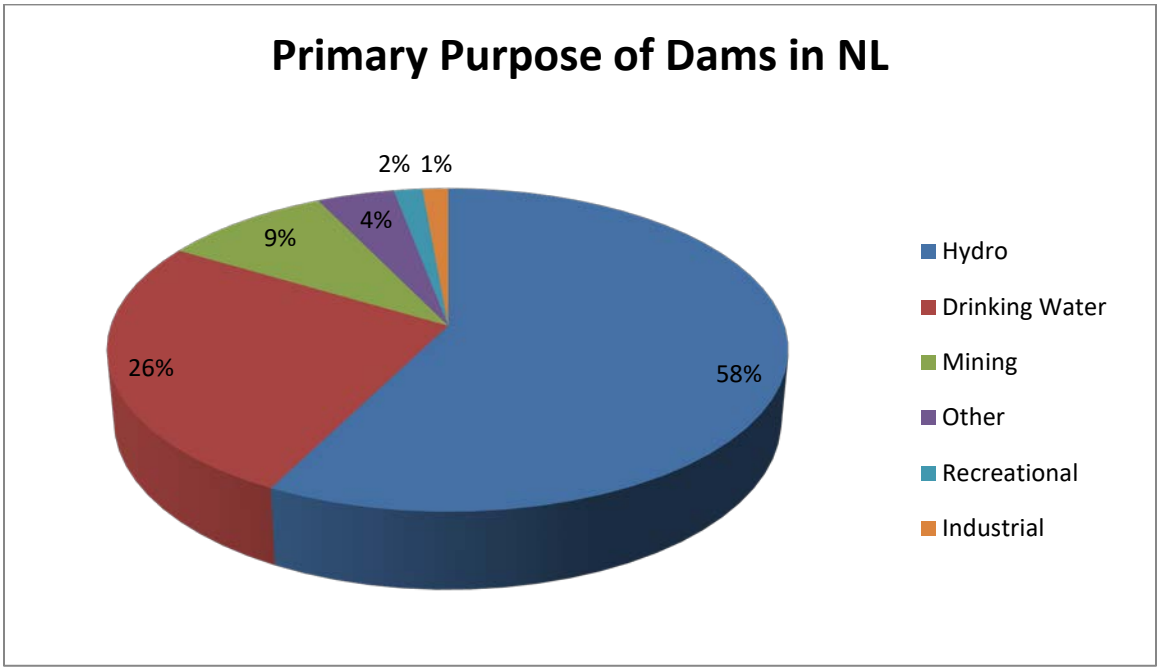

Figure 3: Primary purpose of dams in NL

Figure 4 indicates the distribution of dam owners in the province. NL Power, NALCOR and CF(L)Co are responsible for more than half the dams in the province. Municipalities, Local Service Districts (LSD), and Unincorporated Communities are responsible for just over a quarter of dams in the province. Other dam owners include various mining companies, the Department of Natural Resources, Corner Brook Pulp and Paper-Deer Lake Power, Ducks Unlimited, the Department of Municipal Affairs, the Department of Transportation and Works, various industry companies, and various recreational facilities. Approximately 2% of dams in the province have no identified or existing owner.

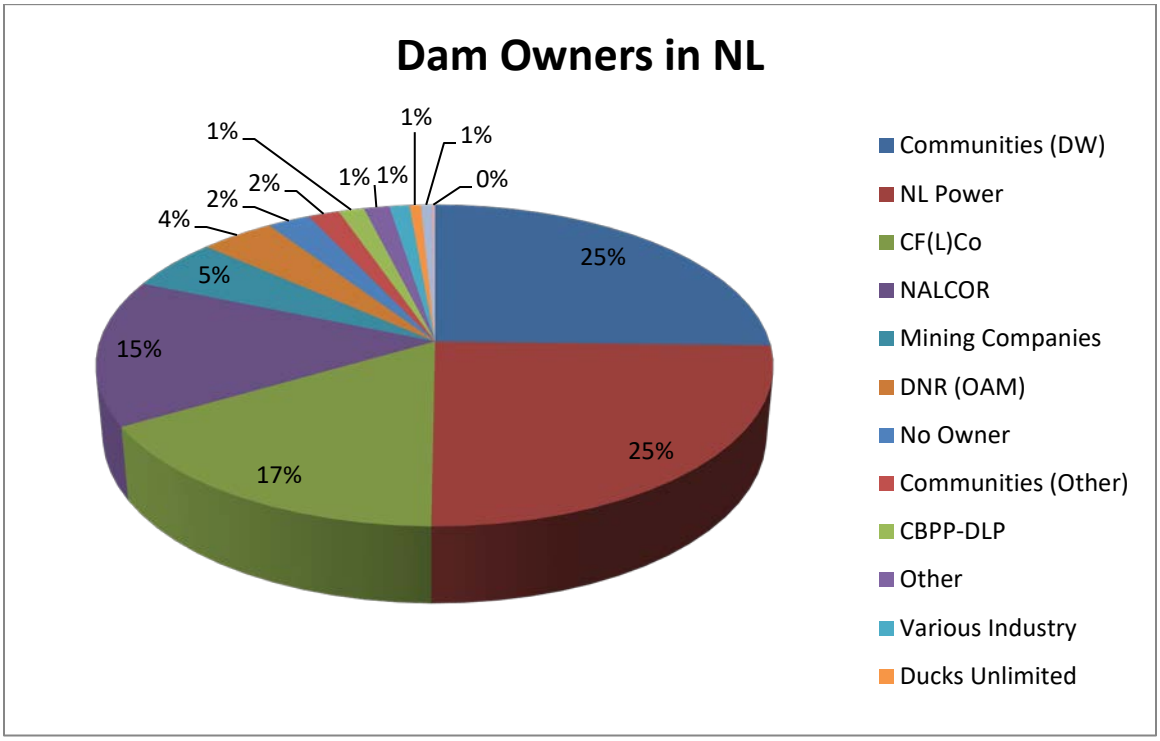

Figure 4: Dam owners in NL

2.1 Dam Classification

The Canadian Dam Association (CDA), *Dam Safety Guidelines* provides a dam classification scheme based upon estimates of potential consequences of dam failure. This only looks at one of the two elements of risk posed by dam structures, and does not take into account the probability of a dam failure occurring. The classification scheme used when the Dam Inventory Database was first created in 2004 is based on the 1999 version of the *Dam Safety Guidelines*. The classification scheme is outlined in Table 1.

Table 1: 1999 Dam Safety Guidelines classification of dams

Consequence Category	**Potential Incremental Consequences of Failure**	
	Life Safety	**Socioeconomic, Financial & Environmental**
Very High	Large number of fatalities	Extreme damages
High	Some fatalities	Large damages

Low	No fatalities anticipated	Moderate damages
Very Low	No fatalities	Minor damages beyond owner's property

This dam classification scheme was updated in the 2007 version of *the Dam Safety Guidelines*. Table 2 outlines the updated classification scheme which is based on potential consequences of a dam failure including loss of life, loss of environmental and cultural values, and losses to infrastructure and the economy. The province's Dam Inventory Database was not updated at the time to reflect these changes. Consequently, dam classification in the database is a mix of the old and new.

Table 2: 2007 Dam Safety Guidelines classification of dams

Dam Class	**Population at Risk**	**Incremental Losses**		
		Loss of Life	**Environmental and Cultural Values**	**Infrastructure and Economics**
Low	None	0	Minimal short-term loss No long-term loss	Low economic losses; area contains limited infrastructure or services
Significant	Temporary Only	Unspecified	No significant loss or deterioration of fish or wildlife habitat Loss of marginal habitat only Restoration or compensation in kind highly possible	Losses to recreational facilities, seasonal workplaces, and infrequently used transportation routes
High	Permanent	10 or Fewer	Significant loss or deterioration of important fish or wildlife habitat Restoration or compensation in kind highly possible	High economic losses affecting infrastructure, public transportation, and commercial facilities
Very high	Permanent	100 or Fewer	Significant loss or deterioration of critical fish or wildlife habitat Restoration or compensation in kind possible but impractical	Very high economic losses affecting important infrastructure or services (e.g., highway, industrial facility, storage facilities for dangerous substances)

Extreme	Permanent	More than 100	Major loss of critical fish or wildlife habitat Restoration or compensation in kind impossible	Extreme losses affecting critical infrastructure or services (e.g., hospital, major industrial complex, major storage facilities for dangerous substances)

There is some debate amongst the Canadian dam safety community whether the above classifications should refer to actual or potential consequences if a dam fails, and whether there is a credible failure mode. Other jurisdictions have considered delicencing dams if there is no credible failure mode. What is meant by important versus critical fish or wildlife habitat is also open for interpretation.

Figure 5 indicates unconfirmed dam classifications from the Dam Inventory Database. More than a quarter of dams have not been classified due to lack of information. Of the dams that have been classified, 38% are classified as low, 14% as significant, 13% as high, 5% as very high and 3% as extreme. High to extreme class dams are of more concern as there is potential for loss of life in the event of a dam failure.

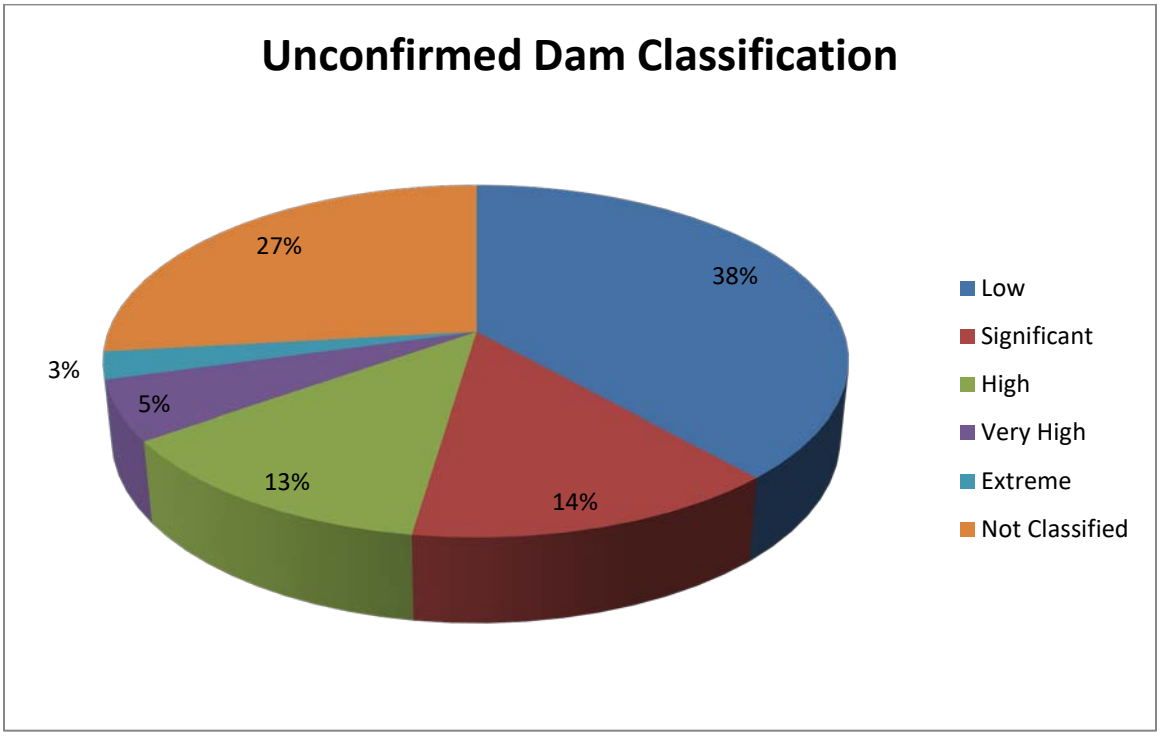

Figure 5: Unconfirmed dam classification as per the CDA Dam Safety Guidelines

Over 25% of the 638 known dams in the Dam Inventory Database were built more than thirty-five years ago. Depending on the material used (e.g., wood vs. concrete), the useful life of a dam can range from 15 to 100 years. Older dams may require more frequent inspections and comprehensive upgrades.

2.2 Dam Height, Volume, Material and Age

Information on dam height, volume, material and age from the provincial Dam Inventory Database is not complete. Figure 6 indicates that over half of the dams in the province are over 2.5 m in height. This has implications with respect to the definition of a dam used for regulatory purposes, as this definition is based on dam height.

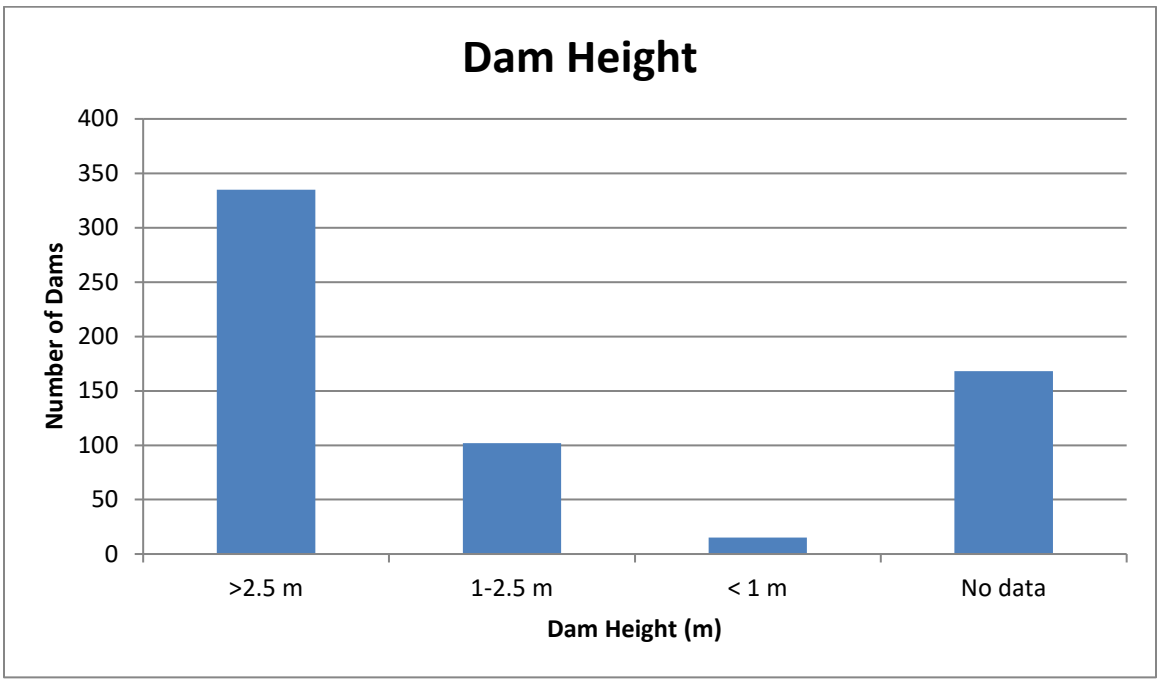

Figure 6: Dam height

Figure 7 indicates that there is a significant lack of data with respect to reservoir storage volume. This lack of data will have implications with respect to how dams are defined for regulatory purposes, as the definition is also based on the volume of water stored behind the dam.

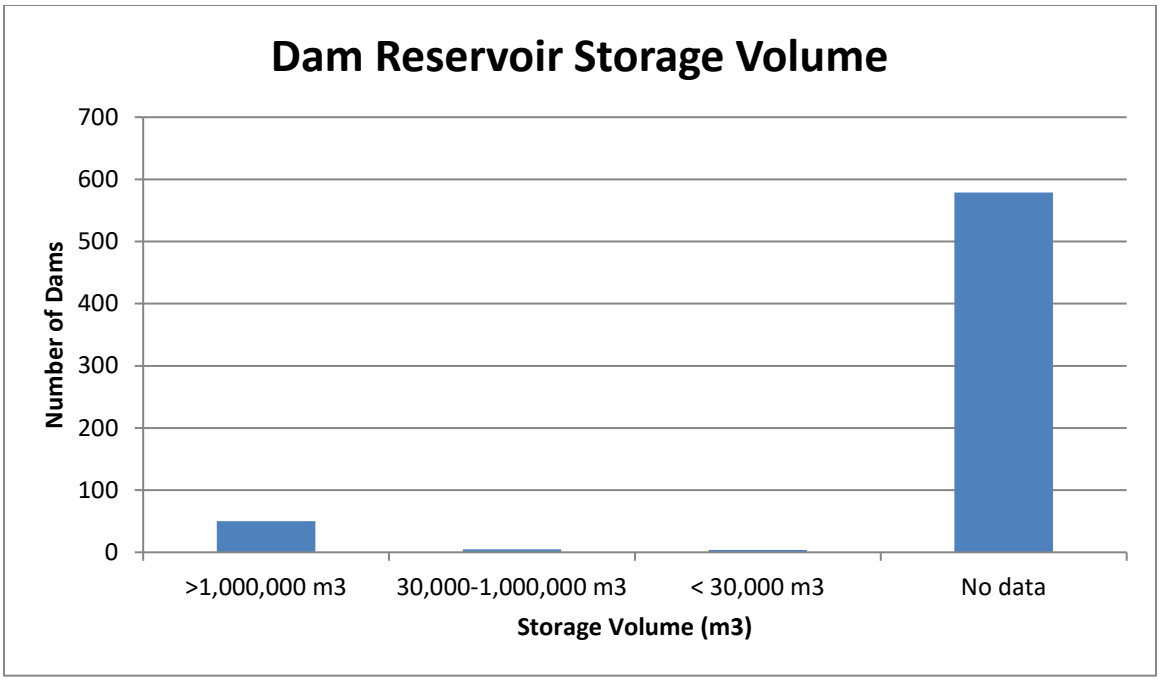

Figure 7: Dam storage volume

Figure 8 indicates that over half the dams in the province are mainly earthfill structures. The next most common type of dam is concrete and then rockfill structures.

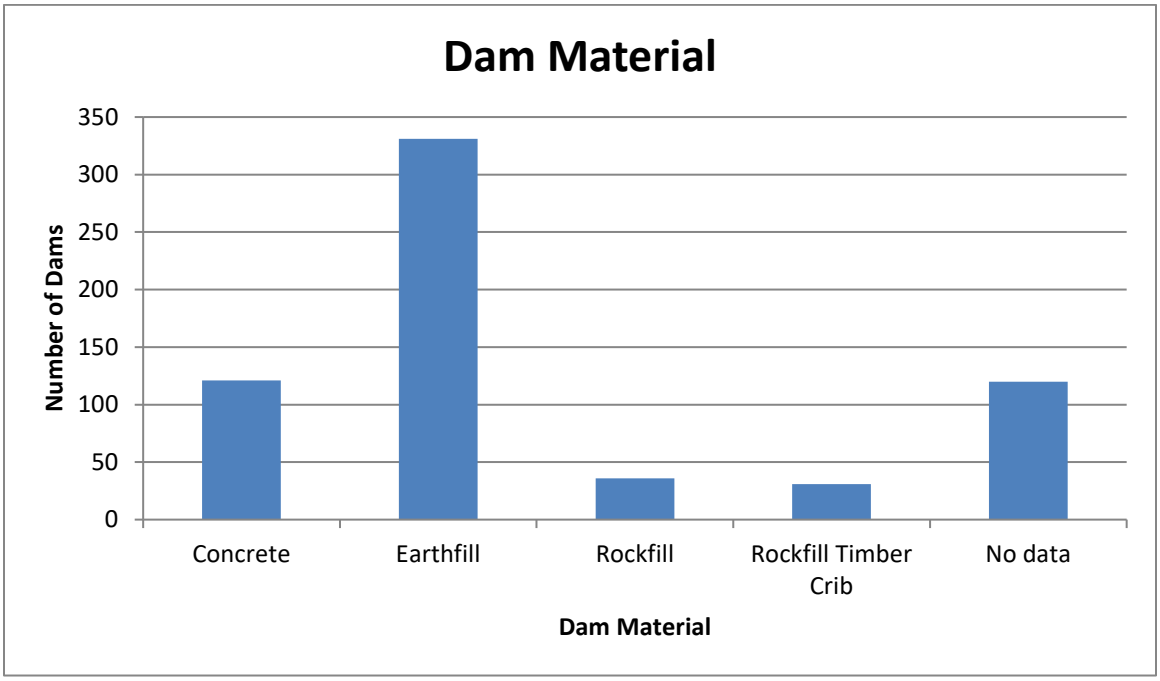

Figure 8: Dam material

The type of dam material has implications with respect to the expected useful life of dams in the province. Table 3 indicates the expected useful life of reservoirs and dams based on the material used in construction.

Table 3: Expected useful life of dams

Reservoirs and Dams	Years
Concrete	50-100
Steel	30-80
Wood	15-30
Earthen	20-50

Figure 9 indicates the time period during which over half the dams in the province were built. The earliest dam still active from the Dam Inventory Database dates to 1905. Peak dam building occurred in the province in the 1980s with the construction of at least 85 dams. At least 25% of dams in the province are over 35 years old.

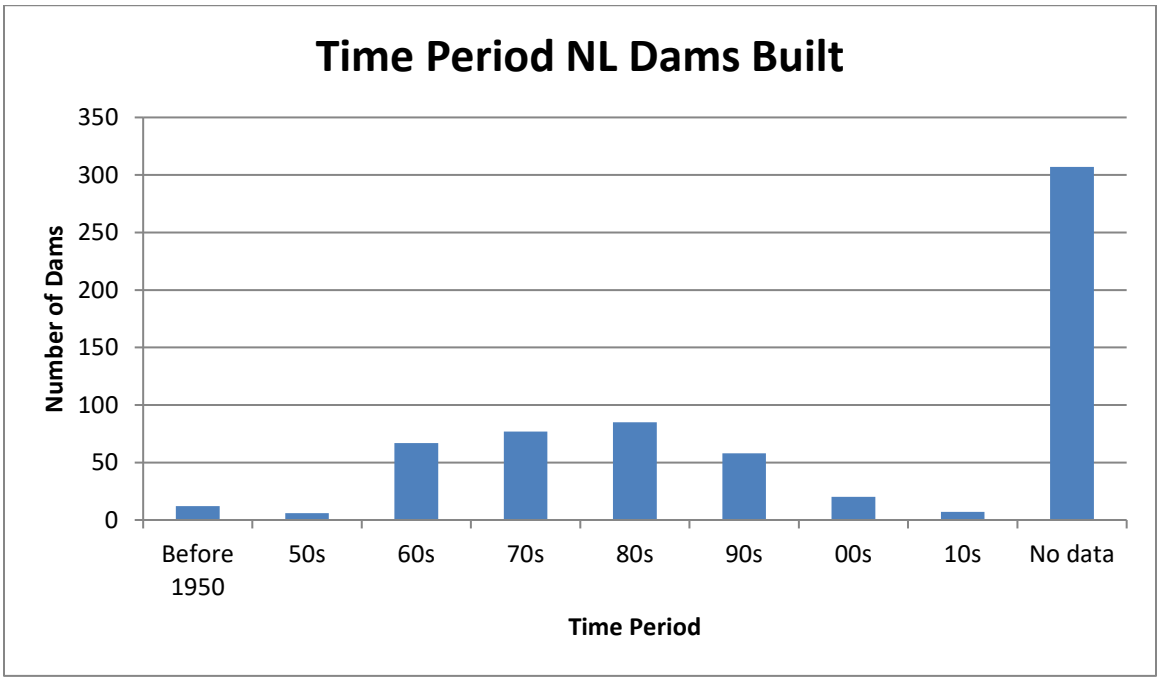

Figure 9: Time period NL dams built

2.3 Dam Failures

A dam failure can be defined as an uncontrolled release of the contents of the reservoir. Dam failures are highly undesirable as they pose a risk to people's lives, property, infrastructure, the economy and the environment. Since 1925, there have been 28 documented dam failures in Newfoundland and Labrador resulting in the deaths of 3 individuals and tens of millions of dollars in damages.

Table 4 provides an inventory of known dam failures in the province.

Table 4: Dam failures in Newfoundland and Labrador

Dam	Date of Failure	Comments
Deer Lake Power, Canal Dyke	ca. 1925	Dyke failed shortly after initial filling (Helwig, Randle & Courage, 1987).
United Towns Electric Company, Fall Pond Dam	ca. 1939	One person drowned (Helwig, Randle & Courage, 1987).
United Towns Electric Company, Little St. Lawrence Dam	Aug 1941	45.7 meters of spillway was washed out during flooding (Kindervater, 1980). Two employees of the company were drowned when the dam broke.
CF(L)Co., Dyke GJ 11-A	1971	Failure caused by right angle joints terminating at a rock surface. Upstream joint carried water in and the water was pushed up through a vertical joint creating sinkholes on the surface of the dyke
NL Hydro, Canal Dyke at Hinds Lake Development, Bay D'Espoir	Dec 1982	Failed due to piping; a construction flaw was suspected cause (Helwig, Randle & Courage, 1987).
Abitibi, Bishop's Falls Dam	Jan 1983	One of the most significant dam failures in the province. Left abutment eroded due to over topping in phenomenal flood. Damaged properties and subdivision downstream. Caused power transformers containing PCBs to wash into Exploits River. Estimated cost $34 million of which $28.5 million represents the loss of Bishops Falls Power Plant and replacement energy (Helwig, Randle & Courage, 1987).
L'Anse au Clair, Park Pond Water Supply Dam	Ca. 1985	Inadequate spillway (Helwig, Randle & Courage, 1987).
Little Bay Copper Mine, Tailings Dam	1989	Tailings dam (retaining dyke) washed out releasing 30-50% of the tailings. $500,000 rehabilitation project, including stabilization of tailings and water diversion.
Governor's Park, Water Supply Dam	Feb 1991	A severe rainstorm caused water levels to rise and surge around west dam abutment.
Concrete Products (Holyrood), Dam	Aug 1991	Flood wave from failed dam deposited silt and debris into community park and pool.
NL Power, Lookout Brook Development, Joe Dennis Pond Dam	May 1992	Probable cause of failure attributed to undercutting of the timber cribwork outlet structure at the foundation (Shawmont, 1992).

Dam	Date of Failure	Comments
		Damages estimated to be in the millions of dollars.
Terra Nova Mining (Baie Verte), Water Supply Dam	May 1992	Water flooded the Mill site so quickly that evasive action was able to be taken on by site personnel. The flooding damages were estimated to be $271, 150.
King's Point, Bulley's Pond Water Supply Dam	Jun 1995	Caused by localized heavy rain on June 8, 1995 from the tail end of a hurricane.
Governor's Park, Water Supply Dam	1997	Leakage from dam lead to repeated failure.
Hermitage-Sandyville, Water Supply Dam	Apr 1998	Earth dam washed out due to significant rainfall amounts. Improper operation and management practices may have resulted in failure. Estimated costs failure approximately $3-million.
King's Point, Bulley's Pond Water Supply Dam	Spring 1999	Substandard repairs to dam after a previous breach failed with high spring runoff.
Barry Group, Water Supply Dam	Sept 2010	Hurricane Igor. Dam breach no significant damages, however the town of Clarenville evacuated residents downstream of the dam as a precaution.
Sunnyside, Water Supply Dam	Sept 2010	Hurricane Igor. Dam breached resulting in significant damages to municipal infrastructure.
NL Power, Whirl Pond Dam (Port Union)	Sept 2010	Hurricane Igor. Dam breach resulting in some damages to NL power infrastructure.
NL Power, Lawn Dam	Sept 2010	Hurricane Igor. Dam breach resulting in significant damages to NL power infrastructure.
Consolidated Rambler Mine (Baie Verte), North Dam	2010	Orphan and Abandoned Mine. Escape of tailings water into surface water (Stantec Consulting Ltd., 2012).
Consolidated Rambler Mine (Baie Verte), West Dam	2010	Orphan and Abandoned Mine. Escape of tailings water into surface water (Dept. of Natural Resources, 2014).
IOC, Jody's Dyke	Sept 2012	Heavy rain and runoff caused dyke to breach.
Gullbridge Mine, Tailings Pond Dam (South Brook)	Dec 2012	The dam failed while attempts were being made to stabilize it. The pond drained completely and small amounts of tailings escaped. Dam failure occurred 500m from South Brook, 26 km downstream is the community of South Brook's drinking water intake.

Dam	Date of Failure	Comments
Rambler Metal and Mining, Nugget Pond Tailings Dam	Jan 2013	A breach occurred in the earth dam of the Polishing Pond, spilling all the water of the Polishing Pond, 220,000 cubic meters.
IOC, Jody's Dyke	Spring 2013	Heavy rain and runoff caused dyke to breach.
Consolidated Rambler Mine (Baie Verte), West Dam	2013	Orphan and Abandoned Mine. Escape of tailings water into surface water (Dept. of Natural Resources, 2014).
NALCOR, Goodyear Dam	April-May 2015	Heavy rain, runoff and ice caused 2 portions of the rockfill timber crib section of dam to fail.

Of the known dam failures in the province, ten have been on dams used in hydro-electrical generation, eight on mine tailings dams, five on community drinking water supply dams, and five on other dams (i.e., recreational, industrial water supplies). Three dams have failed more than once.

Past dam failures in the province have been linked to:

- Inadequate design
- Poor construction
- Overtopping, piping, undercutting or embankment failure
- Extreme rainfall/runoff events
- Improper operation of dam

In the 110-year period since 1905, there have been a total of approximately 22,500 years of active dam operation and 28 failures in the province, where failure is considered to be breach of the dam resulting in release of water. This corresponds to a failure frequency of $1.2x10^{-3}$ per dam per year. In other words, statistically there is approximately a 1-in-800 chance of a dam failure in any given year, based on historical performance over the period of record. While these numbers may seem small, their implications are not.

One of the main goals of the province's Dam Safety Program is to avoid future dam failures. The increasing age of dams, increasing climatic variability, and lack of adequate maintenance of dams are all contributing factors to increasing the risk of a future dam failure.

3.0 Dam Safety Programs in Other Jurisdictions

In the last five years, there appears to be a general trend of review and updating of dam safety legislation and regulations occurring throughout the world, including Canadian provinces. The driver for many of these initiatives has been the occurrence of a catastrophic dam failure. The Mount Polly Mine tailings dam failure in British Columbia on August 14, 2014 has been the most significant dam failure in Canada in recent years, triggering an expert panel report and audits of dam safety programs across the country.

There is evidence from overseas jurisdictions, that in the absence of government regulation, there may be under-investment in public safety measures, particularly for smaller dams as large dams may be less inclined to under-invest in dam safety due to the more substantial legal liability they face in the event of dam failure. This observation is applicable to the situation in Newfoundland and Labrador where larger dam owners are the only ones actively undertaking to some extent dam safety reviews and other CDA Dam Safety Guideline best management practices.

3.1 Canada

In Canada, the responsibility for dams falls under provincial/territorial jurisdiction unless on federal property. There is no federal agency, legislation or regulations with a mandate concerning dams. Each province/territory is responsible for developing its own program to ensure dam safety. The following provinces have developed their own regulations for dam safety:

- British Columbia (BC)
- Alberta
- Ontario
- Quebec

BC and Quebec have adopted a more prescriptive approach, while Alberta's regulations are considered non-prescriptive providing greater flexibility to the dam owner to follow best practices for achieving compliance.

Within each province/territory, the department or ministry responsible for dam safety differs, and in some cases the responsibility is spread over a couple of departments or ministries. Table 5 indicates that five provinces have separated the responsibility for water dams and mine tailings dams over multiple departments.

Table 5: Provincial government departments responsible for dams

Province	Ministerial/Departmental Responsibility
British Columbia	Ministry of Forests, Lands and Natural Resource Operations responsible for water dams
	Ministry of Energy and Mines responsible for tailings dams
Alberta	Ministry of Environment and Sustainable Resource Development for water dams
	Alberta Energy Regulator for tailings dams

Province	Ministerial/Departmental Responsibility
Saskatchewan	Water Security Agency for water dams
	Ministry of Environment for tailings dams
Manitoba	Ministry for Conservation and Water Stewardship for all dams
Ontario	Ministry of Natural Resources and Forestry for construction of dams
	Ministry of Northern Development and Mines for tailings dam reclamation
Quebec	Ministère du Développement durable, de l'Environnement, de la Lutte Contre les Changements Climatiques for water dams
	Ministère du Ressources Naturelles for tailings dams
New Brunswick	Ministry of Environment and Local Government for all dams
Nova Scotia	Ministry of Environment and Labour for all dams
Newfoundland & Labrador	Department of Environment and Conservation for all dams
Northwest Territories	Water Management Boards

The type of approval issued for a dam by each jurisdiction varies. Table 6 provides a summary of the scope of the approvals issued for dams in various jurisdictions in Canada.

Table 6: Scope of dam approvals by province

Province	Ministerial/Departmental Responsibility
British Columbia	• License issued for life cycle of water dam under Water Act • Permit issued for life cycle of mining dams under Mines Act
Alberta	• Approval/licence issued for construction or alterations of water dam
Saskatchewan	• Approval to construct issued followed by an Approval to operate
Ontario	• Permit issued for construction or alterations to dam
Quebec	• Approval issued for construction or alterations to dam
New Brunswick	• Permit issued for construction or alterations to dam
Nova Scotia	• Approval issued for construction or alterations to dam
Newfoundland & Labrador	• Permit issued for construction or alterations to dam with some long-term operational conditions
Northwest Territories	• Licence issued for life cycle of dam

3.1.1 Level of Resources for Other Provincial Dam Safety Programs

The level of resources each province dedicates to dam safety is related to the size of its dam safety program, existence of regulations, number of dams and the risk associated with those dams. Based on the information available, Newfoundland and Labrador has a considerably higher dam to staff ratio than other provinces.

