

Operations Safety Management Plan

John Horgan Dam and Generating Station

July 28, 2026

Revision 4

Revision History

Version	Date	Comments
Rev 0	August 21, 2023	Draft – shared for review: Ministry of Transportation and Infrastructure, Peace River Regional District, City of Fort St. John, District of Hudson's Hope Indigenous Nations
Rev 1	January 19, 2024	Final – shared with EAO for review
Rev 2	September 10, 2024	Updated in response to EAO comments.
Rev 3	October 3, 2024	Updated in response to EAO comments.
Rev 4	July 28, 2026	Updated following Operations Year 1 review

1.0 Introduction

The John Horgan Dam and Generating Station (formerly known as the Site C Clean Energy Project) is the third hydroelectric facility on the Peace River in northeastern British Columbia. The facility provides between 1,150 and 1,230 megawatts (MW) of generating capacity and approximately 5,100 gigawatt hours of energy annually to the province's integrated electricity system.

The John Horgan Dam and Generating Station officially transitioned from the construction phase to the operations phase when the first generating unit came into service on October 28, 2024. The sixth and final generating unit came into service on August 8, 2025, bringing the facility into full operation.

In October 2014, the Provincial Ministers of Environment (MOE) and Forests, Lands and Natural Resource Operations (FLNRO)¹ issued the Environmental Assessment Certificate (EAC) for the Site C Clean Energy Project (the Project). In November 2014, the Federal Minister of the Environment² issued a Federal Decision Statement (FDS) for the Project. Both the EAC and FDS set out conditions under which the Project can be constructed and operated. The Project is also governed by provincial and federal regulatory approvals, including Conditional Water Licences 132990 and 132991, Fisheries Act Approval 15-HPAC-01160, and Canadian Navigable Waters Act Approval 2008-500822 (CNWA).

The purpose of this document is to fulfil Conditions 38 and 73 of the EAC which requires BC Hydro to prepare and implement an Operations Safety Management Plan (OSMP) to manage worker and public safety throughout the operations phase of the project. These conditions specifically require the development and implementation of the following component plans:

- Public Safety Management Plan
- Boater Communication Protocol, including communication of navigational hazards during operations
- Reservoir Shoreline Monitoring and Management Plan
- Worker Safety and Health Management Plan

Table 1 attached contains the full EAC conditions associated with this plan. A summary of each component plan, including its scope, is provided below.

2.0 Component Plan Summary

Public Safety Management Plan (Appendix A)

The John Horgan Dam and Generating Station Public Safety Management Plan (PSMP) identifies hazards and associated risks to public safety and outlines the control measures implemented to eliminate or reduce the risk of public injury or loss of life associated with operation of the facility.

The PSMP also includes a public safety signage program. Overall responsibility for implementation of the PSMP rests with the Senior Field Manager, Peace East.

¹ Now separated into two Ministries: Ministry of Forests (MOF) and Ministry of Water, Land and Resource Stewardship (WLRS).

² Now Environment and Climate Change Canada

Boater Communications Protocol (Appendix B)

The Boater Communications Protocol outlines how BC Hydro communicates with stakeholders, the public, and Indigenous Nations regarding navigational hazards and boater safety issues associated with operation of Nááchę Mege (formerly Site C Reservoir). The protocol also addresses communications related to the seasonal operation of BC Hydro boat launches and recreation areas.

The protocol identifies key audiences, communication methods, and the information that will be provided to support safe reservoir use.

Boater Safety and Shoreline Monitoring Plan (Appendix C)

The Boater Safety and Shoreline Monitoring Plan (Reservoir Shoreline Monitoring and Management Plan) complements the Public Safety Management Plan and describes the measures BC Hydro will undertake to support safe boating activities on the reservoir.

These measures are integrated with BC Hydro's comprehensive shoreline monitoring program, which assesses shoreline stability and identifies conditions that may affect boater safety. Section 6.6 of this plan describes the Shoreline Monitoring Program, including monitoring methods, assessment procedures, and response actions that may be triggered by monitoring results.

Worker Safety and Health Management Plan (Appendix D)

The Worker Safety and Health Management Plan (WSHMP) describes BC Hydro's safety management system, including the processes and requirements that apply to work conducted at and around John Horgan Dam and Generating Station. The plan addresses:

- Legislative framework and BC Hydro policies;
- BC Hydro's safety governance framework;
- Site-specific hazards and risk management processes;
- Worker qualifications and training requirements;
- Compliance and effectiveness monitoring;
- Reporting requirements; and
- Processes for plan review, revision, and updates.

The WSHMP summarizes safety processes and requirements established in other BC Hydro policies, standards, and procedures. It is intended to provide an overview of the applicable safety management framework and does not replace any safety plans, procedures, or task-specific requirements established through other BC Hydro safety programs.

3.0 Updates and Reporting

The OSMP will be reviewed for potential updates every five years during Operations.

Reporting requirements for each component plan are set out in the applicable appendices and will be implemented in accordance with the conditions of the EAC and FDS.

Table 1: Environmental Assessment Certificate - Conditions 38 and 73

Condition #	Condition
38	The EAC Holder must develop a Public Safety Management Plan to describe how it will implement measures to avoid or manage the effects of the Project on public safety during construction and operations. The Public Safety Management Plan must be developed by a QEP. The Public Safety Management Plan must include at least the following: • Increase public awareness of safety hazards, including navigational hazards, access restrictions and closures during the construction and operation of the Site C reservoir. • Establish boater communication protocol including communication of navigational hazards during construction and operations. • Develop standard navigation mitigations for signals, markings and notifications, relating to overhead structures such as towers and conductors crossing navigable waters. • Manage public water-based access during construction and for the first 5 years of operation. The EAC Holder must provide this draft Public Safety Management Plan to MOTI, Peace River Regional District, City of Fort St. John, District of Hudson's Hope and Saulneau, West Moberly, Halfway River, Doig River, Blueberry River and Prophet River First Nations, and McLeod Lake Indian Band for review 90 days prior to the commencement of construction and operations. The EAC Holder must file the final Public Safety Management Plan with the MOTI, Peace River Regional District, City of Fort St. John, District of Hudson's Hope and Saulneau, West Moberly, Halfway River, Doig River, Blueberry River and Prophet River First Nations, and McLeod Lake Indian Band 30 days prior to the commencement of construction and operations. The EAC Holder must develop, implement and adhere to the final Public Safety Management Plan, and any amendments, to the satisfaction of EAO.
Condition 73	The EAC Holder must manage worker and public safety throughout the operations phase by implementing measures detailed in an Operations Safety Management Plan that complies with all applicable requirements of statutes, permits, approvals, and authorizations as outlined in Section 35 of the EIS. The Operations Safety Management Plan must be developed by a QEP. The Operations Safety Management Plan must include the following component plans: • Public Safety Management Plan (including the Reservoir Shoreline Monitoring and Management Plan); and • Worker Safety and Health Management Plan. Each component plan must include the following: • Clear Statement of Objectives; • Description of potential Project effects and safety hazards, through consideration of baseline conditions and sensitive receptors;

Condition #	Condition
	• Clear documentation of all applicable legislative requirements that must be adhered to, as well as BC Hydro policies, guidelines and other best management practices that will be followed; • Clear documentation of compliance and effectiveness monitoring to be undertaken; • Description of worker qualifications and training requirements pertaining to the Plan(s); • Description of reporting requirements; and • Process for revising and updating the Operations Safety Management Plan. The EAC Holder must provide this draft Operations Safety Management Plan, including all component plans, to regulatory agencies, Peace River Regional District, City of Fort St. John, District of Hudson's Hope and Aboriginal Groups for review a minimum of 90 days prior to the commencement of operations. The EAC Holder must file the final Operations Safety Management Plan, including component plans with EAO, regulatory agencies, Peace River Regional District, City of Fort St. John, District of Hudson's Hope and Aboriginal Groups a minimum of 30 days prior to the commencement of operations. The EAC Holder must develop, implement and adhere to the final Operations Safety Management Plan, and any amendments, to the satisfaction of EAO.

APPENDICES

- Appendix A: Public Safety Management Plan, including signage plan
- Appendix B: Boater Communications Protocol
- Appendix C: Boater Safety and Reservoir Shoreline Monitoring Plan
- Appendix D: Worker Safety and Health Management Plan



BC Hydro Generation

Public Safety Management Plan (PSMP)

John Horgan Dam and Generating Station

June 2026





BC Hydro Generation

Public Safety Management Plan (PSMP)

John Horgan Dam and Generating Station

June 2026

Prepared By:

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**David Mengerling, Senior Field Manager
Peace East**



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1.0 Purpose

The purpose of BC Hydro's Public Safety Management Plan (PSMP) is to document hazards and their associated risks in order to implement effective control measures to eliminate or reduce the risk of public injury or death at, or associated with, BC Hydro's generating facilities during normal operations. Through the development and maintenance of a PSMP for each of its facilities, BC Hydro also seeks to demonstrate due diligence by identifying and mitigating hazards and risks associated with its operations.

