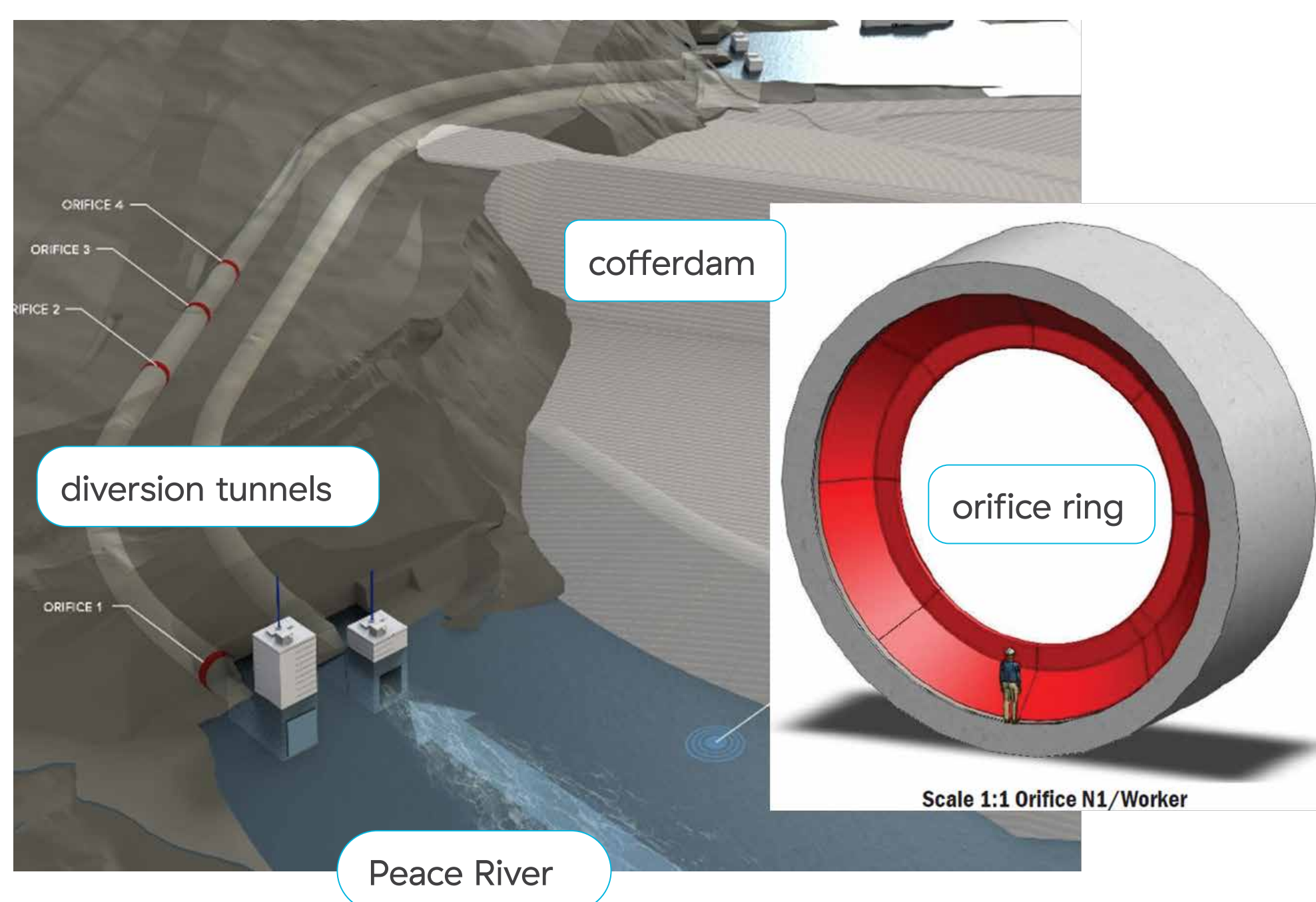


Filling the reservoir

Filling the reservoir with water allows us to put the generating station, spillways, turbines and generators into operation, creating enough energy to power the equivalent of about 450,000 homes per year in B.C.

Filling the reservoir will create permanent shoreline changes. This is what you can expect as the water level rises:

- The 83-kilometre-long reservoir will be, on average, two to three times the width of the current Peace River. The mouths of the Moberly River, Halfway River and Cache Creek will also widen.
- It will take approximately four months for the water to reach its full depth, and the depth will vary: 52 metres close to the dam, 36 metres at Halfway River, and 18 metres near Hudson's Hope.
- During the final phase of reservoir filling, the reservoir will fill at a varying rate of 0.3 metres to two metres per day.
- Shoreline erosion will occur because of reservoir creation and may occur during reservoir filling. The impacts will vary around the shoreline, depending on the location.



Reservoir filling could begin as early as fall 2023

The timeline for reservoir filling will depend on construction progress, regulatory approvals, provincial authorizations, and environmental compliance. It also will consider weather-related constraints that could affect upstream operations of the Peace River system.

To meet our projected in-service date of 2025, reservoir filling could begin as early as fall 2023. Before filling the reservoir, the following must occur:

- Highway 29 realignments complete and open to traffic
- Reservoir cleared of vegetation and final sweeps are done
- Dam built and fit for service
- Ongoing Indigenous engagement
- Diversion tunnels converted

Closing the diversion tunnels

Prior to filling the reservoir, we must first convert (or close) the diversion tunnels that are currently in service to divert the Peace River to allow for construction of the earthfill dam.

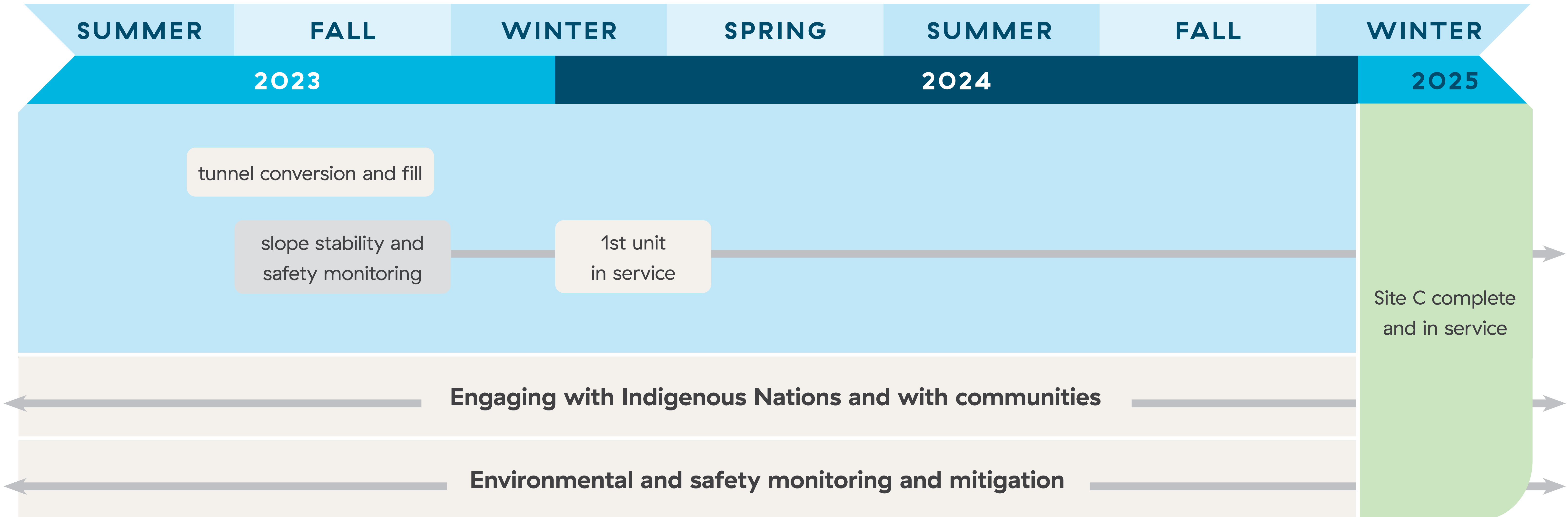
Conversion of the diversion tunnels requires installation of constrictions (or orifice rings) inside one of the tunnels to restrict the flow of water during reservoir filling.

This work must occur between June and October due to environmental, operational, and weather-related constraints as well as construction progress. This means the window to safely fill the reservoir will start and complete early fall 2023.