Table 7: Number of dams vs. staff for various provincial dam safety programs

Province	Number of Dams	Staff	Dam per Staff
Alberta	1500	8	188
British Columbia	1650 water- regulated	9*	183
	460 water-unregulated		
	118 mining	3	39
Saskatchewan	1300	22**	59
	15 mining		
Manitoba	570		
Quebec	5806	16	363
Ontario	2400		
Newfoundland and Labrador	638	0.33	1933
Nova Scotia	200		
New Brunswick	240		
Yukon	21		

*FTE

**Organization owns dams– some staff involved directly in operations.

3.2 Approaches for Dam Safety from Other Canadian Jurisdictions

Different jurisdictions in Canada have reached different levels of achievement with respect to dam safety management. An examination of approaches implemented by different jurisdictions as part of their respective dam safety frameworks was made to determine what activities could be adopted by Newfoundland and Labrador. This analysis is provided in Table 8.

Table 8: Possible activities for adoption by the NL dam safety program from Canadian jurisdictions

Province	Approach
Alberta	• Establish life-cycle approach for dam approvals • Dam owners must immediately report potential safety hazards • Dam safety program has the authority to reject dam classification proposed by dam owner/consultant • Regulation is non-prescriptive in nature • Compliance with regulation based on social regulatory approach vs. command and control approach • Raising awareness about regulatory requirements through education of dam owners through seminars, workshops, audit inspections, reporting, follow-ups, enforcement

	• Maintain an inventory of dams that have EPRPs in place • Participate in emergency exercises related to dams • Undertake post-event inspection and performance reporting of impacted dams • Digital dam break inundation mapping available through web site • Database to include comprehensive deficiency tracking and follow-up system • Dam safety web site to provide easy access to necessary dam safety related information for dam owners and the public • Reporting on regulatory performance measures for dam safety risk mitigation for government and public • Enforcement: written warnings, administrative penalties (tickets), orders, prosecution, suspension or cancellation of an authorization • Undertakes a small dam inspection program for dam owners who do not have the expertise or training to do the inspection, other dam owners required to undertake their own inspections • Monitors and keeps track of critical incidents at dams
British Columbia	• Dam owners responsible for their dams throughout the entire life cycle of the dam and are liable for any damage • Non-prescriptive regulation because it does not specify how dams are to be designed (depends on guidelines and BMPs for details)– have developed several guidance documents • Powers given to certain position under the Act • Design requirements based on traditional standards-based engineering • Terms/conditions in license are set considering life-cycle approach based on consequence classification of structures and can reinforce regulatory requirements or establish site-specific requirements • No direct reference to CDA guidelines in regulation • Educating dam owners a focus of activities • Dam registry exists • Assessment of level of compliance by dam owners • Formal auditing program- every 5 years for high-extreme dams, 10 years for significant dams as per policy • Take prescribed compliance action (enforcement) with dam owners not in compliance • Annual report on dam safety program

	• Webpage and workshops • Ensure staff are technically qualified to undertake work and provision of technical training • Dams must be designed by a professional engineer (sealed) • Require field reviews by the design engineer during construction
Ontario	• Guidance on public safety around dams
Quebec	• Guidance on bathometric surveys • Costs of dam safety program are assumed by dam owners who are required to pay annual fees and other fees for authorizations
Saskatchewan	• Verifies land ownership for all Approvals to construct dams

It is felt that a prescriptive regulatory approach as practiced by Quebec and British Columbia is more appropriate for Newfoundland and Labrador as this will provide clarity for all parties on requirements, which to date have been minimal, and not uniformly applied. There has also been a lack of follow-through by dam owners and follow-up by ENVC to ensure requirements are met.

3.2.1 Findings of Dam Safety Program Audits and Mount Polly Report

In the past couple of years, province wide audits have been conducted of the dam safety programs in the following:

- Alberta
- Quebec
- British Columbia

Reports have been issued for all but the British Columbia audit to date. The Mount Polly Review Panel Report was released on Jan 30, 2015. It should be noted that there is some disagreement in the dam safety community on the validity of some recommendations from the Mount Polly Panel Report. In July 2010, the BC Deputy Solicitor also released a report regarding the Testalinden Dam failure.

Applicable lessons learned from these audits and reports that may be important to the Dam Safety Program in Newfoundland and Labrador are highlighted in Table 9. The province should be prepared to have its own dam safety program audited by the Auditor General's Office at some point in the future.

Table 9: Lessons learned from other jurisdictional dam safety program audits

Jurisdiction	Lessons Learned
Alberta	• Need to consistently report results of regulatory activities including performance metrics, results analysis, and identification of areas for future improvement to executive and public • Ensure the completeness, accuracy and sustainability of the dams registry database • Use the dam registry database to track inspections and deficiencies • Follow up to ensure dam owners correct deficiencies or manage them until corrected • Review dam consequence classifications periodically • Obtain sufficient information to assess the risks of dam failure • Retain evidence of regulatory activities performed • Determine how the regulator will assess whether dams are safe and operated safely • Provide information to the public on location of dams, contact information for questions or concerns about dams, guidance on public safety around dams, or what to do if faced with a dam related emergency • Conclusions reached after analysis and review of information submitted by dam owners (DSRs, annual inspection), or of inspections carried out by government, must be better documented to ensure responsibilities for dam safety are being carried out • Dam Safety Review should include list of deficiencies, ranking of deficiencies in descending order of criticality, and timelines by which deficiencies should be corrected • Post flood inspections of higher consequence dams should be completed
Quebec	• Establish process to ensure compliance with requirements on dam owners such as submitting documentation and the completion of remedial measures • Implement enforcement action against non-compliant dam owners • Report on the application of the *Dam Safety Act* • Establish criteria for determining who is responsible for a dam • Establish a fee policy for services provided to dam owners

	• Develop documentation related to water flow regulation and emergency situations • Ensure proper training and preparation of staff
Mount Polly Panel Report	• Improved adoption of best applicable practices (BAP) and also a migration to best available technology (BAT) in the design and operation of tailings management areas • The Panel does not accept the concept of a tolerable failure rate for tailings dams • Corporations proposing to operate a tailings storage facility (TSF) should be required to be a member of the Mining Association of Canada (MAC) • Establish an Independent Tailings Review Boards • Utilize the concept of Quantitative Performance Objectives (QPOs) to improve Regulator evaluation of ongoing facilities
Review of Testalinden Dam Failure	• Proper and complete files are kept and archived on all dam structures • Review the historical warnings about the conditions of the dam and any actions taken to hold the owner(s) responsible for inspection and maintenance • Consider implementing signage at all dam locations to make it clear to passersby that the structure is a dam and to provide direction and emergency contact information, including contact information for the owner, to report any issues observed • Develop an alert matrix to quickly escalate priority issues • Rapid dam assessment undertaken to assess the condition of dams and possible corrective actions • Tracking improvements in dam information in the dam registry

3.3 Approaches for Dam Safety from International Jurisdictions

An examination of approaches implemented by different international jurisdictions as part of their respective dam safety frameworks was made to determine what activities could possibly be adopted by Newfoundland and Labrador. This analysis is provided in Table 10.

Table 10: Possible activities for adoption by the NL dam safety program from other jurisdictions

Jurisdiction	Approach
USA	• Have developed training aids for dam safety regulators on various aspects of dam safety management through the Association of State Dam Safety Officials. • The United States Bureau of Reclamation and United States Corp of Army Engineers, both of which are federally owned agencies with large portfolios of dams, are self-regulated. • From 1998 to 2008, the recorded number of deficient dams (those with structural or hydraulic deficiencies leaving them susceptible to failure) rose by 137%—from 1,818 to 4,308. The number of dams identified as unsafe is increasing at a faster rate than those being repaired. • Since 1998, the number of high-hazard-potential dams (dams whose failure would cause loss of human life) has increased from 9,281 to more than 14,700. • Every state in the US except Alabama have dam safety regulatory programs. • Trend toward owner-responsible inspection of dams by states.
Britain	• Under the Reservoirs Act, there is a "Panel" (or group) of civil engineers who are responsible for checking the safety of these reservoirs and their dams. These panel engineers come from an approved list from the Environmental Agency. • Publish an annual post-incident report for UK dams and require mandatory reporting of incidents.
Scotland	• Regulation is based on risk posed by dams.
New Zealand	• Uses a risk management regulatory regime for dams.
Australia	• Taking a cost benefit approach to ensure that very small reductions in risk are not being achieved at disproportionate cost. • The objectives of the NSW dam safety act is to achieve socially acceptable levels of public safety risk in relation to dams and stored waters in the most efficient manner possible. • The dam regulator should be independent of the business it regulates. • The dam regulator is fully funded by those who create the need for dam safety regulations (ie. dam owners). • Publicly report on dam upgrades and costs. • Regulatory approach provides broad oversight which sets and monitors objectives for dam safety at a strategic level, while

	maintaining adequate powers in legislation to intervene if necessary. • Since the introduction of dam safety regulatory arrangements in the mid-1990s, there has been a steady improvement in public dam safety, with many of the key risks addressed through well-targeted dam safety upgrade programs. • Established a Dam Safety Advisory Committee that provides independent expert input and advice to government on dam safety regulation.

Figure 10 provides a framework for the regulatory approach used for dam safety in the state of Victoria, Australia. Dam safety regulation in Victoria, as in other international jurisdictions, is underpinned by a risk management approach.

Figure 10: Strategic framework for dam safety regulations in Victoria, Australia

3.4 Canadian Dam Association

The Canadian Dam Association (CDA) is a non-governmental, not-for-profit organization that brings together dam owners, regulators, consulting engineers, and others who have a stake in the safety of dams. The CDA acts as a key resource on dam safety in Canada and has published several important documents used across the country:

- Dam Safety Guidelines 2007 (Revised 2013)
- Guidelines for Public Safety Around Dams (2011)
- Technical Bulletins
    - Inundation, Consequences, and Classification for Dam Safety (2007)
    - Surveillance of Dam Facilities (2007)
    - Flow Control Equipment for Dam Safety (2007)
    - Dam Safety Analysis and Assessment (2007)
    - Hydrotechnical Considerations for Dam Safety (2007)
    - Seismic Hazard Considerations for Dam Safety (2007)
    - Geotechnical Considerations for Dam Safety (2007)
    - Structural Considerations for Dam Safety (2007)
    - Application of Dam Safety Guidelines to Mining Dams (2013)

The original CDA Dam Safety Guidelines were first published in 1999. As a central organization providing technical guidance on dam safety in Canada, the CDA helps maintain consistency in dam safety management across the country. The province of Newfoundland and Labrador does not have the resources to develop technical guidance on dam safety and relies on the CDA Guidelines and Technical Bulletins. Most Canadian jurisdictions recommend the use of the CDA Dam Safety Guidelines as best practice.

The CDA guidelines were developed by working groups of the CDA who represented a cross section of dam engineering professionals across Canada. The CDA guidelines have no legal status in Newfoundland and Labrador, however, the guidelines are considered to be the principal technical guidance document in Canada by all provinces, including this province.

Consideration should be given to how to best adopt CDA guidelines into the provincial dam safety program. Possible options include direct mention in any new dam safety regulations or stipulated in permits.

4.0 Current NL Dam Safety Program

Until June of 2014, dam safety was integrated within the broader mandate of the Water Investigations Section of the Water Resources Management Division. With the Divisional reorganization that occurred in 2014, dam safety was removed from the Water Investigations Section and became the Dam Safety Program assigned to the Water Resources Management Engineer also responsible for the Drinking Water & Wastewater Section.

The Dam Safety Program has seen a great deal of change over the last number of years with turnover of staff, divisional reorganization, establishment as a separate program under the WRMD, and variability in annual budget allocations. The Dam Safety Program is currently in a phase of consolidation with respect to updating information, updating existing tools, re-connecting with stakeholders, and establishing revised program procedures and policies.

4.1 Definitions of a Dam

There is no definition of a dam in the *Water Resources Act, 2002*, although the term is used multiple times. Dam is included in the definition of "works" in the Act. Section 43 includes the following: "a dam or other similar structure impounding or conveying water". Section 45 includes the following: "a dam or other structure is constructed on a body of water".

Definitions of dams used in other jurisdictions are outlined in Table 11.

Table 11: Definition of a dam

Jurisdiction	Definition of a Dam
Canadian Dam Association *Dam Safety Guidelines, 2013*	A barrier constructed for the retention of water, water containing any other substance, fluid waste, or tailings, provided the barrier is capable of impounding at least 30,000 m^3 of liquid and is at least 2.5 m high. Height is measured vertically to the top of the barrier from the natural bed of the stream or watercourse at the downstream toe of the barrier, in the case of a barrier across a stream or watercourse; or from the lowest elevation at the outside limit of the barrier, in the case of a barrier that is not across a stream or watercourse. The term dam includes appurtenances and systems incidental to, necessary for, or connected with the barrier. The definition may be expanded to include dams less than 2.5 m high with an impoundment capacity of less than 30,000 m^3 if the consequences of dam operation or failure are likely to be unacceptable to the public, such as dams that create hydraulic conditions posing a danger to the public; dams with erodible foundations that, if breached, could lower the reservoir by more than 2.5 m; or dams retaining contaminated substances.
British Columbia	a) A barrier constructed across a stream.

British Columbia Dam Safety Regulation, 2011	b) A barrier constructed off-stream and supplied by diversion of water from a stream, for the purpose of enabling the storage or diversion of water, and includes all works which are incidental to or necessary for the barrier. (a) a dam 1 metre or more in height that is capable of impounding a volume of water greater than 1 000 000 m^3; (b) a dam 2.5 metres or more in height that is capable of impounding a volume of water greater than 30 000 m^3; (c) a dam 7.5 metres or more in height; (d) a dam that does not meet the criteria under paragraph (a), (b) or (c) but has a classification of significant, high, very high or extreme.
Alberta *Water Regulation, 1998*	"dam" means a barrier constructed for the purpose of storing water, including water containing any other substance, that (i) provides for a storage capacity of 30 000 cubic metres or more, and (ii) is 2.5 metres or more in height when measured vertically to the top of the barrier, (A) from the bed of the water body at the downstream toe of the barrier, where the barrier is across a water body, or (B) from the lowest elevation at the outside limit of the barrier, where the barrier is not across a water body, and includes a works related to the barrier; "canal" means any structure or part of a structure (i) that is constructed for the purpose of conveying 15 cubic metres or more of water per second, including water containing any other substance, and (ii) that has embankments that are 2.5 metres or more in height when measured vertically from the lowest elevation at the outside limit of the embankment to the top of the embankment;
Quebec *Dam Safety Act, 2001*	"dam" means any works intended to divert or impound the water of a watercourse or of a lake or reservoir listed in the Répertoire toponymique du Québec or a supplement to that publication. The following dams are considered to be high-capacity dams: (1) dams 1 metre or more in height having an impounding capacity greater than 1,000,000 m^3; (2) dams 2.5 metres or more in height having an impounding capacity greater than 30,000 m^3; (3) dams 7.5 metres or more in height, regardless of impounding capacity; (4) regardless of their height, retaining works and works appurtenant to a dam referred to in paragraph 1, 2 or 3, and works intended to retain all or part of the water stored by such a dam.

	The following dams are considered to be low-capacity dams: (1) dams 2 metres or more in height to which section 4 does not apply; (2) regardless of their height, retaining works and works appurtenant to a dam referred to in paragraph 1, and works intended to retain all or part of the water stored by such a dam.
Ontario *Lakes and Rivers Improvement Act, 1990* *Regulation 854 Mines and Mining Plants, 1990*	"dam" means a structure or work forwarding, holding back or diverting water and includes a dam, tailings dam, dike, diversion, channel alteration, artificial channel, culvert or causeway; "dam" means a structure for the impoundment of more than twenty-five tonnes of water in an underground opening and constructed so as to permit an unobstructed overflow of the water;
PEI *Prince Edward Island Watercourse and Wetland Alteration Guidelines, 2006*	A water control structure constructed across a watercourse or wetland designed to handle water, including retention, conveyance, control, regulation and dissipation.

The common elements in the dam definitions referenced in Table 11 are that a dam is a structure constructed on a body of water that acts as a barrier which retains water, typically for some designated use (i.e., drinking water supply, electrical generation, tailings management). Only Ontario, Quebec, British Columbia, Alberta and PEI have a legal definition of a dam contained in provincial acts, regulations or guidelines.

In many jurisdictions, the definition of a dam determines which dams are regulated or not. In many cases, small dams that do not meet the regulatory definition are managed differently according to a separate small dam safety program (e.g., Alberta, British Columbia).

The Newfoundland and Labrador *Water Resources Act*, 2002 refers to a dam or similar structure. Table 12 outlines different types of water control structures found in the province and whether they should be considered similar to a dam or not based on the definition of a dam.

Table 12: Structures similar to dams

Water Control Structure	Definition	Comments	Considered a Dam or Not
Weir	An artificial obstruction in any watercourse that results in increased water surface level upstream for some, if not all flow conditions. A type of small overflow dam that is often used within a river channel to create an impoundment lake for water abstraction purposes and which can also be used for flow measurement or retardation.	Retains water.	Yes
Saddle Dam	An auxiliary dam constructed to confine the reservoir created by a primary dam either to permit a higher water elevation and storage or to limit the extent of a reservoir for increased efficiency. An auxiliary dam is constructed in a low spot or *saddle* through which the reservoir would otherwise escape.	Retains water.	Yes
Tailings Dam	A dam, including foundations, water control structures, and base of the impounding basin, that is constructed to retain tailings from mining or mineral processing operations.	Retains water.	Yes
Polishing Dam or Settling Dam	A dam that is part of a tailings management facility from which water in the reservoir is discharged directly to the environment.	Retains water.	Yes
Canal	An artificial waterway constructed to allow the passage of water for various purposes (i.e., irrigation, navigation, hydro).	Are embankments used?	Depends
Dyke	An elongated naturally occurring ridge or artificially constructed fill or wall, which regulates water levels and prevents inundation of nearby land. It is usually earthen and often parallel to the course of a river in its floodplain or along low-lying coastlines.	Is structure used more as a dam that retains water or as a berm to prevent flooding?	Depends

Water Control Structure	Definition	Comments	Considered a Dam or Not
Check Dam	A small dam designed to reduce flow velocity and control soil erosion.	What is the height of the dam?	Depends
Fishway or Fish Ladder	A structure placed on or around constructed barriers (such as dams or weirs) to give fish the opportunity to migrate.	If included as an appurtenance to a dam.	Depends
Stormwater Retention Pond	Retention ponds maintain a permanent pool of water in addition to temporarily detaining stormwater. A retention basin is used to manage stormwater runoff to prevent flooding and downstream erosion, and improve water quality in an adjacent river, stream, lake or bay.	Retains water. Is pond excavated or created through a dam?	Depends
Stormwater Detention Pond	A dry extended detention pond is a basin whose outlets are designed to detain the stormwater runoff for some minimum duration (e.g., 24 hours) which helps prevent flooding and allows sediment particles and associated pollutants to settle out. Unlike retention ponds, detention ponds do not have a permanent pool.	Retains water. Is pond excavated or created through a dam?	Depends
Culvert	A culvert is a closed conduit used to convey water from one area to another, usually from one side of a road to the other side.	Does not retain water. Could be used as gate or spillway for a dam.	Depends
Temporary Berm	A temporary dike or berm is a ridge constructed of compacted soil, composted material, gravel, crushed rock, sandbags, gravel bag barriers, or straw bales that intercepts and prevents runoff from entering a disturbed area, and diverts or directs the water to a controlled or stabilized drainage outlet.	Does not retain water.	No
Permanent Berm	A permanent dike or berm is a ridge constructed of compacted soil, loose gravel, stone, or crushed rock that intercepts and prevents stormwater runoff from entering a	Does not retain water.	No

Water Control Structure	Definition	Comments	Considered a Dam or Not
	sensitive area, and diverts or directs the water to a controlled or stabilized drainage outlet.		
Retaining Wall	Retaining walls are structures that are constructed to support almost vertical (steeper than 70 degrees) or vertical slopes of earth masses.	Does not retain water.	No
Fisheries Compensation Structure (low head dams, etc.)	Structures placed in a waterbody to enhance fish habitat.	Does not retain water.	No
Counting Fence	A counting fence is used to provide an accurate escapement count of species of salmon passing the fence. Counting fences are normally installed seasonally and span across entire rivers.	Does not retain water.	No
Pipe Crossing	Any conduit crossing a watercourse that can be either a buried crossings or aerial crossings (i.e. via bridges). Pipe crossings can include water pipe crossings, sanitary sewers, gas pipelines or other pipes.	Does not retain water.	No
Stream Diversions	Water diversions consist of a system of structures and measures that intercept clear surface water runoff upstream of a project site, transport it around the work area, and discharge it downstream with minimal water quality degradation for either the project construction operations or the construction of the diversion.	Does not retain water.	No
Wing Dam	A structure that only partly restricts a waterway, creating a faster channel that resists the accumulation of sediment.	Does not retain water.	No

4.2 Authority for Dam Safety in NL

English common law, on which our legal system is based, considers dams to be "inherently dangerous structures" and those who own dams are liable for damages that are caused by the dam. Dam owners are clearly responsible for the inspection, safe operation and maintenance of their dams. The province has a duty of care to ensure that dams are maintained according to acceptable standards for public safety.

According to the Department of Justice and Public Safety (DJPS), as per provisions of the *Water Resources Act*, authority for dam safety in the province is the mandate of the Water Resources Management Division (WRMD) of the Department of Environment and Conservation (ENVC). For a short period in the mid 2000's there was some debate over which department was responsible for mine tailings dams, WRMD or the Department of Natural Resources (DNR). This matter was resolved with the opinion of the Department of Justice that WRMD is responsible for dam safety for all types of dams and over the entire life-cycle of the dam.

Figure 11 outlines the current (and proposed) dam safety regulatory framework for NL, including all relevant legislation, regulation, permitting and guidelines for dams and the role of various stakeholders involved.

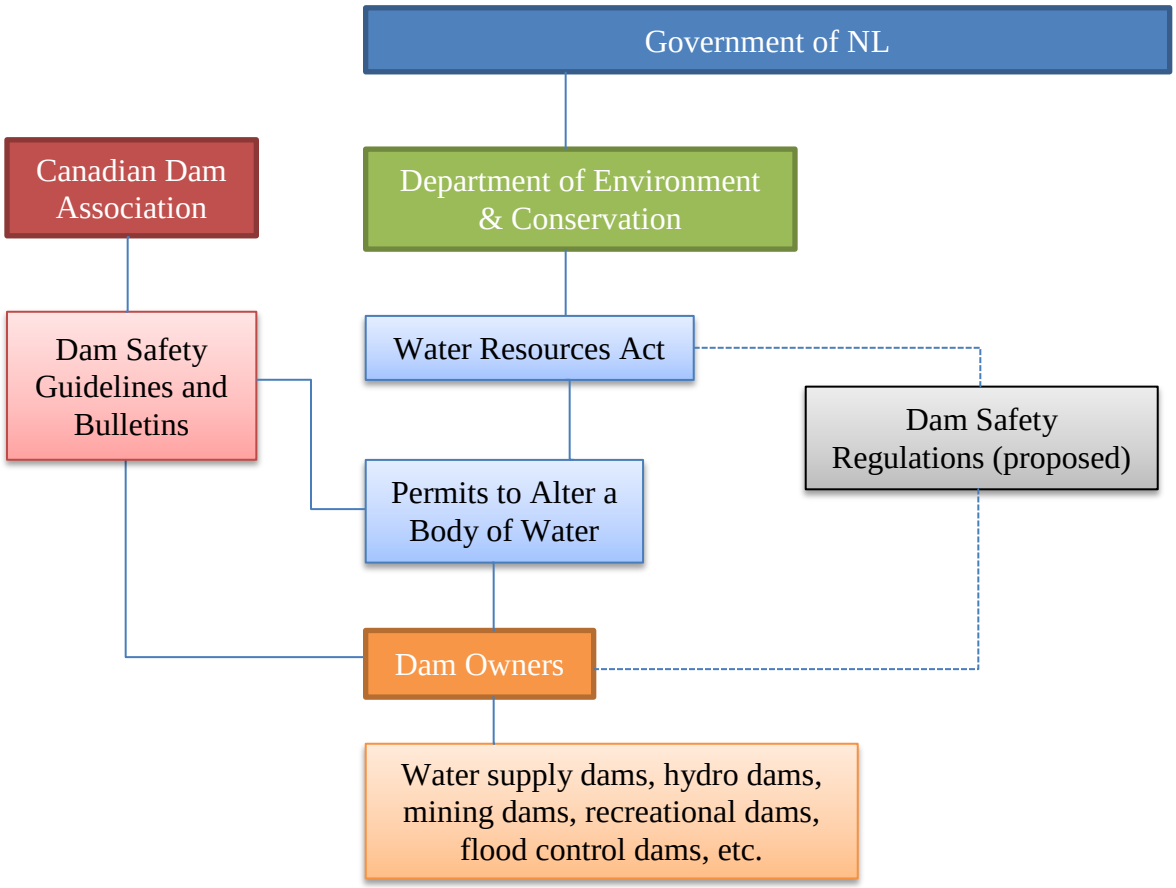

Figure 11: Current and proposed dam safety framework for NL

Dam owners currently have to abide by the requirements of the Water Resources Act in general, the terms and conditions contained in permits specifically, and the CDA Dam Safety Guidelines as best practice. The establishment of Dam Safety Regulations could help to fill gaps in current requirements.

4.2.1 Legislation

Prior to the formation of the WRMD, authority for dam safety was included in the *Crown Lands Act*. This authority was given under Section 48(c) of the *Crown Lands Act C-42, RSN 1990* and prior versions: "the government engineer has in writing, certified that in his or her opinion the proposed dam will be reasonably safe, strong and durable." Following the formation of the WRMD, legislative authority for dams was included as part of the *Environment Act, Department of Environment and Lands Act*, and *Department of Environment Act.*

The *Water Resources Act, 2002* provides ENVC with its current legislative authority over dams. Appendix A highlights sections of the Act relevant to dam safety (Sections 43-48), or that give government regulation making authority (Section 64). According to the Department of Justice and Public Safety, regulation making authority for dam safety in the *Water Resources Act* is limited. Changes to the *Water Resources Act* will have to be made in order to allow for comprehensive potential dam safety regulations.

4.2.2 Regulations

The province of Newfoundland and Labrador does not have any dam safety regulations. In 2010, ENVC first initiated work on getting cabinet approval for drafting Dam Safety Regulations. A submission was made to Cabinet in 2015 for the approval of provincial Dam Safety Regulations and for changes to the *Water Resources Act* to allow for these regulations. In the Sept 3, 2015 Minutes of Cabinet (MC2015-0356), the Office of the Legislative Council and ENVC were directed to draft amendments to the *Water Resources Act* and to draft *Dam Safety Regulations*. These future provincial *Dam Safety Regulations* will help to fill gaps in current requirements for dam safety.

4.2.3 Environmental Assessment

Dam related projects may prompt the provincial environmental assessment process under the *Environmental Assessment Regulations, 2003.* The following triggers may require an environmental assessment for a dam related project: Section 27 for decommissioning of a dam, Section 28 for work near a scheduled salmon river, Section 33 for mining dams, Section 34 for new hydro utility dams, and Section 35 for a canal or flood control structure. The Lower Churchill Project at Muskrat Falls was the most recent dam project to complete an environmental assessment. The St. John's-Long Pond Weir project is currently still in the environmental assessment process.

When a dam project goes through environmental assessment, the WRMD dam engineer plays a key role in the evaluation of the project and sits on the EA technical committee.

4.2.4 Permits

The province issues environmental approvals for dams under Section 48 of the *Water Resources Act* for "alterations to a body of water". Permits currently contain terms and conditions that involve design, construction and operation of the dam and are issued for work that considers the life cycle of the dam (e.g., construction, repair, alteration, replacement and removal).

The issuance of a Permit to Alter a Body of Water creates some confusion with respect to mine tailings dam reservoirs which in some instances are not considered waterbodies. Some mine tailings dams are constructed where there is no natural waterbody. Also, under Schedule 2 of the federal *Metal Mining Effluent Regulations*, a waterbody can be designated as a Tailings Impoundment Area and is no longer considered a waterbody. Appendix B includes a list of designated Tailings Impoundment Areas in the province. Under subsection 35(2) of the federal *Fisheries Act*, the Minister can authorize the alteration, disruption or destruction of fish habitat under any conditions he or she deems appropriate such as for mine tailings.

While only specific activities (i.e., construction, upgrades, replacement) currently require an environmental approval, it is expected that all activities concerning dam safety would be subject to any proposed provincial dam safety regulation.

4.2.4.1 Permits to Alter a Body of Water

Approvals to construct or upgrade dams have been issued by the Water Resources Management Division since the early 1980's. Approvals were issued under the authority of various Acts over the years including:

- *Environment Act*
- *Department of Environment and Lands Act*
- *Department of Environment Act*
- *Water Resources Act, 2002*

Since 2002, Permits to Alter a Body of Water have been issued for dam works under Section 48 of the *Water Resources Act*. As of 2003, all Permits for dams have been developed using the ENTRACK permitting application. On average, nine permits are issued every year for dam construction or upgrades with an average intake of $2000 in application fees. Figure 12 indicate the number of permits issued for dams since 2004-05.

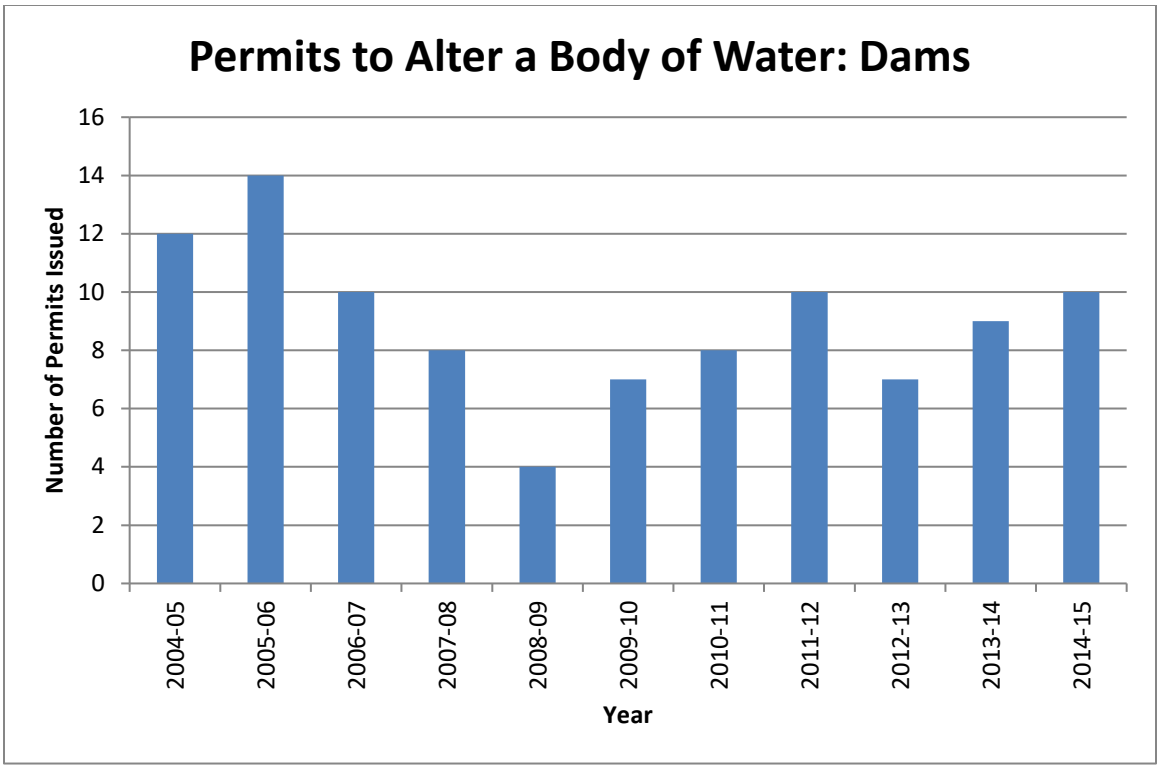

Figure 12: Permits issued for dam works

As part of the application for a permit to undertake dam works, the proponent must submit an application fee. Application fees for dam related works are as outlined in Table 15. As of May 2015, the application fees for dam works have doubled.

Table 13: Application fees for dam permits to alter a body of water

Type of Project	Fees Prior to May 2015	Fees After May 2015
Hydro-electric power project control dam	$2000	$4000
Other control dams including dykes and berms	$500	$1000
Water intake greater than 100 mm diameter or an infiltration gallery	$500	$1000
Pipe or conduit installed under any body of water including intakes less than 100 mm in diameter	$50	$100
Settling basin or Sedimentation Pond	$100	$200
Other construction or activity that takes place in a body of water	$50	$100

Figure 13 indicate the application fees collected for dam works since 2004-05.