BC Hydro applies the Canadian Dam Association (CDA) guidelines for assessing and managing public use safety risks in relation to dams, waterways, and associated infrastructure. Under these guidelines a PSMP is required for each generation station to document how dam owners are managing public safety at their sites. Review the [Public Use Risk Management Program Overview in SafeHub](#) for further program details.

This PSMP addresses:

- Public activities in the area affected by presence and operation of the John Horgan Dam facilities, including the reservoir and downstream impacts;
- Hazards to the public that may be present;
- Safety control measures that are employed to protect the public;
- Procedures for inspection, remediation, and modification of safety controls;
- Revisions to this PSMP, as required, due to changes in operating procedures, transitions of physical plant, legal or management direction, and/ or the public interest.

Areas NOT included in this PSMP are:

- Highway 29 (Ministry of Transportation and Transit (MOTT) responsibility);
- Transmission facilities;
- The D.A. Thomas Public Use Management Area (PUMA);
- BC Hydro properties under the control of a third party (i.e., property leased to a third party) that are unaffected by the facility or its operation;
- Property owned by the Crown or others including public roads and provincial, municipal and regional district land and facilities that are unaffected by the facility or its operation.

This PSMP is applicable throughout the range of normal operating conditions of the project. Situations outside of the range of normal operations (e.g., spilling, emergency drawdowns) are the subject of separate emergency protocols, such as *System Operating Orders* and *Local Operating Orders*, which supersede this PSMP.

The term "public" does NOT refer to BC Hydro workers or contractors working for BC Hydro. Safety practices for these workers are managed in accordance with the requirements of applicable *WorkSafe BC Occupational Health and Safety Regulations* and BC Hydro's *Occupational Safety and Health Standards*, both of which are not included in this document as this PSMP focuses solely on the public's safety.



2.0 Responsibilities

BC Hydro has an obligation to:

- Understand public use within areas affected by the presence and operation of the John Horgan Dam facilities;
- Identify the risks or dangers involved with public use of areas affected by BC Hydro's assets and their operations;
- Ensure that steps are taken as required by the CDA Guidelines in order to eliminate hazards or reduce their risk to the public.

BC Hydro is responsible for ensuring that:

- A PSMP is in place and aligns with the requirements of the Canadian Dam Association *Guidelines for Public Safety Around Dams, 2011*;
- Inspections and remedial measures are performed as outlined in the Local Operating Order (LOO) STC-08 – Public Safety. Field Operations staff assigned to inspections have received training by a Public Safety Specialist from Public Use Risk Management;
- Records are kept of inspections and remedial measures;
- Public safety controls are implemented or enhanced if changes to the physical plant and operating procedures occur due to the potential of new operations and/or Capital works creating new public safety hazards;
- Public Safety incidents are recorded, reported to Fire Risk Management/Safety and assessed by a Public Safety Specialist to determine the effectiveness of the safety controls. If it is determined that the controls are not effective, additional measures are to be implemented to further reduce risk;
- Annual assessments are conducted by Field Operations staff to confirm site controls are in place as documented in the PSMP. Changes to site public safety risks are to be reported to Fire Risk Management/Safety (email public.safety@bchydro.com) for assessment. This team will also support revisions to the PSMP.



7.0 Public Uses, Safety Hazards, and Safety Control Measures

The John Horgan Dam and Generating Station facility (formerly known as the Site C Project) is the third hydroelectric facility on the Peace River, with W.A.C. Bennett Dam/G.M. Shrum Generating Station, and Peace Canyon Dam located upstream. John Horgan Dam, which is located outside the City of Fort St. John and within the Peace River Regional District Areas C & E, was completed in 2025 and consists of a reservoir embankment dam, powerhouse, spillway, and various ancillary facilities including a fish bypass.

The John Horgan Dam facilities have been divided into components which have common public uses, safety hazards, and safety control measures. The following 5 subsections describe these attributes for each component.

1.2 Nááchę Mege

General. The 83km long reservoir now formally known as Nááchę Mege (Dreamer Lake) is defined as the body of water downstream of the Peace Canyon tailrace and upstream of the John Horgan Dam headpond (which is delineated by the row of 10 warning buoys 2km upstream of the earthfill dam). The reservoir covers 5,550 hectares of land, with a total surface area of about 9,330 hectares. It is 52 metres deep close to the dam, 36 metres deep at Halfway River, and 18 metres deep near Hudson's Hope.

The operating range of Nááchę Mege is very limited due to the storage available in the upstream Williston Reservoir. It has a normal Minimum Reservoir Level (Min NRL) of El. 460.0m and a normal Maximum Reservoir Level (Max NRL) of El. 461.8m. The reservoir will only be below the Min NRL in exceptional circumstances, such as an emergency drawdown of the reservoir.

Public Use. The primary public use is boating for pleasure, fishing, and access to hunting sites. There are multiple accesses to the reservoir with the primary ones being the established boat launches at Halfway River, Lynx Creek, and the D.A. Thomas PUMA (cartop only). In addition to these three primary sites there are multiple access routes to the reservoir on both Crown and private land.

Shoreline use is picnicking and overnight camping at informal sites during hunting season. There are no formal campgrounds along the reservoir.

Safety Hazards. As with all BC Hydro reservoirs, the main hazards, particularly to boaters, are floating debris and submerged objects. Fortunately for Nááchę Mege, the reservoir level will be held relatively constant such that submerged hazards will not increase due to any significant drafting of the reservoir.

Large landslide generated waves is a hazard associated with Nááchę Mege. Instability of the shoreline has the potential to generate large waves in the reservoir that could overturn small watercraft and wash up onto the shoreline impacting persons picnicking or camping near the shoreline. The landslides that have potential to create large waves are monitored by BGC Engineering and it is anticipated that there will be enough advance warning to safely evacuate the reservoir. Smaller slides are more likely to occur without warning but the impact to boaters from these slides is less.



There are some areas of standing trees in the reservoir. Three locations are of concern. One is located upstream of Alwin Holland Park. This area is very shallow and rather than removing the trees, which are good visual warning, 6 permanent buoys have been installed around the stand of trees. The second location is also shallow and is directly across the reservoir from Hudson's Hope. This area is also marked with permanent buoys, one upstream and one downstream of the hazard. The third is at the base of the Attachie Slide. This area is identified with temporary buoys as there are plans to have these trees removed. There are also several random trees standing in the reservoir. These are very visible and will remain.

There are two areas where submerged hazards exist. One is downstream of Peace Canyon Dam where the 'Fingers' and fish enhancement works pose a risk to boaters. These hazards are identified with buoys and a warning sign.

There are no overhead hazards within the reservoir, and all Highway 29 bridge piers have been marked with standard warning signs.

Safety Control Measures. To address the hazards associated with floating debris and submerged hazards, an extensive signage program has been implemented. Two large highway signs on Highway 29 outline the boating hazards on the reservoir and are similar to the Boater Advisory signs that are installed at all BC Hydro reservoirs. Information kiosks located at the D.A. Thomas PUMA, Lynx Creek, and Halfway River boat launches include a map of the entire reservoir outlining the *Warning* and *Danger Zones* as well as the shallow water and submerged hazards. Information on the kiosks provides information on the hazards and the precautions needed to be exercised while using the reservoir. In addition to the maps on the kiosks, detailed bathymetry mapping, which include the *Warning* and *Danger Zones*, is available online and can be downloaded as a PDF for use on the reservoir.

The hazards associated with reservoir shoreline instability are addressed through an extensive slope monitoring program with protocols in place to alert the Senior Field Manager (SFM) of potential hazardous slope movements. The SFM will activate the emergency response as documented in the John Horgan Dam Emergency Action Plan.

The reservoir debris management program, which aggressively removes floating debris, is also an effective safety control measure as it reduces the likelihood of boat damage.

1.3 Headpond

General. The headpond is defined as the portion of the reservoir that is upstream of the dam and downstream of the row of warning buoys, including the approach channel to the powerhouse and spillway. The headpond is classified as a *Danger Zone* because of the BC Hydro operations that occur, particularly debris collection, bagging, and disposal, and the strong currents and undertow that exist within the approach channel.