Scan to watch



Reservoir filling timeline



Site C dam: Overview



Diversion tunnel outlet

Powerhouse

Earthfill dam

Roller-compacted concrete buttress

Approach channel

Site C dam: Downstream



Spillways

Penstocks

Roller-compacted concrete buttress

Earthfill dam

Powerhouse

Dam safety at BC Hydro

Safety is a key consideration in the Site C project design. Since the early twentieth century, we've been safely operating and maintaining dams across B.C. We currently manage and operate 85 dams at 42 locations throughout the province.

Our dam safety program is rigorous and based on provincial regulations, guidelines published by the Canadian Dam Association, and international best practice.

A 2018 audit concluded that our dam safety program is well-established and in line with international practices.

BC Hydro's emergency management program

- B.C. Emergency Management System manages and responds to emergencies
- Drills with employees validate and reinforce procedures
- Table-top and role-play sessions with provincial and local emergency management agencies coordinate emergency procedures

Dam safety program

- Thousands of instruments to collect and report dam performance data
- 24/7 automated monitoring system including alarm notification
- Weekly visual checks, more extensive inspections and engineering evaluation twice a year
- Annual reports submitted to Province of B.C.
- Audits of our dam management system every five years
- Independent regulatory reviews of each dam every 7 to 10 years
- Extensive maintenance of critical equipment
- Ongoing assessment against current standard of practice
- Dam upgrades when needed

Scan to
learn more



Peace Canyon Dam



W.A.C. Bennett Dam

Dam safety at Site C

Site C is built and maintained in accordance with the highest international and Canadian safety practices

- Designed to withstand unlikely extreme earthquakes and floods
- Meets the Canadian Dam Association's highest level of design guidelines
- Aligns with best practices in instrumentation and surveillance
- Will have a dam safety engineer and two dam safety technologists working out of Fort St. John

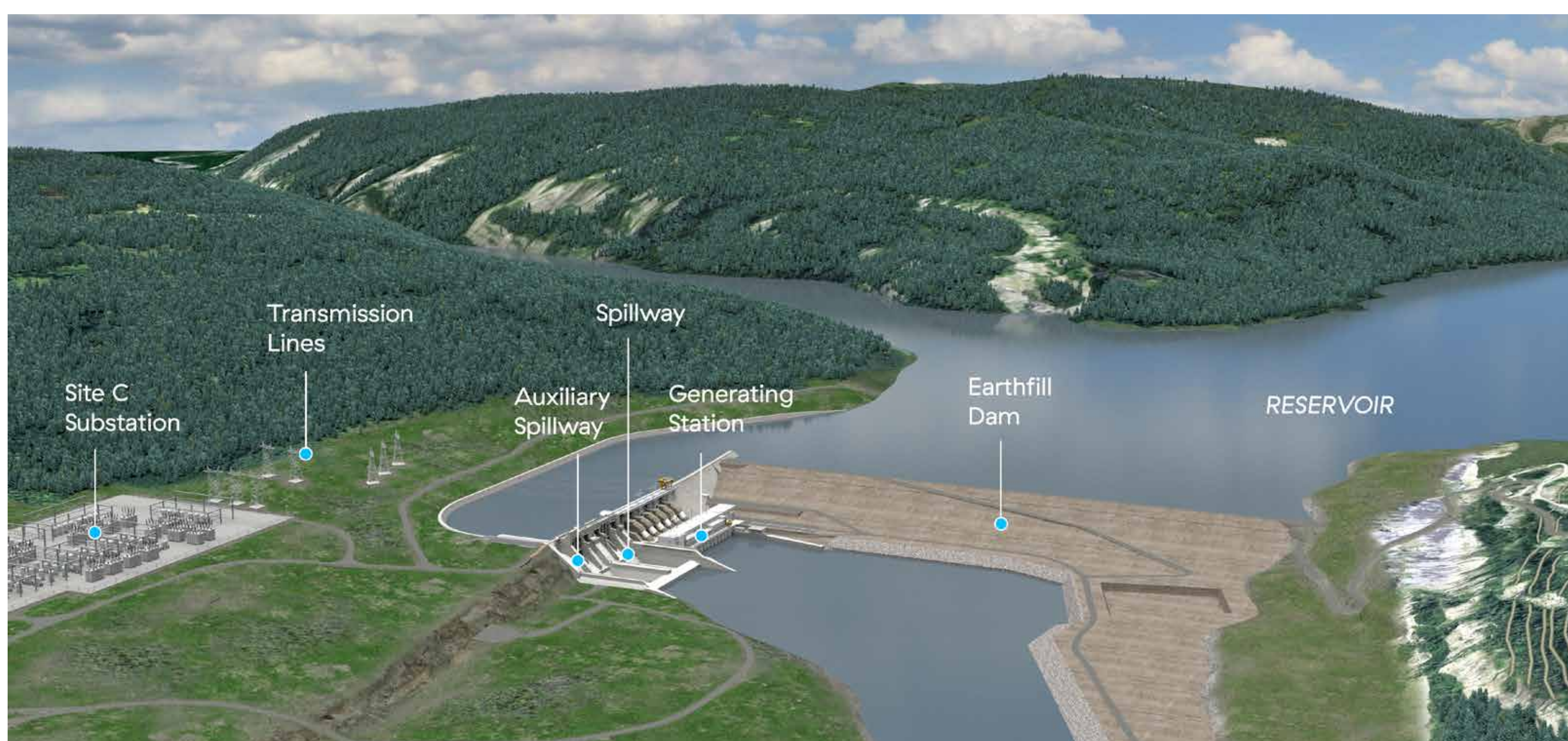
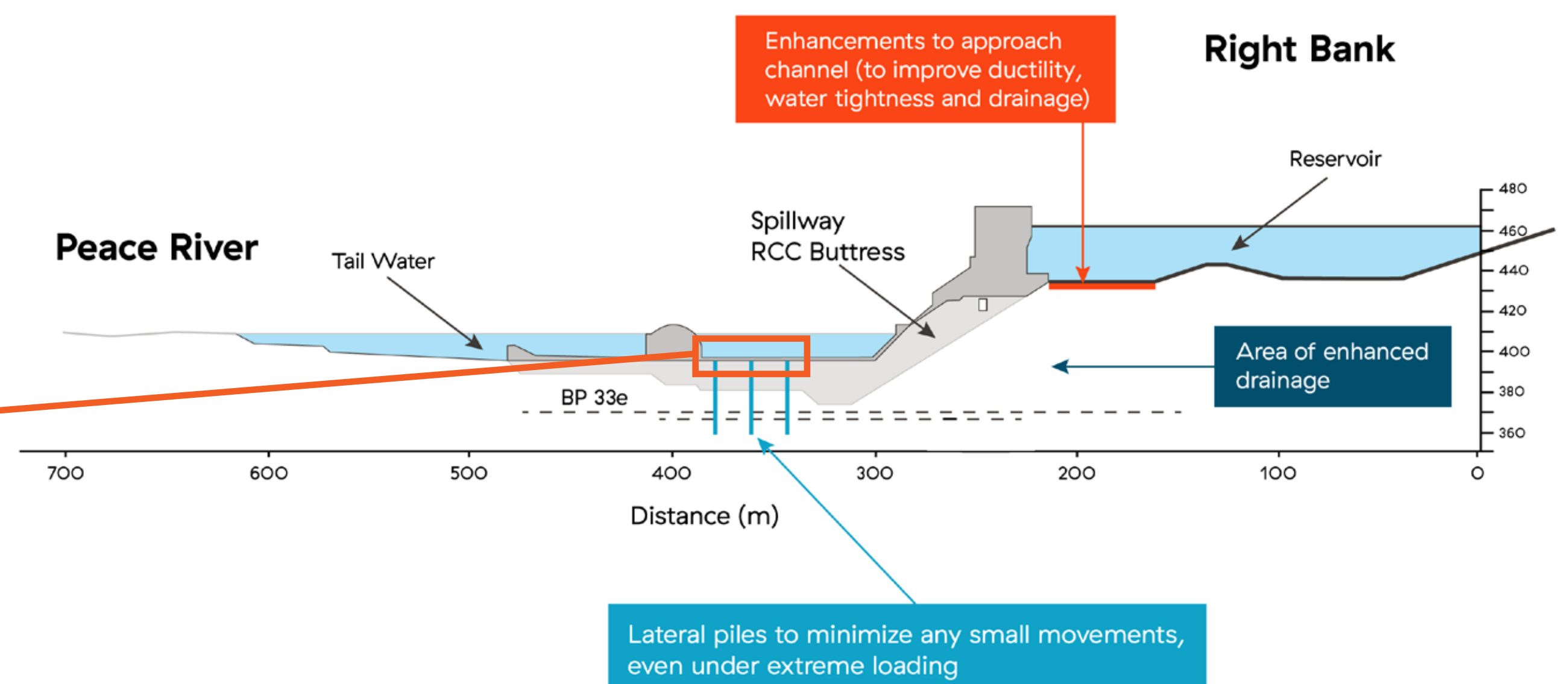
The L-shaped design

- Includes a long concrete buttress under the spillway and generating station, which improves stability and seismic performance
- Features a large-capacity gated spillway and an overflow auxiliary spillway
- Meets current seismic and safety standards

Right bank foundation enhancements

We're improving the stability of the right bank structures by:

- Enhancing the approach channel liner and improving drainage
- Installing 96 piles (large steel pipes filled with concrete) 46 metres into the stronger rock below



Scan to watch



Protecting the shoreline

Hudson's Hope Berm

Shoreline erosion, combined with changes in groundwater conditions, could cause the banks to recede in the lower slopes below the District of Hudson's Hope.