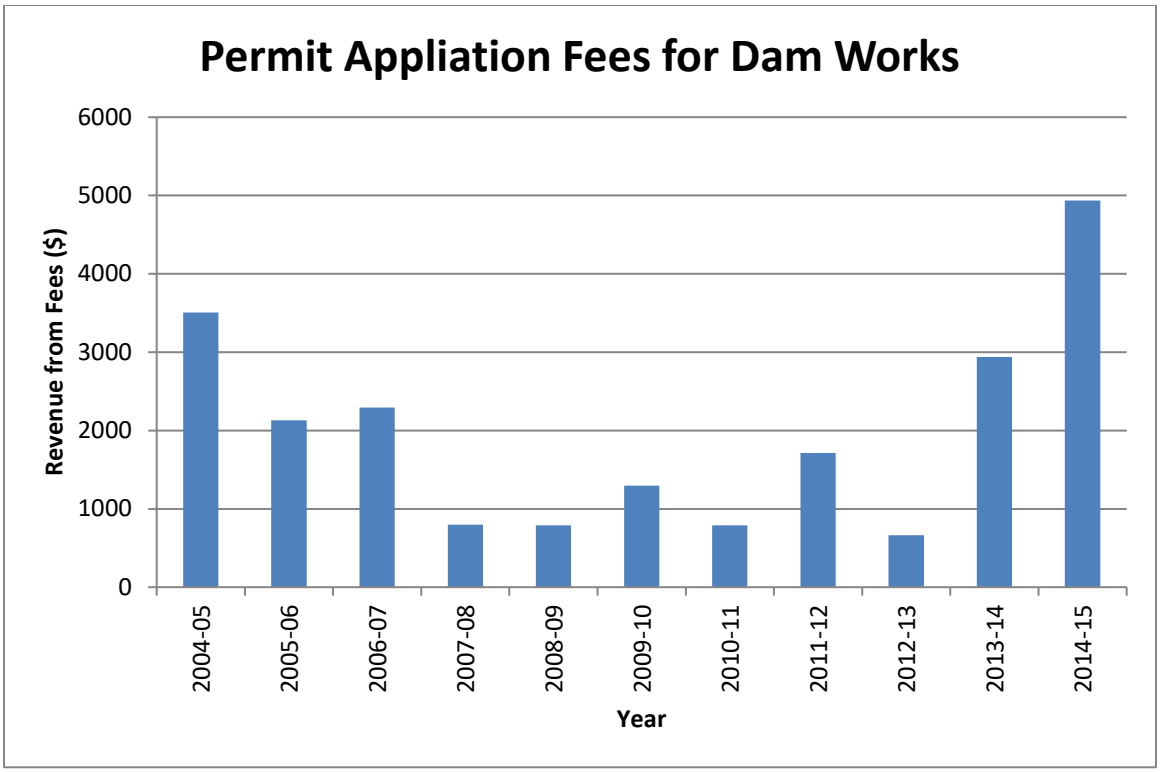

Figure 13: Application fees for dam works

Revenue generated from fees is considered consolidated revenue that goes to the provincial treasury.

It is difficult to judge the level of compliance of dam owners with the terms and conditions contained in permits that have been issued. Requirements such as submission of completion reports, annual inspections, dam safety reviews, Emergency Preparedness and Response Plans, and Operation, Maintenance and Surveillance Manuals have not been tracked.

4.2.5 Guidelines

The province does not have any guidelines related to dam safety management. Instead, Newfoundland and Labrador relies upon the CDA *Dam Safety Guidelines* and associated Bulletins. Some jurisdictions (BC, AB, QB, ON) have produced their own sets of guidelines for things like dam design, dam safety reviews, inspections, OMS plans, Emergency Response and Preparedness Plans, and public safety around dams. Many of these guidelines mirror information that is already contained in CDA guidelines. A non-prescriptive approach to dam safety regulation will generally entail the need for development of more guidelines. NL lacks the resources to develop comprehensive dam related guidelines.

There is some concern on behalf of the CDA about liability if jurisdictions use CDA guidelines and where reference to the CDA guidelines is made (e.g., regulations, approvals, guidelines). There is currently a lack of consistency across Canada concerning this.

4.3 Inspections and Enforcement

Inspection and enforcement activity by ENVC with respect to dams has been minimal, and has generally been associated with dam safety incidents or events.

4.3.1 Inspections

The number of dam site visits or inspections undertaken by ENVC staff has been tracked since 2010 as indicated in Figure 14. On average, five dam related inspections are undertaken every year. Inspections are typically undertaken for major projects, where there may be issues with a permit, or where a critical event has occurred at a dam site.

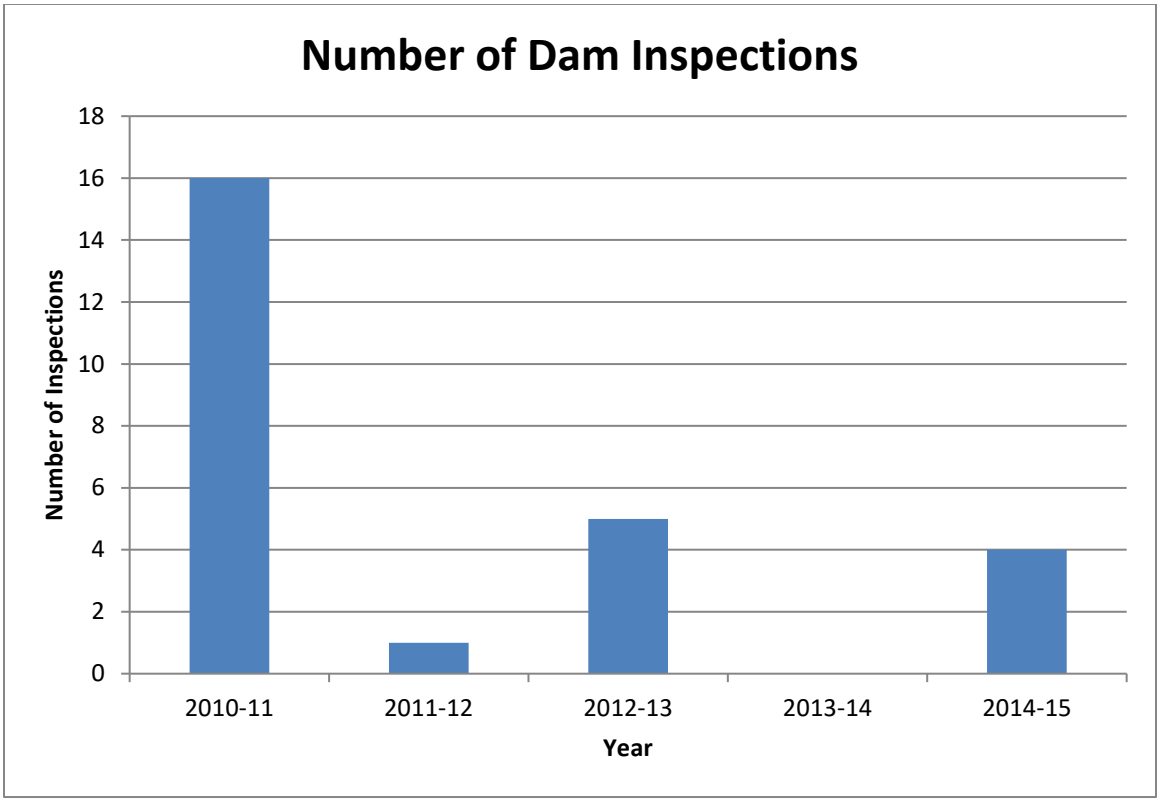

Figure 14: Number of dam site inspections

The scope of most past dam inspections entailed a site visit with the collection of photographs. A one page dam inspection check list has been developed for use in the province and is included in Appendix D.

4.3.2 Enforcement

Where a dam poses an unacceptable risk and the dam owner's response has been inadequate, enforcement action may be necessary. Under Section 44 of the *Water Resources Act*, the Minister of ENVC may direct the dam owner to repair, alter or remove the dam if necessary.

This provision has been used sparingly in the past, but ENVC has directed a dam owner to deliberately breach a dam in order to release water and prevent a catastrophic dam failure.

4.4 Dam Inventory Database

The Dam Inventory Database was developed in-house by ENVC staff in 2004. The database is an internal web based application which allows users to add and edit dam information, view dam information, and query search. The dam inventory application needs to be updated to be compatible with recent upgrades to hosting software. Data from the database is exported to the NL Water Resources Portal in the form of a GIS based dam layer. Information in the Dam Inventory Database is updated as information is received from dam owners.

4.5 Mining Dams

Mining dams can include tailings dams, sedimentation pond dams, polishing pond dam, and water supply (non-contact) dams. There are a number of government departments and divisions with different responsibilities with respect to overseeing mining dams including:

- ENVC– Water Resources Management Division (responsible for dam safety)
- ENVC– Pollution Prevention Division (responsible for regulating discharges from mining dams)
- Department of Natural Resources (DNR) (regulates the development, operation and closure of mines in the province and responsible for Orphan and Abandoned Mine (OAM) sites)

Clarity on the roles and responsibilities of these divisions/departments with respect to mining dams is essential. Additionally, the Canadian Nuclear Safety Commission (CNSC) would regulate any potential uranium mine dams in the province.

While other jurisdictions separate the responsibility for tailings dams across different government departments, this is not recommended for NL. As DNR is also considered a dam owner, it would be a conflict of interest for this department to also be a dam regulator.

5.0 Challenges and Opportunities

The following gaps have been identified in the current Dam Safety Program for Newfoundland and Labrador. These gaps represent both challenges and opportunities to be addressed by the province's Dam Safety Program.

1. There is no clear definition of what is a dam.

2. There is a lack of available resources (staff, budget, knowledge and skills) for further development of the Dam Safety Program.

3. There is a lack of water resources monitoring associated with the operation and maintenance of dams. ENVC needs to enter into more agreements with dam owners for water resources monitoring stations.

4. Requirements for dam owners are not clear.

5. There is limited authority in the *Water Resources Act* for dam safety regulations. Changes to the *Water Resources Act* will have to be made in order to allow for comprehensive future *Dam Safety Regulations*.

6. There are currently no regulations for dam safety under the *Water Resources Act*. *Dam Safety Regulations* could help to fill gaps in current requirements for dam safety.

7. The WRMD currently only has the capacity for evaluating the hydrotechnical safety of dams and not the geotechnical safety of dams. Most other Canadian jurisdictions have geotechnical engineers on staff as part of their dam safety program. There is a lack of geotechnical knowledge within the ENVC Dam Safety Program.

8. The issuance of a Permit to Alter a Body of Water for dam related works creates confusion as some dams do not technically alter waterbodies.

9. Permits for dams need to better reflect activities required over the entire life-cycle of the dam.

10. There are no internal ENVC guidelines on how to undertake the review of a dam permit application. There is a lack of design evaluation tools to assist with the evaluation of applications.

11. The application for permits for dam works needs to be reviewed and updated.

12. The terms and conditions used in dam related permits needs to be reviewed and updated.

13. There is a lack of tracking on compliance with terms and conditions contained in Permits to Alter a Body of Water for dams and other dam safety requirements.

14. Dam owners do not automatically submit copies of Dam Safety Reviews to ENVC. There is no tracking of compliance with recommendation made in Dam Safety Reviews. There is no tracking on dam deficiencies and corrective measures in general.

15. There is a lack of inspection and enforcement activity by ENVC relating to dams. There is a lack of tracking on dam inspections and enforcement activity.

16. There is a lack of compliance promotion activity with respect to dam safety in the province.

17. The Dam Inventory Database requires upgrades for server compatibility. Structural changes are also required to the fields and options contained in the database to reflect changes to the CDA, *Dam Safety Guidelines* and to meet the needs of ENVC. Large-scale structural changes are needed to the Dam Inventory Database to meet future program needs.

18. There is no guidance document for users of the Dam Inventory Database.

19. Information updates and QA/QC of data within the Dam Inventory Database is required.

20. Geotechnical and structural information is not included in the Dam Inventory Database.

21. There is a lack of defined qualifications for those engaged in dam related work for both government and the private sector including dam design, dam inspections, and dam safety reviews.

22. There is no definition of the engineer of record and their duties and responsibilities.

23. There is no provincial dam safety advisory committee to assist with technical review of dam safety related reports.

24. There is no current methodology to assess the probability of failure of a dam and overall risk posed by a dam. ENVC lacks the ability to measure continuous improvement of dam safety management in the province and the reduction of dam risk.

25. There is no assessment undertaken examining potential dam failure modes and appropriate dam safety risk controls.

26. There is a lack of understanding of how climate change could affect dams in this province.

27. There is a lack of inspections and reporting by dam owners on dam safety to ENVC.

28. ENVC tracks dam failures, but does not track other types of critical incidents relating to dam safety.

29. There is a lack of flood inundation mapping relating to possible dam break scenarios in this province. This is needed for emergency situations where public safety may be endangered.

30. There is a lack of attention on certain aspects of dam safety in this province as recommended by the CDA including public safety around dams, emergency response and preparedness planning, and OMS manuals.

31. ENVC has no forum or workshop for dam owners in which to communicate developments in the Dam Safety Program or provide training. There is limited information available on the Dam Safety Program website. There is in general a lack of communication and outreach to stakeholders involved in dam safety.

32. ENVC does not produce an annual dam safety report.

33. There is a lack of ENVC staff training on dam safety.

34. Permit fees do not reflect dam consequence categories.

35. The province is not prepared to undertake a rapid response, emergency assessment of multiple dams following a significant rainfall/runoff event that has resulted in the failure or near failure of multiple dams.

36. A protocol is required to assign ownership of a dam in cases where there is no identified dam owner, where the identified dam owner no longer exists, or where dam ownership has been erroneously assigned.

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Appendix A: Water Resources Act Sections Relevant to Dams

Maintenance and inspection of dams

43. (1) The owner, operator or licensee of a dam or other structure shall, at all times, maintain the dam or other structure in good repair.

(2) The owner, operator or licensee with respect to a dam or other similar structure impounding or conveying water shall, in accordance with the regulations,

(a) conduct periodic inspections of the dam or other structure to ensure structural stability;

(b) submit a report to the minister on the results of the inspections; and

(c) comply with the recommendations contained in the inspection report.

Safety of works

44. (1) Where conditions exist that may reasonably be anticipated to be hazardous to a dam or other similar structure, or to property down-stream, an owner, operator or licensee shall immediately notify the minister and take all necessary actions to minimize or eliminate those hazardous conditions.

(2) Where the minister considers it necessary for public safety, to prevent injury or damage to persons or property or to comply with this Act, the minister may direct the owner or operator of a dam or other structure to

(a) arrange a safety inspection of that dam or other structure in the time specified in the order or as may be prescribed by regulation; and

(b) submit the inspection report to the minister along with drawings, specifications, geotechnical, geological and other data and information that the minister considers necessary.

(3) The minister may, within the time that the minister may specify, direct the owner or operator of a dam or other structure to repair, improve, change, alter, replace or remove all or a part of a dam or other structure as he or she considers necessary for the safety of the dam or other structure, for public safety or to prevent injury or damage to persons or property.

(4) The minister, or an officer or other person authorized by the minister, shall have free access to lands on which the dam or other structure is located.

(5) Where, in compliance with the direction referred to in subsection (3), it is proposed to repair, improve, reconstruct or remove the dam or other structure, the proposed works shall not be proceeded with until a permit is obtained from the minister.

Water flow level

45. Where, after the coming into force of this Act, a dam or other structure is constructed on a body of water and the minister considers it necessary, he or she may direct an owner or operator of that dam or other structure to take those steps that are necessary to raise or lower the level or maintain the flow or level of the water in a body of water.

Impounded water

46. Where water is impounded for water power or waterworks development, the minister may direct the person responsible for that impounding to

(a) clear timber, scrub, slash or debris that is or was flooded; and

(b) remove the timber, scrub, slash or debris that has escaped from the flooded land to a lake, river, pond, stream or other body of water,

within the time and in the manner specified by the minister.

Reservoir development area

47. The minister may, by regulation, designate all or a portion of the area adjacent to or surrounding a reservoir as a reservoir development area where he or she considers that designation necessary for the efficient and safe operation of the reservoir, for the regulation of land use activities and to minimize an adverse effect.

Permit

48. (1) A person may apply to the minister for a permit to carry out an undertaking that under this Act or the regulations requires a permit and the minister may issue that permit in accordance with this Act.

(2) A person shall not, without obtaining a permit required under subsection (1), carry out an undertaking for which a permit is required under this Act or regulations.

(3) An application made under subsection (1) shall be in the required form and accompanied by the required fee, and an undertaking or works shall not be proceeded with until the minister has issued the permit.

(4) The minister, after considering the information required under subsection (3) and

(a) the potential adverse effects of the proposed undertaking upon the environment and surface and groundwater conditions in the area in relation to the present and future water uses;

(b) the effectiveness, purposes and benefits of the proposed undertaking to be authorized under subsection (1);

(c) if the proposed undertaking contravenes a policy of the government of the province;

(d) if the location of the proposed undertaking is unacceptable; and

(e) if there would be adverse effects to water from the proposed undertaking,

may grant a permit for the undertaking, subject to those terms and conditions that the minister considers necessary.

(5) Where a person undertakes the construction, extension or change of an undertaking without first having obtained a permit, the minister may direct an investigation of the undertaking and the alterations, additions, removal from or changes to the undertaking that the minister considers necessary to be made by and at the expense of the person responsible for the unauthorized undertaking.

(6) The minister may refuse to issue a permit to a person with respect to an undertaking referred to in this section where the person has not deposited with the minister security that the minister may require.

(7) Where the minister is of the opinion that a proposed undertaking should not proceed, the minister shall not issue the permit with respect to the proposed undertaking.

(8) The minister shall, in writing, notify a person of his or her decision not to issue a permit.

(9) An action or proceeding, including an action or a proceeding for compensation or damages, does not lie against the Crown for or in respect of an amendment, cancellation, abrogation, refusal or denial of a right or privilege under this section or in respect of a statement made or undertaking given, whether orally or in writing, that a person may have acted on to his or her detriment.

Regulations

64. The Lieutenant-Governor in Council may make regulations

(o) prescribing powers and duties of inspectors and other officials appointed under this Act;

(u) providing for the terms, conditions and purposes upon and for which licences and permits may be required, issued, refused, renewed, suspended, amended, transferred or revoked, and generally respecting licences and permits under this Act including the duties of licensees and permit holders;

(gg) respecting those things which the minister may do respecting structures, devices, contrivances or things laid, placed, built or erected by licensees and permit holders, and respecting the structural safety of works;

(jj) requiring and prescribing returns, accounts, records and statements to be made by licensees, permit holders and other persons, the information to be given in those returns, accounts, records and statements, by whom and at what time they shall be made;

Appendix B: NL Tailings Impoundment Areas Designated in Schedule 2, *Metal Mining Effluent Regulations*

Item	Column 1	Column 2
	Water or Place	Description
1.	Trout Pond, Newfoundland and Labrador	Trout Pond located at 48°39′0.81882″ north latitude and 56°29′19.704984″ west longitude in west-central Newfoundland. More precisely, the area bounded by (*a*) the contour of elevation around Trout Pond at the 270 m level, and (*b*) the outlet of Trout Pond.
2.	The headwater pond of a tributary to Gill's Pond Brook, Newfoundland and Labrador	The headwater pond of a tributary to Gill's Pond Brook, located at 48°38′29.599584″ north latitude and 56°30′15.560676″ west longitude in west-central Newfoundland. More precisely, the area bounded by (*a*) the contour of elevation around the pond at the 260 m level, and (*b*) the outlet of the pond.
3.	A portion of Wabush Lake, Newfoundland and Labrador	That portion of Wabush Lake near the towns of Labrador City and Wabush in western Labrador. More precisely, the area bounded by (*a*) the southern limit, extending from 53° north latitude, 66°50′24″ west longitude to 53° north latitude, 66°52′57″ west longitude, and (*b*) the outlet of Wabush Lake, extending from 53°09′4.7″ north latitude, 66°47′3.5″ west longitude to 53°08′57.5″ north latitude, 66°47′2.9″ west longitude.
4.	Flora Lake, Newfoundland and Labrador	Flora Lake located at 52°55′ north latitude, 66°49′ west longitude, near the towns of Labrador City and Wabush in western Labrador.
5.	A portion of an unnamed tributary stream to Flora Lake, Newfoundland and Labrador	A portion of an unnamed tributary stream to Flora Lake, Newfoundland and Labrador. More precisely, an area extending from the mouth of the stream (52°52′9.94″ north latitude, 66°47′14.26″ west longitude) for a distance of 75 m upstream from Flora Lake.
6.	A portion of an unnamed tributary stream to Flora Lake, Newfoundland and Labrador	A portion of an unnamed tributary stream to Flora Lake, Newfoundland and Labrador. More precisely, an area extending from the mouth of the stream (52°52′10.70″ north latitude, 66°47′6.49″ west longitude) for a distance of 580 m upstream from Flora Lake.
7.	A portion of an unnamed tributary stream to Flora Lake, Newfoundland and Labrador	A portion of an unnamed tributary stream to Flora Lake, Newfoundland and Labrador. More precisely, an area extending from the mouth of the stream (52°52′57.45″ north latitude, 66°47′25.23″ west longitude) for a distance of 256 m upstream from Flora Lake.
8.	Sandy Pond, Newfoundland and Labrador	Sandy Pond, located at 47°25′33″ north latitude and 53°46′52″ west longitude, on the Avalon Peninsula, approximately 3 km east southeast of the town of Long

Item	Column 1	Column 2
	Water or Place	Description
		Harbour-Mount Arlington Heights, Newfoundland and Labrador. More precisely, the area bounded by (*a*) the contour of elevation around Sandy Pond at the 137 m level, and (*b*) the dams built at the north end of Sandy Pond.

Appendix C: Dam Safety Regulation from Other Canadian Jurisdictions

Province of Alberta

WATER ACT

WATER (MINISTERIAL) REGULATION

Alberta Regulation 205/1998

With amendments up to and including Alberta Regulation 62/2013

Office Consolidation

Alberta Queen's Printer
5th Floor, Park Plaza
10611 - 98 Avenue
Edmonton, AB T5K 2P7
Phone: 780-427-4952
Fax: 780-452-0668

E-mail: qp@gov.ab.ca
Shop on-line at www.qp.alberta.ca

Note

All persons making use of this consolidation are reminded that it has no legislative sanction, that amendments have been embodied for convenience of reference only. The official Statutes and Regulations should be consulted for all purposes of interpreting and applying the law.

(Consolidated up to 62/2013)

ALBERTA REGULATION 205/98

Water Act

WATER (MINISTERIAL) REGULATION

Table of Contents

Interpretation

1(1) In this Regulation,

(a) "Act" means the *Water Act*;

(b) "alternative watering system" means a method of supplying water to grazing livestock that has been developed to replace the watering of grazing livestock directly in a natural water body;

(c) "annulus" means the space between the outside of the casing of a water well and the wall of the borehole;

(d) "camp" includes, but is not limited to, a temporary industrial camp, a recreational camp and a temporary camp site;

(e) "canal" means any structure or part of a structure

(i) that is constructed for the purpose of conveying 15 cubic metres or more of water per second, including water containing any other substance, and

(ii) that has embankments that are 2.5 metres or more in height when measured vertically from the lowest elevation at the outside limit of the embankment to the top of the embankment;

(f) "certified journeyman driller" means the holder of a trade certificate as a water well driller issued under the *Apprenticeship and Industry Training Act*;

(g) "completion", with respect to a water well, means, except in sections 47(g)(i) and 53(1), that the drilling, construction, development, disinfection and yield testing of the water well have been completed as required under this Regulation;

(h) "dam" means a barrier constructed for the purpose of storing water, including water containing any other substance, that

(i) provides for a storage capacity of 30 000 cubic metres or more, and

(ii) is 2.5 metres or more in height when measured vertically to the top of the barrier,

(A) from the bed of the water body at the downstream toe of the barrier, where the barrier is across a water body, or

(B) from the lowest elevation at the outside limit of the barrier, where the barrier is not across a water body,

and includes a works related to the barrier;

(i) "dewatering" means removing or draining water;

(j) "drilling report" means the drilling report referred to in section 41;

(k) "emergency preparedness plan" means a plan developed by a person responsible for a dam or canal that describes the action the person responsible for the dam or canal must take in the event of an emergency at the dam;

(l) "Environmental Protection and Enhancement Fund" means the Environmental Protection and Enhancement Fund established under the *Environmental Protection and Enhancement Act*;

(m) "Environmental Protection Security Fund" means the Environmental Protection Security Fund established under the *Environmental Protection and Enhancement Act*;

(n) "flood action plan" means a plan developed by a person responsible for a dam or canal that describes the action the person responsible for the dam or canal must take in the event of a flood;

(o) "ford" means an enhanced site used for traversing a watercourse where the bed or banks of the watercourse are modified to facilitate traversing the watercourse;

(p) "Green Area" means that part of Alberta shown outlined and coloured green on the map annexed to

(i) Ministerial Order 71/85 dated May 7, 1985 and made pursuant to section 10 of the *Public Lands Act* (RSA 1980 cP-30), as that order is amended from time to time, or

(ii) any order made in substitution for the order referred to in subclause (i), as amended from time to time;

(q) "independent reviewer" means an independent reviewer under section 30;

(r) "instrumentation" includes, but is not limited to, survey monuments and stations, inclinometers, extensometers, piezometers and measuring weirs;

(s) "municipality" means the geographical area of a city, town, village, summer village, municipal district, improvement district, special area, specialized municipality or settlement area as defined in the *Metis Settlements Act*;

(t) "operation, maintenance and surveillance manual" means a manual developed by a person responsible for a dam or canal that describes the normal operation, maintenance and surveillance of the dam or canal;

(t.1) "outfall structure" means a pipe or structure in, on, under or adjacent to a water body that is constructed for the discharge of

(i) precipitation that has fallen and been collected, or

(ii) liquid and water-carried wastes

to a water body, and includes any associated structure that is required for the installation, maintenance or protection of the outfall structure;

(u) "owner", with respect to land, means

(i) the registered owner of the land,

(ii) a purchaser of the land whose interest as a purchaser is shown on the certificate of title to that land, and

(iii) except in sections 37(4), 50(4), 73, 80, 81(4) and (5) and 166(2) of the Act and Schedule 1 to this Regulation, a tenant or other person who is in lawful possession or occupation of the land;

(v) "person in charge of the drilling" means a person who is authorized under the Act or regulations to drill or reclaim a water well;

(w) "pipeline crossing" means a pipeline crossing as defined in the *Code of Practice for Pipelines and Telecommunication Lines Crossing a Water Body* adopted in section 3(1);

(x) "qualified driller" means a person who

(i) is not a certified journeyman driller,

(ii) is the owner and operator of a drilling machine, and

(iii) holds a valid and subsisting approval to drill water wells that was issued under the *Water Well Regulation* (AR 123/93);

(y) "quarter-section" means a quarter-section within the meaning of the *Surveys Act*;

(z) "saline groundwater" means water that has total dissolved solids exceeding 4000 milligrams per litre;

(aa) "substance" means

(i) any matter that

(A) is capable of becoming dispersed or is dispersed in the environment, or

(B) is capable of becoming transformed or is transformed in the environment into matter referred to in paragraph (A),

(ii) any sound, vibration, heat, radiation or other form of energy, and

(iii) any combination of things referred to in subclauses (i) and (ii);

(bb) "surface water" means all water on the ground surface, whether in liquid or solid state;

(cc) "telecommunication line crossing" means a telecommunication line crossing as defined in the *Code of Practice for Pipelines and Telecommunication Lines Crossing a Water Body* adopted in section 3(1);

(dd) "watercourse" means a river, brook, stream or other natural water channel and the bed along which this flows;

(ee) "watercourse crossing" means a watercourse crossing as defined in the *Code of Practice for Watercourse Crossings* adopted in section 3(2).

(2) A water body that is part of an irrigation works is included in the definition of "water body" as defined in the Act, for the purposes of the regulations under the Act, except as it is used in section 12(4)(h) and Schedule 1 to this Regulation.

(3) For the purposes of the Act,

(a) "farm unit" means an agricultural operation

(i) that is carried out by a person, whether solely or jointly with one or more persons, on any parcel of land that is owned or occupied by that person, and

(ii) that constitutes, in the opinion of the Director, one agricultural operation;

(b) "household" means one or more individuals living in a single, private and detached dwelling place;

(c) "municipal water" means water under a deemed licence that is processed through a treatment plant of a local authority of Alberta, where water under the deemed licence is transferred from within the Province to a location outside of Canada on the date the Act comes into force;

(d) "problem water well" means a water well that has been declared by the Director to be a problem water well;

(e) "processed water" means

(i) water that is packaged in Alberta as a beverage, including but not limited to bottled or canned water, and

(ii) water used in the processing of a food or industrial product if the water is a component of or used to transport the food or industrial product;

(f) "reclamation" means any or all of the following:

(i) the removal of equipment or buildings or other structures or appurtenances;

(ii) the decontamination of buildings or other structures or appurtenances, or of land or water;

(iii) the stabilization, contouring, maintenance, conditioning or reconstruction of the surface of the land;

(iv) any other procedure, operation or requirement specified in this Regulation.

(4) For the purposes of the Act, "activity" includes anything

(a) that is conducted by a licensee in or on a works that is the subject of a licence and that is owned or operated by the licensee, and

(b) that impairs or may impair the exercise of rights of any household user, traditional agriculture user or other licensee, or causes or may cause a significant adverse effect on the aquatic environment, human health, property or public safety.

(5) A person responsible for an activity, diversion of water or for a works or operation of a works is any or all of the following:

(a) an owner of the land on which the activity is or was carried out, the water is or was diverted or the works is or was located;

(b) a previous owner of the land on which the activity was carried out, the water was diverted or the works was located, if the previous owner owned the land while the activity was carried out, the water was diverted or the works was located on the land;

(c) a person who carries out or has carried out an activity;

(d) a person who diverts or has diverted water;

(e) an owner and a previous owner of the works;

(f) any other person whom the Director considers caused or contributed to an adverse effect on the aquatic environment, natural water body, human health, property or public safety that resulted from the activity, diversion of water or works;

(g) a successor, assignee, executor, administrator, receiver, receiver-manager, liquidator or trustee of a person referred to in any of clauses (a) to (f);

(h) a person who acts as the principal or agent of a person referred to in any of clauses (a) to (g);

(i) a person responsible for a dam or canal.

(6) A person responsible for a dam or canal is any one or more of the following:

(a) a licensee with respect to a dam or canal or both;

(b) an owner of the land on which the dam or canal, or both, are located;

(c) a successor, assignee, executor, administrator, receiver, receiver-manager, liquidator or trustee of a person referred to in clause (a) or (b);

(d) a person who acts as the principal or agent of a person referred to in clause (a), (b) or (c).

(7) A person responsible for a water well is any one or more of the following:

(a) an owner of the land on which the water well is situated;

(b) a previous owner of the land if the water well was situated on the land when that owner owned the land;

(c) a person who has had charge, management or control of the water well including the driller and, for the purposes of sections 60 and 61, the person who installs the pumping equipment on the water well;

(d) a successor, assignee, executor, administrator, receiver, receiver-manager, liquidator or trustee of a person referred to in clause (a), (b) or (c);

(e) a person who acts as the principal or agent of a person referred to in clause (a), (b), (c) or (d).

AR 205/98 s1;251/2001;280/2003

Part 1
Activities

Approval exemption

2(1) An activity described in Schedule 1 is exempt from the requirement for an approval.

(2) An activity described in Schedule 2 that is commenced or continued in the area of the Province designated under Schedule 2 is exempt from the requirement for an approval.

Approval exemptions subject to Code

3(1) The placing, constructing, installing, maintaining, replacing or removing of a pipeline crossing or telecommunication line crossing is designated as an activity that does not require an approval, but the activity must be

(a) commenced,

(b) continued, and

(c) carried out

in accordance with the *Code of Practice for Pipelines and Telecommunication Lines Crossing a Water Body*, published by the

Costs

23(1) Any party to a proceeding before the Land Compensation Board may make an application to the Land Compensation Board at the conclusion of the hearing for an award of costs that are reasonable and that are directly and primarily related to the matters contained in the notice of appeal and the preparation and presentation of the party's submission.

(2) In deciding whether to grant an application for an award of costs in whole or in part, the Land Compensation Board may consider any criteria the Board considers appropriate.

(3) In an award of costs, the Land Compensation Board may order the costs to be paid in whole or in part by any party to the appeal that the Board may direct.

(4) The Land Compensation Board may make an award of costs subject to any terms and conditions it considers appropriate.

Fees

24 The Land Compensation Board may charge fees for services or material provided by the Board or things done by the Board under the Act in accordance with an order of the Minister under section 168 of the Act.

Extension of time

25 The Land Compensation Board may, before or after the expiry of the prescribed time, advance or extend the time prescribed in sections 19 and 21 if the Board is of the opinion that there are sufficient grounds for doing so.

Part 6
Dam and Canal Safety

Plans and operation

26(1) If required by the Director, a person responsible for a dam or canal must prepare an emergency preparedness plan, flood action plan and operation, maintenance and surveillance manual in the form and manner and within the time period specified by the Director, whether or not there is a licence or approval with respect to the dam or canal or a term or condition in a licence or approval with respect to the dam or canal requiring such plans or manuals to be prepared.

(2) A person responsible for a dam or canal must operate and maintain the dam or canal in accordance with

(a) the terms and conditions in any applicable licence,

(b) if applicable, an emergency preparedness plan, flood action plan and operation, maintenance and surveillance manual,

(c) the terms and conditions of any water management order that is issued under the Act,

(d) the directions of an inspector or the Director, and

(e) the Act and this Regulation.