Public Use. This portion of the reservoir is not expected to be used for recreational boating. However, based on observations at other large BC Hydro facilities, boaters will enter the headpond for a close-up view of the dam. There is an emergency pull-out sign on the dam such that boaters in distress can exit the reservoir in an emergency. Boater access into the approach



channel is possible if a determined boater chose to breach the boom at high speed. This is considered very unlikely.

Shoreline public use is not anticipated due to very limited access from land and close proximity to an active work site.

Safety Hazards. Currents and undertow, which are particularly strong near the debris boom, and striking the booms themselves, are the primary hazards. Exposure to heavy construction equipment during debris removal is also a hazard. If the public were to walk onto the face of the dam, there would be hazards from tripping and falling in the riprap.

Safety Control Measures. The upstream end of the headpond is defined by a row of 10 large warning buoys in the reservoir combined with signs on both shores indicating that there is a dam ahead and to keep away. The debris boom upstream is a physical barrier preventing any watercraft from entering the approach channel. A danger sign located at the right abutment of the debris boom indicates that there is a water intake and to keep out.

Access by foot is difficult as the headpond is located well within the security perimeter of the site and is monitored by electronic surveillance.

Electronic surveillance, including forward-looking radar, will detect entry into the headpond and onsite security will respond by audible commands, and if required RCMP support.

1.4 Damsite

General. This component includes the earthfill embankment, approach channel, powerhouse, spillway, switchyard, fish passage, and all of the roads and gates.

Public Use. It is anticipated that there will be no unauthorized public access to the dam site.

Safety Hazards. The damsite is an active hydroelectric generating facility with strong currents and undertow, heavy machinery, electrical and mechanical hazards, falling from height, confined spaces, and vehicle traffic.

Safety Control Measures. The security perimeter consists of a series of fences, 5 electronic vehicle gates, 3 manual vehicle gates, the debris boom, and natural barriers such as steep riverbanks and forest. Electronic surveillance, including radar, is used to detect unauthorized entry into the security perimeter which would be responded to by onsite security and RCMP if required.

The radars are only one layer of security feature. They will create alarms for when watercraft or people enter the security perimeter around the damsite. The assessment, tracking, and monitoring will be done by the paired highly powerful PTZs that will be installed with each radar unit. For security purposes, the details of the electronic surveillance system are not documented in this PSMP.

Installation of permanent security perimeter fences, gates, and electronic surveillance is planned for 2027.



1.5 Tailrace

General. This component is defined as the portion of the Peace River immediately downstream of the powerhouse and spillway, and extending to the edge of the security perimeter, which is just downstream of the existing construction bridge.

Public Use. In the spring of 2025, there have been 4 incidents where boaters entered the tailrace. Further attempts were made to enter the tailrace over the 2025 Victoria Day weekend but a parked security vehicle on the construction bridge deterred further attempts. Fishing from a boat would be the primary reason for entering the tailrace as fish tend to be more abundant at the toe of dams due to the river blockage. There has been no public activity from the shoreline.

Safety Hazards. The hazards in the tailrace include rapid changes in flow from both the powerhouse and the spillway, and turbulence and air entrainment which reduce buoyancy.

Safety Control Measures. The primary control measures consist of:

- Reducing the hazard by controlling the rate of flow change;
- Danger signs 900m and warning signs 3km downstream of the spillway;
- Public Warning System consisting of a siren and strobe station at the dam and a single strobe station on the downstream right abutment adjacent to security Gate 3 that are activated in advance of hazardous flow changes from the spillway, and;
- Electronic surveillance (radar) at a station downstream of the dam which will detect and trigger an alarm at BC Hydro's Security Command Centre in Metro Vancouver, who have the ability to warn away any boaters entering the tailrace.

These are defined in Generation Operating Orders (GOOs) and Local Operating Orders (LOOs).

1.6 Downstream

General. This component is defined as the portion of the Peace River immediately downstream the tailrace component, extending a further 2km downstream to the town of Old Fort. Beyond this distance, flow changes are not expected to pose a hazard to the public.

Public Use. Public use of this 2km reach is extensive, primarily with boat traffic associated with fishing and hunting. People have been observed camping and picnicking along the shoreline, particularly on the south bank where the terrain is flatter.

Safety Hazards. The hazards in the downstream component are primarily related to changes in flow, both velocity and depth. Entrainment of air in the water has been dissipated downstream of the tailrace and no longer poses a buoyancy risk to boaters or swimmers.

Safety Control Measures. The control measures in place include the Public Warning System described above and GOOs and LOOs that define the rate at which flow can be changed. Signage is in place at the Peace Island Park boat launch, advising boaters of the dam upstream and that flows in the river are subject to fluctuation from powerhouse and spillway operations.

On November 24th, 2025, a Maximum Flow Test from the generating units was carried out. In under 10 minutes, the flow increased from 800 m³/sec to 2600 m³/sec, resulting in the downstream



waters being well above the “normal high-water mark”. This event is under review to ensure that adequate warning is provided to residents in Old Fort prior to significant flow changes from the powerhouse.



8.0 Public Safety Risk Assessment

The Canadian Dam Association's (CDA) *Guidelines for Public Safety Around Dams* provides a risk assessment methodology which is applied to BC Hydro's generation facilities. These guidelines outline a consistent approach to assessing the risk by assigning a rating to both the likelihood of occurrence and the consequence of exposure to the hazard. Both likelihood and consequence are scored by 1 (least) to 5 (highest).

The following table illustrates the rating of increasing likelihood on the scale from 1 to 5.

Descriptor	Definition of Likelihood	ILR
Very Frequent	More than 10 occurrences in the hazardous area in any one of the last 3 years Or 25 or more occurrences in total in the last 3 years	5
Frequent	More than 2 occurrences in the hazardous area in any one of the last 3 years	4
Occasional	Any occurrence in the hazardous area in the last 6 years	3
Possible	Any occurrence in the hazardous area in the last 10 years	2
Remote	No known occurrences in the last 10 years	1

This next table illustrates the rating of increasing consequences on the scale from 1 to 5.

Descriptor	Definition of Consequence	ICR
Fatality	Fatality	5
Critical	Permanent Partial or Total Disability	4
Major	Medical Treatment or Stranding (rescue required)	3
Minor	First Aid or Stranding (self-rescue possible)	2
Insignificant	No attention required	1

CDA Risk Assessment of the John Horgan Dam & Generating Station Components

This section places the above information regarding the Incident Likelihood Rating (ILR) and the Incident Consequence Rating (ICR) into practice with the John Horgan facilities' components. The two ratings are multiplied together to create either a low, medium, or high-risk rating, which is indicated in the table below.

Nááchę Mege

Nááchę Mege is very popular for boating and shoreline recreation. Using the CDA ILR system, there will be more than 10 such occurrences every year, resulting in a score of 5.



The **most likely consequence** to boaters being exposed to the hazards on the reservoir is boat damage by floating debris and submerged and semi-submerged timbers. Given the experience of boaters in this region of British Columbia, self-rescue would be the most likely consequence of boat damage. There are more severe potential consequences but CDA's rating is always based on what is most likely. Therefore, an ICR of 2 is assigned. This rating can drop to "Insignificant" during the next public safety review if the debris on the reservoir has been reduced and the stability of the reservoir slopes is confirmed as stable.

Headpond

The row of warning buoys and shore signage will discourage but not physically prevent boaters from entering the headpond. Based on observations at other large BC Hydro generating facilities, it is anticipated that more than 25 boaters will enter the headpond in the next 3 years, thereby resulting in an ILR of 5.

It is anticipated that boaters will enter the headpond to have close view of the dam but promptly leave the area. Entry into the approach channel by boat is not likely and not considered in this rating. An ICR of 1 is assigned to the Headpond. Upstream-looking radar detection will trigger an alarm at the Security Command Centre.

Damsite

Site security around John Horgan Dam and Generating Station has been proven to be very effective, with no trespassing events in the last two years. The existing control measures (buoys, signs, and the debris boom) are anticipated to be effective in preventing any public access into the approach channel. Access to the approach channel by foot would be done by going through the security perimeter around the site, though there have been no such trespassing events in the last two years. The combination of fences, signs, electronic and manual gates, and electronic security including radar detection and onsite security response will ensure no unauthorized land access to the site. An ILR of 1 is assigned to the damsite. Water access to the damsite is addressed in both the Headpond and Tailrace components.

