

Managing beaver activity:  
**it makes good sense.**



**Lizotte**  
SOLUTIONS

*Beaver Activities  
Risk Management*

It makes good sense to manage  
beavers—not fight them.

**Here's why, and here's how.**

# Beaver activities can cause extremely expensive damage in forest, farm, and urban environments.

## Culvert blockage

- Obstructed culverts
- Ineffective drainage causing destabilization or flooding

## Road deterioration

- Drainage problems causing destabilization
- Frost heave
- Platform deformation due to water infiltration in embankments

Lizotte Solutions detects problems hidden from view.



## Typical example: impact of a series of dams.

- Hydrography and water ecology were modified. Spawning areas were contaminated and eliminated. Banks are destabilized.
- Major risks for several kilometres downstream if dams give way to water pressure or if demolished.
- Risk of seasonal obstruction and washout up to residential zones.
- Drinking water contaminated by sediments

### Railroad embankments weakened

- Water infiltration causing frost heave through capillary action
- Deterioration of structural components, rails, and ties
- Ballast contamination
- High maintenance costs due to difficult railroad access

### Structural destabilization

- Unstable ground under pylons, retaining walls, and other structures

### Loss of forestry production

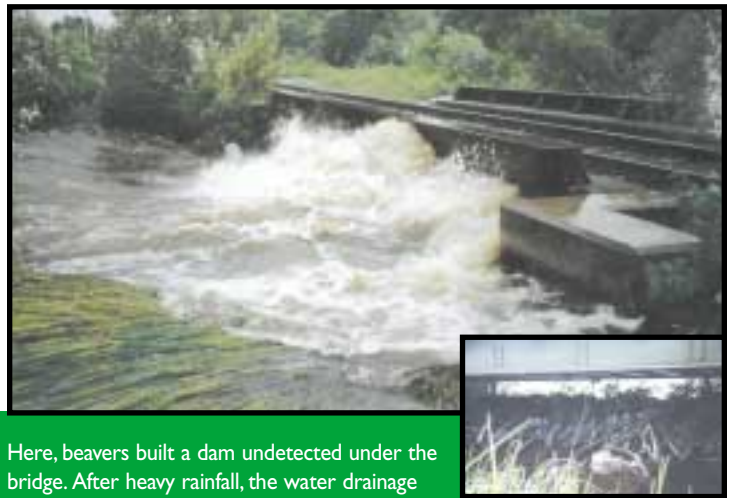
- Flooded cutting zones
- Reduced tree growth due to water surplus
- Impossible to develop new plantations
- Major damage to fertile soil layer

### Increased forestry road costs

- Higher cost layouts to avoid risk zones
- High maintenance costs after beavers move in
- Drainage and destabilization problems

### Loss of farm productivity

- Flooding in cultivated fields, maple bushes, and plantations
- Irrigation ditches weakened
- Drainage problems
- Seeding and harvesting delays



Here, beavers built a dam undetected under the bridge. After heavy rainfall, the water drainage capacity was inadequate, and the structure was damaged. This is a classic example of poor management or lack of follow-up.



Dams gradually raise the water level; when they burst, the sudden rise in water level causes residential flooding.



Better drainage means longer-lasting infrastructure.

### Drinking water contamination

- Reserves contaminated by sediments
- Ground water contamination

### Blockages: spring melt-off

- Flooding in residential, agricultural, and road zones

### Spawning area and fish loss

- Obstructions in spawning areas
- Reduced current causes an oxygenation deficit
- Harmful contaminants created
- Lake bottoms become unfit for spawning



Flooding caused by beaver dams can ruin productivity in vast tracts of forestry land.



Several acres of fertile land lost due to flooding and destabilization.



Flooded and weakened rail tracks result in tremendous repair costs and may cause ecological disasters, even the loss of lives.