Site assessments

27 If required by the Director, a person responsible for a dam or canal must carry out an assessment of the site of the dam or canal during the construction, operation, rehabilitation or repair of the dam or canal in the form and manner and within the time period specified by the Director.

Safety assessments

28(1) A person responsible for a dam or canal must, within 30 days of receiving written notice from the Director or within another time period specified by the Director,

(a) submit to the Director the original or copies satisfactory to the Director of all design notes, drawings, specifications, structural, hydraulic, hydrologic, geotechnical and geological data, reports or other documents that were required or used for the design, construction, repair and rehabilitation of the dam or canal, and

(b) arrange for a safety assessment of the dam or canal described in the notice to be conducted by an inspector or person authorized by the Director in the form and manner and within the time period specified by the Director.

(2) A safety assessment under subsection (1) may be carried out jointly with a person responsible for the dam or canal.

Reporting of site or safety assessment

29(1) Unless otherwise specified by the Director, if an assessment of a dam or canal is carried out or arranged by a person responsible for a dam or canal, including an assessment under section 27 or 28, the results of the assessment must be forwarded to the Director within 90 days of the assessment, or other time period required by the Director, unless the assessment reveals an unusual situation or

potential safety hazard, in which case the results of the assessment must be reported immediately to the Director.

(2) For the purposes of this section, "results of the assessment" includes, but is not limited to, instrumentation readings and analyses, photographs and other visual records and drawings, soil or aggregate testing results or other test results and any other information related to the dam or canal that is requested by the Director.

Safety evaluation

30(1) If required in writing by the Director, a person responsible for a dam or canal must have a person who has been approved by the Director and who is a professional engineer as defined in the *Engineering and Geoscience Professions Act* be an independent reviewer to carry out a safety evaluation of a dam or canal in accordance with any written requirements of the Director and provide a written report of the safety evaluation.

(2) The report under subsection (1) must be in the form and manner required by the Director and must be submitted within the time period specified by the Director.

AR 205/98 s30;170/2012

Safety directives

31 If conditions are or may likely be hazardous to a dam or canal or if conditions may reasonably be anticipated to cause a dam or canal, or any part of a dam or canal, or any operation or action at or in connection with a dam or canal, to be or become a hazard to the environment, human health, property or public safety, a person responsible for a dam or canal must

(a) operate the dam or canal, or any part of the dam or canal, in accordance with an applicable emergency preparedness plan,

(b) immediately inform all persons who may be endangered by the dam or canal of the nature of the existing or anticipated conditions and, if reasonably necessary, advise those persons to vacate and to remove any property from the endangered area,

(c) immediately notify the Director of

(i) the nature of the existing or anticipated conditions,

(ii) all things done with respect to the dam or canal by a person responsible for the dam or canal, and

(iii) the time and exact nature of any information provided or warning issued to any person under this section,

and

(d) suspend operation of the dam or canal if required by the Director.

Suspension, cessation, abandonment, decommissioning

32(1) A person responsible for a dam or canal must not commence any of the following unless the person responsible for the dam or canal has previously applied for and obtained the written authorization of the Director:

(a) to cease the operation of the dam or canal permanently or for any period of time;

(b) to abandon or decommission the dam or canal permanently;

(c) to remove the dam.

(2) If required by the Director, a person responsible for a dam or canal must prepare a program or comply with a program prescribed by the Director for ceasing the operation of a dam or canal, abandoning or decommissioning a dam or canal or removing a dam.

(3) A person responsible for a dam or canal who has obtained the Director's authorization under subsection (1) must, at least 14 days before commencing any work to which the authorization applies, notify the Director of the date on which the person responsible for the dam or canal expects to commence the work and submit a schedule for completion of the work.

(4) On the completion of any work to which this section applies, a person responsible for a dam or canal must submit to the Director a report on the work and how it was performed, and must arrange an inspection of the work by an inspector or person authorized by the Director on a date satisfactory to the Director.

(5) If required by the Director, a person responsible for a dam or canal must do any further work that the Director prescribes with respect to any danger to any person or property.

Providing information

33(1) In addition to any information required under this Regulation or under section 167 of the Act, a person responsible

for a dam or canal must, within the time period specified by the Director, submit to the Director any information requested by the Director respecting the dam or canal and the land upstream or downstream from or adjacent to the dam or canal that the Director requires to evaluate the condition of the dam or canal.

(2) A person responsible for a dam or canal must conduct any inspection, investigation, survey and test that is necessary to provide the information under subsection (1).

Instrumentation

34(1) If instrumentation is installed in a dam or canal, a person responsible for a dam or canal must monitor and maintain, and replace, if necessary, the instrumentation so the instrumentation provides continuity of readings.

(2) If required by the Director, a person responsible for a dam or canal must

(a) install any additional instrumentation prescribed by the Director, and

(b) submit instrumentation readings to the Director within 60 days after the readings are taken.

(3) If instrumentation reading schedules that have been agreed to by the Director are to be changed or modified, a person responsible for the dam or canal must notify the Director within 60 days of a cessation of the reading or before making any changes or modifications to the reading schedules.

Part 7
Water Wells

Duty to comply

35(1) No person shall site, locate, drill, construct, cover, reclaim, service, monitor, deepen, operate, complete, equip, disinfect, recondition, test or maintain a water well or cause a water well to be sited, located, drilled, constructed, covered, reclaimed, serviced, monitored, deepened, operated, completed, equipped, disinfected, reconditioned, tested or maintained except in accordance with this Regulation.

(2) Notwithstanding subsection (1), sections 41, 43(4), 44(1)(b) and (d), 44(2), 45, 47(b), (c), (e) and (f), 52(2), 60, 61, 63, 64 and 66(2) do not apply in respect of a water well drilled by the holder of a Class C approval.

B.C. Reg. 44/2000
O.C. 131/2000

Deposited February 10, 2000

Water Act

BRITISH COLUMBIA DAM SAFETY REGULATION

Note: Check the Cumulative Regulation Bulletin 2014 and 2015
for any non-consolidated amendments to this regulation that may be in effect.

[includes amendments up to B.C. Reg. 163/2011, November 30, 2011]

Point in Time

Contents

Definitions

1 In this regulation:

"Act" means the *Water Act*;

"classification" means the dam failure consequences classification of a dam under Schedule 1;

"dam" means

(a) a barrier constructed across a stream, or

(b) a barrier constructed off-stream and supplied by diversion of water from a stream,

for the purpose of enabling the storage or diversion of water, and includes all works which are incidental to or necessary for the barrier;

"dam owner" means, with respect to a dam, any or all of the following:

(a) the person who holds the current licence or is required to hold a licence for the dam;

(b) the person who last held a licence for the dam, including a licence that has been suspended, cancelled, abandoned or terminated;

(c) if there is no person to whom paragraph (a) or (b) applies, the owner of the land on which the dam is located or the person who had the dam constructed;

"dam safety officer" means an engineer or officer who is designated in writing by the comptroller as a dam safety officer;

"dam safety review" means a review carried out by a professional engineer under section 7 or 14;

"emergency preparedness plan" means

(a) a plan prepared by a dam owner under section 3.1 (1) and accepted by a dam safety officer, and

(b) any revisions to the plan prepared by the dam owner and accepted by a dam safety officer;

"height" means the vertical distance to the top (crest) of a dam measured,

(a) in the case of a dam across a stream, from the natural bed of the stream at the downstream outside limit of the dam, or

(b) in the case of a dam that is not across a stream, from the lowest elevation at the outside limit of the dam;

"instrumentation" means, but is not limited to, survey monuments and stations, inclinometers, extensometers, piezometers or measuring weirs;

"maintain" or **"maintenance"** means the performance of those tasks required to keep the dam in good operating condition;

"operation, maintenance and surveillance manual" means

(a) a manual prepared by a dam owner under section 3 (2) and accepted by a dam safety officer, and

(b) any revisions to the manual prepared by the dam owner and accepted by a dam safety officer;

"professional engineer" means a person registered, and in good standing, as a professional engineer under the *Engineers and Geoscientists Act*;

"Provincial Emergency Program" means the Provincial Emergency Program continued under the *Emergency Program Act*;

"Schedule 2 table" means the table in section 2 of Schedule 2;

"volume of water" means the total storage volume of the reservoir at full supply level measured in accordance with one of the following:

(a) between the natural bed of the stream and the spillway crest;

(b) between the upstream outside limit of the dam and the spillway crest;

(c) if a low level outlet is excavated to an elevation lower than the general foundation of the dam, between the bottom of that outlet and the spillway crest.

[am. B.C. Reg. 108/2011, App. 1, s. 1; App. 2, s. 1.]

Application

2 (1) This regulation applies to all of the following:

(a) a dam 1 metre or more in height that is capable of impounding a volume of water greater than 1 000 000 m^3;

(b) a dam 2.5 metres or more in height that is capable of impounding a volume of water greater than 30 000 m^3;

(c) a dam 7.5 metres or more in height;

(d) a dam that does not meet the criteria under paragraph (a), (b) or (c) but has a classification of significant, high, very high or extreme.

(2) This regulation does not relieve a dam owner from any other requirements that may be imposed under the Act, the Water Regulation or any other applicable enactment.

[am. B.C. Reg. 108/2011, App. 1, s. 2.]

Operation and maintenance of a dam

3 (1) A dam owner must operate and maintain a dam in accordance with all of the following:

(a) this regulation;

(b) any applicable licence or approval;

(c) any order made by the comptroller, a regional water manager or an engineer under the Act or this regulation or any requirement specified by a dam safety officer under this regulation;

(d) the emergency preparedness plan for the dam;

(e) the operation, maintenance and surveillance manual for the dam.

(2) A dam owner of a dam that has a classification of significant, high, very high or extreme must, in the form and manner and within the time period specified by the comptroller or regional water manager,

(a) prepare a manual that describes the dam owner's operation, maintenance and surveillance procedures for the dam, and

(b) submit the manual to a dam safety officer for acceptance by the dam safety officer.

(3) Subsection (2) applies whether or not there is a term or condition in an approval granted or licence issued that requires the preparation of such a manual for the dam.

(3.1) A dam owner of a dam that has a classification of significant, high, very high or extreme must

(a) review, and revise if necessary, the operation, maintenance and surveillance manual for the dam no less frequently than is specified for the classification of the dam in item 6 in the Schedule 2 table, and

(b) submit any revisions to a dam safety officer for acceptance by the dam safety officer.

(4) A dam owner must ensure that the dam is adequately safeguarded to prevent unauthorized operation of the dam by someone other than the dam owner or an agent of the dam owner.

(5) A dam owner of a dam that is located partially or entirely on Crown land and that has a classification of significant, high, very high or extreme must ensure that there is at all times posted on the land at both ends of the top of the dam a sign that meets all of the following criteria:

(a) the sign must contain, in lettering that is clearly visible from 15 metres, the following information:

(i) the name of the dam;

(ii) the name of the stream that is dammed;

(iii) the following words: "If you see any dam safety concerns, please contact:", followed by

(A) the name and emergency telephone numbers for both day and night of a dam owner, and

(B) the emergency telephone number for the Provincial Emergency Program;

(b) the sign must be at least 75 centimetres high and 60 centimetres wide;

(c) the sign must be clearly visible under seasonal conditions to persons approaching the dam;

(d) the sign and post must be constructed from metal or other durable materials having strength suited to the location and environment of the sign;

(e) the sign must meet any other requirement specified by the comptroller or a regional water manager.

(6) Subsection (5) applies whether or not the dam owner has an authorization or other right to use or occupy the Crown land on which the dam is partially or entirely located.

(7) For the purposes of subsection (5) (a) (iii) (A), if there is more than one dam owner, the dam owner whose name and emergency telephone numbers must be on the sign is the dam owner who

(a) the dam owners agree is the emergency contact for the dam, or

(b) if there is no agreement by the owners, the dam owner specified by a dam safety officer.

[am. B.C. Reg. 108/2011, App. 1, s. 3; App. 2, s. 2.]

Emergency preparedness plan

3.1 (1) A dam owner of a dam that has a classification of significant, high, very high or extreme must, in the form and manner and within the time period specified by the comptroller or regional water manager,

(a) prepare a plan that describes the actions to be taken by the dam owner in the event of an emergency at the dam, and

(b) submit the plan to a dam safety officer for acceptance by the dam safety officer.

(2) Subsection (1) applies whether or not there is a term or condition in an approval granted or licence issued that requires the preparation of such a plan for the dam.

(3) A dam owner of a dam that has a classification of significant, high, very high or extreme must

(a) review, and revise if necessary, the emergency preparedness plan for the dam no less frequently than is specified for the classification of the dam in items 5 and 6 in the Schedule 2 table, and

(b) submit any revisions to a dam safety officer for acceptance by the dam safety officer.

[en. B.C. Reg. 108/2011, App. 1, s. 4.]

Change of classification

3.2 If the classification of a dam changes, a dam owner must, in a timely manner,

(a) meet the requirements of this regulation that apply in respect of the new classification, and

(b) review, and revise if necessary, the operation, maintenance and surveillance manual and the emergency preparedness plan, if any, for the dam and submit any revisions to a dam safety officer for acceptance by the dam safety officer.

[en. B.C. Reg. 108/2011, App. 1, s. 4.]

Alteration of a dam

4 (1) Any alteration, improvement or replacement to all or any part of a dam must be authorized by an approval, licence or order.

(2) Subsection (1) does not apply to an alteration, improvement or replacement for the purpose of

(a) maintaining the dam as authorized under section 3, or

(b) addressing a hazardous condition under section 8.

(3) On completion of an alteration, improvement or replacement to all or any part of a dam, a dam owner must, in a timely manner,

(a) submit to a dam safety officer a report on the work and the manner in which the alteration, improvement or replacement was performed, and

(b) review, and revise if necessary, the operation, maintenance and surveillance manual and the emergency preparedness plan, if any, for the dam and submit any revisions to a dam safety officer for acceptance by the dam safety officer.

[am. B.C. Reg. 108/2011, App. 1, s. 5.]

Inspections and tests

5 A dam owner must do all of the following:

(a) inspect the dam and dam site no less frequently than is specified for the classification of the dam in items 1 and 2 in the Schedule 2 table in order to assess the condition of the dam during the construction, operation or alteration of the dam;

(b) test the operation of the outlet facilities, spillway gates and other mechanical components of the dam no less frequently than is specified for the classification of the dam in item 4 in the Schedule 2 table;

(c) record the results of every inspection or test performed under this section;

(d) comply with section 7.1 or 8, if applicable.

[en. B.C. Reg. 108/2011, App. 1, s. 6.]

Reporting

6 (1) If an inspection or test is carried out under section 5 or any other inspection, test or review is carried out with respect to a dam, a dam owner must, if required by a dam safety officer, submit to the dam safety officer, in the form and manner and within the time period specified by the dam safety officer,

(a) a record of the results of the inspection, test or review, and

(b) the results and analysis of any test or measurement taken including, but not limited to,

(i) instrumentation readings and analysis,

(ii) visual records or observations,

(iii) drawings,

(iv) soil, aggregate and concrete test results, and

(v) any other test results.

(2) Despite subsection (1), if an inspection, test or review carried out with respect to a dam reveals a potential safety hazard referred to in section 7.1 or a hazardous condition referred to in section 8, a dam owner must promptly submit to a dam safety officer the records referred to in subsection (1).

(3) A dam owner must, if required by a dam safety officer, submit to the dam safety officer copies of the following records relating to the design, construction or alteration of the dam:

(a) all design notes, drawings and specifications;

(b) hydraulic, hydrologic, geological and geotechnical data;

(c) reports and other similar records.

[en. B.C. Reg. 108/2011, App. 1, s. 6.]

Review of downstream conditions

6.1 A dam owner must

(a) annually conduct a review of conditions downstream of the dam to assess whether there has been any change to the classification of the dam, and

(b) immediately notify a dam safety officer if there has been a change to the classification of the dam.

[en. B.C. Reg. 108/2011, App. 1, s. 6.]

Dam safety review and report

7 (1) A dam owner of a dam that has a classification of high, very high or extreme must, no less frequently than is specified for the classification of the dam in item 7 in the Schedule 2 table,

(a) have a professional engineer with qualifications and experience in dam safety analysis,

(i) carry out a review, in accordance with the requirements of the comptroller or regional water manager,

(A) to determine whether the dam is safe, and

(B) if it is determined that the dam is not safe, to determine what actions are required to make the dam safe; and

(ii) prepare, in the form and manner specified by the comptroller or regional water manager, a dam safety report, and

(b) submit to a dam safety officer, for acceptance by the dam safety officer, a copy of the dam safety report prepared by the professional engineer.

(2) Despite subsection (1), if a dam classification increases due to an increase in the consequences of a failure of the dam, other than an increase from a low classification to a significant classification, the dam owner must meet the requirements of paragraphs (a) and (b) of subsection (1) no later than 2 years from the earlier of the following dates:

(a) the date on which a dam safety officer notifies the dam owner of the change in classification;

(b) the date on which the dam owner notifies a dam safety officer of the change in classification;

unless the comptroller, regional manager or a dam safety officer specifies that the requirements must be met by another date.

(3) For the purposes of subsections (1) and (2), if a dam owner meets the requirements of paragraphs (a) and (b) of subsection (1) on or before December 31 of the year in which the requirements must be met under those subsections, the dam owner is deemed to have met the requirements within the time required.

(4) After completion of a dam safety review the dam owner must comply with section 7.1 or 8, if applicable.

[en. B.C. Reg. 108/2011, App. 1, s. 6.]

Potential safety hazard at a dam

7.1 If

(a) an inspection or test under section 5,

(b) a dam safety review,

(c) monitoring, under section 11, the instrumentation installed at a dam, or

(d) any other inspection, test or review carried out with respect to a dam

reveals a potential safety hazard to which section 8 does not apply, a dam owner must prepare a plan that identifies and prioritizes any actions required to correct the potential safety hazard and, in accordance with section 4, if applicable, must implement the plan in a timely manner based on the priorities identified in the plan.

[en. B.C. Reg. 108/2011, App. 1, s. 6.]

Hazardous conditions at a dam

8 If conditions exist which are or are likely to be hazardous to a dam, or if conditions may reasonably be anticipated to cause a dam, or any part of a dam, or any operation or action

at or in connection with a dam, to be or become potentially hazardous to public safety, the infrastructure or works, other property or the environment, a dam owner must promptly do all of the following:

(a) if an emergency preparedness plan exists, modify the operation of the dam, or any part of the dam, in accordance with the emergency preparedness plan;

(b) if an emergency preparedness plan does not exist, operate the dam in a manner, and initiate any remedial actions, that will

(i) safeguard the public,

(ii) minimize damage to the infrastructure or works or to other property, including that not owned by the dam owner, and

(iii) minimize damage to the environment;

(c) contact the Provincial Emergency Program;

(d) notify a dam safety officer, or the comptroller or regional water manager, of

(i) the nature of the existing or anticipated conditions,

(ii) all things done by the dam owner to rectify the conditions, and

(iii) the time and exact nature of any information or warning of existing or anticipated conditions issued to any person under this section;

(e) inform local authorities, and persons who may be in immediate danger from the potential failure of the dam, of the nature of the existing or anticipated conditions and, if necessary, advise those persons who may be in immediate danger to vacate and remove any property from the endangered area;

(f) modify the operation of the dam to minimize or prevent damage which may be caused by the failure of the dam, and undertake any other hazard response activity required by a dam safety officer or engineer or by the comptroller or regional water manager.

[am. B.C. Reg. 108/2011, App. 2, s. 3.]

Suspension of normal operation or removal of a dam

9 (1) A dam owner must give the comptroller or regional water manager at least 60 days written notice before undertaking any of the following activities:

(a) removing all or a significant part of a dam;

(b) decommissioning or abandoning a dam;

(c) stopping the normal operation of a dam for a period of time longer than one year.

(2) The dam owner must prepare, and submit to a dam safety officer for approval,

(a) a plan respecting an activity under subsection (1) (a) or (b), or

(b) if required by the dam safety officer, a plan respecting an activity under subsection (1) (c).

(3) The dam owner must, at least 14 days before the date on which the work is expected to commence, notify a dam safety officer before commencing any work under the approved plan.

(4) The dam owner must submit to a dam safety officer, on the completion of the work performed under the approved plan, a report on the work and the manner in which it was performed.

(5) The dam owner must undertake any further actions that the comptroller or regional water manager requires to alleviate any adverse consequences to any person, the infrastructure or works, other property or the environment that may be affected by any work performed on the dam.

(6) An approval under subsection (2) respecting the decommissioning of a dam is subject to the *Environmental Assessment Act* and to approvals, if any, required under that Act.

Information and evaluation

10 (1) A dam owner must, if required by a dam safety officer, submit to the dam safety officer the following information in order to evaluate the condition or hazard potential of a dam:

(a) information with respect to the dam including, but not limited to,

(i) foundation investigation results,

(ii) design details and as-built plans,

(iii) construction records,

(iv) operation manuals,

(v) records of instrumentation,

(vi) inspection reports,

(vii) safety reports, and

(viii) inundation studies and emergency preparedness plans;

(b) information with respect to the nature of the land and the stream, and the use of the land and the stream, downstream from or adjacent to the dam or reservoir, including the hydraulic, hydrologic, geological and geotechnical characteristics and the uses of the land and stream;

(c) information with respect to the watershed upstream of the dam.

(2) The information required under subsection (1) must be submitted to a dam safety officer, in the form and manner and within the time period specified by the comptroller or regional water manager.

(3) The dam owner must conduct any inspection, investigation, survey or test that is necessary to provide the information required by subsection (1).

(4) If a dam owner conducts an investigation that involves drilling, trenching, excavating a test pit or other invasive activity within the dam or in close proximity to the dam, the dam owner must ensure that the activity is directly supervised by a professional engineer with qualifications and experience in dam design, construction and analysis.

[am. B.C. Reg. 108/2011, App. 1, s. 7.]

Instrumentation

11 A dam owner must do all of the following:

(a) install any instrumentation necessary to adequately monitor the performance of a dam;

(b) maintain or replace instrumentation installed at a dam to ensure continuity of readings;

(b.1) monitor the instrumentation installed at a dam no less frequently than is specified for the classification of the dam in item 3 in the Schedule 2 table;

(c) if required by a dam safety officer, submit to the dam safety officer instrumentation readings and evaluations in the form and manner and within the time period specified by the dam safety officer;

(c.1) comply with section 7.1 or 8, if applicable;

(d) submit, to a dam safety officer for acceptance by the dam safety officer,

(i) notice of any planned modifications to, changes to or removal of the instrumentation at least 60 days before the proposed modification, change or removal, or

(ii) an annual plan outlining intended changes to the instrumentation.

[am. B.C. Reg. 108/2011, App. 1, s. 8.]

Expert opinion

12 (1) If, based on information submitted in respect of a dam or related works, the comptroller or regional water manager considers that a question has arisen as to what is proper practice for resolving an issue involving a dam or related works, the comptroller or regional water manager may require a dam owner to retain an independent expert, satisfactory to the comptroller or regional water manager, with qualifications and experience as follows:

(a) in the case of a dam, in dam design, construction and analysis;

(b) in the case of related works, in hydraulic, hydrological, geological, geotechnical, mechanical or structural engineering or other appropriate disciplines.

(2) The expert retained under subsection (1) must provide a report to the comptroller or regional water manager on the issue.

[am. B.C. Reg. 108/2011, App. 1, s. 9.]

Acceptance by dam safety officer

13 (1) If a record that is submitted under this regulation by a dam owner to a dam safety officer for acceptance by the dam safety officer is not in a form that is acceptable to the dam safety officer, the dam safety officer may return the record to the dam owner together with a written notice specifying the deficiencies in the record and requiring that they be corrected.

(2) If a dam safety officer provides a written notice to a dam owner under subsection (1)

(a) the dam owner must correct the deficiencies identified in the notice in a timely manner, and

(b) the dam safety officer is not required to accept the record referred to in subsection (1) until the dam owner has corrected the deficiencies set out in the notice.

[en. B.C. Reg. 108/2011, App. 1, s. 10.]

Transition — dam safety review and report

14 (1) Despite section 7, if a dam

(a) had a downstream consequence classification of low or very low under this regulation as it read immediately before June 9, 2011, and

(b) had a classification of high, very high or extreme on June 9, 2011,

the dam owner must meet the requirements of paragraphs (a) and (b) of section 7 (1) no later than December 31, 2013.

(2) Despite section 7, subsection (3) of this section applies to a dam if

(a) the dam had a downstream consequence classification of high or very high under this regulation as it read immediately before June 9, 2011,

(b) the dam had a classification of extreme on June 9, 2011, and

(c) on June 9, 2011 the immediately preceding dam safety review in respect of the dam was conducted in a year set out in column 1 of the table in subsection (3).

(3) For the purposes of subsection (2) of this section, the dam owner must meet the requirements of paragraphs (a) and (b) of section 7 (1) no later than the date specified in column 2 in the table below opposite the year in which the immediately preceding dam safety review was conducted as set out in column 1 of the table below:

	Column 1	**Column 2**
Item	**Year of immediately preceding dam safety review**	**Date by which requirements in paragraphs (a) and (b) of section 7 (1) must be met**
1	2001 or 2002	10 years from the date on which the dam safety report in respect of the immediately preceding review was submitted to a dam safety officer.
2	2003, 2004 or 2005	December 31, 2013.
3	2006 and thereafter	The date specified for the classification of the dam in item 7 in the Schedule 2 table.

(4) In respect of Items 1 and 3 of the table in subsection (3) of this section, if a dam owner meets the requirements of paragraphs (a) and (b) of section 7 (1) on or before December 31 of the year in which the requirements must be met under subsection (3) of this section, the dam owner is deemed to have met those requirements within the time required.

[en. B.C. Reg. 163/2011.]

Schedule 1

[en. B.C. Reg. 108/2011, App. 1, s. 11.]

(sections 1, 2 (1) (d), 3 (2) and (3.1), 3.1 (1) and (3), 3.2, 5, 6.1, 7, 11 (b.1) and 14)

Dam Classification

Definitions

1 In this Schedule:

"category", with respect to consequences of failure, means one of the following:

(a) loss of life;

(b) environment and cultural values;

(c) infrastructure and economics;

"consequences of failure" means losses or damages that

(a) are caused by the failure of a dam, and

(b) result from impacts on areas that are at the dam or are downstream or upstream of the dam;

"failure", in respect of a dam, means the partial or complete collapse of the dam and the uncontrolled release of all or part of the water stored by the dam, caused by either flood-induced failure or non flood-induced failure;

"flood-induced failure" means a dam failure that is caused by a natural flood of a magnitude that is greater than the magnitude that the dam can pass at the time of the failure;

"non flood-induced failure" means a dam failure that occurs during normal dam operation that is caused by conditions such as internal erosion, piping, an earthquake or an error in operation leading to overtopping.

Determination of classification

2 The dam failure consequences classification of a dam is determined in accordance with the following steps:

(a) for each category of consequences of failure in the following table, identify the losses or damages specified in the table that most closely describe the losses or damages that are the worst potential consequences of a failure of the dam;

(b) identify the classification that is specified in the following table for the losses or damages referred to in paragraph (a) for each category;

(c) the classification identified under paragraph (b) with the worst potential consequences is the classification of the dam.

Table

Dam failure consequences classification	Population at risk	Consequences of failure		
		Loss of life	Environment and cultural values	Infrastructure and economics
Low	None[1]	There is no possibility of loss of life other than through unforeseeable misadventure.	Minimal short-term loss or deterioration and no long-term loss or deterioration of (a) fisheries habitat or wildlife habitat, (b) rare or endangered species, or (c) unique landscapes or sites of cultural significance.	Minimal economic losses mostly limited to the dam owner's property, with virtually no pre-existing potential for development within the dam inundation zone.
Significant	Temporary only[2]	Low potential for multiple loss of life.	No significant loss or deterioration of (a) important	Low economic losses affecting limited infrastructure and residential buildings, public transportation or services or

			fisheries habitat or important wildlife habitat, (b) rare or endangered species, or (c) unique landscapes or sites of cultural significance, and restoration or compensation in kind is highly possible.	commercial facilities, or some destruction of or damage to locations used occasionally and irregularly for temporary purposes.
High	Permanent[3]	10 or fewer	Significant loss or deterioration of (a) important fisheries habitat or important wildlife habitat, (b) rare or endangered species, or (c) unique landscapes or sites of cultural significance, and restoration or compensation in kind is highly possible.	High economic losses affecting infrastructure, public transportation or services or commercial facilities, or some destruction of or some severe damage to scattered residential buildings.
Very high	Permanent[3]	100 or fewer	Significant loss or deterioration of (a) critical fisheries habitat or critical wildlife habitat, (b) rare or endangered species, or (c) unique landscapes or sites of cultural significance, and restoration or compensation in kind is possible but impractical.	Very high economic losses affecting important infrastructure, public transportation or services or commercial facilities, or some destruction of or some severe damage to residential areas.
Extreme	Permanent[3]	More than 100	Major loss or deterioration of (a) critical fisheries habitat or critical	Extremely high economic losses affecting critical infrastructure, public transportation or services or commercial facilities, or some

			wildlife habitat, (b) rare or endangered species, or (c) unique landscapes or sites of cultural significance, and restoration or compensation in kind is impossible.	destruction of or some severe damage to residential areas.

[1] There is no identifiable population at risk.

[2] People are only occasionally and irregularly in the dam-breach inundation zone, for example stopping temporarily, passing through on transportation routes or participating in recreational activities.

[3] The population at risk is ordinarily or regularly located in the dam-breach inundation zone, whether to live, work or recreate.

Schedule 2

[en. B.C. Reg. 108/2011, App. 1, s. 11; am. B.C. Reg. 163/2011.]

(sections 1, 3 (3.1), 3.1 (3), 5, 7, 11 (b.1) and 14)

Minimum Frequency of Safety Activities

Interpretation of Schedule

1 In this Schedule:

"EPP" means the emergency preparedness plan for a dam;

"formal inspection" means a thorough on-site inspection performed by the representative of the dam owner who is responsible for dam safety;

"OMS manual" means the operation, maintenance and surveillance manual for a dam;

"site surveillance" means the close monitoring of dam behaviour through visual inspections and, in addition, may include the systematic collection, analysis and interpretation of data obtained through automated instrumentation.

Frequency of activities

2 In the following table, column 1 sets out an activity that must be carried out by a dam owner under a provision in this regulation and columns 2, 3, 4 and 5 set out the minimum frequency with which the activity must be carried out for each classification.

Table

	Column 1	Column 2	Column 3	Column 4	Column 5
Item	Activity	Frequency of activity			
		Extreme classification	Very high and high classifications	Significant classification	Low classification

1	Site surveillance	Weekly[1]	Weekly[1]	Monthly[1]	Quarterly
2	Formal inspection	Semi-annually	Annually	Annually	Annually
3	Monitor instrumentation	Annually unless otherwise specified in the OMS manual	Annually unless otherwise specified in the OMS manual	Annually unless otherwise specified in the OMS manual	If and when required by a dam safety officer
4	Test operation of outlet facilities, spillway gates and other mechanical components	Annually unless otherwise specified in the OMS manual	Annually unless otherwise specified in the OMS manual	Annually unless otherwise specified in the OMS manual	Annually
5	Update the emergency contact information in the EPP	Annually	Annually	Annually	Not applicable
6	Review, and revise if necessary, the OMS manual and the EPP	Every 7 years	Every 10 years	Every 10 years	Not applicable
7	Conduct dam safety review and submit dam safety report	Every 7 years	Every 10 years	Not applicable	Not applicable
8	Review downstream conditions, as set out in section 6.1, and notify a dam safety officer of any change in classification	Annually	Annually	Annually	Annually
[1] The frequency of visual inspections may be reduced if provided for in the OMS manual.					

[Provisions relevant to the enactment of this regulation: *Water Act*, R.S.B.C. 1996, c. 483, section 101 (1), (2), (3), (5) and (8)]

Updated to 1 March 2015
This document has official status.

chapter S-3.1.01

DAM SAFETY ACT

CHAPTER I
GENERAL PROVISIONS

1. The purpose of this Act is to increase the safety of the dams to which the Act applies and thereby protect persons and property against the risks associated with the presence of dams.

2000, c. 9, s. 1.

2. For the purposes of this Act, “dam” means any works intended to divert or impound the water of a watercourse or of a lake or reservoir listed in the *Répertoire toponymique du Québec* or a supplement to that publication.

In addition, a person holding or operating a dam shall be considered to be a dam owner.

2000, c. 9, s. 2.

3. This Act is binding on the Government, on government departments and on bodies that are mandataries of the State.

2000, c. 9, s. 3.

CHAPTER II
PROVISIONS APPLICABLE TO HIGH-CAPACITY DAMS

4. The following dams are considered to be high-capacity dams:

(1) dams 1 metre or more in height having an impounding capacity greater than 1,000,000 m^3;

(2) dams 2.5 metres or more in height having an impounding capacity greater than 30,000 m^3;

(3) dams 7.5 metres or more in height, regardless of impounding capacity;

(4) regardless of their height, retaining works and works appurtenant to a dam referred to in paragraph 1, 2 or 3, and works intended to retain all or part of the water stored by such a dam.

2000, c. 9, s. 4.

DIVISION I
PROJECTS REQUIRING AUTHORIZATION

5. The construction, structural alteration or removal of any high-capacity dam requires the authorization of the Minister of Sustainable Development, Environment and Parks.