There are numerous hazards if someone were to gain access onto the site. The most hazardous are associated with the approach channel where strong currents, undertow, and very cold water could lead to death. All electrical hazards have secondary security around them with the powerhouse being compliant with the North American Electric Reliability Corporation (NERC) cyber security. Hazards include vehicle encounters, tripping, and falling from heights. The most likely consequence of exposure to these hazards would be medical treatment. An ICR of 3 is assigned, which is primarily based on the hazards in the approach channel, electrical and mechanical contact, and falling from height.

Tailrace – Normal Operations

The current control measures for boater access into the tailrace are not sufficiently effective. A small percentage of boaters ignore the signs and the radar surveillance system. There have been seven incidents in 2025 where boaters entered the tailrace.

The radar detection system can communicate with boaters, but neither the local facility security nor the RCMP have a rapid response ability to physically stop boaters or people walking along the shoreline from entering the tailrace. Therefore, an ILR of 5 is assigned.



However, under normal operations, the hazards within the tailrace are limited to strong currents, which pose little difficulty to the boats that operate on the Peace River. Accordingly, an ICR of 1 is assigned for normal operating conditions.

Tailrace – Spillway Operations

The two primary controls for public safety are the ramping rates defined in the LOOs and the Public Warning System (PWS). Although an ILR of 5 was used for normal operations (generation flows only), the ILR was reduced to 2 as the PWS is deemed to be effective in ensuring that any public, either boaters or people on the shore, have evacuated the tailrace prior to a spillway release.

Spillway releases produce rapid changes in flow, turbulence, and a high degree of air entrainment which pose significant hazards to any member of the public in the tailrace, regardless of location within the component. Although drowning is a possibility, the most likely outcome of a boater being exposed to hazards is being capsized, washed downstream, stranded, and requiring medical treatment for hypothermia. An ICR of 3 is assigned.

Downstream

The 2km reach of the Peace River downstream of the tailrace is extensively used by boaters, resulting in an ILR of 5.

Given the control measures in place, there are no anticipated consequences of exposure to changes in flow, resulting in an ICR of 1.

The following table summarizes the risk assessment for the 5 John Horgan facilities' components.

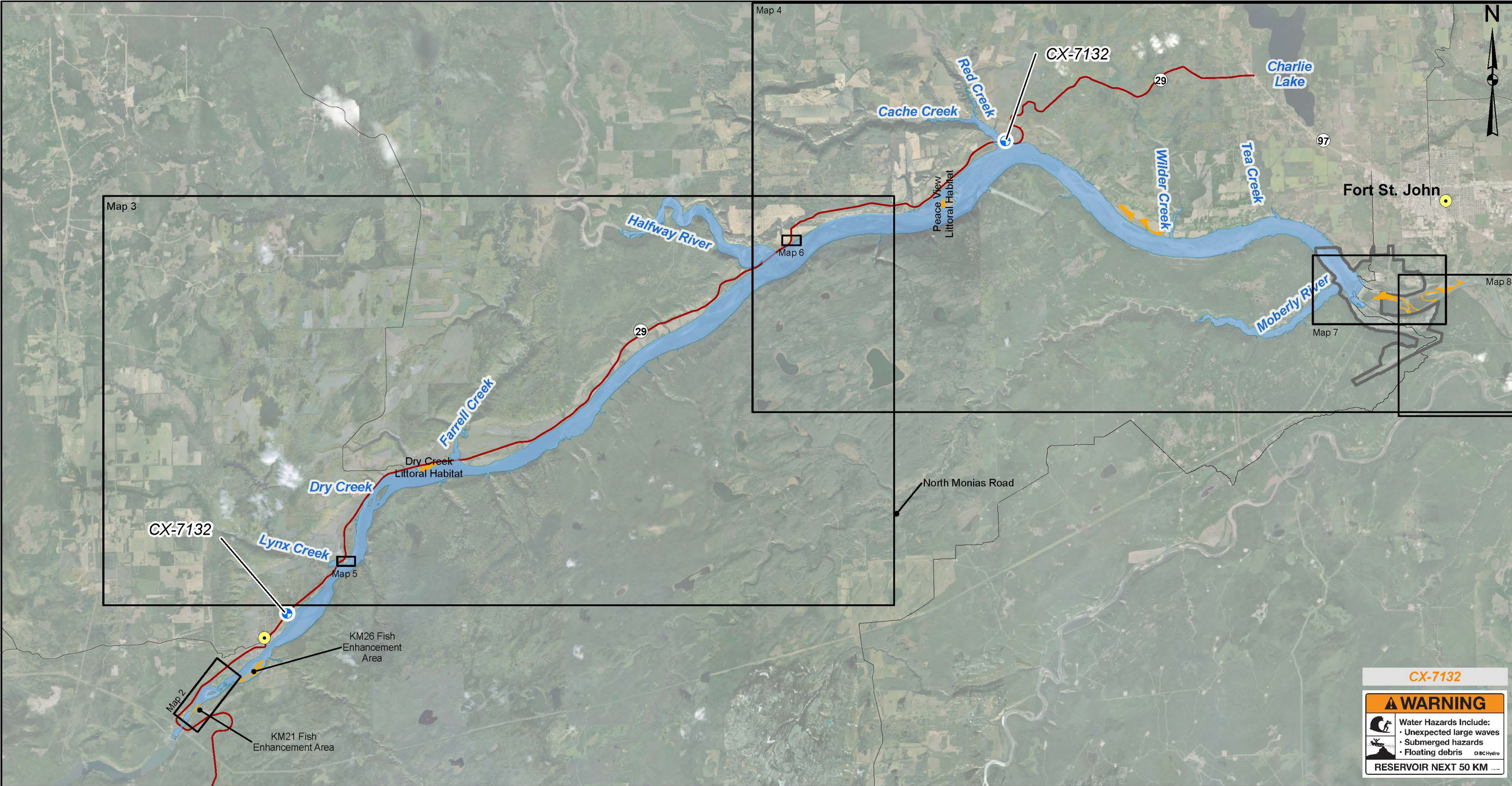
Component	ILR	ICR	Risk Rating	Risk Score
Nááchę Mege	5	2	10	MEDIUM
Headpond	5	1	5	LOW
Damsite	1	3	3	LOW
Tailrace – normal operations	5	1	5	LOW
Tailrace – spillway operation	2	3	6	MEDIUM
Downstream	5	1	5	LOW

Under BC Hydro's tolerable risk criteria, any risk rating over 8 requires further risk reduction controls. Since it is difficult to reduce consequences, BC Hydro's effort is directed to reducing the likelihood of occurrences. The Risk Rating of 10 for Nááchę Mege is expected to drop below 8 once the floating debris quantity is minimized and observations of the reservoir slopes indicate long term stability.



9.0 Maps

- Map 1:** Nááchę Mege Overview
Drawing No.: 1016-N11-02180-1
- Map 2:** Peace Canyon Dam Downstream
Drawing No.: 1016-N11-02180-2
- Map 3:** Reservoir Reach 1
Drawing No.: 1016-N11-02180-3
- Map 4:** Reservoir Reach 2
Drawing No.: 1016-N11-02180-4
- Map 5:** Lynx Creek Boat Launch
Drawing No.: 1016-N11-02180-5
- Map 6:** Halfway River Boat Launch
Drawing No.: 1016-N11-02180-6
- Map 7:** Damsite
Drawing No.: 1016-N11-02180-7
- Map 8:** Peace Island Park
Drawing No.: 1016-N11-021809-8



CX-7132

WARNING

Water Hazards Include:

- Unexpected large waves
- Submerged hazards
- Floating debris

RESERVOIR NEXT 50 KM



Map Notes:
1. Datum: NAD83
2. Projection: UTM Zone 10N
3. Basemap: ESRI

- Legend**
- Sign Location
 - Road
 - Highway
 - Reservoir Full Supply Level 461.8m
 - Fish Enhancement Areas
 - Dam Site Area

DRAFT - FOR DISCUSSION PURPOSES ONLY - CONFIDENTIAL

1:210,000 0 9.5 km



Public Safety Management Plan
Map1 - Nááchę mege Overview

Date	Jun 12, 2026	DWG NO	1016-N11-02180-1	R1
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Construction of the Site C Clean Energy Project is subject to required regulatory and permitting approvals.