### Changes in habitats developed for ducks

- Unwanted increase in water level
- Changes in nesting areas

To sum up, keep in mind that good structures start with good drainage. By nature, beaver activities change drainage conditions, affecting environments both locally and some distance away. An abandoned dam that bursts in a mountain area can impact roads, bridges, fields, and residences several kilometres away.

When it comes to beavers, it makes better sense to manage them—not just fix the damage.



Beaver damage also affects urban areas. Roads near towns and villages can be damaged following a culvert obstruction or by water rushing suddenly out of a burst dam.



# Muskrats: another problem in the family.

Although muskrat and beaver activities are different, muskrats still cause a great deal of damage, particularly near urban zones and on farmland.

- Muskrat tunnels cause destabilization below ground
- Along irrigation canals, heavy machinery becomes stuck in mud, where tunnels weaken under the weight of wheels



# Conventional solutions

## **Dynamite: more harm than good**

Dynamite use is often believed to be fast and cost-effective. But in reality, this method simply postpones the inevitable. Beavers are quick to repair any damage, sometimes as quick as 24 hours.

What's worse, dynamiting frequently causes greater damage than the original problem:

- Unchecked changes in water level, resulting in floods or washouts up to several kilometres downstream
- Deteriorating structures and infrastructure

- Destabilized soil layers due to vibration
- Cracks, which elevate risks when the water level rises next

Depending on the region, dynamite use is highly regulated or completely banned, due to associated dangers and negative effects.

- Water pollution
- Impact on animal life
- Deterioration of aquatic habitats



Poorly controlled dynamiting to unblock this culvert ended up causing the embankment to weaken, resulting in tremendous repair costs.

Dynamite use damages structures. Repeat detonations gradually weaken even apparently solid bridges.

### Trapping, a partial answer

When land owners find beavers on their property, they often hire trappers, hoping to eliminate the problem at the source. But in fact, it often lingers or worsens:

- Trapper actions limited to trapping season
- Some trappers' lack of professionalism: site captures may not be complete
- Need to manage dams left on site: deterioration without beaver presence
- Trappers lack dam demolition know-how

Trappers don't carry insurance for themselves or for possible damage caused by their actions. Also, site owners don't benefit from follow-ups, mapping, and other risk management tools for their land.

In fact, trapping works only when it's part of a global programme to manage beaver activities.

### Dam demolition, from best to worst

Dam demolition is often necessary. But the cost-impact-effectiveness equation changes radically depending on the method.

- Demolition by machinery: expensive (varies with accessibility), pollution-causing, and responsible for environmental degradation
- Manual demolition: effective, clean, but labour-intensive
- Demolition by helicopter: highly effective, but expensive

Dam demolition can be avoided through good risk management of beaver activity.

## No one wins the battle against beavers.

Efforts such as dynamiting, trapping, and dam demolition come with a high price tag—and they've got to be repeated over and over again.

- Major administrative costs
- Increased taskload for personnel
- Improper follow-up leading to recurring problems

Fighting beavers is an expensive proposition. And it's a battle that's lost in advance.

Instead, **Lizotte Solutions** recommends managing the activities of this wily creature.

# Lizotte Solutions offers structured, efficient, and cost-effective risk management of beaver activities.

The **Lizotte Solutions** approach is one-of-a-kind. It's based on more than 10 years of experience in beaver management all across Canada, with an emphasis on railroad protection.