The authorization of the Minister is also required for any change in use of a high-capacity dam likely to affect the safety of the works, and for any permanent or temporary stopping of the operation of the dam.

2000, c. 9, s. 5; 2006, c. 3, s. 35.

6. An application for authorization must be filed by the promoter or the owner of the dam by way of a notice containing a general description of the project.

The following documents must be submitted in support of an application for authorization for the construction or structural alteration of a high-capacity dam:

(1) the plans and specifications for the project, prepared by an engineer;

(2) a certificate of an engineer stating that the plans and specifications conform to the safety standards prescribed by the Government by regulation.

The Government may, by regulation, determine the other information or documents to be submitted with an application for authorization.

2000, c. 9, s. 6.

7. The Minister may require an applicant to submit any information, document, study or expert opinion the Minister considers necessary to the assessment of the project.

2000, c. 9, s. 7.

8. The authorization of the Minister may include conditions and fix the time within which the work must be completed.

2000, c. 9, s. 8.

9. Any modification to the plans and specifications must be prepared by an engineer and, if the modification is likely to affect the safety of the works, be submitted to the Minister for approval before the work is undertaken.

The application for approval must include a certificate of an engineer stating that the proposed modifications conform to the safety standards prescribed by the Government by regulation.

2000, c. 9, s. 9.

10. Upon completion of the work authorized pursuant to section 5 and, where applicable, before the dam is put into operation, the owner must advise the Minister of the completion of the work and forward to the Minister a certificate of an engineer stating that the work has been carried out in conformity with the plans and specifications and any conditions of authorization.

Any modifications made to the plans and specifications during the carrying out of the work that were not required to be submitted to the Minister for approval under section 9 must also, within the same time limits, be forwarded to the Minister, together with a certificate of an engineer stating that the modifications are not likely to affect the safety of the works.

2000, c. 9, s. 10.

11. A new authorization must be sought for every proposed construction, structural alteration or removal of a high -capacity dam that is not undertaken within two years.

2000, c. 9, s. 11.

12. A decision by the Minister refusing authorization or approval may be contested by the applicant before the Administrative Tribunal of Québec within 30 days of notification.

2000, c. 9, s. 12.

13. The Minister shall maintain a register of applications for authorization and approval and shall record all authorizations and approvals granted.

The information contained in the register is public information.

2000, c. 9, s. 13.

DIVISION II
CLASSIFICATION

14. Every high-capacity dam must be classified on the basis of the risk it presents for persons and property.

The classification shall be effected and kept current by the Minister according to the conditions and using the methods and parameters determined by the Government by regulation, including dam type, location, dimensions, impounding capacity, age, condition and consequences of dam failure for persons and property.

Before a decision is made by the Minister on the classification of a dam, the owner must be informed of the Minister's intention and given an opportunity to present observations.

The Minister's decision as to the classification of a dam may be contested by the owner before the Administrative Tribunal of Québec within 30 days of notification.

2000, c. 9, s. 14.

DIVISION III
SAFETY STANDARDS

15. The Government shall determine, by regulation, the safety standards applicable to high-capacity dams and, in particular, flood and earthquake resistance standards.

2000, c. 9, s. 15.

16. Every high-capacity dam must, at the intervals and on the other conditions determined by the Government by regulation, undergo a safety review by an engineer to assess its safety in terms of good practice and regulatory safety standards. The safety review must, in particular, identify any situation liable to compromise the safety of the works and indicate, where applicable, the proposed remedial measures.

2000, c. 9, s. 16.

17. In addition to forwarding the safety review required under section 16 to the Minister within the time fixed by the Government by regulation, the dam owner must forward for approval, within the same time, an outline of the remedial measures the owner intends to take and an implementation schedule.

The Minister's approval may include conditions; the Minister may modify the remedial measures and implementation schedule submitted, or require the owner to submit new remedial measures and a new implementation schedule within the time the Minister fixes, in which case the owner must first be advised of the Minister's intention and given an opportunity to present observations.

A decision by the Minister refusing approval, approving the remedial measures and implementation schedule with modifications, or requiring the owner to submit new remedial measures and a new implementation schedule may be contested by the owner before the Administrative Tribunal of Québec within 30 days of notification.

2000, c. 9, s. 17.

18. If the owner of a dam fails to have a safety review carried out as provided in section 16, to implement approved remedial measures in accordance with the implementation schedule, or to submit new remedial measures or a new implementation schedule within the time fixed, the Minister may have the safety review carried out or implement any required remedial measures at the owner's expense.

2000, c. 9, s. 18.

19. The owner of a high-capacity dam must have an impounded water management plan prepared by an engineer according to the conditions and within the time fixed by the Government by regulation, and must keep the management plan current.

In addition, the owner of the works must, in collaboration with the emergency preparedness authorities and in compliance with the conditions and time limits fixed by the Government by regulation, prepare and keep current an emergency action plan.

The owner of the works is responsible for ensuring that the plans are applied. The plans must remain available for inspection by the Minister.

not in force
The information contained in the impounded water management plan and in the emergency action plan is public information. The Government shall, by regulation, determine the manner in which the plans are to be made available to the public.

A regulation made by the Government pursuant to the first or second paragraph may, however, prescribe the conditions on which dams may be exempted from an obligation set out in those provisions.

2000, c. 9, s. 19.

20. Every high-capacity dam must be monitored and maintained on a regular basis to ensure the timely detection and correction of any deficiency and to maintain the works in good repair. The Government may, by regulation, determine the conditions applicable to the monitoring of the works, including monitoring frequency and the qualifications required of the persons who perform the monitoring.

In addition, the apparatus or devices with which the dam is equipped must, if they contribute to ensuring the safety of the dam, be maintained in accordance with good practice and the manufacturer's instructions so as to ensure that they are in proper working order at all times.

2000, c. 9, s. 20.

21. A register for every high-capacity dam must be established, and kept current, in which the results of the observations and monitoring performed under section 20 and all other information as may be required by the Government by regulation are recorded.

The register for the dam must remain available for inspection by the Minister.

2000, c. 9, s. 21.

22. In the event of a situation that may compromise the safety of a high-capacity dam, the dam owner must, without delay, take the necessary steps to remedy the situation; the dam owner must also, without delay, inform the Minister and, if there is a threat to persons or property, the emergency preparedness authorities.

2000, c. 9, s. 22.

DIVISION IV
SAFETY PROGRAMS

23. An owner may, in respect of a high-capacity dam, submit a safety program to the Minister for approval that, if approved, will replace the regulatory standards prescribed pursuant to this Act and indicated in the program, other than the safety standards referred to in section 15.

The Minister shall approve the program submitted by the owner, with or without conditions, if the owner shows that the resulting level of safety under the program is equal to or greater than the level of safety that would be achieved through compliance with the regulatory standards. The Minister may also approve any safety program modification submitted by the owner that meets the requirements of this section.

A decision by the Minister refusing approval of a safety program or safety program modification may be contested by the owner of the works before the Administrative Tribunal of Québec within 30 days of notification.

No safety program may be established for a period exceeding five years.

2000, c. 9, s. 23.

24. The Government may, by regulation, prescribe the conditions subject to which a safety program may be approved and determine the minimal content of a safety program.

2000, c. 9, s. 24.

25. A safety program may be terminated in the manner specified in the program.

A program may also be terminated by the Minister before its expiry and without compensation, where the Minister is of the opinion that the owner of the works

(1) no longer meets the conditions for approval of the program;

(2) is failing to comply with the provisions of this Act or the regulations, or is not complying with the obligations incumbent upon the owner under the program;

(3) has made false or misleading statements to the Minister.

Before a program is terminated by the Minister, the owner must be informed of the Minister's intention and given an opportunity to present observations.

A decision by the Minister terminating a safety program before its expiry may be contested by the owner of the works before the Administrative Tribunal of Québec within 30 days of notification.

2000, c. 9, s. 25.

26. A person does not contravene the regulatory provisions indicated in a safety program approved by the Minister if the person complies with the corresponding provisions of the program.

2000, c. 9, s. 26.

27. The Minister shall maintain a register of approved programs containing the name and address of the beneficiaries of the programs, the designation of the dams involved, the regulatory provisions concerned and the contents of the approved substitutions. Where a program has been renewed or modified, or terminated before its expiry, the Minister shall make a mention to that effect in the register.

The information contained in the register is public information.

2000, c. 9, s. 27.

CHAPTER III
PROVISIONS APPLICABLE TO LOW-CAPACITY DAMS

28. The following dams are considered to be low-capacity dams:

(1) dams 2 metres or more in height to which section 4 does not apply;

(2) regardless of their height, retaining works and works appurtenant to a dam referred to in paragraph 1, and works intended to retain all or part of the water stored by such a dam.

2000, c. 9, s. 28.

29. The construction, structural alteration or removal of any low-capacity dam must be declared.

The declaration must be filed with the Minister by the promoter or owner of the dam at the same time as an application for authorization under section 22 of the Environment Quality Act (chapter Q-2), or a notice required under section 31.2 of that Act if the project is subject to an environmental assessment.

The Government shall, by regulation, determine the information to be contained in and the documents to be submitted with the declaration.

2000, c. 9, s. 29.

30. The Minister may require the person filing the declaration to submit any information, document, study or additional expert opinion the Minister considers necessary to assess the safety of the works or project.

2000, c. 9, s. 30.

CHAPTER IV
ADMINISTRATIVE MEASURES

31. The Minister shall establish and keep current a register of all dams 1 metre or more in height. For that purpose, every owner of such a dam is required to inform the Minister of the existence of the works.

The Government shall, by regulation, prescribe the information to be recorded in the register, including the location, characteristics and classification of the dams, the documents it must contain and the conditions and time limits to be respected by the owners of the works in forwarding the information or documents to the Minister.

The information or documents contained in the register are public. The Government shall, by regulation, determine the manner in which the register is to be made available to the public. The regulation shall also prescribe the procedure for the forwarding, to the local municipalities, regional county municipalities, urban communities or the Kativik Regional Government, of any information or document contained in the register concerning a dam situated in their territory.

2000, c. 9, s. 31.

32. The Minister or any person authorized by the Minister may, for the purposes of this Act, the regulations or the safety programs mentioned in section 23,

(1) have access at all times to any place where dams, apparatus or devices governed by this Act are situated and conduct an inspection;

(2) inspect the premises and take photographs of the premises and of the dams, apparatus or devices;

(3) examine and obtain a copy of any register or other document relating to the dams, apparatus, devices or activities governed by this Act and the regulations;

(4) require any information or document relating to the application of this Act, the regulations or a safety program.

A person conducting an inspection must, when so requested, produce a certificate signed by the Minister showing authority to conduct the inspection.

2000, c. 9, s. 32.

33. The Minister may, for the purpose of assessing the safety of a dam, order the owner of the works to carry out any test, survey, testing or verification the Minister specifies.

The Minister may also, for the same purpose, order the owner to install, within the time specified, any device or apparatus the Minister indicates.

Furthermore, the Minister may require the owner to report, in the form and within the time the Minister determines, on any aspect of the construction or operation of the dam and to submit the report with any information or document required.

2000, c. 9, s. 33.

34. Where the Minister is of the opinion that a dam does not sufficiently ensure the safety of persons or the protection of property, the Minister may order the owner of the works to take any measure the Minister considers appropriate, including the lowering of the impounded water level or the removal of the works.

2000, c. 9, s. 34.

35. Where the owner of the works fails to comply with an order of the Minister, the Minister may cause the order to be carried out or the appropriate remedial measures to be taken at the expense of the owner. The Minister may recover the cost, with interest and other costs, in particular by claiming the security or guarantee furnished by the owner.

Where the owner of the dam is unknown or cannot be found, or ownership of the dam cannot be ascertained, a judge of the Superior Court may, on motion of the Minister, authorize the Minister to take any measure the Minister considers appropriate, including the performance of remedial work, or to immediately have the dam removed and recover the cost, with interest and other costs, from the owner if the owner's identity becomes known or the owner is found. The judge may also authorize the Minister to transfer ownership of the dam to any other person or partnership.

2000, c. 9, s. 35.

CHAPTER V
REGULATIONS

36. In addition to the other regulatory powers provided for in this Act, the Government may make regulations

(1) determining the methods and criteria to be used to calculate the height of a dam and the impounding capacity;

(2) requiring, in the cases, on the conditions and within the time it determines, liability insurance to be contracted or security or a guarantee to be furnished, and determining the extent, term, amount and other conditions applicable thereto;

(3) prescribing, in the cases, on the conditions and within the time it determines, the creation of a special trust fund to cover the costs generated by the maintenance or, where applicable, the removal of the works, where the operation of a dam is stopped temporarily or permanently, and in particular the rules governing the financing and administration of the trust fund and the conditions applicable to the payment of sums out of the trust fund;

(4) fixing the file processing fees payable by any person filing a declaration or applying for an authorization or approval or for the renewal or modification of an authorization or approval, or the method and criteria to be used to calculate the fees, and determining the terms and conditions of payment;

(5) determining the annual fees payable to the Minister by dam owners to cover the costs incurred in the administration of this Act and the regulations, or the method and criteria to be used to calculate the fees, and determining the terms and conditions of payment;

(6) prescribing the time within which the Minister must make a decision pursuant to section 5, 9, 17 or 23;

(7) determining, from among the provisions of a regulation made pursuant to this Act, the provisions a violation of which constitutes an offence, and specifying, for each offence, the fines to which the offender is liable; such fines may not exceed $500,000.

The regulations may make mandatory any standards, methods or technical procedures established by another government or by a body responsible for establishing them and prescribe that in such a case, references to the texts containing them are references to those texts as subsequently amended.

2000, c. 9, s. 36.

37. The regulatory provisions made by the Government pursuant to this Act may vary according to the classes of dams, any of the parameters mentioned in the second paragraph of section 14 or the classes of dam owners that may otherwise be established by the provisions, and specify the conditions in which and time limits within which the provisions may be applied to existing works.

2000, c. 9, s. 37.

CHAPTER VI
PENAL PROVISIONS

38. Every person who undertakes a project referred to in section 5 without holding the required authorization or fails to have a modification to plans and specifications approved, in contravention of section 9 is liable to a fine of not less than $2,000 nor more than $1,000,000.

2000, c. 9, s. 38.

39. Every dam owner who fails to fulfill the obligations prescribed under sections 16, 17, 19, 20 and 22 or fails to comply with an order made by the Minister under section 34 is liable to the fine under section 38.

2000, c. 9, s. 39.

40. Every dam owner who fails to comply with the conditions of an authorization or approval is liable to a fine of not less than $2,000 nor more than $500,000.

2000, c. 9, s. 40.

41. The following persons are liable to a fine of not less than $2,000 nor more than $200,000:

(1) every dam owner who contravenes the provisions of section 10;

(2) every promoter or dam owner who undertakes a project without holding the authorization required under section 11;

(3) every dam owner who fails to keep the register prescribed by section 21 or fails to provide any information, documents, reports or registers required under this Act;

(4) every promoter or dam owner who undertakes a project without filing the declaration required under section 29;

(5) every dam owner who fails to comply with an order made by the Minister pursuant to section 33.

2000, c. 9, s. 41.

42. Every person who hinders the work of the Minister or of a person authorized by the Minister to exercise powers under section 32, makes a false or misleading statement, records false or misleading information or omits to record information in a document, report or register, or who participates in or consents to the making or

recording of such a statement or such information or to the omitting of such information is liable to a fine of $500 to $20,000 in the case of a natural person, and $2,000 to $50,000 in the case of a legal person.

2000, c. 9, s. 42.

43. The fines under this Act or a regulation under this Act shall be doubled for a subsequent offence.

2000, c. 9, s. 43.

44. The court may order an offender to remedy any failure of which the offender has been found guilty.

2000, c. 9, s. 44.

45. Every director or officer of a legal person who did not take reasonable measures, having regard to the circumstances, to prevent an offence from being committed, or who ordered, authorized, consented to or participated in the offence is liable to the fine prescribed for that offence, whether or not the legal person has been prosecuted or convicted.

2000, c. 9, s. 45.

CHAPTER VII
MISCELLANEOUS PROVISIONS

46. Any balance of the fees payable under this Act that remains unpaid shall bear interest at the rate fixed under section 28 of the Tax Administration Act (chapter A-6.002). The interest is capitalized monthly.

2000, c. 9, s. 46; 2010, c. 31, s. 175.

47. The provisions of this Act are public policy; they therefore apply to any dam governed by a special Act and prevail over any inconsistent provision of such an Act.

2000, c. 9, s. 47.

48. *(Amendment integrated into c. J-3, Schedule III).*

2000, c. 9, s. 48.

49. The Minister of Sustainable Development, Environment and Parks is responsible for the administration of this Act.

2000, c. 9, s. 49; 2006, c. 3, s. 35.

50. *(Omitted).*

2000, c. 9, s. 50.

REPEAL SCHEDULE

In accordance with section 9 of the Act respecting the consolidation of the statutes and regulations (chapter R-3), chapter 9 of the statutes of 2000, in force on 1 April 2003, is repealed, except section 50, effective from the coming into force of chapter S-3.1.01 of the Revised Statutes.

Updated to 1 March 2015
This document has official status.

chapter S-3.1.01, r. 1

Dam Safety Regulation

Dam Safety Act
(chapter S-3.1.01, ss. 6, 14, 15, 16, 17, 19, 20, 21, 24, 29, 31, 36 and 37)

■ *The fees prescribed in the Regulation have been indexed as of 1 January 2015 pursuant to the notice published in Part 1 (French) of the Gazette officielle du Québec of 20 December 2014, page 1246. (ss. 64, 65, 66, 67, 68, 69)*

CHAPTER I
GENERAL

1. This Regulation applies to all dams governed by the Dam Safety Act (chapter S-3.1.01).

O.C. 300-2002, s. 1.

2. The height of a dam is the vertical distance between the lowest point of the natural surface of the ground at the downstream toe of the dam and the uppermost point of the top of the dam.

O.C. 300-2002, s. 2.

3. The impounding capacity of a dam is the total volume of water stored in the reservoir measured at the full supply level. Where bathymetric surveys or other site surveys to measure the impounding capacity with greater precision are unavailable,

(1) the impounding capacity of a dam built across a watercourse is equal to the product of the backflow length multiplied by one-half the reservoir depth and by the average width of the body of water formed by the dam; and

(2) the impounding capacity of other dams is equal to the product of the surface area of the reservoir multiplied by the reservoir depth.

The reservoir depth is the vertical distance between the lowest point of the natural surface of the ground at the downstream toe of the dam and the full supply level.

O.C. 300-2002, s. 3.

4. For the purposes of this Regulation, unless the context requires otherwise,

“existing dam” means a dam completely constructed by the date of coming into force of the Act or under construction on that date, as well as a dam construction project for which the developer had, on the date of coming into force of the Act, obtained the required approval under the Watercourses Act (chapter R-13); (*barrage existant*)

“full supply level” means the maximum normal operating water surface level of a reservoir; (*niveau maximal d'exploitation*)

“project” means the complex of structures impounding the water of a single reservoir that are owned by the same person; (*aménagement*)

A reservoir includes any lake referred to in the Banque de noms de lieux du Québec.

O.C. 300-2002, s. 4.

CHAPTER II
REGISTER OF DAMS

5. The register of dams established under section 31 of the Act must contain the following information and documents:

(1) the official name of the dam as established by the Commission de toponymie and the particulars of its location;

(2) the name and address of the dam owner;

(3) the year the dam was constructed and, where applicable, the year any structural alterations were made to the dam;

(4) the dam uses;

(5) a description of the dam that includes the dam type, foundation type, dam height, impounding capacity and reservoir depth;

(6) the hydrologic and hydraulic data in respect of the dam, including discharge capacity, in the case of a high-capacity dam, reservoir surface area and backflow length, reference to any upstream or downstream structures and, where a dam is part of a project, reference to the other structures forming part of the project;

(7) the seismic zone in which the dam is located with reference to the seismic zone map in Schedule I; and

(8) 1 or more photographs of the dam.

In respect of high-capacity dams within the meaning of section 4 of the Act, the following information must also be entered in the register of dams:

(1) the dam classification under Division I of Chapter III;

(2) the dam failure consequence category;

(3) the year of a planned safety review and the year it was effectively carried out; and

(4) the year in which there was any change in the use of the dam likely to affect its safety and, where applicable, the year of a permanent or temporary stopping of its operation.

The dam failure consequence category of an existing dam shall not be entered in the dam register until it has been reviewed pursuant to section 19.

O.C. 300-2002, s. 5; O.C. 17-2005, s. 1; O.C. 901-2014, s. 22.

6. The dam owner shall, within 3 months of the dam commissioning date, send the information or documents required for the preparation of the register of dams to the Minister, unless an application for authorization or a declaration has been filed under the Act with respect to the construction of the dam.

Every offence against any provision of this section renders the owner liable to a fine of not less than $2,000 and not more than $200,000.

O.C. 300-2002, s. 6.

7. The dam owner shall notify the Minister as soon as possible of any change affecting the accuracy of the information recorded in the register of dams. The owner shall also, within 3 months of receiving a request to that effect, send to the Minister any information or document required to update the register of dams.

Every offence against any provision of this section renders the owner liable to a fine of not less than $2,000 and not more than $200,000.

O.C. 300-2002, s. 7.

8. The public shall have access to the register of dams through the Internet, excluding access to the names and addresses of owners who are natural persons.

O.C. 300-2002, s. 8.

CHAPTER III
HIGH-CAPACITY DAMS

DIVISION I
DAM CLASSIFICATION

9. Every dam must be classified on the basis of the degree of risk it poses to persons and property, measured by multiplying the numerical value of its vulnerability (V) calculated under section 12 by the numerical value of the potential consequences of a dam failure (C) determined under section 16, to which "P" is the assigned value in the formula "P = V x C".

O.C. 300-2002, s. 9.

10. Following are the classes of dams based on the values determined under section 9, in addition to the class referred to in the second paragraph:

"P" Value	**Dam Class**
P ≥ 120	A
70 ≤ P < 120	B
25 ≤ P < 70	C
P < 25	D

A dam in the Very Low Consequence category is a Class E dam if the "P" value determined under section 9 is less than 70.

If a dam consists of more than 1 section, each section must be assessed individually and the dam class shall be that of the section with the highest "P" value.

O.C. 300-2002, s. 10; O.C. 901-2014, s. 22.

11. A dam shall be classified by the Minister prior to authorization for the construction of the dam, subject to the special provisions in section 74 relating to existing dams.

A dam owner may, at any time, apply for a review of the classification of the structure if a supporting report or study made under the responsibility of an engineer is submitted with the application.

O.C. 300-2002, s. 11.

Dam vulnerability (V)

12. The vulnerability (V) of a dam is measured by multiplying the arithmetic mean value of the constant physical parameters by the arithmetic mean value of the variable parameters.

O.C. 300-2002, s. 12.

13. The constant physical parameters to be considered are the dam height, dam type, impounding capacity and dam foundation type. The points to be assigned to each parameter based on the characteristics of the dam are set out in Schedule II.

If there is more than 1 foundation type in a section of a dam, the points to be assigned to the foundation type parameter for that section of the dam must be the highest of the points assigned to the different foundation types in that section.

O.C. 300-2002, s. 13; O.C. 17-2005, s. 2.

14. The variable parameters to be considered are

(1) the dam age, which is the number of years since its construction or, as the case may be, as determined by the engineer in charge of the safety review on the basis of the useful life of the dam;

(2) the seismic zone in which the dam is located according to the seismic zone map in Schedule I;

(3) the dam condition, which is assessed by considering the physical state and structural condition of the dam, the quality and effectiveness of maintenance, aging, possible effects of external factors such as frost or earthquakes and any dam design or structural defects. At the completion of the assessment, the dam condition is rated “very good”, “good”, “acceptable”, “poor” or “undetermined”; and

(4) the reliability of the discharge facilities of the dam, which must be capable of passing the inflow design flood. The reliability is assessed on the basis of the design of the discharge facilities and the procedures established by the owner to ensure that they operate effectively during floods. At the completion of the assessment, the reliability of the discharge facilities is rated “satisfactory”, “acceptable”, “unsatisfactory” or “undetermined”.

The points to be assigned to each variable parameter based on the characteristics of the dam are set out in Schedule III.

O.C. 300-2002, s. 14; O.C. 402-2011, s. 1.

15. For the purposes of the assessment of the reliability of discharge facilities, the sections of a dam that do not contain such facilities are given the same rating as the section that does. If there are discharge facilities in more than 1 section of the dam, the lowest rating given to any section also applies to every other section of the dam. The same rule applies if there are discharge facilities in every section of a dam.

If there is more than 1 dam on the rim of a single reservoir, the structures that are not equipped with discharge facilities are given the same rating as the dam that is so equipped. If more than 1 dam is equipped with discharge facilities, the lowest rating given to any such dam or to a section of one of those dams also applies to every other dam on the rim. The same rule applies if there are discharge facilities in every section of each dam.

O.C. 300-2002, s. 15.

Dam failure consequences (C)

16. For the purposes of section 9, the numerical value of the consequences of a dam failure (C) is based on the failure consequence category of the dam. The points assigned to each category are set out in Schedule IV.

O.C. 300-2002, s. 16; O.C. 901-2014, s. 22.

17. The dam failure consequence category is determined on the basis of the characteristics of the downstream area, barring exceptions, that would be affected by the dam failure and takes into account, from among a number of dam failure scenarios, the one that would result in the highest consequence category. Those characteristics are assessed in terms of population density and the extent of downstream infrastructure and services that would be destroyed or severely damaged in the event of a dam failure. The consequence categories and a description of the characteristics used to determine each category appear in Schedule V.

O.C. 300-2002, s. 17.

18. The delineation of the area that would be affected by a dam failure and identification of the characteristics of the area are based on a dam failure analysis that includes inundation maps. That analysis, using recognized methods, consists of a detailed evaluation of the consequences of a dam failure by means of an accurate delineation of the affected area and identification of the characteristics of the area. The analysis involves an examination of various dam failure scenarios under normal conditions and in flood conditions. It includes a description of the assumptions and procedures that were used to select the scenarios examined and to determine the dam break flood wave, flood wave arrival times and the extent of the affected area. For scenarios in which the dam fails during a flood, the affected area would be the area that would be inundated due entirely to the dam failure.

If, in the opinion of the engineer in charge, the dam failure consequence category is “moderate”, only rough inundation maps showing the area that would be affected by a dam failure are required. This mapping consists of a rough assessment of the consequences of a dam failure by means of a delineation of the affected area on topographical maps and identification of the characteristics of the area. The mapping is established on basic hydrologic and hydraulic calculations, such as flood flows and breach flows, as well as on a rough analysis of the downstream watercourse profile and cross-sections. For the purposes of the mapping, the extent of the affected

area is determined by adding the breach flow to the 1000-year flood flow to a point of attenuation or restriction, such as confluence with a large lake or river or another dam.

If, in the opinion of the engineer in charge, the dam failure consequence category is “very low” or “low”, only a characterization of the area that would be affected by the dam failure is required. That characterization consists of a conservative estimate of the consequences of a dam failure by means of a rough delineation of the affected area and a general description of the characteristics of the area. For the purposes of the characterization, the extent of the affected area is established by adding the reservoir depth to the 100-year flood level to a point of attenuation or restriction, such as confluence with a large lake or river or another dam.

The dam failure analysis, rough mapping and characterization referred to in this section must be carried out under the responsibility of an engineer.

O.C. 300-2002, s. 18.

19. The dam failure consequence category shall be determined by the Minister prior to authorization for the construction of a dam, subject to the special provisions in section 74 relating to existing dams.

The category determined under the first paragraph shall be reviewed in the following circumstances:

(1) following a dam safety review;

(2) prior to authorization for the permanent or temporary stopping of the operation of the dam, such as results on full seasonal opening of the dam's discharge facilities; and

(3) prior to authorization for the structural alteration of a dam or a change in use likely to affect its safety, including changes involving putting a dam back into operation or partially stopping its operation, where carrying out the project for which the authorization is sought would enlarge the area that would be affected by a dam failure.

However, a dam owner may at any time apply to the Minister for a review of the dam failure consequence category of the dam, with the supporting dam failure analysis, rough maps or characterization required under section 18 for the consequence category the owner believes is applicable to the structure.

O.C. 300-2002, s. 19; O.C. 17-2005, s. 3.

DIVISION II
MINIMUM SAFETY STANDARDS

§1. Flood resistance

20. For the purposes of this subdivision, unless the context requires otherwise,

“erodible dam” means a dam with an earthfill or rockfill component that is not designed for overflow and the erosion of which would cause a dam failure in a flood; (*barrage susceptible d'érosion*)

“safety check flood” is the flood that a dam must be capable of withstanding under extreme conditions while continuing to operate safely, accepting some damage and a reduction in safety factors but without causing dam failure. (*crue de sécurité*)

O.C. 300-2002, s. 20.

21. Subject to sections 21.1, 22 and 24, every dam must be able to withstand any of the following safety check floods, taking into account the highest dam failure consequence category in flood conditions:

Highest dam failure consequence category in flood conditions	**Safety Check Flood**
Very low or low	Centennial* (1: 100 years)
Moderate or high	Millennial*

	(1: 1,000 years)
Very high	Decamillennial* (1: 10,000 years)
Severe	Probable maximum flood

* Safety check floods expressed according to their recurrence interval.

O.C. 300-2002, s. 21; O.C. 901-2014, s. 2.

21.1. A dam's safety check flood may be less than that established under section 21, without being less than the centennial flood, if an engineer certifies that a dam failure during such a flood would cause a consequence category lower than that determined pursuant to section 19.

The engineer's certificate must be sent to the Minister, together with the dam failure analysis or the rough inundation maps referred to in section 18.

O.C. 901-2014, s. 2.

22. For a dam of which at least half the inflow during floods is controlled by another dam operated upstream, the safety check flood is, subject to section 24, the greater of

(1) the safety check flood determined under section 21 or 21.1; and

(2) the lesser of the 10,000-year flood and the inflow equivalent to the discharge capacity of the upstream dam together with the local inflows.

If more than 1 dam is located on the same watercourse upstream of the dam in question, the flow to be considered is the flow equivalent to the discharge capacity of the upstream dam with the greatest discharge capacity, taking the local inflows and the flood routing by the other dams into account. This rule also applies if the upstream dams are located on different watercourses; however, in that event, the flow that must be considered is the total flow obtained by adding, for each watercourse, the flow equivalent to the discharge capacity of the upstream dam with the greatest discharge capacity, taking the local inflows and flood routing into account.

This section does not apply to a dam whose failure consequence category is “very low” or “low”.

O.C. 300-2002, s. 22; O.C. 402-2011, s. 2; O.C. 901-2014, s. 3.

23. *(Revoked).*

O.C. 300-2002, s. 23; O.C. 17-2005, s. 4; O.C. 402-2011, s. 3; O.C. 901-2014, s. 4.

24. Only 1 safety check flood shall apply to all the dams located on the rim of a single reservoir and it shall be that of the dam with the highest safety check flood determined under section 21, 21.1 or 22.

O.C. 300-2002, s. 24; O.C. 901-2014, s. 5.

25. The crest of an erodible dam at its lowest point must not be less than 1 m above the safety check flood level, unless the owner demonstrates to the Minister's satisfaction that all hydrologic and hydraulic uncertainties and flood management uncertainties have been taken into account in the determination of the safety check flood.

The factors that the Minister shall consider include the extent of sampling periods and the reliability of the source data, the methods and models used, the accuracy of the calculations, the catchment basin lag time and the routing of the safety check flood as well as the dam's capacity to manage it, in particular with respect to response and operating time, the reliability of discharge facilities and the impounded water management plan.

This section does not apply to dams designed to withstand a “probable maximum flood”.

O.C. 300-2002, s. 25; O.C. 402-2011, s. 4.

26. Any impervious component of an erodible dam must be at least as high as the safety check flood level.

This section does not apply to existing dams.

O.C. 300-2002, s. 26.

27. Realistic and conservative assumptions and methods based on good practice must be used to estimate the safety check flood for a dam and to assess the dam's capacity to manage it.

O.C. 300-2002, s. 27.

§2. Earthquake resistance

28. Every dam must be designed to remain stable during the earthquake loading to which it may be subjected in the zone in which it is located.

This section does not apply to a dam whose failure consequence category is “very low” or “low”.

O.C. 300-2002, s. 28; O.C. 901-2014, s. 6.

29. Calculations regarding the structural and foundation seismic stability of a dam must be done on the basis of a return period of 2,500 years and by using either of the following peak ground acceleration values:

(1) the value which, under Schedule I, corresponds to the seismic zone in which the dam is located;

(2) the value which, with regard to the location of the dam, may be determined from the seismic data established by the Geological Survey of Canada.

O.C. 300-2002, s. 29; O.C. 402-2011, s. 5; O.C. 901-2014, s. 7.

DIVISION III
OPERATION

§1. Impounded water management plan

30. An impounded water management plan must be drawn up for every dam or project before its commissioning. The plan must describe all the procedures to be followed by the owner for the safe management of the impounded water, in particular during situations in which persons or property located upstream or downstream are at risk, excluding the emergency action plan procedures.