We've built a 2.6-kilometre-long shoreline protection berm along the shore of Hudson's Hope.

The berm—a large barrier made of riprap, rocks, and gravel—will reinforce the shoreline and protect it from potential erosion once the Site C reservoir is filled.

While the berm will protect the shoreline from instability caused by the reservoir, it cannot mitigate preexisting conditions or instabilities due to natural causes on the slopes immediately above the berm.

D.A. Thomas Road and the trail leading down to the berm will be reopened for foot traffic once complete. Construction of the recreation site begins in spring 2023.

The remaining sections of the berm will remain closed to the public during reservoir filling and until the reservoir becomes accessible. The sections of the berm beyond of the gates will remain permanently closed after reservoir filling.



The shoreline protection berm extends for 2.6 km and is made of riprap, rocks, and gravel.

Berm protection along Highway 29

We also built berms to reinforce sections of Highway 29. These were built at:

- the eastern Cache Creek highway segment
- the Cache Creek bridge
- the Halfway River bridge
- the eastern Lynx Creek highway segment
- the west end of the Lynx Creek bridge



Slope stability

The reservoir shoreline and slopes will be monitored for safety

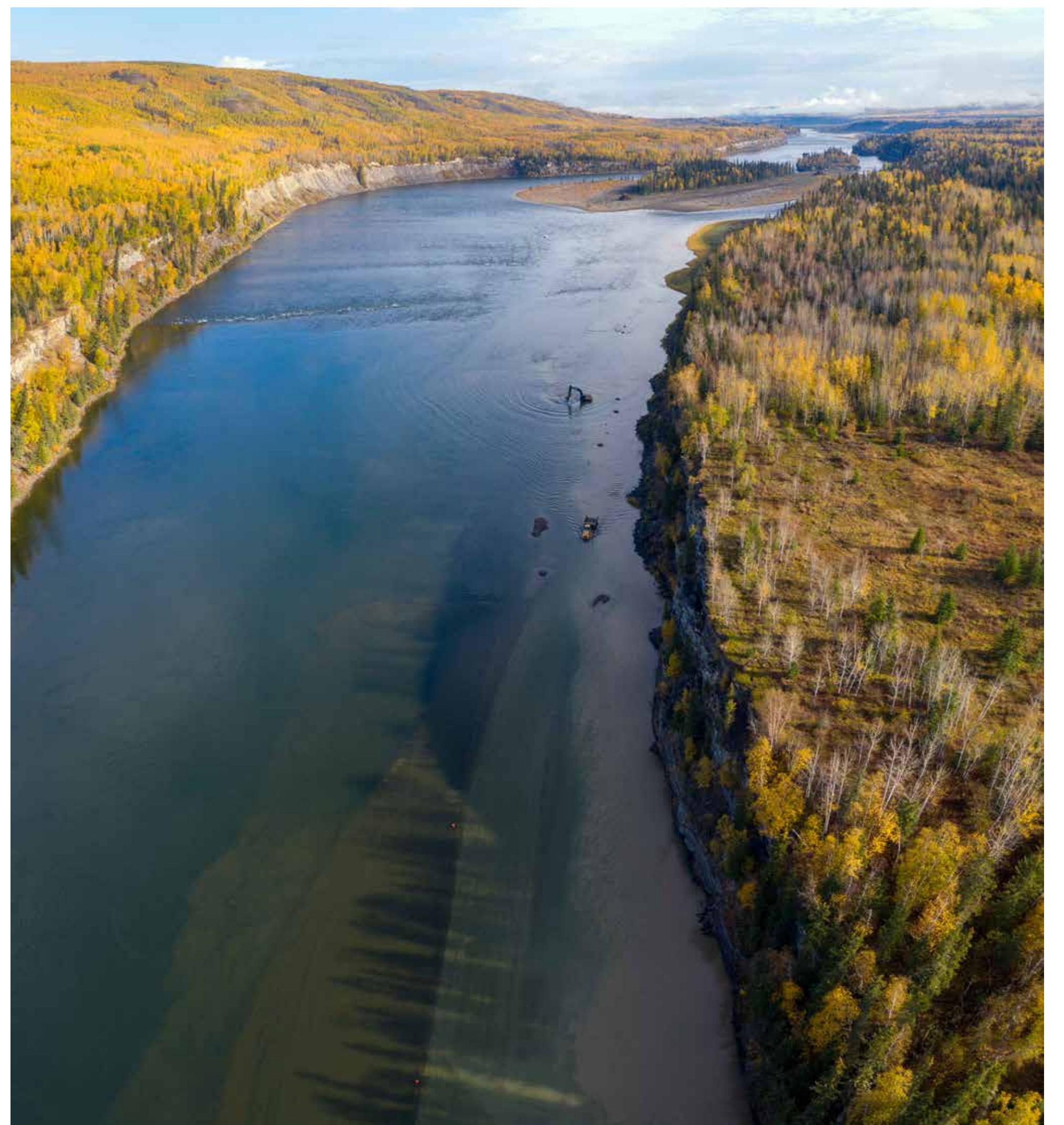
Shoreline erosion and slope instability will occur as a result of reservoir creation and will take place during reservoir filling. The impacts will vary around the shore, depending on the location.

As part of our public safety plan, we'll communicate any hazards that may impact the public.

Please be careful around the reservoir and do not use it until BC Hydro advises that it is safe to do so, which will be at least one year after filling. In the first few years, we'll monitor the reservoir and surrounding slopes for signs of erosion or instability.

Once the reservoir is filled, here's what you need to know about slope stability and safety:

- Shoreline erosion will occur as a result of reservoir creation, and may take place during filling. The impacts will be variable around the shoreline, depending on the location.
- Residents are encouraged to use caution when near the reservoir, look for signs of active erosion and slope movements, and maintain a safe distance from these areas.
- Embankments and slopes are particularly prone to sudden sloughing (soil falling off banks and slopes). Sudden sloughing may trigger waves on the reservoir that could run up onto adjacent areas of shoreline or the shoreline on the opposite side of the reservoir.
- After the reservoir is filled, shoreline erosion is expected to accelerate in some areas, and new sloughing may occur.
- We have developed a reservoir-wide shoreline monitoring and surveillance program.