Path: X:\a\c\GIS\Projects\Safety\PSMP_Operation\ArcGISPro\PSMP_Operation_1016-N11-02180-1.aprx



CS-320

⚠ DANGER

Keep Out Dam Outflow

Access beyond this point may result in drowning

BC Hydro

CS-3464

⚠ WARNING

Submerged hazards ahead

Proceed with caution

BC Hydro

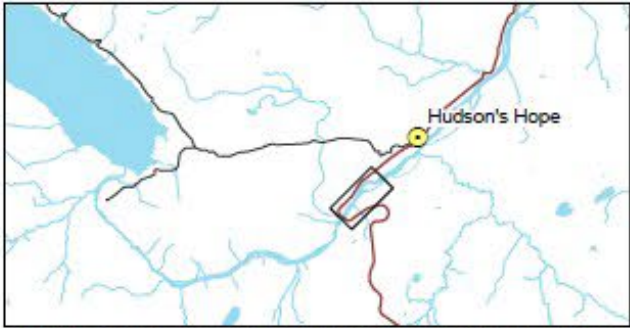
CX-7450

⚠ WARNING

WATER HAZARDS INCLUDE:

- Strong currents
- Cold water
- Unexpected large waves
- Submerged hazards

BC Hydro



Map Notes:
1. Datum: NAD83
2. Projection: UTM Zone 10N
3. Imagery: ESRI World Imagery

© BC Hydro 2026 - all rights reserved. This map is for information purposes only and accuracy is not guaranteed.

- Legend**
- Buoy
 - ⊕ Sign Location
 - Highway
 - Danger Zone
 - Warning Zone
 - Safe Zone

1:9,000 0 250 m

BC Hydro

Public Safety Management Plan

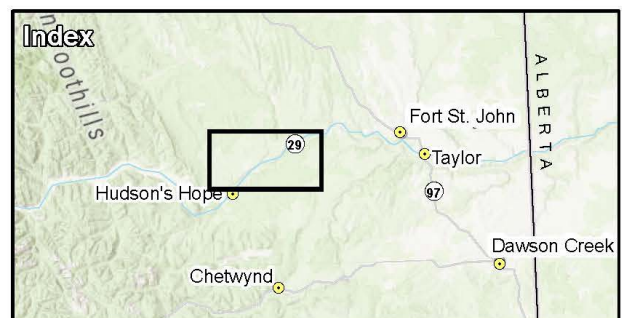
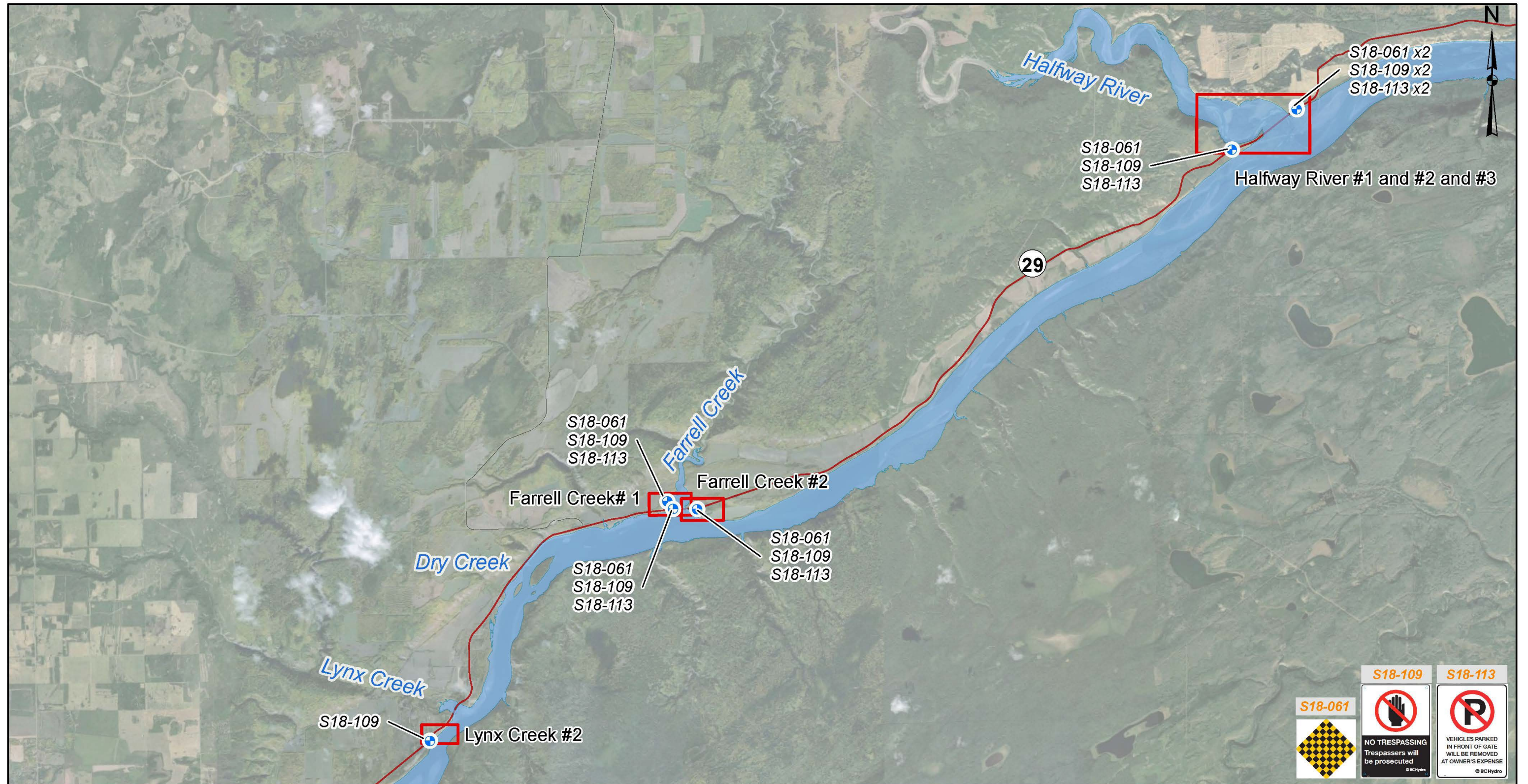
Map2 - Peace Canyon Dam Downstream

Date	Jun 4, 2026	DWG NO	1016-N11-02180-2	R 0
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DRAFT - FOR DISCUSSION PURPOSES ONLY - CONFIDENTIAL

Construction of the Site C Clean Energy Project is subject to required regulatory and permitting approvals.

Path: X:\ArcGIS\Projects\Safety\PSMP_Operation_1016-N11-02180-3\PSMP_Operation_1016-N11-02180-3.aprx



Map Notes:
1. Datum: NAD83
2. Projection: UTM Zone 10N
3. Basemap: ESRI

- Legend**
- Sign Location
 - Road
 - Highway
 - Reservoir Full Supply Level 461.8m

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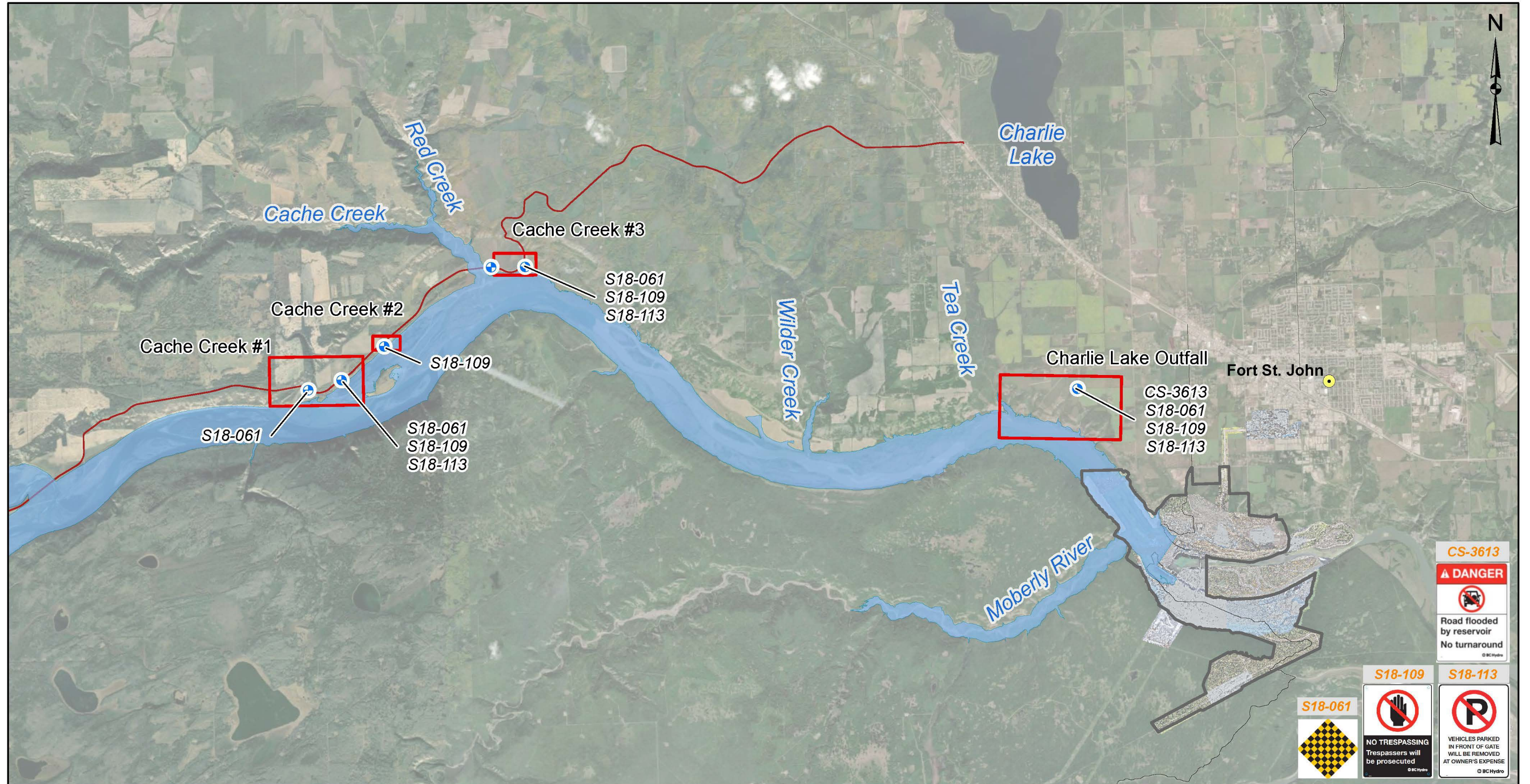
1:110,000 0 5 km