The plan must include

(1) a description of the hydrographical network upstream and downstream of the dam, including flood estimates and the catchment basin lag time as well as, where applicable, reference to other structures in the network that may affect the operation of the dam or whose operation the dam may affect and a quantification of any such impact;

(2) operational constraints relating to the safety of persons or property located upstream or downstream of the dam during normal operation and during floods;

(3) the full supply level;

(4) the flow and level of the safety check flood;

(5) the level or depth at which the reservoir overflows at its lowest point;

(6) the reservoir storage curve, if available;

(7) the discharge curve;

(8) if there are any inhabited areas near the dam, the upstream and downstream flood limits;

(9) a description of the measures that will be taken by the owner to manage the reservoir when the flow reaches the lower flood level, that is, the flow at which property may be affected by the discharged water; and

(10) where applicable, a description of the communications strategy for providing information on potential hazards to the civil protection authorities, other dam owners in the hydrographic system, enterprises and inhabitants that will ultimately be affected by the implementation of the impounded water management plan.

O.C. 300-2002, s. 30.

31. The owner is required, at all times, to make all necessary amendments to the impounded water management plan in the event of any change affecting the procedures set out in the plan or the information contained therein.

O.C. 300-2002, s. 31.

32. The impounded water management plan must be updated and reviewed

(1) when a dam safety review is conducted;

(2) *(paragraph revoked);*

(3) prior to authorization for the structural alteration of the dam or for a change in use likely to affect its safety, including changes involving putting a dam back into operation or partially stopping its operation, if carrying out the project for which the authorization is sought would modify the impounding capacity, the full supply level or the discharge capacity of the dam. This rule also applies if the structural alteration would require modifying the safety check flood.

O.C. 300-2002, s. 32; O.C. 17-2005, s. 5.

33. As soon as possible after the preparation or amendment of an impounded water management plan, the dam owner shall send a summary of the plan as drawn up or amended to the local municipality within whose territory the dam is located. If the dam is located in unorganized territory, the plan summary shall be sent to the competent regional authority or to the Minister of Public Security, as provided in section 8 of the Civil Protection Act (chapter S-2.3).

The management plan summary must include the particulars listed in subparagraphs 2 to 5 and 8 of the second paragraph of section 30 and a summary of the descriptions referred to in subparagraphs 9 and 10 of the same provision.

O.C. 300-2002, s. 33.

34. The provisions of this subdivision do not apply to Class E dams.

Nor do they apply to dams in other classes in the following cases:

(1) the only discharge facility of the dam is a free weir;

(2) an engineer certifies that it is not necessary to manoeuvre the dam discharge facilities during floods.

The engineer's certificate must be sent to the Minister, together with a summary of the reasons supporting it.

O.C. 300-2002, s. 34; O.C. 901-2014, s. 8.

§2. Emergency action plan

35. An emergency action plan must be drawn up before the commissioning of any dam. The plan shall set out the procedures to be followed for the protection of persons and property upstream or downstream of the dam in the event of an actual or imminent dam failure or to mitigate the effects of the disaster.

The plan must include

(1) the name of the local municipality, regional county municipality or any other regional body whose territory would be affected by a dam failure;

(2) a list of the conditions that could lead to a dam failure;

(3) a general description of the area that would be affected by a dam failure, including the principal infrastructures that would be destroyed or severely damaged;

(4) a description of the internal and external human, material and organizational resources that would be available in the event of a disaster; and

(5) a description of the monitoring and warning procedures in the event of an actual or imminent dam failure that have been established by the owner, including

(a) a description of the prevention, potential dam failure detection and mitigation measures established by the owner;

(b) warning and dam personnel mobilization procedures for the various conditions that may lead to a dam failure;

(c) the procedure for warning civil protection authorities and, where applicable, residents; and

(d) the operation and decision centre.

The inundation maps referred to in the first paragraph of section 18 must be appended to the emergency action plan. The maps must indicate the dam break flood wave travel time in the event of a dam failure in normal conditions and during floods and take into account, for the latter eventuality, the water elevation equal to the safety check flood for the dam. Only rough maps that comply with the second paragraph of section 18 are required for dams in the Moderate Consequence category.

O.C. 300-2002, s. 35; O.C. 901-2014, s. 22.

36. The owner must provide for the training of all dam personnel involved in the emergency action plan and, in particular, of the person in charge of implementing the plan. The owner must also make sure that drills to test the implementation of the plan are held periodically and when specifically requested by the civil protection authorities.

O.C. 300-2002, s. 36.

37. The owner is required, at all times, to make all necessary amendments to the emergency action plan in the event of any change affecting the procedures set out in the plan or the information contained therein, in particular with respect to the resources available in the event of a disaster.

O.C. 300-2002, s. 37.

38. The emergency action plan must be reviewed

(1) when a dam safety review is conducted;

(2) prior to authorization for the permanent or temporary stopping of the operation of the dam; and

(3) prior to authorization for the structural alteration of the dam or for a change in use likely to affect its safety, if carrying out the project for which authorization is sought would enlarge the area that would be affected by a dam failure.

O.C. 300-2002, s. 38.

39. As soon as possible after the preparation or amendment of an emergency action plan, the dam owner shall send a summary of the plan as drawn up or amended to the local municipality within whose territory the dam is located. If the dam is located in unorganized territory, the plan summary shall be sent to the competent regional authority or to the Minister of Public Security, as provided in section 8 of the Civil Protection Act (chapter S-2.3). The Minister shall be notified whenever such a plan summary is sent.

The emergency action plan summary must include the particulars listed in subparagraph 1 and subparagraphs *c* and *d* of subparagraph 5 of the second paragraph of section 35. It must also include a summary of the particulars referred to in subparagraph 3 and subparagraphs *a* and *b* of subparagraph 5 of that provision. As the case may be, the inundation maps or the rough maps referred to in the third paragraph of section 35 must be appended to the summary.

O.C. 300-2002, s. 39.

40. This subdivision does not apply to dams in the Very Low or Low Consequence category.

O.C. 300-2002, s. 40; O.C. 901-2014, s. 22.

§3. Monitoring

41. Every dam must, according to its class, be the subject of the minimum number of inspections indicated in the table below in accordance with the frequency mentioned therein:

Type of inspection	**Number and frequency of inspections according to the dam's class**				
	A	**B**	**C**	**D**	**E**
Site inspection	12/year	6/year	2/year	2/year	1/year
Inspection	1/year	1/2 years	1/5 years	1/8 years	1/10 years

Site inspections whose frequency is higher than 1 per year must be spread as evenly as possible over the year.

An inspection carried out during a year reduces the number of site inspections required for that year by 1.

O.C. 300-2002, s. 41; O.C. 901-2014, s. 9.

42. A site inspection is intended to make a summary description of the dam's condition and, if a minor deficiency was discovered during a prior inspection, to monitor the evolution of the deficiency.

An inspection is intended to check a dam's condition in all aspects and to monitor its behavior. It may include the taking of measurements and the analysis thereof.

O.C. 300-2002, s. 42; O.C. 17-2005, s. 6; O.C. 901-2014, s. 9.

43. Notwithstanding section 42, the monthly site inspections may be omitted for the months of December to April inclusively for a dam in the Very Low, Low or Moderate Consequence category unless the dam has deficiencies that require that the inspections be maintained.

O.C. 300-2002, s. 43; O.C. 17-2005, s. 7; O.C. 901-2014, ss. 10 and 22.

44. For the purposes of section 41, an inspection referred to in subparagraph *a* of paragraph 1 of section 48, paragraph 1 of section 49.0.1 and subparagraph 1 of the first paragraph of section 49.1 reduces by one the number of site inspections required for the year in which the inspection is made.

In addition, if such inspection is made during a year for which an inspection referred to in section 41 had to be made, it counts as the latter.

O.C. 300-2002, s. 44; O.C. 901-2014, s. 11.

45. The site inspections of a Class A, Class B or Class C dam must be carried out by one of the following persons or under their supervision:

(a) an engineer;

(b) a person who holds a diploma at the college level awarded upon completion of a program referred to in paragraph 4 of section 2.09 of the Regulation respecting the diplomas issued by designated educational institutions which give access to permits or specialist's certificates of professional orders (chapter C-26, r. 2);

(c) a person with technical experience in the field of dams.

O.C. 300-2002, s. 45; O.C. 17-2005, s. 8; O.C. 402-2011, s. 6; O.C. 901-2014, s. 12.

45.1. Dam inspections, regardless of the class to which the dam belongs, must be carried out by an engineer.

O.C. 901-2014, s. 12.

§4. Logbook

46. Every dam owner must, from the dam commissioning date, establish and maintain a logbook in which activities and important events relating to the safety of the dam are recorded in chronological order.

In addition to the information required under section 21 of the Act, the logbook must contain

(1) a brief description of all inspection activities carried out, indicating the reservoir level at each inspection;

(2) a brief description of every safety review conducted; and

(3) a description of any maintenance, repair or structural alteration work to the dam.

The logbook must also contain, where applicable,

(1) a description of unusual natural events, such as earthquakes, a flood with a 20-year or more recurrence interval, rainstorms or windstorms, landslides, floating islands, and ice conditions;

(2) a description of events caused by human activity, such as vandalism or sabotage or work carried out near the dam, that could affect its stability;

(3) any deviation from operational constraints relating to dam safety established at the time of dam design or in a safety review, in particular with respect to the full supply level and to filling and drawdown speeds;

(4) a description of special activities, such as behaviour tests or investigations; and

(5) a description of operations that have been carried out, excluding regular flow controls.

The owner of an existing dam must enter in the logbook, to the best of the owner's knowledge, the actions that have been taken and the significant events that have occurred from the dam commissioning to the date of coming into force of the Act.

O.C. 300-2002, s. 46.

47. The project owner may elect to establish and maintain more than 1 logbook. Where a logbook pertains to more than 1 dam, each entry in the logbook must identify the dam to which it refers.

O.C. 300-2002, s. 47.

DIVISION IV
DAM SAFETY REVIEW

48. A dam safety review for a dam whose failure consequence category is equal to or greater than «moderate» must include;

(1) checking the condition and behaviour of the dam by means of

(a) an inspection of every structural component;

(b) an analysis of the compiled results of every inspection carried out since the last safety review or, in the absence of such a review, during the period considered appropriate by the engineer in charge of the review;

(c) where applicable, a check of the instrumentation and an analysis of the readings since the last safety review or, in the absence of such a review, during the period considered appropriate by the engineer in charge of the review; and

(d) a check of the functionality and reliability of the discharge facilities;

(2) verifying the dam design by means of

(a) a reappraisal of the design criteria, namely, the data, assumptions and analysis methods considered at the time of dam design, in particular with reference to hydrology, hydraulics, structure, discharge capacity and flood routing; and

(b) a validation of the stability of the dam and foundation, including, if the engineer in charge considers it appropriate, geotechnical investigations and static stability calculations or, where required, pseudostatic or dynamic stability calculations, of the structure and foundation of the dam based on dam design criteria in use at the time of the safety review, establishing new safety factors. The validation includes, if the engineer considers it appropriate, a characterization of the dam materials.

(3) where applicable, checking the safety devices with which the dam is equipped, namely, emergency systems, emergency detector systems and back-up systems;

(3.1) analysing the topography of the reservoir rim;

(4) reviewing the dam's classification; and

(5) reviewing the impounded water management plan, if such a plan is required under Subdivision 1 of Division III for the dam undergoing the safety review.

O.C. 300-2002, s. 48; O.C. 901-2014, s. 13.

49. The report documenting the dam safety review referred to in section 48 must set out the procedure followed by the engineer in charge of the review and include, depending on the component in question, the engineer's comments, opinions and recommendations. The report must also contain the data, methods and design assumptions on which the analyses and checks were based. The report must include

(1) a brief description of the instrumentation if the dam is so equipped, an assessment of their condition and their effectiveness and the opinion of the engineer in charge on the readings;

(2) a description of the maintenance and repair work carried out since the last safety review or, in the absence of such a review, for the period considered appropriate by the engineer in charge;

(3) the opinion of the engineer in charge on the functionality and reliability of the discharge facilities;

(4) a description of the compiled observations and deficiencies discovered, including comments on them, as well as the opinion of the engineer in charge on the condition of the dam and on the impact of the work that was carried out on the safety of the dam;

(5) the opinion of the engineer in charge on the adequacy of the dam design in relation to good practice and to the minimum safety standards;

(5.1) the opinion of the engineer in charge on the liquefaction potential of the dam and its foundation and the data on which that opinion is based;

(6) a description of the safety devices, checks and tests that have been carried out, as well as the opinion of the engineer in charge on their functionality and adequacy;

(7) if applicable, the recommendations of the engineer in charge as to the need for an intervention at the locations, on the reservoir rim, through which overflow could occur during a flood equal to the dam's safety check flood;

(8) if applicable, the recommendations of the engineer in charge in respect of the remedial work that, considering in particular the elements listed in section 48, must be carried out to ensure the dam's safety and the engineer's opinion on the time required to carry out the work;

(9) if applicable, the opinion of the engineer in charge on the temporary measures and work required to ensure the dam's safety until the remedial work is carried out; and

(10) the recommendations of the engineer in charge in respect of the class and dam failure consequence category that should apply to the dam, together with, as the case may be, the dam failure analysis, rough inundation maps or characterization of the area referred to in section 18.

The report must also include

(1) the official name of the dam as established by the Commission de toponymie, and the particulars of its location;

(2) the name and address of the dam owner;

(3) the name and position of the owner's representative responsible for dam safety;

(4) a brief description of the dam and its geometric size;

(5) a description of available data pertinent to the dam safety review, such as the catchment hydrologic and hydraulic characteristics at the time of dam design, the geology, geotechnics and seismicity of the zone in which the dam is located and the characteristics of the foundation and the materials used to build the dam;

(6) the name and address of the engineer in charge of the dam safety review;

(7) where applicable, the date on which the last dam safety review was carried out; and

(8) a list of the reference documents used in the dam safety review.

If the review of the impounded water management plan results in the drawing up of a new plan, a summary of the plan that complies with the second paragraph of section 33 must be appended to the report.

O.C. 300-2002, s. 49; O.C. 901-2014, s. 14.

49.0.1. The safety review of a dam whose failure consequence category is “very low” or “low” must include

(1) checking the dam's condition by means of an inspection of its structure;

(2) checking the functionality and reliability of the discharge facilities;

(3) checking the dam's discharge capacity, including a review of the hydrologic and hydraulic data and assumptions with respect to the dam's safety check flood;

(4) if, on the reservoir rim, there are other dams whose failure consequence category is equal to or greater than “moderate”, checking the dam's stability with regard to its safety check flood;

(5) analysing the topography of the reservoir rim;

(6) reviewing the dam's classification;

(7) reviewing the impounded water management plan if, under subdivision 1 of Division III, such a plan is required for the dam concerned.

O.C. 901-2014, s. 15.

49.0.2. The report documenting the dam safety review must include

(1) the opinion of the engineer in charge on the dam's condition;

(2) the opinion of the engineer in charge on the functionality and reliability of discharge facilities;

(3) the opinion of the engineer in charge on the discharge capacity of the dam with respect to its safety check flood;

(4) if, on the reservoir rim, there are other dams whose failure consequence category is equal to or greater than “moderate”, the opinion of the engineer in charge on the dam's stability with regard to its safety check flood;

(5) if applicable, the recommendations of the engineer in charge as to the need for an intervention at the locations, on the reservoir rim, through which overflow could occur during a flood equal to the dam's safety check flood;

(6) if applicable, the recommendations of the engineer in charge in respect of the remedial work that, considering in particular the elements listed in 49.0.1, must be carried out to ensure the dam's safety and the engineer's opinion on the time required to carry out the work;

(7) if applicable, the opinion of the engineer in charge on the temporary measures and work required to ensure the dam's safety until the remedial work is carried out;

(8) the recommendations of the engineer in charge in respect of the class and dam failure consequence category that should apply to the dam, together with, as the case may be, the dam failure analysis, rough inundation maps or characterization of the area referred to in section 18.

The report must also include the information referred to in subparagraphs 1 to 4 and 6 of the second paragraph of section 49.

O.C. 901-2014, s. 15.

49.1. Where the owner of a dam intends, within 5 years, to remove it, reconstruct it or make a structural alteration to it that affects all parts of the dam or that, because of the scope of the work, is equivalent to reconstructing the dam, the dam safety review may be limited to the following:

(1) a check of the condition and behaviour of the dam by means of an inspection of every structural component; and

(2) a check of the functionality and reliability of the discharge facilities.

The report documenting the dam safety review must include

(1) the report of the most recent inspection carried out pursuant to section 41; and

(2) the opinion of the engineer in charge on the structural and functional safety of the dam and, where applicable, on the measures proposed to prevent the risks of dam failure until the planned work is carried out.

The report must also contain the information referred to in subparagraphs 1 to 4 and 6 of the second paragraph of section 49.

Paragraph 1 of sections 32 and 38 and subparagraph 1 of the first paragraph of sections 76 and 77 do not apply to a dam whose safety review is conducted under this section.

O.C. 402-2011, s. 7; O.C. 901-2014, s. 16.

50. A dam safety review must be conducted, and the attendant report sent to the Minister, every 10 years. That frequency is increased to 15 years and 20 years for dams in the Low and Very Low Consequence category, respectively.

Where a dam undergoes a structural alteration that affects all parts of the structure or that, because of the scope of the work, is equivalent to reconstructing the dam, the schedule of reviews and reports is moved forward, the period for the next review and report being computed from the year of completion of the work.

O.C. 300-2002, s. 50; O.C. 17-2005, s. 9.

51. Subject to the provisions of sections 78 to 80 respecting an existing dam, the first dam safety review must be conducted not later than in the tenth year following the year of dam commissioning. That deadline is postponed to the 15th year and the 20th year for dams in the Low and Very Low Consequence category, respectively.

For the purposes of section 50 and this section, the year of dam commissioning and the year of completion of the work are the years during which the Minister must be advised of the completion of the work as provided in section 10 of the Act.

O.C. 300-2002, s. 51; O.C. 17-2005, s. 9.

52. The Minister's decision under section 17 of the Act in respect of the remedial work that the owner intends to carry out and implementation schedule must be rendered within 6 months after receipt of the outline and schedule submitted by the owner.

O.C. 300-2002, s. 52; O.C. 901-2014, s. 17.

DIVISION V
SAFETY PROGRAMS

53. The Minister may approve a safety program on the condition that the program has been in effect, under the responsibility of qualified persons, for at least 5 years and covers all the dams belonging to the owner of at least 10 high-capacity dams.

In addition, a safety program shall not be approved unless the application for approval of the program complies with section 55.

O.C. 300-2002, s. 53.

54. A safety program must, for every dam or structure covered by the program, provide for

(1) management of the impounded water, in particular the content of a management plan and plan updating procedures;

(2) emergency preparedness in respect of any dams covered by the program that are subject to the requirement of an emergency action plan under Subdivision 2 of Division III, in particular the content of an emergency action plan and plan updating procedures;

(3) the frequency, nature and content of monitoring activities and the qualification requirements for carrying them out;

(4) a dam safety review, in particular the content and frequency of the review;

(5) the content of the logbook referred to in section 21 of the Act; and

(6) dam maintenance.

The program must also provide for the administration of the safety program, in particular with respect to the persons in charge of its implementation, their training and their respective responsibilities.

O.C. 300-2002, s. 54.

55. An application for the approval of a safety program must contain

(1) the name and address of the dam owner;

(2) the name and position of the owner's representative in charge of administering the safety program;

(3) the names of the dams concerned and the particulars of their location;

(4) a summary of the content of the program under section 54; and

(5) a demonstration that the program's resulting level of safety is at least equal to the level that would be obtained with the implementation of the prescribed standards for which alternatives are proposed, with a reference to those regulatory provisions.

O.C. 300-2002, s. 55.

56. The Minister's decision under section 23 of the Act in respect of a safety program must be rendered within 4 months after receipt of the proposal.

O.C. 300-2002, s. 56.

DIVISION VI
APPLICATION FOR AUTHORIZATION

57. The following information and documents, in addition to those required by the Act, must be submitted with an application for authorization for the construction of a dam or for a structural alteration that affects all parts of the structure or that, because of the scope of the work, is equivalent to reconstructing the dam:

(1) the appropriate hydrological and hydraulic studies;

(2) the recommendation of the engineer responsible for the dam project plans and specifications in respect of the failure consequence category of the dam, to which is appended the dam failure analysis, rough maps or characterization required under section 18 for the consequence category the engineer considers appropriate for the dam;

(3) the impounded water management plan summary if such a plan is required under Subdivision 1 of Division III for the dam to be constructed;

(4) a description of emergency preparedness procedures in the event of a dam failure or failure of the temporary structures during the construction referred to in the application, if an emergency action plan is required under Subdivision 2 of Division III for the dam to be constructed;

(5) the structural and foundation stability studies for the dam to be constructed, including geotechnical investigations;

(6) seismic stability calculations for the dam to be constructed, unless the dam failure consequence category is “very low” or “low”;

(6.1) the opinion of the engineer in charge on the liquefaction potential of the dam and its foundation and the data on which that opinion is based, unless the dam failure consequence category is “very low” or “low”;

(7) the results of a topographic analysis of the reservoir rim;

(7.1) if applicable, the recommendations of the engineer in charge as to the need for an intervention at the locations, on the reservoir rim, through which overflow could occur during a flood equal to the dam's safety check flood; and

(8) detailed cost estimates of the planned work.

A $200 deposit on the fees prescribed in section 64 must accompany the application for authorization. The deposit is not refundable under any circumstances.

O.C. 300-2002, s. 57; O.C. 17-2005, s. 10; O.C. 402-2011, s. 8; O.C. 901-2014, ss. 18 and 22.

58. In addition to the information and documents required by the Act, the following information and documents adapted and prepared specifically in relation to the proposed alteration must be submitted with an application for authorization for the structural alteration of a dam that is not an alteration under section 57:

(1) the structural and foundation stability studies for the dam, including geotechnical investigations;

(2) seismic stability calculations for the dam, unless the dam failure consequence category is “very low” or “low”;

(3) the opinion of the engineer in charge on the liquefaction potential of the dam and its foundation and the data on which that opinion is based, unless the dam failure consequence category is “very low” or “low”;

(4) a description of emergency preparedness procedures in the event of a dam failure or failure of the temporary structures during the structural alteration work for which the authorization is sought, if an emergency action plan is required for the dam under Subdivision 2 of Division III;

(5) if the proposed structural alteration would enlarge the area that would be affected by a dam failure, the recommendation of the engineer in charge of drawing up the plans and specifications for the proposed alteration in respect of the dam failure consequence category, to which is appended the dam failure analysis, rough maps or characterization required under section 18 for the consequence category the engineer considers appropriate for the dam; and

(6) detailed cost estimates of the planned work.

In addition to the information and documents referred to in the first paragraph, if the structural alteration would change the safety check flood, the impounding capacity, the full supply level or the discharge capacity of the dam, the following documents must also be appended to the application for authorization:

(1) the appropriate hydrologic and hydraulic studies;

(2) the results of a topographic analysis of the reservoir rim;

(3) if applicable, the recommendations of the engineer in charge as to the need for an intervention at the locations, on the reservoir rim, through which overflow could occur during a flood equal to the dam's safety check flood;

(4) the impounded water management plan summary, as revised at the time of the application for authorization if such a plan is required for the dam under subdivision 1 of Division III.

A $200 deposit on the fees prescribed in section 64 must accompany the application for authorization. The deposit is not refundable under any circumstances.

O.C. 300-2002, s. 58; O.C. 17-2005, s. 11; O.C. 402-2011, s. 9; O.C. 901-2014, ss. 19 and 22.

59. An application for authorization for the complete removal of a dam, or its partial removal if as a result the dam is no longer a high-capacity dam, must include

(1) the geographic coordinates and geometric size of the dam;

(2) a description of the planned work; and

(3) a description of the impact of the dam removal on the natural characteristics of the watercourse, its bed and its shores.

An application for authorization for partial removal must also include

(1) the name and address of the dam owner;

(2) the plans and specifications of the altered dam, drawn up by an engineer, and the hydrologic and hydraulic data and assumptions considered; and

(3) the new impounding capacity of the dam.

O.C. 300-2002, s. 59; O.C. 402-2011, s. 10.

60. The following information and documents must be submitted with an application for authorization for a change in use likely to affect the safety of the dam, including changes involving putting a dam back into operation or partially stopping its operation,

(1) an assessment of the effects of the proposed change on dam safety;

(2) the project engineer's certification respecting the structural and foundation stability of the dam and the functionality and reliability of the discharge facilities; and

(3) if carrying out the project referred to in the application for authorization would enlarge the area that would be affected by a dam failure, the recommendation of the project engineer in respect of the dam failure consequence category, to which is appended the dam failure analysis, rough maps or characterization required under section 18 for the consequence category the engineer considers appropriate for the dam;

(4) the impounded water management plan summary, as revised for the purpose of the application for authorization if such a plan is required for the dam under Subdivision 1 of Division III.

O.C. 300-2002, s. 60; O.C. 17-2005, s. 12; O.C. 901-2014, s. 22.

61. The following information and documents must be submitted with an application for authorization for the permanent or temporary stopping of the operation of a dam:

(1) if the application is for a permanent stopping:

(a) a description of the measures that will be taken to terminate the operation of the dam;

(b) the project engineer's recommendation respecting the dam failure consequence category, to which is appended the dam failure analysis, rough maps or characterization required under section 18 for the consequence category the engineer considers to be appropriate for the dam once the operation has stopped; and

(c) if the dam condition is “poor” or “undetermined” or if the dam failure consequence category reviewed under section 19 is “Moderate”, “High”, “Very High” or “Severe”, the project engineer's certification respecting the structural and foundation stability of the dam; and

(2) if the application is for a temporary stopping, such as results on full seasonal opening of the dam's discharge facilities,

(a) the year or, where the stopping of the dam's operation is recurrent, the years for which the authorization is applied for and details on the time and duration of each anticipated period of temporary stopping; and

(b) a description of the measures that will be taken to temporarily stop the operation of the dam.

O.C. 300-2002, s. 61; O.C. 17-2005, s. 13; O.C. 402-2011, s. 11; O.C. 901-2014, s. 22.

62. The Minister's decision under section 5 of the Act in respect of the construction or structural alteration of a dam must be rendered within 6 months after receipt of the application for authorization.

The Minister's decision under section 5 of the Act in respect of the complete or partial removal, a change in use or the permanent or temporary stopping of the operation of a dam must be rendered within 2 months after receipt of the application for authorization.

The Minister's decision under section 9 of the Act in respect of a modification to the plans and specifications must be rendered within 10 days after receipt of the application.

O.C. 300-2002, s. 62; O.C. 402-2011, s. 12.

63. The time limits referred to in section 62 run from the date on which the file on the application is complete.

O.C. 300-2002, s. 63.

DIVISION VII
FEES

64. The application processing fee for authorization for the construction or structural alteration of a dam is based on the following table, taking into account the cost estimated by the project engineer to perform the work requiring the authorization:

Cost of Work	Fee
Less than $25,000	$1,087
$25,001 to $100,000	$1,087 for the first $25,000, plus $40 for each additional $1,000 or part thereof
$100,001 to $500,000	$4,087 for the first $100,000, plus $10 for each additional $1,000 or part thereof
$500,001 to $1,000,000	$8,087 for the first $500,000, plus $4 for each additional $1,000 or part thereof
$1,000,001 to $10,000,000	$10,087 for the first $1,000,000, plus $2 for each additional $1,000 or part thereof
$10,000,001 to $40,000,000	$28,087 for the first $10,000,000, plus $1 for each additional $1,000 or part thereof
$40,000,001 and up	$58,087 for the first $40,000,000, plus $0.10 for each additional $1,000 or part thereof

The cost of the work includes the engineering fees and costs relating to the plan design and specifications, work supervision, quality control and materials, machinery and labour costs to carry out the dam construction or structural alteration work.

O.C. 300-2002, s. 64.

65. The application processing fee for authorization for a change in use likely to affect the safety of a dam is $256 per application for all classes of dams.

O.C. 300-2002, s. 65; O.C. 17-2005, s. 14.

66. The application processing fee for authorization for the complete or partial removal of a dam is $1,277 for a Class A dam, $639 for a Class B dam and $318 for a Class C, D or E dam.

O.C. 300-2002, s. 66; O.C. 402-2011, s. 13.

67. The file processing fee for the approval of the outline of remedial measures an owner intends to implement for a dam and the implementation schedule is $5,108 for a Class A dam, $3,194 for a Class B dam and $1,277 for a Class C, D or E dam.

O.C. 300-2002, s. 67.

68. The application processing fee for the approval of a safety program submitted under section 23 of the Act is $12,774 per owner. The fee for the renewal of a program is $3,194.

O.C. 300-2002, s. 68.

69. The annual fee payable by a dam owner to cover the costs incurred in the administration of the Act is $1,086 for a Class A or B dam, $224 for a Class C or D dam and $127 for a Class E dam.

The annual fee payable by the owner of a dam covered by a safety program under section 23 of the Act is 75% of the annual fee established in the first paragraph for each dam covered by the program.

The fees prescribed in this section cover the period from 1 April to 31 March of each year. A change in a dam's classification shall not generate a fee adjustment for the year in which it occurs.

O.C. 300-2002, s. 69.

70. The fees prescribed in sections 64 to 69 must be paid within 30 days of the invoice date by certified cheque made payable to the Minister of Finance.

O.C. 300-2002, s. 70.

71. The fees prescribed in sections 65 to 69 shall be adjusted on 1 January of each year on the basis of the percentage change in the Consumer Price Index for Canada published by Statistics Canada, which is calculated by determining the difference between the average monthly index for the 12-month period ending on 30 September of the preceding year and the average monthly index for the same period of the second preceding year.

The adjusted fee shall be reduced to the nearest dollar if it contains a dollar fraction under $0.50 and it shall be increased to the nearest dollar if it contains a dollar fraction of $0.50 or more.

The Minister shall inform the public of the annual adjustment by a notice published in the *Gazette officielle du Québec* and by any other means the Minister may consider appropriate.

O.C. 300-2002, s. 71.

CHAPTER IV
LOW-CAPACITY DAMS

72. A declaration of the construction or structural alteration of a dam must contain

(1) the name and address of the owner and the particulars of the dam location, including geographic coordinates;

(2) the impounding capacity of the dam;

(3) the hydrologic and hydraulic data and assumptions considered at the time of dam design; and

(4) the project description.

The project plans and specifications drawn up by an engineer must be submitted with the declaration.

O.C. 300-2002, s. 72.

73. A declaration of the removal of a dam must contain

(1) the name and address of the owner and the particulars of the dam location, including geographic coordinates; and

(2) a description of the proposed work.

O.C. 300-2002, s. 73.

CHAPTER V
SPECIAL PROVISIONS RELATING TO EXISTING HIGH-CAPACITY DAMS

74. On the date of coming into force of the Act, the Minister shall classify all existing dams in accordance with Division I of Chapter III, subject to the following:

(1) an existing dam shall not be classified as a Class E dam unless the owner applies for that classification and submits a supporting report or study prepared under the responsibility of an engineer. The same rule applies for the discharge facilities of the dam to be given an “acceptable” rating; and

(2) the dam failure consequence category of an existing dam shall be determined on the basis of the characterization of the area as established by the Minister pursuant to the third paragraph of section 18.

O.C. 300-2002, s. 74.

75. Every existing high-capacity dam with characteristics that do not comply with the minimum safety standards under Division II of Chapter III on the date of coming into force of the Act must be brought into conformity with those standards

(1) when the dam undergoes a structural alteration that affects all parts of the structure or that, because of the scope of the work, is equivalent to reconstructing the dam; or

(2) not later than by the completion date stated in the outline of remedial measures and implementation schedule approved by the Minister under section 17 of the Act.

In addition, if structural alterations other than those referred to in subparagraph 1 are made to a dam before either of those times, the dam must be brought into conformity with the various safety standards respecting the work, the parts of the dam or the characteristics of the dam being altered or affected by the alterations to the structure of the dam.

O.C. 300-2002, s. 75; O.C. 17-2005, s. 15.

76. The owner of an existing dam shall, within the earlier of the following time limits, prepare an impounded water management plan pursuant to Subdivision 1 of Division III of Chapter III if such a plan is required under that subdivision for the dam in question:

(1) the time limit applicable to the dam under section 78; and

(2) prior to authorization for

(a) a structural alteration to the dam if it affects all parts of the structure or, because of the scope of the work, the structural alteration is equivalent to reconstructing the dam; or

(b) any change in use likely to affect dam safety, in particular a change involving putting the dam back into operation or partially stopping its operation.

An impounded water management plan summary under the second paragraph of section 33 must be appended to the first dam safety review study or to an application for authorization referred to in subparagraph 2 of the first paragraph, as the case may be.

The owner shall also forward the plan summary to the local municipality within whose territory the dam is located as soon as possible after the preparation of the impounded water management plan.

O.C. 300-2002, s. 76; O.C. 17-2005, s. 16.

77. The owner of an existing dam shall, within the earlier of the following time limits, prepare an emergency action plan pursuant to Subdivision 2 of Division III of Chapter III if such a plan is required under that subdivision for the dam in question:

(1) the time limit applicable to the dam under section 78; and

(2) prior to authorization for

(a) a structural alteration to the dam if it affects all the parts of the structure or, because of the scope of the work, the structural alteration is equivalent to reconstructing the dam; or

(b) any change in use likely to affect dam safety, in particular a change involving putting the dam back into operation or partially stopping its operation.

The owner shall also send a plan summary that complies with the second paragraph of section 39 to the local municipality within whose territory the dam is located as soon as possible after the preparation of the plan. The Minister must be notified that the plan has been sent.