Highway 29

We've worked with the Ministry of Transportation and Infrastructure to:

- Realign approximately 30 kilometres of Highway 29 between Fort St. John and Hudson's Hope
- Reconstruct six segments of highway outside of reservoir impact areas
- Build five new bridges
- Install dual-language signs on bridges with Indigenous place names in the Dane-zaa language

Highway 29 improvements:

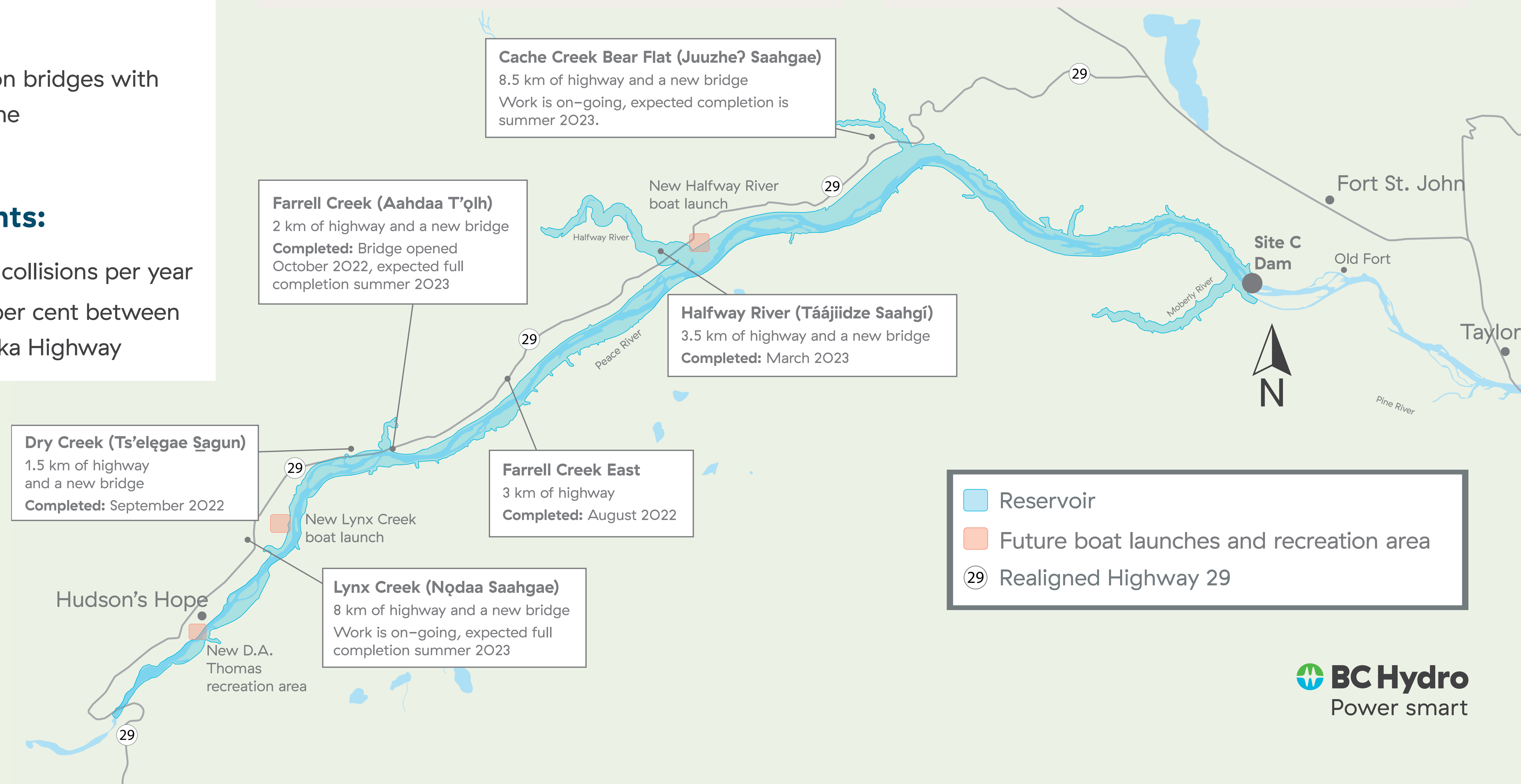
- Prevent approximately three collisions per year
- Reduce travel times by five per cent between Hudson's Hope and the Alaska Highway



Dual-language sign



Halfway River bridge



Scan to learn more:



Highway 29: Five new bridges

In partnership with the Ministry of Transportation and Infrastructure, we've built five new bridges along Highway 29 between Fort St. John and Hudson's Hope.



Halfway River bridge (Táájiidze Saahgí)

Length: About one kilometre
Opened: March 2023



Cache Creek bridge (Juuzhe? Saahgae)

Length: About 600 metres
Opened: December 2022



Lynx Creek bridge (Nqdaa Saahgae)

Length: About 150 metres
Opened: November 2022



Farrell Creek bridge (Aahdaa T'olh)

Length: About 400 metres
Opened: October 2022



Dry Creek bridge (Ts'elegae Sagun)

Length: About 160 metres
Opened: September 2022

Recreational access

Keeping boaters safe

Filling the reservoir will provide new and enhanced recreational activities for the community.

However, for safety reasons, the reservoir will not be accessible for at least one year after filling.

- The D.A. Thomas and Lynx Creek boat launches are currently inaccessible. These areas will stay closed this summer.
- The Halfway River boat launch will remain open via a gravel access road from Highway 29 for the 2023 season. It will then be permanently closed in September before reservoir filling.

After filling, the new boat launches at Lynx Creek and Halfway River, as well as a new small craft launch at D.A. Thomas Rd., will remain closed for at least one year to allow time for slope stability and erosion monitoring.

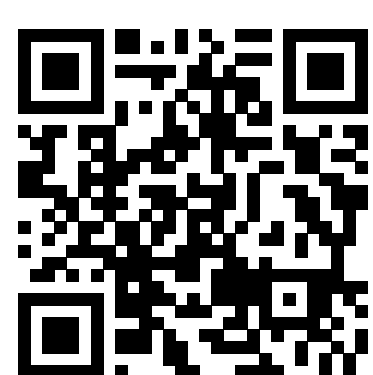
Our boat launches will be opened for public use based on the results of monitoring reservoir conditions related to slope stability and debris management following the initial filling.

D.A. Thomas Recreation Area

As part of our community investment program in Hudson's Hope, we are developing a recreation site featuring a small craft launch at the bottom of D.A. Thomas Rd. The launch will consist of a gangway and floating dock. This will allow the launch of car topper-type boats, such as kayaks and canoes, at regular reservoir operation levels. Boats on trailers will still need to be launched at the new boat launch and day use area at Lynx Creek.

There is currently no public access to the D.A. Thomas small craft launch and during reservoir filling, the existing boat launch will be inaccessible.

The new D.A. Thomas small craft launch will remain closed for at least one year after reservoir filling. The recreation site is scheduled to be open upon completion or the following recreation season. Only the launch will remain closed.



Scan to learn more



Layout of D.A. Thomas Recreation Area

Lynx Creek boat launch

The Lynx Creek boat launch will be rebuilt and upgraded at a site east of its current location.

The new boat launch will include:

- Day use area with picnic site, interpretive kiosk, and pit toilet
- Safe road access for vehicles with trailers
- Double-wide concrete boat ramp with a 10–15% grade
- Safe turnaround area for trailered, motorized boats longer than five metres
- Parking for vehicles with trailers

The old Lynx Creek boat launch will be closed for the summer 2023 season.

It will stay inaccessible for at least one year after reservoir filling to allow time for slope stability and erosion monitoring.



Halfway River boat launch

The existing Halfway River boat launch will remain open until September 2023, via a gravel access road from Highway 29. There may be access delays and intermittent closures due to nearby construction activities. It will close permanently in September prior to reservoir filling.

The existing Halfway River boat launch will be replaced by a site east of its current location.

The new boat launch will include:

- Safe road access and pull-through parking for vehicles with trailers
- Double-wide concrete boat ramp with a 10–15% grade
- Turnaround area for trailered, motorized boats longer than five metres
- Day use area with picnic site, interpretive kiosk, and pit toilet



Indigenous relations



Interactive travelling exhibit

The Site C project is located within the traditional territories of the Treaty 8 First Nations.

The Peace River has been used by Indigenous people for thousands of years and has been changed dramatically by development and hydro-electric dams.

We're working with Indigenous communities to build long-term relationships by incorporating their interests into the Site C project and finding ways to mitigate impacts and advance reconciliation together.

- Community engagement
- Environmental stewardship
- Economic opportunities
- Cultural recognition and commemoration



Dual-language sign on Highway 29

Scan to learn more:



The Culture and Heritage Resources Committee is an example of our collaborative work with Indigenous Nations impacted by Site C. Through this committee we have work to mitigate impacts to culture and heritage resources.



The McLeod Lake Indian Band is building the Sas Cho Koh ("big black bear home") culture camp.

Some of the projects include:

- Indigenous language crossing signage along Highway 29
- Interactive travelling exhibit
- Video project sharing Indigenous communities' history and perspectives on the Site C project
- Site C public viewpoint signage
- Boat tours to view areas of cultural significance
- Working to develop a cultural centre near Site C, a joint project between Nations

In everything we do, we strive to learn from our shared past and find ways to incorporate Indigenous knowledge and perspectives in our work today, and build lasting relationships with communities affected by Site C.



Site C public viewpoint sign

Protecting fish, wildlife, and the environment

Our goal is to protect the environment and reduce the environmental impacts of Site C.