BC Hydro

Public Safety Management Plan
Map3 - Nááche mege Reach 1

Date	May 29, 2026	DWG NO	1016-N11-02180-3	R1
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Construction of the Site C Clean Energy Project is subject to required regulatory and permitting approvals.



Map Notes:
1. Datum: NAD83
2. Projection: UTM Zone 10N
3. Basemap: ESRI

- Legend**
- Sign Location
 - Road
 - Highway
 - Reservoir Full Supply Level 461.8m

1:110,000 0 5 km



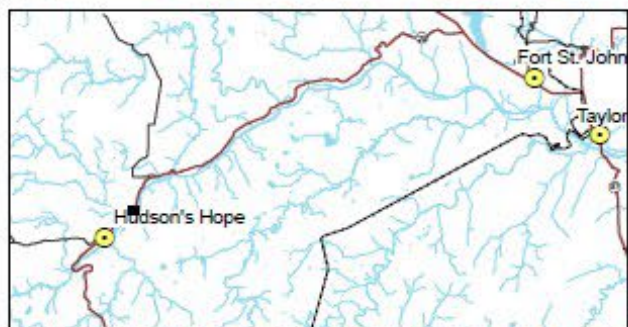
Public Safety Management Plan
Map4 - Nááche mege Reach 2

Date	May 29, 2026	DWG NO	1016-N11-02180-4	R1
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Construction of the Site C Clean Energy Project is subject to required regulatory and permitting approvals.

Path: X:\ArcGIS\Projects\Safety\PSMP_Operation\1016-N11-02180-4\PSMP_Operation_1016-N11-02180-4.aprx



Map Notes:
1. Datum: NAD83
2. Projection: UTM Zone 10N
3. Imagery: LIDAR October 2025

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Legend

- | | | |
|---------------|----------------------|-----------------------------|
| Sign Location | Vehicle Gate | Rockfill Breakwater |
| Info Kiosk | Concrete Lock Blocks | Indigenous structure |
| Parking Area | Boat Launch Fences | Barrier |
| Pit Toilet | Picnic Area | Transport Canada Light Sign |

DRAFT - FOR DISCUSSION PURPOSES ONLY - CONFIDENTIAL

1:2,500

0100 m

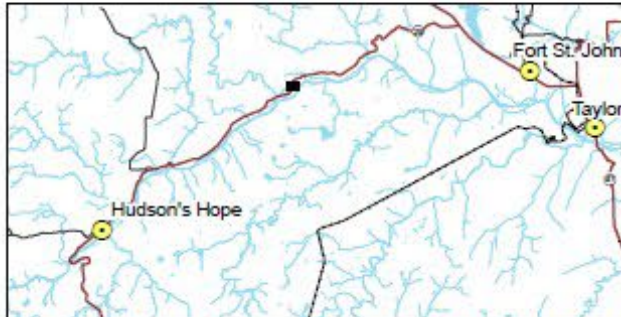
BC Hydro

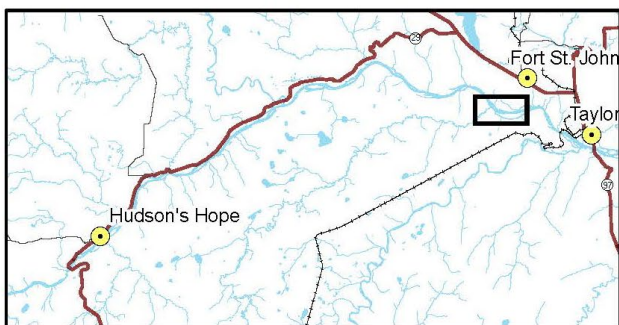
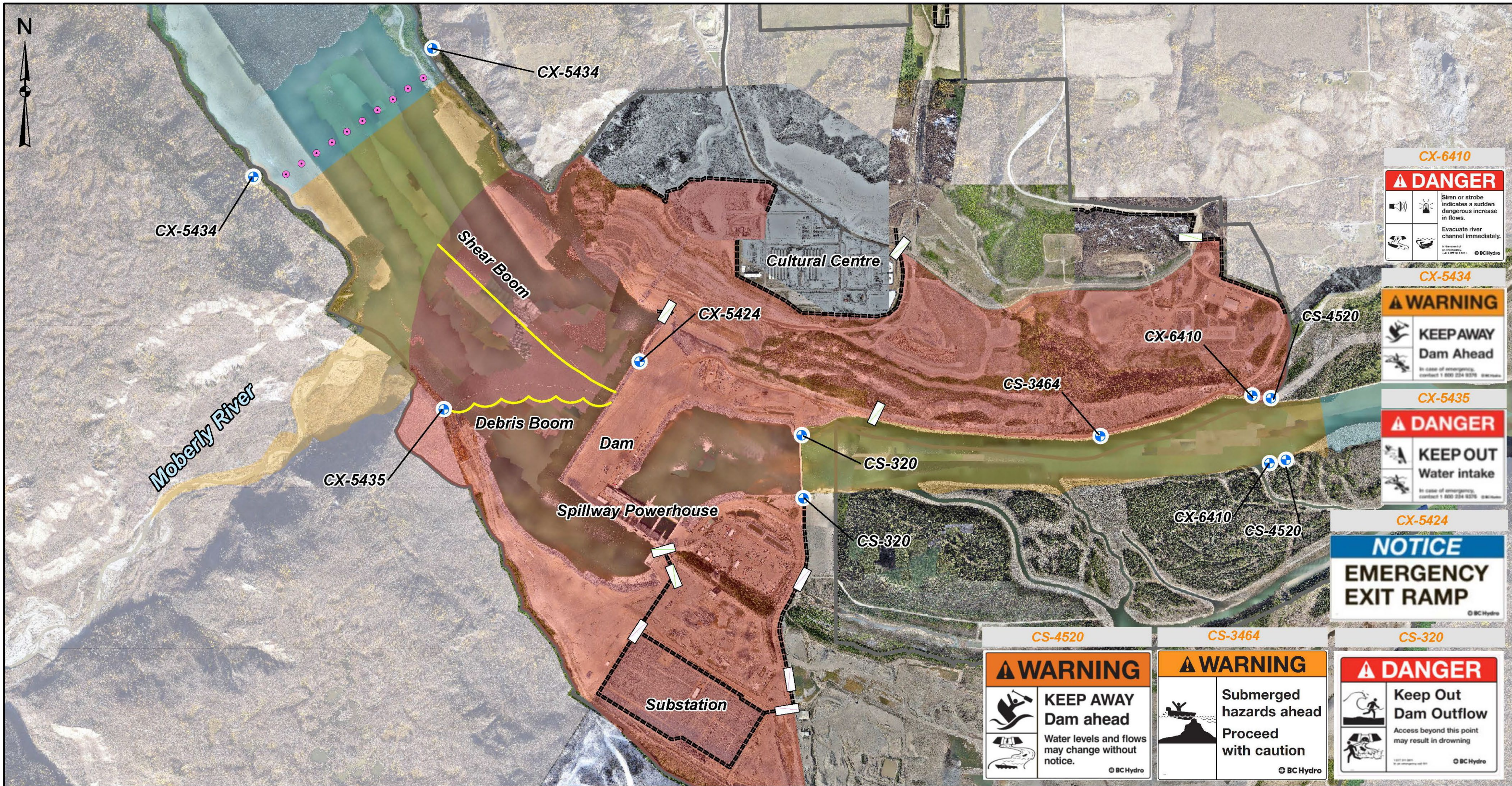
Public Safety Management Plan