Notwithstanding the foregoing, a preliminary emergency action plan that includes rough inundation maps must be prepared within 12 months following the date of coming into force of the Act for every dam covered by this section. The plan must contain a brief summary of the information referred to in section 35, if it is available at the time. A preliminary plan summary must be sent to the local municipality within whose territory the dam is located and the Minister notified thereof.

O.C. 300-2002, s. 77; O.C. 17-2005, s. 17.

78. Subject to the provisions of sections 79 and 80, the first dam safety review of an existing high-capacity dam must be conducted, and the attendant report sent to the Minister, within the time limit indicated below, computed from the date of coming into force of the Act; the time limit varies according to the dam failure consequence category and the dam condition and discharge facilities reliability ratings under subparagraphs 3 and 4 of the first paragraph of section 14 and section 15.

For a Very High or Severe Consequence dam, the time limit is

(1) 3 years, if the condition of the dam is rated acceptable, poor or undetermined or if the reliability of the discharge facilities is rated unsatisfactory or undetermined; or

(2) 4 years, if the condition of the dam is rated good or very good and the reliability of the discharge facilities is rated satisfactory or acceptable.

For a Moderate or High Consequence dam, the time limit is

(1) 5 years, if the condition of the dam is rated acceptable, poor or undetermined or if the reliability of the discharge facilities is rated unsatisfactory or undetermined; or

(2) 6 years, if the condition of the dam is rated good or very good and the reliability of the discharge facilities is rated satisfactory or acceptable.

For a Low Consequence dam, the time limit is

(1) 14 years, if the condition of the dam is rated acceptable, poor or undetermined or if the reliability of the discharge facilities is rated unsatisfactory or undetermined; or

(2) 15 years, if the condition of the dam is rated good or very good and the reliability of the discharge facilities is rated satisfactory or acceptable.

For a Very Low Consequence dam, the time limit is

(1) 18 years, if the condition of the dam is rated acceptable, poor or undetermined or if the reliability of the discharge facilities is rated unsatisfactory or undetermined; or

(2) 20 years, if the condition of the dam is rated good or very good and the reliability of the discharge facilities is rated satisfactory or acceptable.

O.C. 300-2002, s. 78; O.C. 402-2011, s. 14; O.C. 901-2014, ss. 20 and 22.

79. The first dam safety review of an existing dam for which approval was granted under the Watercourses Act (chapter R-13) less than 5 years before the date of coming into force of the Act may be conducted, and the attendant report sent to the Minister, within

(1) the time limit determined under section 78; or

(2) the end of the tenth calendar year after the year in which the approval was granted,

whichever occurs later.

O.C. 300-2002, s. 79.

80. A safety review, the scope of which complies with Division IV of Chapter III, conducted less than 5 years before the coming into force of the Act, may be substituted for the first safety review referred to in section 78 if the attendant report is sent to the Minister within 2 years of the coming into force of the Act and an outline of the remedial measures to be implemented, in addition to the documents listed in section 81, is submitted with the report. The outline must indicate the remedial measures that have been implemented and specify the implementation schedule for the measures to be carried out.

A new safety review as described in the first paragraph must be conducted, and the attendant study updated, 10 years after the coming into force of the Act. Thereafter, a new dam safety review must be conducted and the attendant study updated in accordance with section 51.

O.C. 300-2002, s. 80.

81. The first dam safety review for an existing dam must include the dam failure analysis, rough maps or characterization referred to in section 18, as required by the dam failure consequence category, unless the owner has provided the Minister with the document before the expiry of the time limit determined under section 78, 79 or 80 upon applying for a review of the classification assigned to the structure or for an authorization referred to in section 5 of the Act.

O.C. 300-2002, s. 81; O.C. 901-2014, s. 22.

CHAPTER VI
FINAL

82. The owner of an existing dam must, within 3 months of the coming into force of the Act, send to the Minister all information or documents required for the preparation of the register of dams referred to in Chapter II.

Every offence against this section renders the owner liable to a fine of not less than $2,000 and not more than $200,000.

O.C. 300-2002, s. 82.

83. *(Omitted).*

O.C. 300-2002, s. 83.

SCHEDULE I

(ss. 5, 14 and 29)

SEISMIC ZONES

O.C. 300-2002, Sch. I; O.C. 901-2014, s. 21.

SCHEDULE II

(s. 13)

CONSTANT PHYSICAL PARAMETERS

(Dam vulnerability numerical values)

Dam height

Height (m)	Points
≤5	1
10	2
20	3.5
30	4.5
40	5.0
50	5.8
100	8.0
160 or more	10.0

The points for intermediate heights shall be determined by considering that the points vary linearly between the various height values, except a dam 5 m or lower, which is always assigned 1 point.

Dam types

Dam Type	Points
Concrete arch	1
Concrete buttresses	3
Concrete gravity	2
Concrete gravity embankment	3
Concrete or steel sheet-pile barrier upstream of an earthfill dam	6
Earthfill	10
Earth-filled timber or steel sheet-pile cribs	10
Free weir - concrete shield	7

For any other type of dam, an equivalence with the dam type in the table with the closest characteristics shall be established.

Rockfill dam with - concrete facing - upstream earthfilled core	3
Rockfill free weir	8
Rockfill weir	4
Steel sheet-piling	7
Stone-filled timber or steel sheet-pile cribs	6
Timber buttresses (cribs)	8
Timber buttresses (dead shores)	9

Impounding capacity

Capacity (10^6 m^3)	**Points**
≤1	1
50	3
1,000	5
2,000	6.5
5,000	8
6 000 and over	10

The points for intermediate capacities shall be determined by considering that the points vary linearly between the various values of impounding capacity, except an impounding capacity of 1,000,000 m^3 or less, which is always assigned 1 point.

Foundation types

Type	**Points**
Treated rock	1
Rock	2
Treated till	3
Till	4

The treatment includes all the geotechnical methods meant to reduce the permeability of the foundation and increase its resistance to internal erosion or to increase the bearing capacity of the foundation or the stability of the dam.

Treated clay	6
Clay	7
Treated alluvial deposits	8
Alluvial or unknown deposits	10

Till is a material of glacial origin consisting of a mixture of varying particle sizes that usually contains a certain percentage of fines.

O.C. 300-2002, Sch. II.

SCHEDULE III

(s. 14)

VARIABLE PARAMETERS

(Dam vulnerability numerical values)

Dam age

Concrete Dam

Age (years)	**Points**
0	1
5	1.5
10	2
20	3
40	7
50	9
55 and over	10

This category includes the following dam types: concrete gravity, concrete gravity embankment, concrete arch, stone-filled or earth-filled steel sheet-pile cribs, concrete buttresses, free weir - concrete shield, rockfill dam with concrete facing, steel sheet-piling.

The points for intermediate dam ages shall be determined by considering that the points vary linearly between the various age values.

Embankment Dam

Age (years)	**Points**

0	8
5	7.5
10	6.5
15	5
20	4
25	3
30	2.5
40	2
50	1.5
60 and over	1

This category includes the following dam types: concrete barrier or steel sheet-piling upstream of earthfill dam, rockfill dam with upstream earthfilled core and earthfill.

The points for intermediate dam ages shall be determined by considering that the points vary linearly between the various dam age values.

Timber Dam

Age (years)	Points
0	1
5	1.5
10	2
20	8
30 and over	10

This category includes the following dam types: stone-filled or earth-filled timber cribs and timber buttresses (cribs or dead shores).

The points for intermediate dam ages shall be determined by considering that the points vary linearly between the various dam age values.

Rockfill Free Weir

Age (years)	Points
≤5	5
10	6

This category includes the following dam types: rockfill free weir and rockfill weir.

The points for intermediate dam ages shall be determined by considering that the points vary linearly between the various dam age values, except a dam of 5 years or less, which is always assigned

15	7	5 points.
20	8	
25	9	
30 and over	10	

Seismicity

Seismic Zone	Points
1	1
2	1
3	2
4	6
5	8

Reliability of discharge facilities

Reliability	Points
Satisfactory	1
Acceptable	5
Unsatisfactory or undetermined	10

Dam condition

Condition	Points
Very good	1
Good	3
Acceptable	5
Poor or undetermined	10

Very good: The dam does not show evidence of any deficiency or has minimal confined deterioration considered normal or of no consequence.

Good: The dam shows evidence of only minor deterioration or deficiencies that do not affect the proper operation of its components.

Acceptable: The dam shows evidence of deterioration requiring repairs without however immediately endangering the structure; a dam in this state requires maintenance and repair work in the immediate or near future without which the dam would become increasingly vulnerable. The dam may also show evidence of deficiencies which do not affect its immediate safety but which require close monitoring.

Poor or undetermined: The dam shows evidence of single or multiple severe deterioration that could affect its stability or make certain parts inoperable, or the dam shows evidence of serious deficiencies likely to endanger its safety or the condition of the dam cannot be ascertained.

O.C. 300-2002, Sch. III; O.C. 17-2005, s. 18; O.C. 402-2011, s. 15.

SCHEDULE IV

(s. 16)

DAM FAILURE CONSEQUENCE NUMERICAL VALUES

Consequence Category	Points
Very Low	1
Low	2
Moderate	3
High	5
Very High	8
Severe	10

O.C. 300-2002, Sch. IV.

SCHEDULE V

(ss. 17 and 23)

CHARACTERISTICS OF THE AFFECTED AREA

Characteristics of the affected area (Population density and extent of destroyed or severely damaged infrastructures and services)	Consequence Category
Uninhabited area	

OR	
Area containing minimal infrastructures or services such as - a second dam in the Very Low Consequence category - a resources access road - farmland - a commercial facility without accommodations	Very Low
Occasionally inhabited area containing less than 10 cottages or seasonal residences	
OR	
Area containing a commercial facility that provides accommodation for less than 25 persons or that has less than 10 accommodation units (i.e., 10 cottages, 10 campsites, 10 motel rooms)	Low
OR	
Area containing limited infrastructures or services such as - a second dam in the Low Consequence category - a local road	
Permanently inhabited area containing less than 10 residences or occasionally inhabited and containing 10 or more cottages or seasonal residences	
OR	
Area containing a seasonal commercial facility that provides accommodation for 25 or more persons or that contains 10 or more accommodation units or that operates year-round and provides accommodation for less than 25 persons or has less than 10 accommodation units	Moderate
OR	
Area containing moderate infrastructures or services such as - a second dam in the Moderate Consequence category - a feeder road - a railway line (local or regional) - an enterprise with less than 50 employees - a main water intake upstream or downstream of the dam that supplies a municipality	
Permanently inhabited area containing 10 or more residences and less than 1,000 residents	
OR	
Area containing a commercial facility that operates year-round and provides accommodation for 25 or more persons or has 10 or more accommodation units	
OR	High
Area containing significant infrastructures or services such as - a second dam in the High Consequence category - a regional road - a railway line (transcontinental or transborder) - a school - an enterprise that has 50 to 499 employees	

Permanently inhabited area with a population of more than 1,000 and less than 10,000	
OR	
Area containing major infrastructures or services such as - a second dam in the Very High Consequence category - an autoroute or national highway - an enterprise that has 500 or more employees - an industrial park - a dangerous substances storage site	Very High
Permanently inhabited area with a population of 10,000 or more	
OR	
Area containing substantial infrastructures or services such as - a second dam in the Severe Consequence category - a hospital - a major industrial complex - a large dangerous substances storage site	Severe

For the purposes of the above table, “commercial facility” means a golf course, bicycle trail, cross-country ski trail, snowmobile trail, campground, outfitting operation, outdoor recreation centre, holiday camp, tourist complex or any other similar sports or recreational facility.

The road or highway nomenclatures in the above table are taken from the functional classification established by the Ministère des Transports.

O.C. 300-2002, Sch. V.

REFERENCES
O.C. 300-2002, 2002 G.O. 2, 1647
O.C. 17-2005, 2005 G.O. 2, 471
O.C. 402-2011, 2011 G.O. 2, 1009
O.C. 901-2014, 2014 G.O. 2, 2445

Français

Lakes and Rivers Improvement Act

R.S.O. 1990, CHAPTER L.3

Consolidation Period: From June 20, 2012 to the e-Laws currency date.

Last amendment: 2012, c. 8, Sched. 26.

SKIP TABLE OF CONTENTS

CONTENTS

DEFINITIONS

Definitions

1. In this Act,

"dam" means a structure or work forwarding, holding back or diverting water and includes a dam, tailings dam, dike, diversion, channel alteration, artificial channel, culvert or causeway; ("barrage")

"engineer" means a person licensed under the *Professional Engineers Act* to practise professional engineering and appointed by the Minister for the purposes of this Act; ("ingénieur")

"floating of timber" includes transmission of timber; ("flottage du bois")

"lake" includes a pond and similar body of water; ("lac")

"mill" means a plant or works in which logs or wood-bolts are processed, and includes a saw mill, a pulp mill and a pulp and paper mill; ("usine")

"Minister" means the Minister of Natural Resources; ("ministre")

"Ministry" means the Ministry of Natural Resources; ("ministère")

"municipality" means a local municipality; ("municipalité")

"owner", in relation to a dam, structure or work, means the owner of the dam, structure or work and includes the person constructing, maintaining or operating the dam, structure or work; ("propriétaire")

"regulations" means the regulations made under this Act; ("règlements")

"river" includes a creek, stream, brook and any similar watercourse; ("rivière")

"timber" includes rafts and crafts, saw logs, posts, ties, cordwood, pulpwood, masts, staves, deals, boards, and all sawed and manufactured lumber. ("bois") R.S.O. 1990, c. L.3, s. 1; 1998, c. 18, Sched. I, s. 22; 2002, c. 1, Sched. C, s. 3 (1); 2002, c. 17, Sched. F, Table.

GENERAL PROVISIONS

Purposes of Act

2. The purposes of this Act are to provide for,

(a) the management, protection, preservation and use of the waters of the lakes and rivers of Ontario and the land under them;

(b) the protection and equitable exercise of public rights in or over the waters of the lakes and rivers of Ontario;

(c) the protection of the interests of riparian owners;

(d) the management, perpetuation and use of the fish, wildlife and other natural resources dependent on the lakes and rivers;

(e) the protection of the natural amenities of the lakes and rivers and their shores and banks; and

(f) the protection of persons and of property by ensuring that dams are suitably located, constructed, operated and maintained and are of an appropriate nature with regard to the purposes of clauses (a) to (e). 1998, c. 18, Sched. I, s. 23.

Regulations

3. (1) The Lieutenant Governor in Council may make regulations,

(a) for the safe and orderly floating of timber down lakes and rivers, and for preventing the use of the lakes and rivers for navigation by vessels and boats being unnecessarily impeded or interfered with by the timber;

(b) respecting generally the use under this Act of lakes and rivers and waters therein;

(c) governing applications for approvals under this Act;

(d) prescribing circumstances in which approval is required under subsection 14 (1) or section 16;

(e) providing for and governing appeals from a refusal to give an approval required by a regulation made under clause (d).

(f) Repealed: 2001, c. 9, Sched. K, s. 3 (1).

R.S.O. 1990, c. L.3, s. 3 (1); 1994, c. 23, s. 68; 1996, c. 1, Sched. N, s. 3 (1); 1998, c. 18, Sched. I, s. 24 (1, 2); 2001, c. 9, Sched. K, s. 3 (1).

Minister's regulations re dams

(2) The Minister may make regulations governing the design, construction, operation, maintenance and safety of dams in any lake or river or any defined portion of a lake or river. 2001, c. 9, Sched. K, s. 3 (2).

General or particular

(3) A regulation under subsection (1) or (2) may be general or particular in its application. 2001, c. 9, Sched. K, s. 3 (2).

Adoption by reference

(4) A regulation under subsection (1) or (2) may adopt by reference, in whole or in part, with such changes as the Lieutenant Governor in Council or Minister considers necessary, any code or guideline, as it reads at the time the regulation is made or as amended from time to time. 2001, c. 9, Sched. K, s. 3 (2).

Ministerial agreements

4. For the purposes of this Act, the Minister may enter into agreements, including cost-sharing agreements, with any government or person dealing with the management, protection or use of lakes and rivers and the design, construction, operation, repair, maintenance, alteration or removal of dams or other works in lakes and rivers. 1998, c. 18, Sched. I, s. 25.

Expropriation and arbitration

Expropriation

5. (1) The *Expropriations Act* applies where anything done under this Act constitutes an expropriation or injurious affection within the meaning of that Act. R.S.O. 1990, c. L.3, s. 5 (1).

Arbitrations

(2) Where under this Act a claim or dispute that does not constitute an expropriation or injurious affection is to be determined by arbitration, a judge of the Superior Court of Justice shall be the sole arbitrator for such purpose and the *Arbitrations Act* otherwise applies. R.S.O. 1990, c. L.3, s. 5 (2); 2001, c. 9, Sched. K, s. 3 (3).

Where compensation for flooding or injury by dam made before grant from the Crown

6. Where land is overflowed or otherwise injured by the maintenance of a dam that was erected before the land was granted by the Crown and the grantee or any person under whom the grantee derived title obtained a reduction in the price of the land on account of, or was otherwise indemnified for, its being overflowed or otherwise injured by the dam, no subsequent owner of the land is entitled to maintain an action against the owner or occupier of the dam for damages for any overflowing or injury to the land due to the continuance of the dam. R.S.O. 1990, c. L.3, s. 6.

Restrictions upon operations

7. Nothing in this Act authorizes any person to obstruct any waters already navigable. R.S.O. 1990, c. L.3, s. 7; 1998, c. 18, Sched. I, s. 26.

Orders binding

8. An order of the Minister and all conditions in an approval under this Act are binding upon and enforceable against the successor or assignee of the person to whom the order is directed or the approval is granted. 1998, c. 18, Sched. I, s. 27.

No liability re approvals, etc.

9. (1) Any person heretofore or hereafter giving any approval or making any recommendation for approval authorized or required under this Act is not liable for any injury, including death, loss or other damage caused by or resulting from the giving of the approval or the making of the recommendation or the doing of or the failure to do any act in connection therewith. R.S.O. 1990, c. L.3, s. 9 (1).

Crown not relieved of liability

(2) Subsection (1) does not, by reason of subsections 5 (2) and (4) of the *Proceedings Against the Crown Act*, relieve the Crown of liability in respect of a tort committed by any agent or servant of the Crown to which it would otherwise be subject, and the Crown is liable under that Act for any such tort in a like manner as if subsection (1) had not been enacted. R.S.O. 1990, c. L.3, s. 9 (2).

10. Repealed: 1998, c. 18, Sched. I, s. 28.

Refusal of approval or order that will result in costs

11. (1) If the Minister intends to refuse an approval that he or she is empowered to give under this Act or to make an order directing any act that will incur costs, the Minister shall, before refusing the approval or making the order, give notice of the intention to the person asking for the approval or to whom the order would be directed. 1998, c. 18, Sched. I, s. 28.

When notice received

(2) A notice that is mailed by prepaid post to the last known address recorded with the

Ministry for a person shall be deemed to have been received by that person five business days after it is mailed. 1998, c. 18, Sched. I, s. 28.

Request for inquiry

(3) The notice shall inform the person to whom it is given that the person is entitled to an inquiry if a written request for an inquiry is delivered to the Minister within 15 days after the notice is received. 1998, c. 18, Sched. I, s. 28.

Inquiry required

(4) If the Minister receives a request for an inquiry within the time set out in subsection (3), the Minister shall cause an inquiry to be held and shall consider the inquiry officer's report before making a decision respecting an approval or the making of an order. 1998, c. 18, Sched. I, s. 28.

Inquiry not required

(5) Subsections (1), (3) and (4) do not apply if the Minister is of the opinion that an immediate order is necessary to protect any person from injury or property from damage and if the Minister so states in the order. 1998, c. 18, Sched. I, s. 28; 2001, c. 9, Sched. K, s. 3 (4).

Inquiry officer

(6) The Minister may appoint an inquiry officer and shall specify the particulars of the inquiry. 1998, c. 18, Sched. I, s. 28.

Inquiry

(7) An inquiry officer shall establish the parties to the inquiry, shall fix a time and place for the inquiry, giving adequate notice in the circumstances, and shall hold the inquiry specified. 1998, c. 18, Sched. I, s. 28.

Parties

(8) The following are parties to an inquiry:

1. The person who requested the inquiry.
2. The Minister.
3. Any person whom the inquiry officer determines has a direct interest and should be added as a party. 1998, c. 18, Sched. I, s. 28.

Disclosure

(9) At least 20 days before the day fixed for the inquiry,

(a) each of the parties to the inquiry shall serve each of the other parties a statement setting out the grounds and a list of the documents upon which each intends to rely at the inquiry; and

(b) each party to the inquiry shall make available for inspection by the other parties all documents that the party proposes to use at the inquiry. 1998, c. 18, Sched. I, s. 28.

Purpose of inquiry

(10) The inquiry officer shall inquire as to whether the refusal of approval or the proposed order is fair, sound and reasonably necessary to achieve the purposes of this Act. 1998, c. 18, Sched. I, s. 28.

Report

(11) The inquiry officer shall report to the Minister,

(a) setting out the findings of fact;

(b) stating the officer's opinion on the merits and the reasons for that opinion; and

(c) setting out the officer's recommendations. 1998, c. 18, Sched. I, s. 28.

Copies of report

(12) The inquiry officer shall provide a copy of the report to each of the other parties. 1998, c. 18, Sched. I, s. 28.

Application of R.S.O. 1990, c. S.22

(13) Sections 6 to 16, 21, 21.1, 22 and 23 of the *Statutory Powers Procedure Act* apply, with necessary modification, to an inquiry under this section. 1998, c. 18, Sched. I, s. 28.

Minister's decision

(14) The Minister, after considering the report, may,

(a) in the case of a request for approval, grant the approval requested or a modified version of it or refuse to grant the approval; or

(b) in the case of a proposed order, make the order proposed or a modified version of it or refrain from making the proposed order. 1998, c. 18, Sched. I, s. 28.

Reasons

(15) The Minister shall give reasons for his or her decision to the parties to the inquiry. 1998, c. 18, Sched. I, s. 28.

No petition to Lieutenant Governor in Council

Definition

12. (1) In this section,

"old section 12" means this section as it read immediately before the day the *Good Government Act, 2009* received Royal Assent. 2009, c. 33, Sched. 2, s. 40.

Not subject to petition

(2) Every refusal or order of the Minister that is the subject of a petition filed under the old section 12 that is not disposed of or withdrawn before the day the *Good Government Act, 2009* receives Royal Assent is deemed not to be subject to petition to the Lieutenant Governor in Council, and shall not be considered or continue to be considered, as the case may be, by the Lieutenant Governor in Council. 2009, c. 33, Sched. 2, s. 40.

Same

(3) Every refusal or order of the Minister that may be the subject of a petition under the old section 12 is deemed not to be subject to petition to the Lieutenant Governor in Council, and shall not be considered by the Lieutenant Governor in Council. 2009, c. 33, Sched. 2, s. 40.

No effect on validity

(4) Nothing in this section affects the validity of a refusal or order of the Minister that, but for section 40 of Schedule 2 to the *Good Government Act, 2009*, was or could have been the subject of a petition filed under the old section 12. 2009, c. 33, Sched. 2, s. 40.

PART I
CONSTRUCTION, REPAIR AND USE OF DAMS

13. Repealed: 1998, c. 18, Sched. I, s. 29.

Approvals

14. (1) No person shall construct a dam in any lake or river in circumstances set out in the regulations without the written approval of the Minister for the location of the dam and its plans and specifications. 1998, c. 18, Sched. I, s. 29.

Location approval

(2) An application for approval of the location of a dam must be made in writing and must be accompanied by,

(a) a diagram showing the proposed location of the dam, any area to be flooded and the land of persons other than the applicant that may be affected by the flooding; and

(b) a statement showing the purpose, type and size of the dam, whether the dam will be temporary or permanent, the quantity of water to be held, and the rate of flow of water that may be diverted. 1998, c. 18, Sched. I, s. 29.

Plan approval

(3) If the location of a dam has been approved, an application for approval of the plans and specifications of the dam must be made in writing and must be accompanied by,

(a) three copies of the plans and specifications showing full details of the dam, including any spillways, sluicegates, channels and other associated structures, and the maximum elevation at which the water will be held under normal operating conditions;

(b) a report on the design of the dam and a map showing the location and size of the watershed above the dam; and

(c) particulars of the nature of the foundation on which the dam is to be constructed with reports of all boring or test pits. 1998, c. 18, Sched. I, s. 29.

Additional information

(4) The Minister may require any person submitting an application under this section to provide any additional information that the Minister considers pertinent. 1998, c. 18, Sched. I, s. 29.

Approval

(5) The Minister may approve the location or the plans and specifications of a dam subject to such conditions or with such changes as the Minister considers advisable to further the purposes of this Act. 1998, c. 18, Sched. I, s. 29.

Fees

(6) The Minister may set, charge and collect fees for issuing approvals under this Part. 1998, c. 18, Sched. I, s. 29.

Refusal of approval

(7) The Minister may refuse to grant an approval for the location of a dam if the Minister is of the opinion that the construction of the dam at that location would not coincide with the purposes of this Act. 1998, c. 18, Sched. I, s. 29.

Expiration of approval - location

(8) An approval for location of a dam expires with the specified time for applying for approval of the plans and specifications unless the application for the approval of the plans and specifications is made within that time. 1998, c. 18, Sched. I, s. 29.

Expiration of approval

(9) An approval for location of a dam and the approval for plans and specifications of the dam expire with the specified time for the completion of construction of the approved dam. 1998, c. 18, Sched. I, s. 29.

Extension

(10) Subsection (9) does not apply if the Minister is satisfied that construction of the dam is progressing to completion in a diligent manner and extends the time for the completion of construction. 1998, c. 18, Sched. I, s. 29.

Non-application - emergency

(11) This section does not apply to the construction of an emergency dam if the construction is immediately necessary to prevent injury to persons, loss of life or loss of property. 1998, c. 18, Sched. I, s. 29.

Directions from Minister

(12) When the situation set out in subsection (11) arises, the owner shall,

(a) immediately give notice to the Minister of the start of construction of a dam; and

(b) comply with the directions of the Minister on the precautions to be taken in maintaining the dam and its removal when the purpose for which it was constructed has been served. 1998, c. 18, Sched. I, s. 29.

Ministerial delegation

15. (1) The Minister may delegate, in writing, any of his or her powers or duties respecting approvals or orders under this Part to any person or body outside the Ministry subject to such limitations and requirements as may be set out in the delegation. 1998, c. 18, Sched. I, s. 30; 2012, c. 8, Sched. 26, s. 1 (1).

Fees

(2) A delegation of a power or duty to issue approvals includes the right to collect and retain fees for issuing the approvals. 1998, c. 18, Sched. I, s. 30.

Performance agreement

(3) If the Minister delegates powers or duties under subsection (1), the Minister and the delegate shall enter into a performance agreement setting out measurable performance goals and objectives for the delegate. 2012, c. 8, Sched. 26, s. 1 (2).

Annual performance assessment

(4) Every year, the delegate shall prepare a performance assessment demonstrating that the performance goals and objectives set out in the performance agreement are being met. 2012, c. 8, Sched. 26, s. 1 (2).

Failure to meet performance goals, etc.

(5) If the Minister believes that a delegate has failed to meet the performance goals and objectives set out in the performance agreement, the Minister shall give the delegate written notice of his or her belief and require that the delegate fulfil the requirements of the performance agreement within such time period as may be specified in the notice. 2012, c. 8, Sched. 26, s. 1 (2).

Failure to comply

(6) If a delegate fails to comply with a notice given under subsection (5), the Minister

may terminate the performance agreement and revoke the delegation made under subsection (1). 2012, c. 8, Sched. 26, s. 1 (2).

Alterations, etc.

16. (1) No person shall alter, improve or repair any part of a dam in the circumstances prescribed by the regulations unless the plans and specifications for whatever is to be done have been approved by the Minister. 1998, c. 18, Sched. I, s. 31.

Approval

(2) An approval may be granted subject to such conditions or changes as the Minister considers necessary to further the purposes of this Act. 1998, c. 18, Sched. I, s. 31.

Orders

17. (1) If a dam has been constructed on a lake or river and the location or the plans and specifications of the dam have not been approved by the Minister, the Minister may order the owner to do one or more of the following within the time specified in the order, if the Minister considers it necessary for any of the purposes of this Act:

1. Provide plans and specifications of the dam.
2. Remove the dam or any part of it.
3. Open up the dam.
4. Repair the dam.
5. Improve the dam.
6. Otherwise alter the dam. 2002, c. 18, Sched. L, s. 5.

Engineer's report

(2) If an engineer reports to the Minister that, because of the design, construction or condition of a dam, water is being or may be held, released, forwarded or diverted in sufficient volume or at sufficient rate of flow to cause personal injury or loss of or damage to property, the Minister may order the owner to do what the Minister, on the basis of the report, considers necessary to rectify the problem within the time specified in the order. 1998, c. 18, Sched. I, s. 32; 2000, c. 26, Sched. L, s. 5 (1); 2001, c. 9, Sched. K, s. 3 (5).

Engineer's examination

(3) The Minister may have an engineer examine and report on a dam and the Minister may order the owner, within the time specified in the order, to do what, on the basis of the report, the Minister considers necessary to further the purposes of this Act. 1998, c. 18, Sched. I, s. 32.

Fishway

(4) The Minister may order the owner of a dam that has been constructed without a fishway to provide one, within the time specified in the order, that permits free and unobstructed passage of fish up and down stream at any season of the year. 1998, c. 18, Sched. I, s. 32.

Where failure to comply

(5) After the expiration of the time specified in an order, the Minister may do anything that an owner was ordered to but did not do. 1998, c. 18, Sched. I, s. 32.

Where no approval

17.1 (1) If any activity that requires an approval under this Act is started without that

approval, the Minister may order the owner to,

(a) stop the activity;

(b) furnish, within the time specified in the order, the diagrams, statements, plans and specifications, reports or other information that the Minister would be entitled to have before issuing an approval; and

(c) change or remove, within the time specified in the order and at the owner's expense, whatever may have been done. 1998, c. 18, Sched. I, s. 32.

Where failure to comply

(2) After the expiration of the time specified in an order, the Minister may do, change or remove anything that an owner was ordered to but did not do, change or remove. 1998, c. 18, Sched. I, s. 32.

Recoverable debt

(3) The cost of anything that the Minister does under section 17 or this section because of the failure of an owner to comply with an order is a debt of the owner due to the Crown in right of Ontario and is recoverable with costs in any court of competent jurisdiction. 1998, c. 18, Sched. I, s. 32.

Non-application of s. 11

(4) Section 11 does not apply to an order made under this section. 1998, c. 18, Sched. I, s. 32.

Subsequent approval

17.2 (1) The Minister may approve the location or plans and specifications of a dam that have not been approved under section 14, with any changes the Minister considers necessary, after construction has started if the location and plans and specifications are compatible, in the opinion of the Minister, with the purposes of this Act. 1998, c. 18, Sched. I, s. 32.

Modifying order

(2) In giving an approval under subsection (1), the Minister may rescind or modify a previously issued order in respect of the dam for which approval is given. 1998, c. 18, Sched. I, s. 32.

Compliance with conditions in approval

17.3 The holder of an approval issued under section 14, 16 or 17.2 shall comply with the conditions to which the approval is subject. 2006, c. 19, Sched. P, s. 2 (1).

18. Repealed: 2009, c. 33, Sched. 22, s. 5 (1).

Inspectors and engineers

19. (1) The Minister may, in writing, appoint inspectors and engineers for the purposes of this Act. 1998, c. 18, Sched. I, s. 33.

Limitation

(2) The Minister may limit the duties and authority of any inspector or engineer appointed. 1998, c. 18, Sched. I, s. 33.

Powers and duties of inspectors and engineers

Duties of inspectors

20. (1) The duties of an inspector include determining if,

(a) the approvals or conditions of approvals under this Act have been complied with;

(b) the orders issued under this Act have been complied with; and

(c) the regulations are being complied with. 1998, c. 18, Sched. I, s. 33.

Powers: inspector, engineer

(2) For the purpose of carrying out his or her duties under this Act, an inspector or an engineer may,

(a) enter and inspect, at any reasonable time, any place, structure or land, other than a private dwelling;

(b) require the production for inspection of any document or thing; and

(c) record or copy any information or document by any method. 1998, c. 18, Sched. I, s. 33.

Owner's obligation

(3) The owner of a dam or proposed dam shall permit and facilitate an inspector or an engineer, in the course of carrying out his or her duties, to,

(a) enter and inspect, at any reasonable time, any place, structure or land under the control of the owner, other than a private dwelling; and

(b) inspect any document, data or thing under the control of the owner. 1998, c. 18, Sched. I, s. 33; 2006, c. 19, Sched. P, s. 2 (2).

Removal

(4) An inspector may, upon giving a receipt for it, remove any document or thing produced pursuant to a request under clause (2)(b) for the purpose of making copies or extracts. 1998, c. 18, Sched. I, s. 33.

Return

(5) Any document or thing that is taken under subsection (4) shall be returned as soon as reasonably possible. 1998, c. 18, Sched. I, s. 33.

Search warrant

(6) An inspector may obtain a search warrant under Part VIII of the *Provincial Offences Act*. 1998, c. 18, Sched. I, s. 33.

Interference prohibited

20.1 (1) No person shall obstruct, interfere with or otherwise hinder an inspector or engineer in carrying out his or her duties. 2002, c. 1, Sched. C, s. 3 (2).