There are over 1,000 conditions we must follow while building and operating the Site C dam. They focus on avoiding, reducing or compensating for the potential effects that could result from the project.

Because the new reservoir will change fish habitat movement, and health and survival, we developed a range of monitoring and mitigation programs to address these changes.

Upstream fish passage

The Site C dam will affect the ability of fish to migrate upstream past the dam site.

Our fish passage facility allows fish to continue to migrate upstream and fulfill their lifecycles in the Peace River and its tributaries. Since migrating fish are attracted to fast-flowing water, we've placed the facility where water flows out of the tailrace in the generating station. Inside the facility, we tag and sort the fish, and release them upstream of the dam site in the tributaries to which they'd naturally migrate.



We built a temporary fish passage facility, which we used during dam construction. We used what we learned from the temporary facility to build the permanent facility.

Fish habitat

We're creating and enhancing fish habitat in the Peace River to support many fish species.

Downstream habitat

Downstream of the dam site, the river levels will change, causing some areas to occasionally dry up and become unsuitable for the fish, algae and invertebrates that depend on permanently wetted habitat.

We're increasing the amount of permanently wetted areas by excavating the channels and placing habitat structures such as wood and boulders in the side channels to support fish in various stages of life.



Construction of new downstream channels for fish habitat

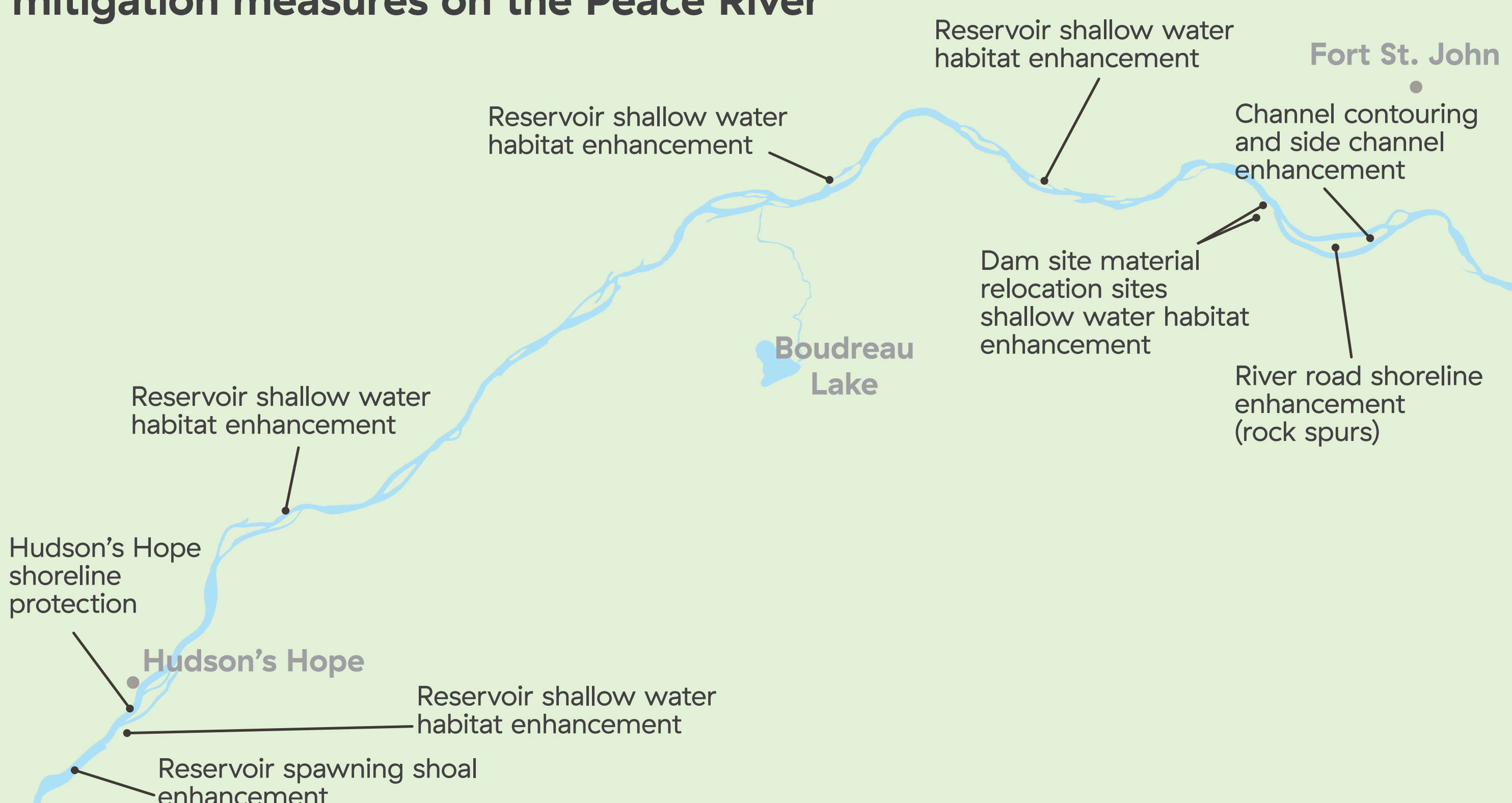
Upstream habitat

Upstream of the dam, we're enhancing reservoir shallow-water habitat to provide nutrients and shelter for fish.



Maurice Creek spawning shoals

Locations of fish and fish habitat mitigation measures on the Peace River



Scan to watch



Wildlife habitat

The objective of the wildlife and vegetation program at Site C is to avoid, reduce, or offset the potential impacts of the project on wildlife, wildlife habitat, vegetation, and rare plants.

One of the ways we've been doing this is by building new habitat for animals that will be affected by the new reservoir. We've built:

- 42 eagle nests
- 121 bat boxes
- 7 snake dens
- 88 fisher dens
- 96 nest boxes for cavity nesting birds
- 70 woody debris piles for fishers



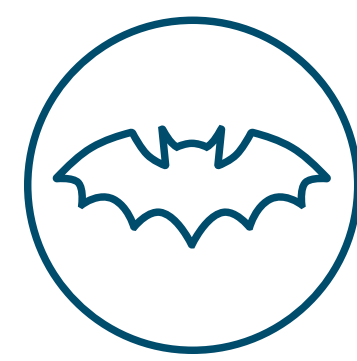
Bat boxes



Eagle nest platform



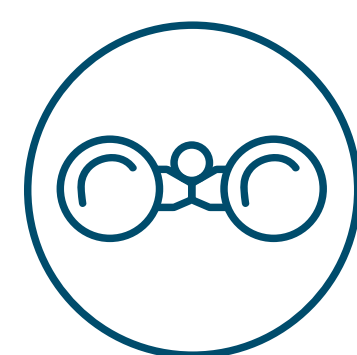
Fisher den



- 20,000 bat calls are recorded each year
- Detectors are recording up to 350 bat calls per night
- 121 bat roosting structures constructed and being monitored
- 103 bat maternity boxes being used
- 40 trees received bat roost tree-specific modifications



- 1,617 km of waterbird surveys along the Peace River
- 25,147 individual waterbirds from 42 species were observed



- 60 bald eagle nests are being monitored
- 3,953 breeding bird surveys completed since 2006
- 39,460 birds observed during breeding bird surveys
- 277 bird nest boxes installed in the Peace River Valley since 2017
- 37 bald eagle nest trees and 29 artificial nest platforms for bald eagles are being monitored
- 120 wildlife trees created, providing nesting, denning and roosting habitat supply to various cavity excavating birds (woodpeckers and sapsuckers), fisher, marten, squirrels and bats



- 1,500 rare plants from a diversity of eight different plant species have been trans-located back to the land within the Peace Region
- 292 rare plant sites located
- Rare plant surveys have occurred over nine years
- 1,825 km have been walked as part of the surveys

Wetland construction and restoration

We're partnering with Ducks Unlimited to restore and build wetland habitat, as part of the mitigation measures for Site C. Wetlands provide a wide range of species with safe areas to eat, shelter and raise their young. They also help clean pollution from the water, regulate water supply, and reduce the effects of drought. Overall, more than 700 hectares of wetlands will be built or restored.

Over the past few years, we've worked with Ducks Unlimited to build 50 hectares of wetlands, starting with the Golata Creek wetlands built in 2020. In 2022, we rebuilt aging water control infrastructure on three more wetlands: Cutbank Lake, Doig-Beatton West and Doig-Beatton East.

