Risks Associated with Dams

Occurrence of a dam failure is low, but the consequences can be high. It is important to understand the risks associated with dam failure and how to react. Over the years, the potential for dam failure has significantly decreased due to improved dam safety programs, new technology, more reliable materials and better designs. Despite this, failure of a dam can result in property damage, serious injury and potentially the loss of life. While dam failure can be caused by extreme weather conditions, they most often fall into categories including (but not limited to) the following:

Structural failures: Deficiencies within the structures caused by incorrect designs, material deficiencies, foundation defects, naturally occurring wear and tear or natural disasters like earthquakes or large floods.

Mechanical failures: Are within the mechanical systems, such as the gates, conduits, or valves. They may also be caused by incorrect designs, material deficiencies, naturally occurring wear and tear or improper usage and/or maintenance.

Hydraulic failures: The inability to adequately pass enough water can compromise a conveyance structure pipeline or the dam itself. Causes may include inadequate spillway design, debris blockage of spillways/gates, and/or movement of dam structures.

Emergency Tips

In the Event of Dam Failure

- Remain calm.
- Make every effort to stay away from the breached water. Do Not attempt to go through, on top or under the water.
- Be prepared to evacuate your home or business if needed or instructed.
- Seek higher ground.
- If you are the first person at the scene of a failure, call 911 to notify local emergency responders or notify Brookfield Renewable at 1-877-816-7466.
- Describe what you see in a clear and precise manner.

Identify Safety Concerns

Cracking: Long cracks (6+ feet) and thick cracks (1+ inch) should be reported, especially if large amounts of water are rushing through.

Misalignment: If a handrail or concrete face appears to jut out of alignment.

Seepage along abutments: When noticeable flow is visible and is murky. Minor weeping is common.

Erosion: Large pockets of erosion (such as a channel forming in an abutment or large chunks of concrete weathering away).

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Heuvelton Hydropower Facility

UNDERSTANDING DAMS & WHAT YOU SHOULD KNOW

Importance Of Dams

This infrastructure ensures the efficient supply the water for agricultural, industrial and community needs along with providing flood control for surrounding areas. At the same time hydropower facilities use water to generate clean, renewable power.

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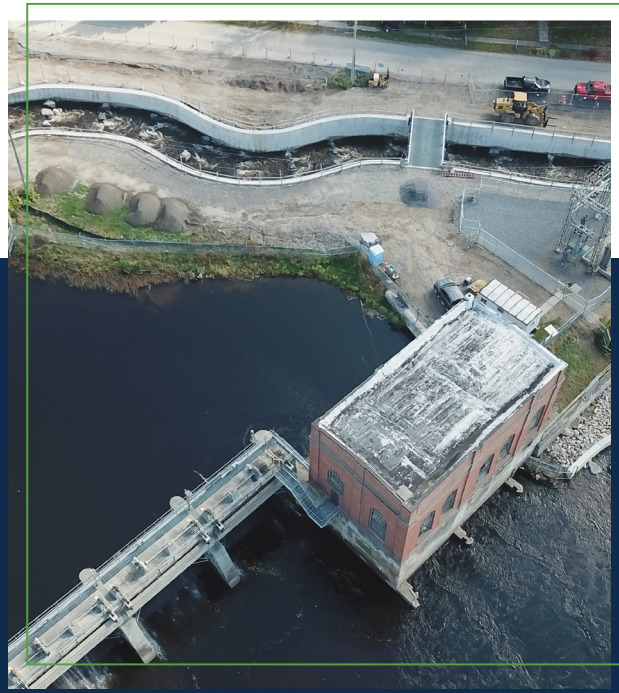
Its History And Design

Heuvelton Dam

Was constructed in 1923 and began generating electricity in 1924. In 1994 the original gates underwent extensive rehabilitation, leading to the current setup of today.

The dam is constructed of concrete and steel. Six bays for spillway gates and rubber bladders span between the powerhouse and a retaining wall on the northwest bank, separated by concrete piers. The dam is a concrete gravity dam, meaning the weight of concrete in combination with friction along the bedrock, resists the reservoir water pressure. To increase its stability, cable anchors were placed within the bedrock and attached to the dam's piers.



Key Features

Reservoir/Impoundment: The water is stored behind the dam on the upstream side.

Tailrace: Downstream of the powerhouse, water for the hydro-power facility discharges into the river.

Powerhouse: Passes water into the generation units via intake gates and discharges water into the tailrace.

Spillway: Where water discharges from the reservoir/ impoundment into the bypass. Water is released from the spillway by gates and rubber dam.

Nature Like Fish Passage: Enhancement measures to reconnect aquatic habitat above and below the dam, allowing free upstream and downstream movement of the aquatic species that inhabit these waters.

Spillway Gates: Four gates line the spillway. Three are located directly next to the powerhouse and one is located directly against the right bank of the river. These gates are controlled via lifts attached on the catwalk above each gate bay. Water from the reservoir is released below as the gates are lifted.

Rubber Dams: Two rubber bladders are located between the two different sections of spillway gates. These rubber bladders filled with air, hold back water from the reservoir/impoundment.

Responsibilites

The Public

Report any visual indications of potential failure to the dam owner. Know the evacuation routes and what to do. Understand the risks of living, working, or recreating near a dam and how best to protect yourself.

Dam Owners and Operators

- Develop a dam safety program that includes maintenance and operation to ensure that the dam does not fail.
- Comply with all federal, state and local safety standards.
- Coordinate proactive initiatives with officials and regulators to mitigate dam safety incidents and consequences.
- Maintain, test, and share Emergency Action Plan (EAP) in coordination with emergency response teams, upstream and downstream dam owners/ operators, and other local officials/regulators.

Regulators, Government & Emergency Response Team

- Enforce dam safety and public safety regulations.
- Coordinate efforts with dam owners/operators to address potential impacts and determine local land use for recreation, floodplain development and management.
- Assist in providing emergency response.

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