Information

(2) No person shall furnish an inspector or an engineer with false information or fail to furnish information required by an inspector or an engineer for the purpose of carrying out his or her duties. 1998, c. 18, Sched. I, s. 33.

Plans, etc., to be kept on file in Ministry

21. All plans, orders and reports furnished or made under this Part shall be kept on file in the Ministry. R.S.O. 1990, c. L.3, s. 21.

Officers to take charge of lake, river or dam

22. (1) The Minister may appoint officers with the powers and duties specified by the

Minister to take charge of a lake or river or any dam in a lake or river if,

(a) a dam is under construction or has been constructed on the lake or river and the Minister considers it expedient for the purposes of this Act; or

(b) a dispute arises between persons having the right to use the lake or river or dam in a lake or river. 1998, c. 18, Sched. I, s. 34.

Orders

(2) The Minister may, on the recommendation of an officer, make orders to regulate the use of the lake or river or to regulate the use and operation of any dam in the lake or river in the manner that seems, to the Minister, best calculated to afford to persons having conflicting interests on the lake or river or in the dam a fair and reasonable use of the waters of the lake or river and to achieve the purposes of this Act. 1998, c. 18, Sched. I, s. 34.

Boundary waters

(3) If a change in the level of international boundary waters is involved, the orders of the Minister and the duties of the officers shall conform to any order or recommendation that the International Joint Commission may make under the authority of the International Boundary Waters Treaty between Great Britain and the United States. 1998, c. 18, Sched. I, s. 34.

Water levels and management plans

Regulation of water levels

23. (1) Where a dam or other structure or work has been heretofore or is hereafter constructed on a lake or river and the Minister considers it necessary or expedient for the purposes of this Act, the Minister may order the owner of the dam or other structure or work to take such steps within the time specified in the order as may be necessary to maintain the level of the water of the lake or river or to raise or lower such level as the order provides. R.S.O. 1990, c. L.3, s. 23 (1).

(1.1) Repealed: 2002, c. 1, Sched. C, s. 3 (3).

Non-compliance with order

(2) Where the owner fails to comply with an order made under this section within the time specified in the order, the Minister may cause to be taken such steps as are necessary to achieve the result intended by the order, and the cost thereof is a debt due by the owner to the Crown and is recoverable with costs in any court of competent jurisdiction. R.S.O. 1990, c. L.3, s. 23 (2).

Where section not to apply

(3) This section does not apply to any lake or river over which the International Joint Commission established under the Boundary Waters Treaty of 1909 or any public authority exercising jurisdiction under the Parliament of Canada or The Lake of the Woods Control Board established under *The Lake of the Woods Control Board Act, 1922*, chapter 21, has jurisdiction with respect to the level of the water. R.S.O. 1990, c. L.3, s. 23 (3).

Plans for operation and maintenance

23.1 (1) If the Minister considers it necessary or expedient for the purposes of this Act, the Minister may order the owner of a dam or other structure or work that has been constructed on a lake or river, or a person who has applied under section 14 or 16 for an approval to construct, alter, improve or repair a dam, other structure or work on a lake or river, to, in accordance with the regulations and with guidelines approved by the Minister,

(a) prepare or amend a plan for the operation and maintenance of the existing or proposed

dam, other structure or work; or

(b) participate in the preparation or amendment of a plan referred to in clause (a). 2012, c. 8, Sched. 26, s. 2 (1).

Submission of plan to Minister

(2) A person to whom an order to prepare or amend a plan is directed under subsection (1) shall submit the plan or amended plan to the Minister within the time specified in the order. 2002, c. 1, Sched. C, s. 3 (4); 2012, c. 8, Sched. 26, s. 2 (2).

Participation in plan

(3) A person to whom an order to participate in the preparation or amendment of a plan is directed under subsection (1) shall do so within the time specified in the order. 2002, c. 1, Sched. C, s. 3 (4); 2012, c. 8, Sched. 26, s. 2 (3).

Non-compliance with order

(4) If a person fails to comply with an order made under subsection (1) within the time specified in the order, the Minister may cause to be taken such steps as are necessary to achieve the result intended by the order, and the cost of taking those steps is a debt due by the person to the Crown and is recoverable with costs in any court of competent jurisdiction. 2002, c. 1, Sched. C, s. 3 (4); 2012, c. 8, Sched. 26, s. 2 (4).

Minister's powers

(5) If a plan or an amended plan is submitted to the Minister under subsection (2), the Minister may approve it, reject it or approve it with such modifications as may be made by the Minister. 2002, c. 1, Sched. C, s. 3 (4).

Amendment of plan

(6) The Minister may at any time amend a plan or an amended plan, that the Minister has previously approved or amended. 2002, c. 1, Sched. C, s. 3 (4).

Duty to comply with plan

(7) An owner of a dam or other structure or work shall operate and maintain the dam or other structure or work in accordance with,

(a) the plan or amended plan that has been approved by the Minister under subsection (5); and

(b) the amendments, if any, that have been made by the Minister under subsection (6). 2002, c. 1, Sched. C, s. 3 (4).

Non-compliance with plan

(8) If an owner contravenes subsection (7), the Minister may cause to be taken such steps as are necessary to achieve the result intended by the plan or amended plan that has been approved by the Minister under subsection (5) and the amendments, if any, that have been made by the Minister under subsection (6), and the cost of taking those steps is a debt due by the owner to the Crown and is recoverable with costs in any court of competent jurisdiction. 2002, c. 1, Sched. C, s. 3 (4).

Where section not to apply

(9) This section does not apply to any lake or river over which the International Joint Commission established under the Boundary Waters Treaty of 1909 or any public authority exercising jurisdiction under the Parliament of Canada or The Lake of the Woods Control Board

established under *The Lake of the Woods Control Board Act, 1922*, chapter 21, has jurisdiction with respect to the level of the water. 2002, c. 1, Sched. C, s. 3 (4).

Removal of obstructions

24. Subject to compensation being made as provided by the *Ministry of Government Services Act* for any damage sustained by reason thereof, the Minister may authorize any person employed by or under the Minister to enter into and upon any land and remove any rocks, stones, gravel, slab or timber jam, dam or part of any dam, rubbish of any kind or other obstruction in any lake or river, the removal of which he or she considers necessary or expedient for the achievement of any of the purposes of this Act. R.S.O. 1990, c. L.3, s. 24.

25. Repealed: 1998, c. 18, Sched. I, s. 35.

26. Repealed: 1998, c. 18, Sched. I, s. 35.

27. Repealed: 1998, c. 18, Sched. I, s. 35.

Offence

28. (1) A person is guilty of an offence if the person,

(a) constructs a dam in any lake or river, in circumstances set out in the regulations, without the location or plans and specifications of the dam having been approved in writing by the Minister;

(a.1) constructs a dam in any lake or river, in circumstances set out in the regulations, that does not conform with the plans and specifications approved under section 14;

(a.2) fails to comply with the conditions of an approval given by the Minister under section 14 or 17.2;

(b) alters, improves or repairs any part of a dam, in the circumstances prescribed by the regulations, without the plans and specifications for whatever is to be done having been approved by the Minister;

(b.1) alters, improves or repairs any part of a dam, in the circumstances prescribed by the regulations, in a way that does not conform with the plans and specifications approved under section 16;

(b.2) fails to comply with the conditions of an approval given by the Minister under section 16;

(c) obstructs, interferes with or otherwise hinders an engineer, an inspector or an officer or agent of the Minister in the exercise of a power or performance of a duty under this Act or the regulations; or

(d) contravenes any provision of this Act or a regulation for the contravention of which no other penalty is provided. 2002, c. 1, Sched. C, s. 3 (5); 2006, c. 19, Sched. P, s. 2 (3).

Same

(2) A person is guilty of an offence if the person,

(a) fails to comply with an order under section 17, 17.1, 18, 22, 23, 23.1, 36 or 38;

(b) fails to comply with a plan that has been approved or amended by the Minister under section 23.1;

(c) fails to maintain or operate a dam in accordance with the regulations; or

(d) when required to provide any of the following by the Minister, by an engineer or inspector or by an officer or agent of the Minister, fails to provide any plans and specifications, books, accounts, documents, data or other information relating to a dam or other structure or work in a lake or river, its design, construction, condition, maintenance or operation or any information relating to plans and specifications or other documents required under this Act. 2002, c. 1, Sched. C, s. 3 (5); 2012, c. 8, Sched. 26, s. 3.

Penalty for offence under subs. (1)

(2.1) Every person who is guilty of an offence under subsection (1) is liable, on conviction,

(a) to a fine of not more than $1 million;

(b) to imprisonment for a term of not more than six months; or

(c) to both a fine described in clause (a) and imprisonment described in clause (b). 2002, c. 1, Sched. C, s. 3 (5).

Penalty for offence under subs. (2)

(2.2) Every person who is guilty of an offence under subsection (2) is liable, on conviction,

(a) to a fine of not more than $1 million for the day during which the offence first occurs and to an additional fine of not more than $20,000 for each day during which the offence continues;

(b) to imprisonment for a term of not more than six months; or

(c) to both a fine described in clause (a) and imprisonment described in clause (b). 2002, c. 1, Sched. C, s. 3 (5).

Increasing fine by amount of monetary benefit

(2.3) Despite the maximum fine provided in subsection (2.1) or (2.2), the court that convicts a person of an offence under clause (1) (a) or (b) or (2) (a), (b) or (c) may, in addition to any other penalty imposed or order made under this section, increase the fine imposed on the person for the commission of the offence by an amount equal to the monetary benefit that was acquired by, or that accrued to, the person as a result of the commission of the offence. 2002, c. 1, Sched. C, s. 3 (5).

Order to repair damage

(2.4) On its own initiative or on the request of the prosecutor, the court that convicts a person of an offence under clause (2) (b) or (c) may, in addition to any other penalty imposed under this section, order the person to take such action as the court directs to repair or rehabilitate the damage that results from or is in any way connected to the commission of the offence, within the time specified in the order. 2002, c. 1, Sched. C, s. 3 (5).

Non-compliance with order

(2.5) If a person fails to comply with an order made under subsection (2.4), the Minister may cause to be taken such steps as are necessary to achieve the result intended by the order, and the cost of taking those steps is a debt due by the person to the Crown and is recoverable with costs in any court of competent jurisdiction. 2002, c. 1, Sched. C, s. 3 (5).

Other liability

(3) A conviction of a person under this section does not affect that person's liability for damages. 1998, c. 18, Sched. I, s. 35.

Onus of proof

(4) In a prosecution under clause (1) (a) or (b), the onus is on the person charged to prove that the location or the plans and specifications, as the case may be, have been approved by the Minister. 1998, c. 18, Sched. I, s. 35.

Limitation period

(5) A proceeding in respect of an offence under this Act shall not be commenced more than five years after the date on which the offence was or is alleged to have been committed. 2001, c. 9, Sched. K, s. 3 (6).

Minister's direction for payment

29. (1) If a debt is owed to the Crown by an owner who owns real property in a municipality for work carried out by the Minister under this Act, the Minister may direct the municipality to recover the amount specified. 1998, c. 18, Sched. I, s. 35.

Lien

(2) Upon receiving a direction under subsection (1), the municipality has a lien on the property for the amount to be recovered and the amount shall have priority lien status, as described in section 1 of the *Municipal Act, 2001* or in section 3 of the *City of Toronto Act, 2006*, as the case may be, in respect of the property and shall be added by the treasurer of the municipality to the tax roll. 2002, c. 17, Sched. F, Table; 2006, c. 32, Sched. C, s. 28 (1).

Same

(3) Despite any other Act, a lien arising by operation of subsection (2) is not an estate or interest of the Crown in right of Canada or in right of Ontario. 1998, c. 18, Sched. I, s. 35.

Money collected

(4) A municipality collecting money under this section shall pay the amount collected, less costs reasonably attributable to the collection, to the Minister of Finance. 1998, c. 18, Sched. I, s. 35.

Where land sold

(5) If land is sold under Part XI of the *Municipal Act, 2001* or Part XIV of the *City of Toronto Act, 2006*, as the case may be, and any of the proceeds are payable to the Minister of Finance under this section, the *Fire Protection and Prevention Act, 1997*, the *Environmental Protection Act* or the *Ontario Water Resources Act*, none of the proceeds are payable until after payment of all other amounts payable from the proceeds in respect of the cancellation price of the land. 1998, c. 18, Sched. I, s. 35; 2002, c. 17, Sched. F, Table; 2006, c. 32, Sched. C, s. 28 (2).

Cancellation price

(6) Despite Part XI of the *Municipal Act, 2001* or Part XIV of the *City of Toronto Act, 2006*, the treasurer of a municipality may sell land under those Parts for less than the cancellation price, so long as the land is not sold for less than what the cancellation price would have been but for this Act, the *Fire Protection and Prevention Act, 1997*, the *Environmental Protection Act* and the *Ontario Water Resources Act*, and the purchaser may be declared to be the successful purchaser under Part XI of the *Municipal Act, 2001* or Part XIV of the *City of Toronto Act, 2006*, as the case may be. 2006, c. 32, Sched. C, s. 28 (3).

Interpretation

(7) In subsections (5) and (6),

"cancellation price" has the same meaning that it has in Part XI of the *Municipal Act, 2001* or Part XIV of the *City of Toronto Act, 2006*, as the case may be. 2006, c. 32, Sched. C, s. 28 (3).

Territory without municipal organization

(8) If a debt is owed to the Crown by an owner who owns real property in a territory without municipal organization for work carried out by the Minister under this Act, the Minister may give written notice to the Minister of Finance of the amount to be recovered, requesting the collection of the amount under the *Provincial Land Tax Act, 2006*, and the amount may be collected under that Act as if it was tax imposed under it. 1998, c. 18, Sched. I, s. 35; 2006, c. 33, Sched. Z.3, s. 15 (1).

(9) Repealed: 2006, c. 33, Sched. Z.3, s. 15 (2).

PART II
PUBLIC RIGHTS IN LAKES AND RIVERS

30.-35. Repealed: 1998, c. 18, Sched. I, s. 36.

Throwing matter into lake or river in conflict with purposes of Act

36. (1) No person shall throw, deposit, discharge or permit the throwing, depositing or discharging of any substance or matter in a lake or river, whether or not the lake or river is covered by ice, or on the shores or banks of a lake or river under circumstances that conflict with the purposes of this Act. 1998, c. 18, Sched. I, s. 36; 2009, c. 33, Sched. 22, s. 5 (2).

Order to remove

(2) If any substance or matter is deposited, thrown or discharged in a lake or river or on the shore or banks of a lake or river in circumstances that the Minister considers conflict with the purposes of this Act, the Minister may order the person who did the act or caused it to be done to take such steps, within the time specified in the order, as the Minister considers necessary to remove the substance or matter from the lake or river or the shore or bank, as the case may be. 1998, c. 18, Sched. I, s. 36; 2009, c. 33, Sched. 22, s. 5 (2).

Where failure to comply

(3) After the expiration of the time specified in an order, the Minister may remove whatever the person to whom the order was directed did not remove. 1998, c. 18, Sched. I, s. 36.

Recoverable debt

(4) The cost of anything that the Minister does under this section because of the failure of a person to whom an order was directed to comply with the order is a debt of that person due to the Crown in right of Ontario and is recoverable with costs in any court of competent jurisdiction. 1998, c. 18, Sched. I, s. 36.

37. Repealed: 1998, c. 18, Sched. I, s. 36.

38. Repealed: 2009, c. 33, Sched. 22, s. 5 (3).

DISCRETIONARY POWER OF COURT

Discretion of court as to granting of injunction in certain cases

39. (1) Where in an action or proceeding a person claims, and but for this section would

be entitled to, an injunction against the owner or occupier of a mill for an injury or damage, direct or consequential, sustained by the person, or for any interference directly or indirectly with any rights of the person as riparian proprietor or otherwise, by reason or in consequence of the throwing, depositing or discharging, or permitting the throwing, depositing or discharging of any refuse, sawdust, chemical, substance or matter from the mill or from it and other mills into a lake or river, or by reason or in consequence of any odour arising from any such refuse, sawdust, chemical, substance or matter so thrown, deposited or discharged or so permitted to be thrown, deposited or discharged, the court or judge may,

(a) refuse to grant an injunction if it is proved that having regard to all the circumstances and taking into consideration the importance of the operation of the mill to the locality in which it operates and the benefit and advantage, direct and consequential, which the operation of the mill confers on that locality and on the inhabitants of that locality, and weighing the same against the private injury, damage or interference complained of, it is on the whole proper and expedient not to grant the injunction;

(b) grant an injunction to take effect after such lapse of time or upon such terms and conditions or subject to such limitations or restrictions as are considered proper; or

(c) in lieu of granting an injunction, direct that the owner or occupant of the mill take such measures or perform such acts to prevent, avoid, lessen or diminish the injury, damage or interference complained of as are considered proper. R.S.O. 1990, c. L.3, s. 39 (1).

Right to damages not affected

(2) Nothing in subsection (1) affects any right of the person claiming the injunction to damages against the owner or occupier of the mill for any such injury, damage or interference. R.S.O. 1990, c. L.3, s. 39 (2).

Subsequent damages

(3) Where damage from the same cause continues, the person entitled to the damages may apply from time to time in the same action or proceeding for the assessment of subsequent damages or for any other relief to which by subsequent events the person from time to time becomes entitled. R.S.O. 1990, c. L.3, s. 39 (3).

Application of section

(4) This section applies whether the injury, damage or interference is or is not a continuing one, and whether the person claiming the injunction in the action or proceeding is a plaintiff or is a defendant proceeding by way of counterclaim. R.S.O. 1990, c. L.3, s. 39 (4).

PART III (ss. 40-59) Repealed: 1998, c. 18, Sched. I, s. 38 (1).

PART IV (ss. 60-67) Repealed: 1998, c. 18, Sched. I, s. 38 (1).

PART V (ss. 68-88) Repealed: 1998, c. 18, Sched. I, s. 38 (1).

PART VI
WATER PRIVILEGES

Application

89. This Part is subject to Part I. R.S.O. 1990, c. L.3, s. 89.

Definition

90. In this Part,

"occupied water privilege" means a mill privilege, or water power, that has been or is in use for mechanical, manufacturing, milling or hydraulic purposes, or for the use of which for any of such purposes the necessary works are in course of construction. R.S.O. 1990, c. L.3, s. 90.

Protection of occupied water privilege

91. An occupied water privilege shall not be in any manner interfered with or encroached upon under the authority of this Part without the consent of the owner. R.S.O. 1990, c. L.3, s. 91.

Right of owner of water privilege to enter on and survey lands

92. A person desiring to use or improve a water privilege, of which or a part of which the person is the owner or legal occupant, for any mechanical, manufacturing, milling or hydraulic purposes by erecting a dam and creating a pond of water, increasing the head of water in any existing pond or extending its area, diverting the waters of any stream, pond or lake into any other channel, constructing any raceway or other erection or work that the person requires in connection with the improvement and use of the privilege, or by altering, renewing, extending, improving, repairing or maintaining any such dam, raceway, erection or work, or any part thereof, may enter upon any land that the person considers necessary to be examined and to make an examination and survey thereof, doing no unnecessary damage and making compensation for any actual damage done. R.S.O. 1990, c. L.3, s. 92.

Expropriation of land for purposes of s. 92

93. A person to whom section 92 applies may expropriate land for the purposes mentioned in section 92. R.S.O. 1990, c. L.3, s. 93.

FORM 1 Repealed: 1998, c. 18, Sched. I, s. 39.

Français

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Lakes and Rivers Improvement Act
Loi sur l'aménagement des lacs et des rivières

ONTARIO REGULATION 454/96

CONSTRUCTION

Consolidation Period: From April 20, 2007 to the e-Laws currency date.

Last amendment: O. Reg. 160/07

This Regulation is made in English only.

1. In this Regulation,

"channelize" means to alter the alignment, width, depth, sinuosity, conveyance or bed or bank material of a river or stream channel;

"water crossing" means a bridge, culvert or causeway that is constructed to provide access between two places separated by water but that also holds back, forwards or diverts water. O. Reg. 454/96, s. 1; O. Reg. 160/07, s. 1.

2. (1) For the purpose of subsection 14 (1) and section 16 of the Act, approval is required,

(a) to construct or decommission a dam that holds back water in a river, lake, pond or stream to raise the water level, create a reservoir to control flooding or divert the flow of water;

(b) to make alterations, improvements or repairs to a dam that holds back water in a river, lake, pond or stream to raise the water level, create a reservoir to control flooding or divert the flow of water, if the alterations, improvements or repairs may affect the dam's safety or structural integrity, the waters or natural resources; or

(c) to do any of the following things outside the area of jurisdiction of a conservation authority, or within the area of jurisdiction of a conservation authority that has in effect a regulation governing development, interference with wetlands and alteration to shorelines and watercourses if the area in which the work will be done does not form part of the area covered by the regulation:

(i) Constructing a water crossing draining an area greater than five square kilometres, unless construction is undertaken by a Ministry or municipality on lands owned by the Crown or the municipality undertaking the construction.

(ii) Channelizing a river or stream that may harmfully alter fish habitat or impede

the movement of fish in a river, stream or lake, except for the installation or maintenance of a drain, subject to the *Drainage Act*;

(iii) Enclosing or covering a length of river or stream for greater than 20 metres in length.

(iv) Installing, if the installation may result in damming, forwarding or diverting water, a cable or pipeline into the bed of a river, stream or lake except for the installation of heat loops, water intakes and service cables for private residences.

(v) Installing a temporary dam for the purpose of removing water or water flow from an area during construction of any of the works described in subclauses (i) to (iv). O. Reg. 160/07, s. 2 (1).

(2) For the purpose of section 16 of the Act, approval is required before a person operates a dam in a manner different from that contemplated by plans and specifications approved by the Minister under section 14 or 16 of the Act. O. Reg. 160/07, s. 2 (2).

3. No approval is required under section 14 or 16 of the Act for a water crossing to which the *Public Lands Act* applies or that has been constructed as part of a forest operation to which the Forest Operation and Silvicultural Manual under *Crown Forest Sustainability Act* applies. O. Reg. 454/96, s. 3.

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Appendix D: NL Dam Safety Program Forms

DAM INSPECTION CHECKLIST

Dam Index Number: _____ Dam Name: _____

Dam Owner: _____ Location: _____

Your Name: _____ Inspection Date: _____

Was the spillway flowing? *Y N* If yes, what was the approximate flow rate? _____
(circle one)
If no, then how far was the reservoir drawn down below the spillway sill level? _____

Was the outlet open? *Y N* If yes, what was the approximate discharge rate? _____

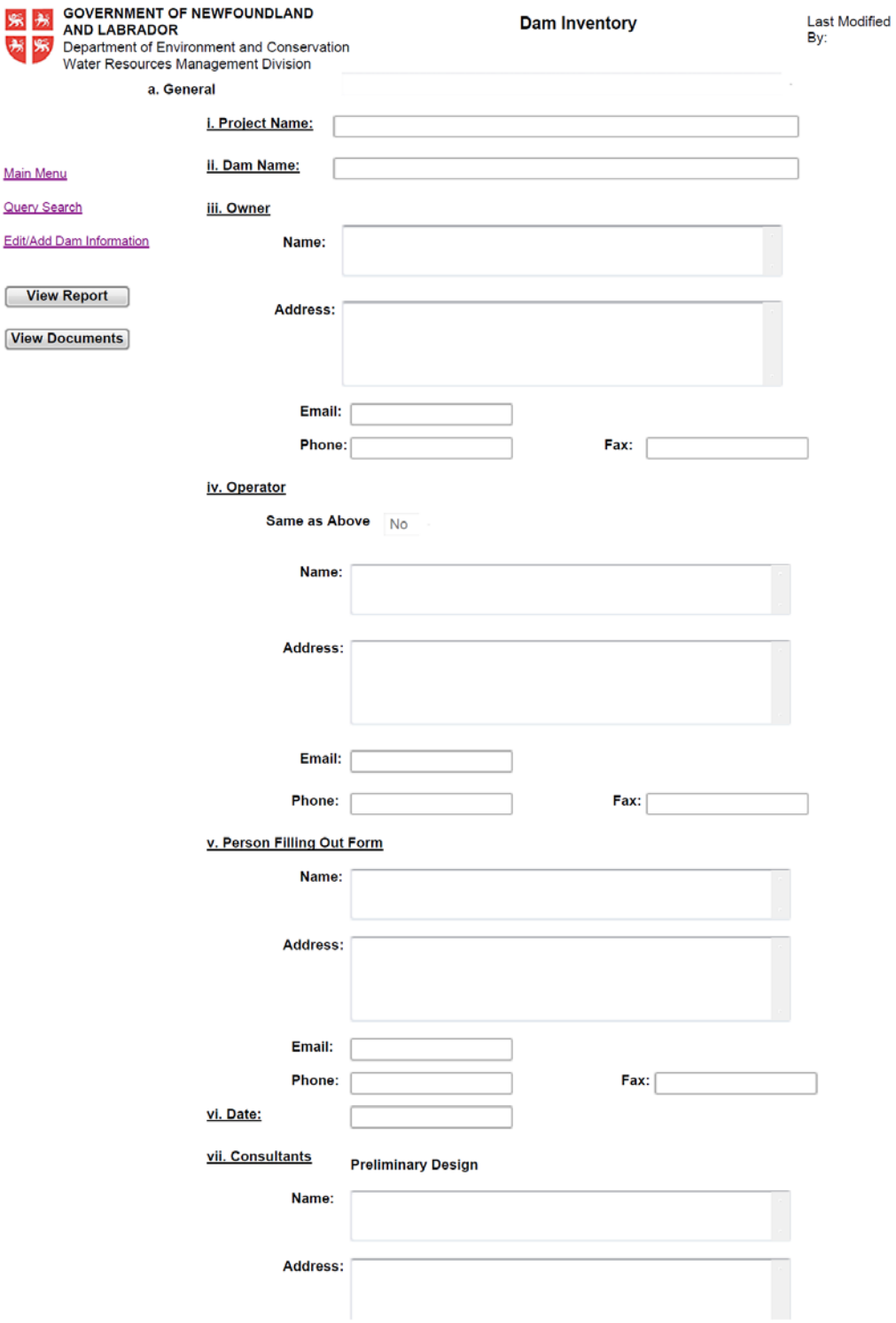
Are the following components of your dam in *SATISFACTORY CONDITION*? Yes or No? (check one if applicable)

EMBANKMENT	Y	N	***OUTLET***	Y	N	***SPILLWAY***	Y	N
1. U/S Slope	☐	☐	1. Outlet Pipe	☐	☐	1. Debris Boom	☐	☐
Crest	☐	☐	2. Energy Dissipater	☐	☐	2. Entrance	☐	☐
D/S Slope	☐	☐	3. Stilling Basin	☐	☐	3. Sill	☐	☐
D/S Toe	☐	☐	4. Toe Drains	☐	☐	4. Apron	☐	☐
Drains	☐	☐	5. Outlet Channel	☐	☐	5. Walls	☐	☐
			6. Measuring Weir	☐	☐	6. Channel	☐	☐
			7. Outlet Controls	☐	☐	7. Channel Slopes	☐	☐
			8. Gates	☐	☐	8. Gates	☐	☐

Were any of the following *POTENTIAL PROBLEM INDICATORS* found?

INDICATOR	***EMBANKMENT***		***OUTLET***		***SPILLWAY***	
	YES	NO	YES	NO	YES	NO
a) Seepage	☐	☐	☐	☐	☐	☐
b) External Erosion	☐	☐	☐	☐	☐	☐
c) Cracks	☐	☐	☐	☐	☐	☐
d) Settlement	☐	☐	☐	☐	☐	☐
e) Sloughing / Slides	☐	☐	☐	☐	☐	☐
f) Animal Activity	☐	☐	☐	☐	☐	☐
g) Excessive Growth	☐	☐	☐	☐	☐	☐
h) Excessive Debris	☐	☐	☐	☐	☐	☐

COMMENT on DEFICIENCY FOUND:



GOVERNMENT OF NEWFOUNDLAND AND LABRADOR
Department of Environment and Conservation
Water Resources Management Division

Dam Inventory

Last Modified By:

Main Menu
Query Search
Edit/Add Dam Information
View Report
View Documents

a. General

i. Project Name:
ii. Dam Name:
iii. Owner
Name:
Address:
Email:
Phone:
Fax:
iv. Operator
Same as Above: No
Name:
Address:
Email:
Phone:
Fax:
v. Person Filling Out Form
Name:
Address:
Email:
Phone:
Fax:
vi. Date:
vii. Consultants
Preliminary Design
Name:
Address:

Email:

Phone: Fax:

Final Design

Same as Above No

Name:

Address:

Email:

Phone: Fax:

Construction

Same as Above No

Name:

Address:

Email:

Phone: Fax:

viii. Year Built:

ix. Dam Status:

Other:

x. DOE Approvals:

xi. Purpose

Drinking Water Supply:

Industrial Water Supply:

Hydro Power Generation:

Flood Control:

Ice Control:

Forestry:

Unknown:

Other:

Other Text:

xii. Waterbodies Controlled:

b. Location

i. Coordinates:

	Degrees	Minutes	Seconds
Latitude:	°	'	"
Longitude:	°	'	"

c. Dam

i. Dam Type:

Other Type:

ii. Dimensions

Maximum Height (m):

Crest Width (m):

Crest Length (m):

iii. Structures

	Capacity (m3/s)	Dimension(m)
Spillway		
Gates		
Fishways		
Penstock		
Surge Tanks		
Tailrace		
Sluiceways		
Intakes		
Other		

Other Text:

iv. Design Criteria:

v. Maintenance:

d. Reservoir

i. Operation Parameters

	Normal	Minimum	Maximum
Water level (m):			
Surface Area (m2):			
Storage Volume (m3):			

ii. Freeboard (m):

iii. Catchment (km2):

c. Dam Safety Review

i. CDA Dam Classification - LifeSafety

ii. CDA Dam Classification - Socio-Economic, Financial and Environmental

iii. Dam Safety Review Completed:

Dam Safety Report Title:

If not Completed Explain Why:

iv. Dam Safety Consultant

Name:

Address:

Email:

Phone: Fax:

v. Year of Review:

vi. Date of Next Review:

vii. Emergency Preparedness Plan Required

viii. Emergency Preparedness Plan Completed

ix. EPP Desk/Training Undertaken

x. Date of Next Update to Emergency Preparedness Plan:

Remarks:

f. Other

i. Operating Rule Curves

ii. DFO Minimum Flow

iii. Does Owner Have WaterRights

iv. Downstream Development

g. Additional Comments

Appendix E: SOP for a Water Supply Dam

Operation & Maintenance of a Water Supply Dam

Inspections - General

- ❑ Check for any leakage from the dam structure
- ❑ Check for any seepage at the base of dam including quantity and quality (turbid or clear) of seepage
- ❑ Check for debris blocking the spillway
- ❑ Check for any signs of burrowing animals or beavers
- ❑ Check for floating debris, algae, or sediment accumulation in reservoir
- ❑ Check for signs of erosion
- ❑ Check for new occurrences or noted changes in dam condition from previous inspections

Inspections – Concrete Structures

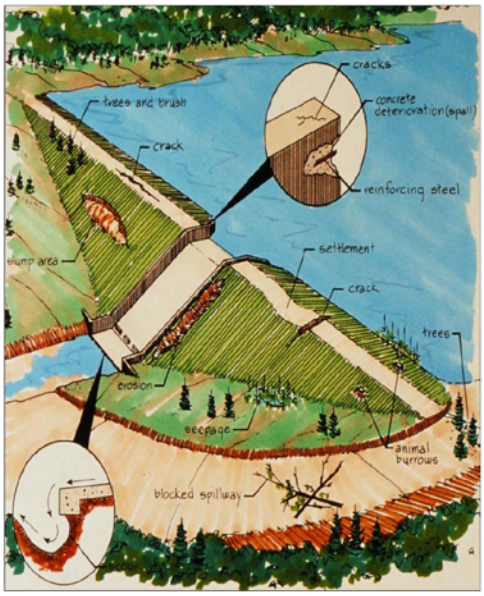
- ❑ Check for cracks or other signs of concrete deterioration
- ❑ Check for signs of erosion around concrete structures
- ❑ Check for shifts in alignment of concrete structures

Inspections – Earthen, Rockfill or Wooden Structures

- ❑ Check condition of embankments, timber cribs, gabions, liners, etc.
- ❑ Check for settling or cracks in the dam crest, slumping along the dam face
- ❑ Check condition of rip-rap along the upstream face of the dam
- ❑ Check for and remove any vegetation (shrubs, trees) from around the dam

Water Supply Dam Operation

- ❑ Develop operating procedures for normal, flood, drought and emergency operations
- ❑ Determine frequency for routine inspections and maintenance
- ❑ Periodically inspect dam structure and equipment, test dam equipment (gates)
- ❑ Monitor water level in reservoir including max and min water levels
- ❑ Inspect dam before and after major precipitation and/or runoff events
- ❑ Address any issues identified in dam inspections (eg. seal cracks, replace rip-rap, repair settled crest, clear debris)



BC MINISTRY OF FORESTS, LANDS AND NATURAL RESOURCE OPERATIONS

☑ **Keep a record of dam and reservoir operational conditions, inspection findings, pictures of the dam, and a log of repairs**

Newfoundland Labrador

Department of Environment and Conservation
Water Resources Management Division
Community Water & Wastewater