In total, BC Hydro and Ducks Unlimited are planning to restore aging water control infrastructure at seven wetlands in the Peace Region over the next few years.



Golata wetlands: 50 hectares of new wetland



Doig Beatton: 42 hectares of wetland restored



Cutbank Lake: 151 hectares of wetland restored

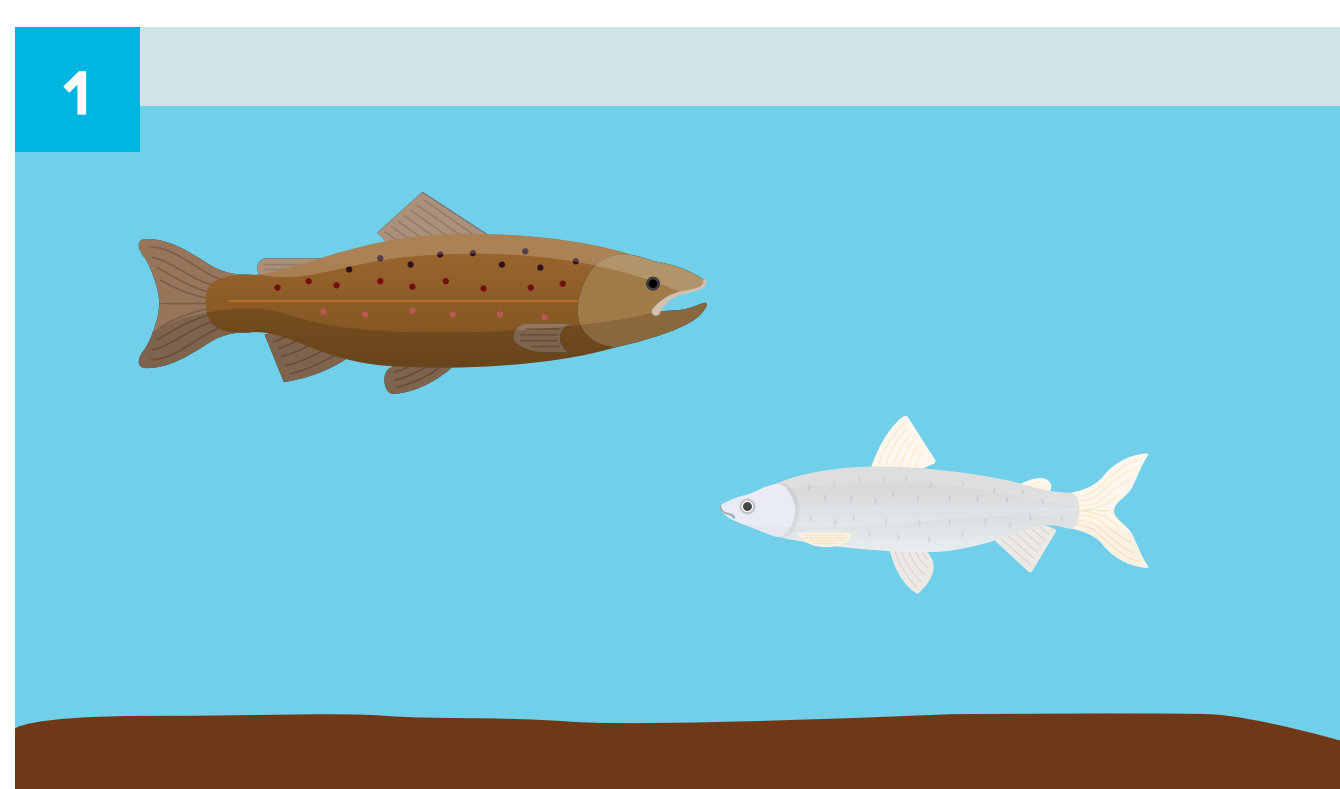
Scan to watch



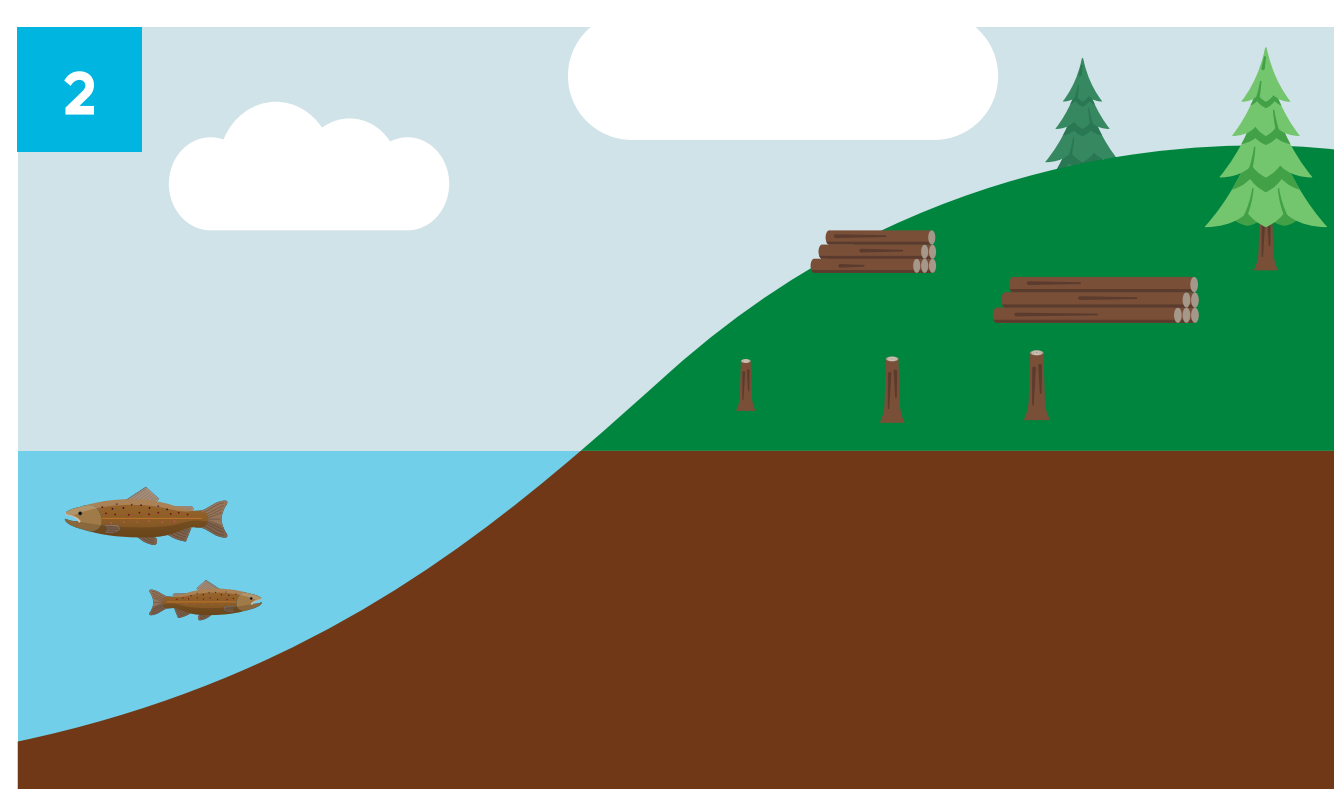
Methylmercury in the Site C reservoir

As the third dam on the Peace River, the Site C project will temporarily change methylmercury levels in fish once the reservoir begins filling. Mercury is a naturally occurring element found in low levels everywhere in the environment—in air, water, soil, plants, animals, and humans.