Map5 - Lynx Creek Boat Launch

Date	Jun 15, 2026	DWG NO	1016-N11-02180-5	R 2
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Construction of the Site C Clean Energy Project is subject to required regulatory and permitting approvals





Map Notes:
1. Datum: NAD83
2. Projection: UTM Zone 10N
3. Imagery: UAV Mosaic Aug 2025
LIDAR Ortho October 2023

Legend

- | | | | | | |
|--|-----------------|--|----------------------------|--|---------------|
| | Sign Location | | Fencing | | Danger Zone |
| | Hazard Buoys | | Debris Boom and Shear Boom | | Warning Zone |
| | Electronic Gate | | | | Safe Area |
| | Manual Gate | | | | Dam Site Area |

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1:20,000 0 1 km



Public Safety Management Plan

Map7 - John Horgan Dam & Generating Station

Date	Jun 2, 2026	DWG NO	1016-N11-02180-7	R 3
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Construction of the Site C Clean Energy Project is subject to required regulatory and permitting approvals.



S-S20-072

Welcome visitors

For your safety, please:

- Keep your vehicle and gear steady
- Do not leave vehicles unattended
- Use the handbrake for parking
- Unattended vehicles may be towed
- Report incidents to the park warden

Need help? Contact:

- BC Hydro: 1-800-361-5800
- BC Parks: 1-800-665-5800
- BC Emergency: 911

© BC Hydro

CS-2853

NOTICE

Personal Flotation Devices (PFDs) or life jackets, approved by Transport Canada, are required by law for each person on board any boat, inflatable boat or canoe.

© BC Hydro

CS-4583

CAUTION

DAM AHEAD

Water levels and flows may change without notice.

© BC Hydro

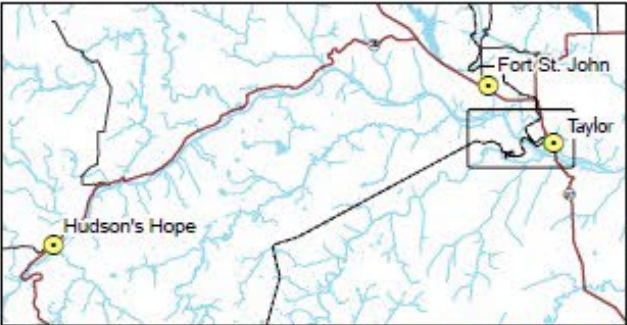
CS-4463

NOTICE

DAM UPSTREAM

Peace River blocked 13 km upstream.

© BC Hydro



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1:38,000 0 1,600 m

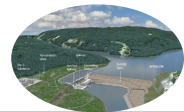
BC Hydro

Public Safety Management Plan

Map8 - Peace Island Park

Date	May 27, 2026	DWG NO	1016-N11-02180-8	R 1
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Construction of the Site C Clean Energy Project is subject to federal, provincial and territorial approvals.



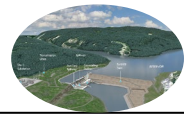
6.0 Safety Control Inventory List

Inspector: _____
(print name)

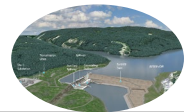
Inspection Date: _____
(yyyy/mm/dd)

ID Code	Location	Pass	Fail
Map 1			
s-CX-7132	Highway 29, entering Hudson's Hope		
s-CX-7132	Highway 29, leaving Cache Creek		
Map 2			
s-CS-320	Downstream Peace Canyon Dam, north abutment		
s-CS-320	Downstream Peace Canyon Dam, south abutment		
s-CX-3464	Prior to the buoys marking the 'Fingers'		
s-CX-7450	Downstream Peace Canyon Dam, prior to shallow water hazards		
Map 3			
s-S18-109	Lynx Creek #2		
s-S18-061	Farrell Creek #1		
s-S18-109	Farrell Creek #1		
s-S18-113	Farrell Creek #1		
s-S18-061	Farrell Creek #1		
s-S18-109	Farrell Creek #1		
s-S18-113	Farrell Creek #1		
s-S18-061	Farrell Creek #2		
s-S18-109	Farrell Creek #2		
s-S18-113	Farrell Creek #2		
s-S18-061	Halfway River #1		
s-S18-109	Halfway River #1		
s-S18-113	Halfway River #1		
s-S18-061	Halfway River #2		
s-S18-109	Halfway River #2		
s-S18-113	Halfway River #2		
s-S18-061	Halfway River #3		
s-S18-109	Halfway River #3		
s-S18-113	Halfway River #3		
Map 4			
s-S18-061	Cache Creek #1		
s-S18-061	Cache Creek #1		
s-S18-109	Cache Creek #1		
s-S18-113	Cache Creek #1		
s-S18-109	Cache Creek #2		

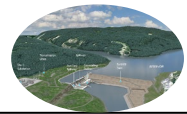
John Horgan Dam & G.S. – Public Safety Management Plan



ID Code	Location	Pass	Fail
s-S18-061	Cache Creek #3		
s-S18-109	Cache Creek #3		
s-S18-113	Cache Creek #3		
s-CS-3613	Charlie Lake Outfall		
s-S18-061	Charlie Lake Outfall		
s-S18-109	Charlie Lake Outfall		
s-S18-113	Charlie Lake Outfall		
Map 5			
s-CS-4123	Private property, across from access road to the Lynx Creek boat launch		
s-T16-009	Lynx Creek boat launch exit from parking lot		
s-S18-061	Lynx Creek boat launch, north gate		
s-S18-061	Lynx Creek boat launch, south gate		
s-S18-061	Vehicle gate past the boat launch		
s-S18-109	Vehicle gate past the boat launch		
s-S18-113	Vehicle gate past the boat launch		
s-S19-013	Past boat launch entrance gate		
s-CX-5436	West of the kiosk		
s-CX-5882	Southeast corner of parking lot		
s-S19-003	South side of the boat ramp		
s-S19-004	South side of the boat ramp		
s-CX-7429	Near the boat ramp		
s-CS-156	Pit toilet		
s-S19-003	North side of the boat ramp		
s-S19-004	North side of the boat ramp		
s-S19-013	North side of parking lot		
Map 6			
s-T16-009	Top of road leading to Halfway River boat launch		
s-S19-013	Road to boat launch		
s-S19-013	Road to boat launch		
s-S19-013	Road to boat launch		
s-S19-013	Road to boat launch		
s-S18-061	Boat launch vehicle gate		
s-S18-109	Boat launch vehicle gate		
s-S18-113	Boat launch vehicle gate		
s-S19-003	West side of parking lot		
s-CX-5377	West side of parking lot		
s-S19-004	West side of parking lot		
s-CX-7429	West side of boat launch		
s-S19-003	East side of boat launch		
s-S19-004	East side of boat launch		



ID Code	Location	Pass	Fail
s-CX-5882	East side of boat launch		
s-CS-156	Pit toilet		
Map 7			
s-CX-5434	East embankment, adjacent to buoys		
s-CX-5434	West embankment, adjacent to buoys		
s-CX-5435	West embankment, adjacent to boom		
s-CX-5424	Debris handling area		
s-CS-320	North side of tailrace		
s-CS-320	South side of tailrace		
s-CS-3464	Downstream on Peace River		
s-CX-6410	Downstream on Peace River		
s-CX-6410	Downstream on Peace River		
s-CS-4520	Downstream on Peace River		
s-CS-4520	Downstream on Peace River		
Map 8			
s-CS-4583	Downstream on Peace River, at Old Fort		
s-CS-4463	13km downstream on Peace River		
s-S20-072	Peace Island Park		
s-CS-2853	Peace Island Park		



10.0 Risk Assessment Forms

John Horgan Dam & G.S. – Public Safety Management Plan

Date	Name	Signature
12 May '26	Dave Cattanach	
12 May '26	Carson Newby	
12 May '26	David McEachren	
12 May '26	Dave Hunter	

Nááche mege

This component includes the reservoir upstream of the headpond and downstream of Peace Canyon Dam tailrace.