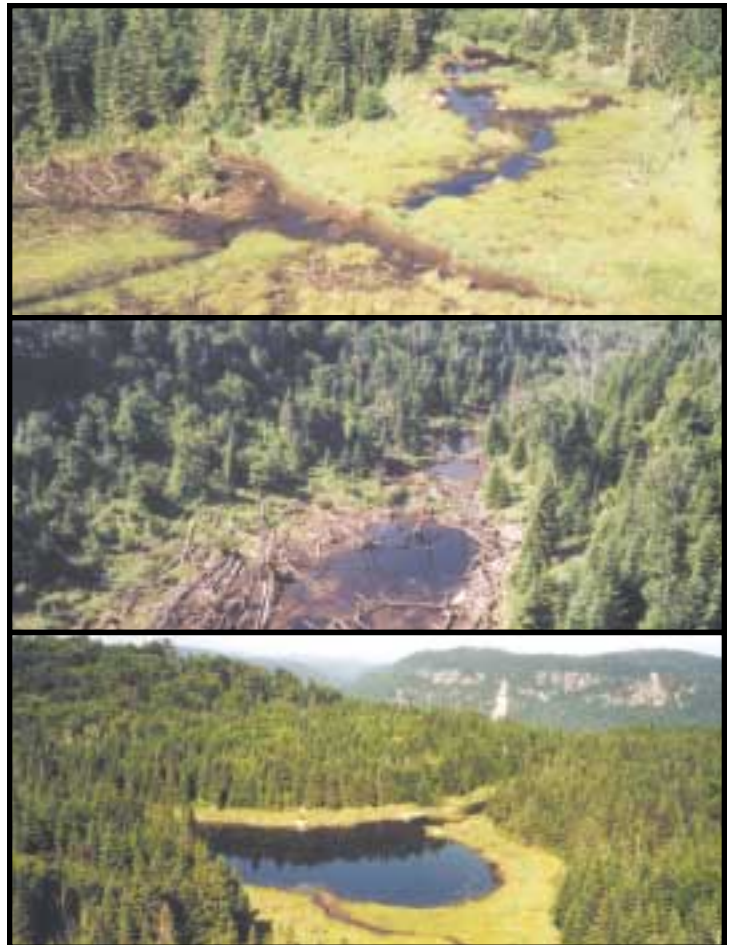
**Lizotte Solutions** actions are based on three major phases.

## 1. Risk inventory

- Site mapping
- Identify current and potential risk sites
- Evaluate short, medium, and long-term risks

## 2. Action plan

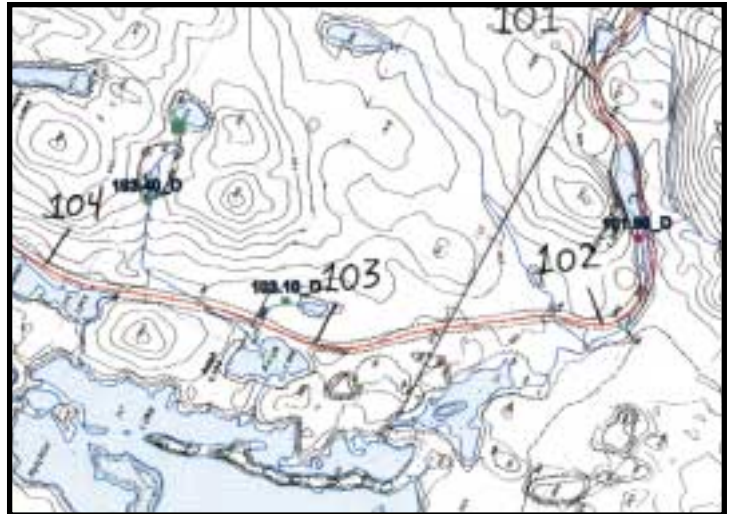
- Planning and prioritization
- Implement control systems
- Intervene before damage appears
- Choose the right equipment for demolitions
- Trap as needed (trapping permits in and out of season)



Top photo: flooding due to dam presence pushed large sections of land out of productivity. Middle and bottom: natural habitat regenerates following implementation of a control system. Vegetation is returning, and soil is becoming productive again.