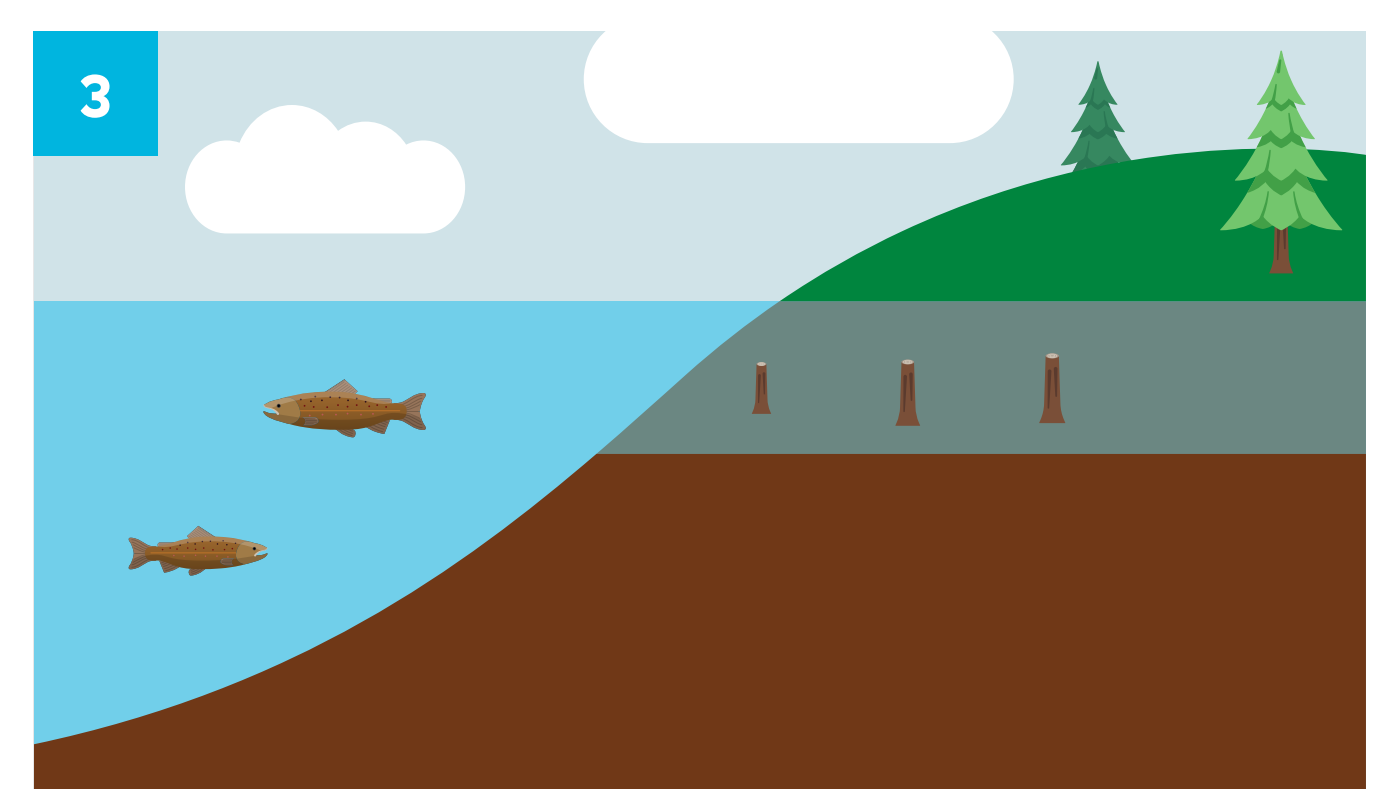
Mercury in the Site C reservoir



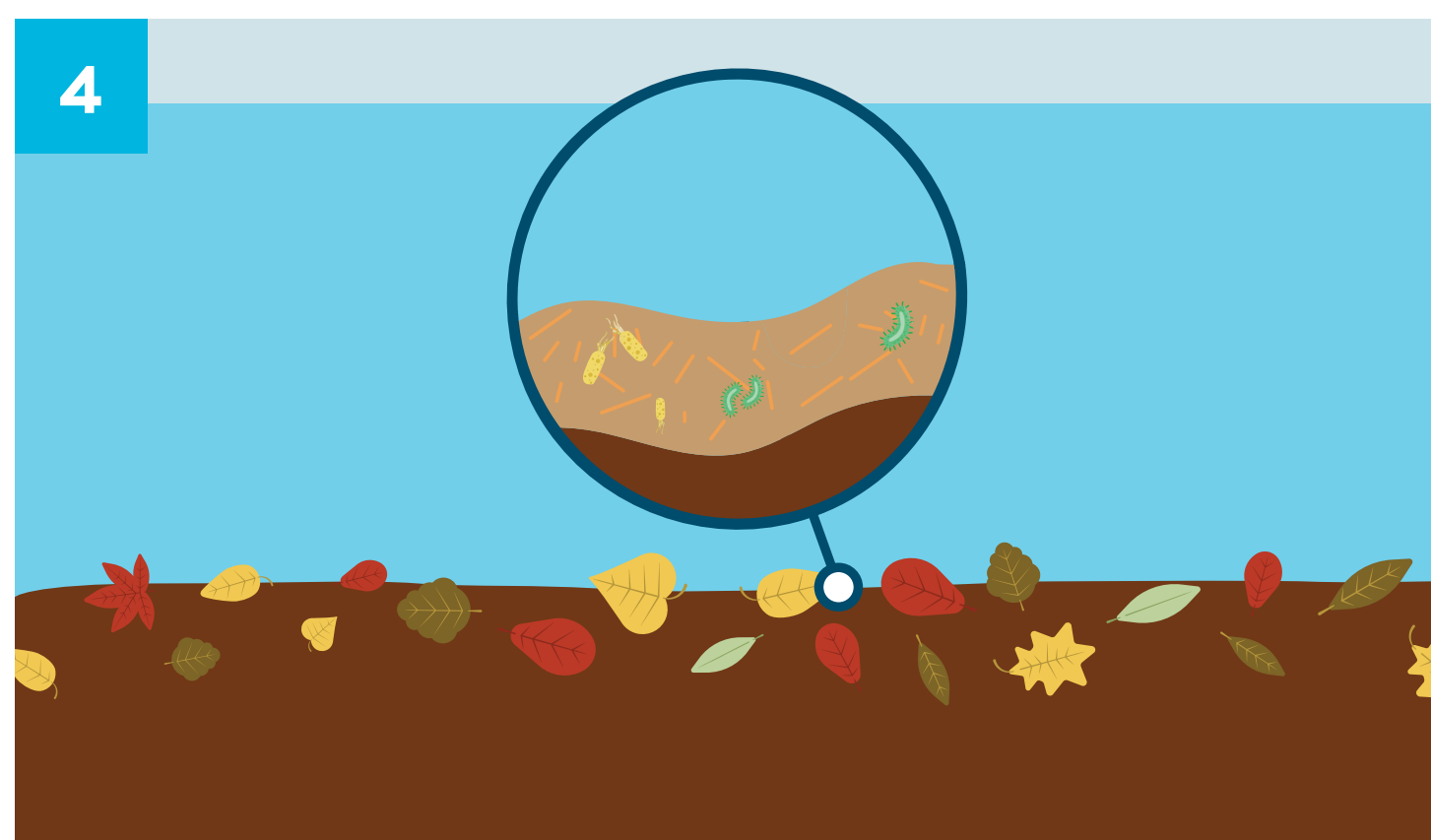
1
Currently, methylmercury levels in Peace River fish are relatively low—similar to fish in other lakes and rivers in B.C.



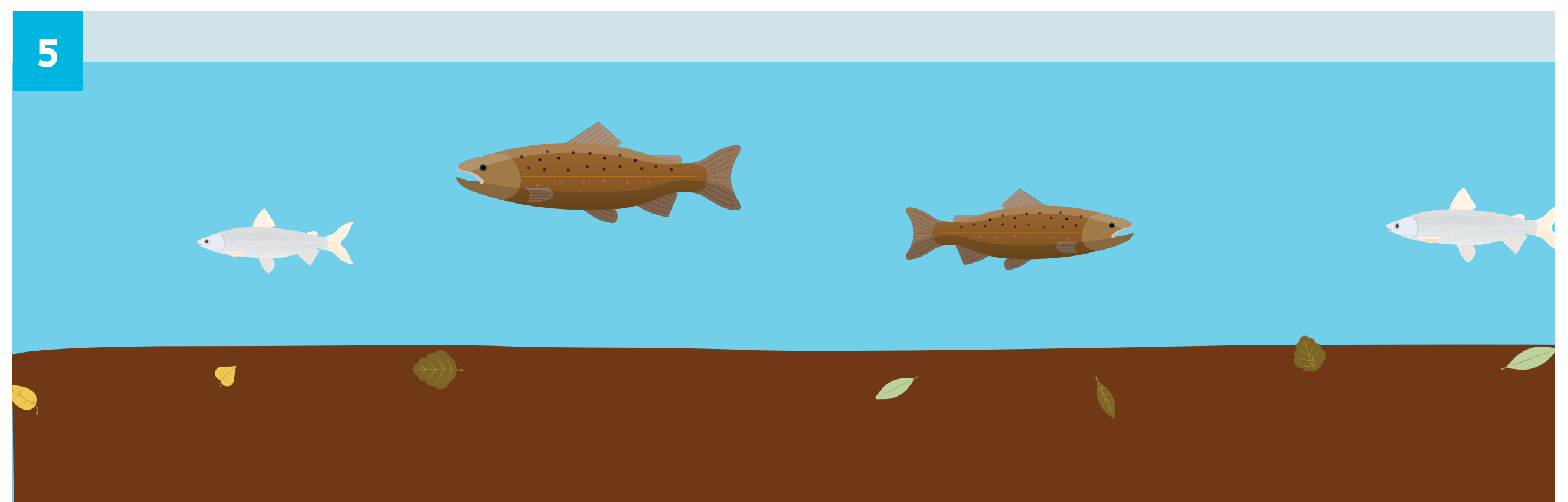
2
We're removing most of the vegetation in the reservoir area to reduce organic material that will end up underwater.



3
When the Site C reservoir is created, parts of the existing shoreline will be permanently covered with water.



4
Methylmercury levels in fish in the reservoir will initially rise as bacteria decompose organic material in newly submerged areas and convert inorganic mercury to methylmercury.



5
Eventually, organic matter becomes scarce at the bottom of the reservoir. Methylmercury creation will slow down and levels will drop throughout the food chain.

Scan to watch

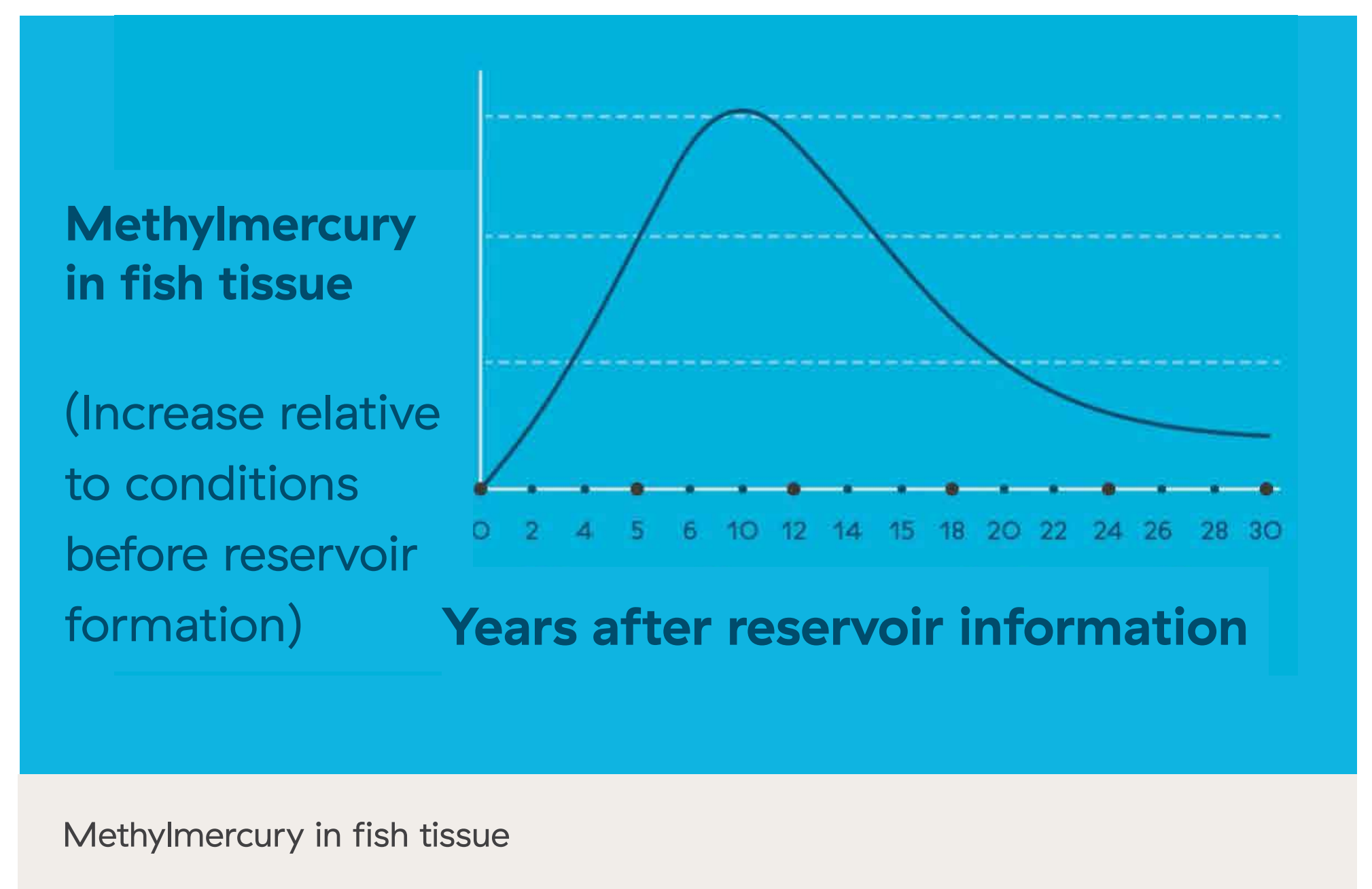


Methylmercury in fish

Methylmercury levels in fish will temporarily increase by three to four times, before slowly returning to a new baseline 20 to 30 years after the reservoir is created.

Methylmercury monitoring

We're working with Indigenous groups, communities, and health authorities to measure methylmercury levels in fish in the years after the Site C reservoir is filled.



Safe levels of fish consumption

This table shows how much fish can currently be eaten from the Peace River system. After the reservoir is filled, we'll work with health authorities to measure methylmercury levels in fish over time, and the guidelines will be updated.

General consumption information			
Safe to eat			
Every day			
Every second day			
Twice a week			
Once a week			
Number of servings per month			
Fish type	Children under 12	Pregnant or could be	Others
Williston Reservoir and Tributaries			
Lake Trout (22")	7	12	28
Bull Trout (22")	7	12	28
Lake whitefish (12")	10	18	42
Kokanee (12")	19	33	78
Rainbow Trout (12")	30	53	124
Dinosaur Reservoir and Tributaries			
Bull Trout (22")	17	30	71
Lake Trout (22")	19	33	78
Rainbow Trout (12")	41	71	168
Peace River between Hudson's Hope, B.C. and Many Islands, A.B.			
Bull Trout (22")	10	18	41
Mountain whitefish (14")	22	39	93
Rainbow Trout (12")	54	94	222

Highways

- Towns and cities
- Reserve lands
- Williston Reservoir and Tributaries Towns and cities
- Dinosaur Reservoir and Tributaries
- Peace River between Hudson's Hope, B.C. and Many Islands, A.B.

Serving size recommendations for the Peace River between Hudson's Hope, B.C. and Many Islands, A.B. will be reviewed after Site C reservoir filling.

Scan to learn more:

Methylmercury monitoring plan results



Methylmercury page



Info sheet with fish consumption guidelines



Reclamation

After the Site C dam is built, we'll begin a process called reclamation, which is how we restore the temporarily disturbed areas to its natural pre-construction state. All construction structures and equipment will be removed, and reclamation will take place over several years.

1. Planning

When construction is finished we develop reclamation plans in consultation with First Nations that look at landscape, soil conditions, hydrology, and vegetation.

2. Collecting plants and seeds

We collect seeds and plant cuttings from the Site C project area, as it's best to gather plants that are locally adapted. We then grow the seedlings at nurseries and keep them in cold storage. Seeds are cleaned, dried and tested before also being stored. We've collected and grown thousands of seedlings, such as trembling aspen, balsam poplar, white spruce, willow, and alder.



3. Growing seedlings in nurseries

Once areas are ready for reclamation, we place seedling orders with nurseries. These nurseries get the seeds and cuttings to grow the orders. The plants are grown for two years, and then in the spring they are delivered to site.



4. Preparing the ground

We prepare the ground by landscaping it to match its pre-construction state. We also prepare the soil by loosening it to increase water absorption, help roots take hold, and provide shelter for small seedlings. We spread coarse woody debris to provide shelter and add nutrients.



5. Planting seedlings

In early spring, nurseries deliver the seedlings to the site, where they're planted. Each seedling is carefully placed in a spot with the right loose prepared soils, lighting, and spacing. Some plants prefer sheltered north-facing sites, while others prefer drier south-facing sites.



6. Monitoring

We will monitor the survival and health of the seedlings. We'll share monitoring results with First Nations, and any lessons learned will be incorporated in future reclamation planning.