### 3. Follow-up

- Constant or as needed
- Planned actions: the right place at the right time
- Minimize impact on the natural habitat
- Prevent water level variations



*Example: mapped risk inventory, railroad line*

**Point 101.90 D:**

Code red, high alert

- Lake near track, water level too high
- Infiltrations and risk of weakened embankment
- Immediate action required

**Point 103.40 D:**

Code green, low alert

- Stream basin draining, in good condition
- Risk: two beaver families moving in
- Carry out regular follow-ups



The entire valley had been flooded by an artificial lake created by beaver dams. Proper site management enabled plant and wildlife to return and flourish.

## The main **advantages**

### Cost savings

- Major reduction in direct and indirect costs for users of beaver-occupied land: railway companies, forestry companies, governmental transportation departments, municipalities, ZEC (controlled harvesting zones), farmers, and others.

### Prevent related damage

- Avoid floods and washouts that follow poorly controlled demolition
- Avoid deterioration in infrastructure and existing structures

### Environmentally green

- Control the beaver population, both in terms of numbers and sites

- Control impact of actions on environment

### Focus on safety

- Experienced personnel
- Proven techniques
- Safe work methods

# Read the signs, prevent the damage.

A key strength of the **Lizotte Solutions** approach: prevention. We seek out and recognize the signs of structural and infrastructural deterioration due to beaver activity—before soils become saturated.

Note the mud between the ties; mud here indicates that it rose to the surface through capillary action. These signs show that the soil is waterlogged in precise locations—on both sides of the track and underneath—due to beaver activity.



# Services

**Lizotte Solutions** is a legal company with a federal charter and the insurance coverage necessary for the services offered. Mario Lizotte is known throughout North America for his skills and expertise in beaver activities risk management.

## Turnkey service

- Risk assessment
- Impact analysis
- Prioritized recommendations
- Demolition work supervision
- Prevention methods
- Training sessions
- Inventory records

## Specialized services

- Risk analysis
- Inventory: sites at risk
- Dam demolition and control
- Demolition by helicopter
- Drinking water protection
- Protection: natural habitats
- Protection: land in use
- Supervision of actions
- Construction of water level control systems
- Studies and strategic advice for new constructions and developments
- Beaver relocation

## Mapping

- Mapped land report
- Risk zone location
- Prioritized surveillance plans

## Personnel training

- Manage existing control systems
- Trace positive and negative impacts of beaver presence
  - railroad networks
  - road networks
  - forestry sites
  - farming areas
  - waterway management

## Weather watch service (Canada)

- Risk condition alerts to personnel
- Post-watch site check

## Specialized tools from Lizotte Solutions

- Portable winch
- Folding metal poles to unblock pipes and sewers, demolish small dams
- Coupling claw for demolishing dams
- Conventional and live-capture traps
- Trapping equipment

# Helicopter use

Helicopter use enables **Lizotte Solutions** to act efficiently and often more cost-effectively than conventional methods.

## Inventory

Helicopters enable the most efficient beaver location and risk analysis.

- Speed and ease in locating dams
- Complete inventory: overcome difficult access in forests or mountains
- Quick check: highways as well as primary, secondary and forestry roads

## Demolition

Lizotte Solutions has perfected a grabber designed specifically for dam demolition by helicopter.

- Easily reach difficult-to-access areas
- Avoid waterway and environmental damage from ground machinery
- Better control over demolition operations
- No dynamiting
- Better control over water reservoir

## Direct transportation to demolition sites

Helicopters enable fast site access with no damage.

- Transport control systems and outlet pipes
- Transport personnel



Carry out work where needed, in all terrains.

Designed by Lizotte Solutions, the hydraulic demolition grabber works with precision.



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# Lizotte

## SOLUTIONS

Gestion du risque des activités du castor  
*Beaver Activities Risk Management*

110, avenue de la Gare  
La Pocatière (Québec) G0R 1Z0 Canada  
Tél.: (418) **856-1001**  
Fax: (418) 856-1855  
Cell.: (418) 952-0945  
[www.lizottesolutions.com](http://www.lizottesolutions.com)  
[info@lizottesolutions.com](mailto:info@lizottesolutions.com)