Location Name

Nááche mege & John Horgan Dam and Generating Station

[illegible]

[illegible]

John Horgan Dam & G.S. – Public Safety Management Plan

Date	Name	Signature
12 May 26	Dave Cattanaach	
12 May 26	Carson Newby	
12 May 26	David McEachren	
12 May 26	Ben Peco and Rob Foss	

Headpond

This component includes the portion of the reservoir between the dam and the row of warning buoys. Does not include the approach channel

Location Name	Nááché mege & John Horgan Dam and Generating Station
---------------	--

Activity Location within the Hazardous Area		Activity Description	Potential Hazard																								Risk Reduction Measures Present at the Time of Assessment														Risk Assessment				Risk Level at the Time of Assessment				
			Rapidly Increasing water levels	Rapidly Increasing water flows	Strong currents or undertows	Frequently dry riverbed	Presence of spillway with spillway gate	Automatic Emergency Operated Spillway Gate	Presence of spillway with stop-logs	Presence of overflow spillway or dam	Presence of discharge valve/pipe	Submerged hydraulic jump	Submerged underwater structures	Remote control flow equipment	Automatic control flow equipment	Steep or slippery banks	Falling from height >3 metres	Pinching or crushing	Thin Ice	Changing flow/depth may result in Stranding	Floating debris	Flow or level changes as a result of maintenance	Unsecured mechanical/electrical equipment	Unsecured or exposed live electrical conductors	Inadequate guardrails/handrails for public	Open holes or tripping	Other (define)	Other (define)	Signage	Public Education (Local Initiatives)	Safety Buoys	Safety Booms	Audible Danger Signalling Devices	Visual Danger Signalling Devices	Fencing	Barriacades (Vehicle or People)	Security Patrols	24/7 Video Surveillance	Operational Controls (Procedures)	Write a letter to the Adjacent Property Owner	Other (define)	Other (define)	Incident Likelihood Rating (ILR)	Incident Consequences Rating (ICR)					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	1	2	3	4	5	6	7	8	9	10	11	12	13	14			RR	RL						
From Water / Ice	Fishing from Boat		x	x			x		x	x			x	x						x							x	x	x	x	x				x	x				5	1	5	LOW	The PWS is referenced as a control even though it is for downstream. It is audible in the headpond though.					
	Boating (under power)		x	x			x		x	x			x	x					x							x	x	x	x	x				x	x				5	1	5	LOW							
	Sailing																																																
	Windsurfing																																																
	Canoeing/Kayaking/Rowing		x	x			x		x	x			x	x						x							x	x	x	x	x				x	x													
	Waterskiing			x			x		x	x			x	x						x																													
	Swimming			x			x		x	x			x	x						x							x	x	x	x	x				x	x				5	1	5	LOW						
	Jet Ski																																																
	Scuba Diving																																																
	Swimming/Diving					x														x							x	x	x	x	x				x	x				5	1	12	LOW						
	Skating																																																
	Ice fishing																	x																															
Tubing																																																	
From Shore/Structure	Fishing from Shore																										x					x		x	x					5	1	5	LOW						
	Walking																										x					x		x	x				5	1	5	LOW							
	Hunting																										x					x		x	x				5	1	5	LOW							
	Camping																																																
	Picnicking																																																
	ATV / Dirt Biking																																																
	Hiking																																																
	Skiing																																																
	Snowshoeing																																																
	Driving																																																
	Biking																																																
	Scuba Diving																																																
	Swimming / Diving																																																
	Accessing electrical equipment																																																
Accessing mechanical equipment																																																	

[illegible]

John Horgan Dam & G.S. – Public Safety Management Plan

Date	Name	Signature
12 May 26	Dave Cattanach	
12 May 26	Carson Newby	
12 May 26	David McEachren	
12 May 26	Ben Peco and Rob Foss	

John Horgan Dam and Generating Station

The component identified as dam site includes all the physical works associated with the project and located within the security perimeter. These include the earthfill embankment, approach channel, powerhouse, spillway, switchyard, fish passage and all the roads and gates

Location Name

Nááche mege & John Horgan Dam and Generating Station

[illegible]

[illegible]

John Horgan Dam & G.S. – Public Safety Management Plan

Date	Name	Signature
12 May '26	Dave Cattanaoh	
12 May '26	Carson Newby	
12 May '26	David McEachren	
12 May '26	Ben Peco and Rob Foss	

Tailrace - Normal Powerhouse Operation

This component includes the shoreline and waterway from the dam and powerhouse to the downstream security perimeter

Location Name	Nááche mege & John Horgan Dam and Generating Station
---------------	--

Activity Location within the Hazardous Area		Activity Description	Potential Hazard																										Risk Reduction Measures Present at the Time of Assessment														Risk Assessment				Risk Level at the Time of Assessment		Comments							
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	1	2	3	4	5	6	7	8	9	10	11	12	13	14	ILR	ICR	RR	RL										
From Water/Ice	Fishing from Boat	x	x	x		x	x		x	x			x	x					x		x								x	x										5	1	5	LOW	The public trespass into the tailrace for recreational activities, like fishing and viewing the dam. They ignore the controls that are in place. However, under normal operation of the powerhouse, the hazards to both boaters and anyone on the shore is minimal. The flows from the powerhosue are manageable by the type of boats that operate on the Peace River.												
	Boating (under power)																																																							
	Sailing																																																							
	Windsurfing																																																							
	Canoeing / Kayaking / Rowing	x	x	x		x	x		x	x			x	x					x		x																																			
	Waterskiing																																																							
	Swimming																																																							
	Jet Ski	x	x	x		x	x		x	x			x	x					x		x																																			
	Scuba Diving																																																							
	Swimming / Diving																																																							
	Skating																																																							
	Ice fishing																																																							
Snowmobiling																																																								
From Shore/Structure	Fishing from Shore	x	x	x		x	x		x	x			x	x					x		x								x	x																				4	1	4	LOW	As above.		
	Walking	x																																																		4	1	4	LOW	As above.
	Climbing																																																							
	Camping																																																							
	Picnicking																																																							
	ATV / Dirt Biking																																																							
	Hiking																																																							
	Skiing																																																							
	Snowshoeing																																																							
	Driving																																																							
	Biking / Motorbiking																																									</														

Tailrace - Normal Powerhouse Operation																			
Anticipated (Current or Expected) Risk Level																			
As a result of recent risk reduction measures implemented or additional risk reduction measures to be implemented in the immediate future																			
Additional Risk Reduction Measures have recently been implemented or will be implemented in the immediate future														Risk Characterization					
Signage	Public Education (Local Initiatives)	Safety Buoys	Safety Booms	Audible Danger Signaling Devices	Visual Danger Signaling Devices	Fencing	Barriacades (Vehicle or People)	Security Patrols	24/7 Video Surveillance	Operational Controls (Procedures)	Write a letter to the Adjacent Property Owner	Installation of a suspended line	Other (define)	Incident Likelihood Rating (ILR)	Incident Consequences Rating (ICR)	Risk Rating	Current or Expected Risk Level	Comments (Includes assumptions, conclusions or observations)	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	ILR	ICR	RR	RL		
x	x		x									x		1	3	3	LOW		
x	x		x									x		1	3	3	LOW		
x	x		x											1	3	3	LOW	Installation of more robust signage would lower the chances of the public from walking into the tailrace.	
x	x		x											1	3	3	LOW	As above.	
x	x		x											1	3	3	LOW	As above.	

John Horgan Dam & G.S. – Public Safety Management Plan

Date	Name	Signature
24 Mar 2025	Dave Cattanach	
24 Mar 2025	Jim Ellis	

Tailrace - Spillway Operation

This component includes the shoreline and waterway from the spillway and powerhouse tailrace to the downstream security perimeter

Location Name	Nááché mege & John Horgan Dam and Generating Station
---------------	--

																												Risk Level at the Time of Assessment																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
Activity Location within the Hazardous Area	Activity Description	Potential Hazard																										Risk Reduction Measures Present at the Time of Assessment														Risk Assessment				Comments																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
		Rapidly increasing water levels	Rapidly increasing water flows	Strong currents or undertows	Frequently dry riverbed	Presence of spillway with spillway gate	Automatic Emergency Operated Spillway Gate	Presence of spillway with stop-logs	Presence of overflow spillway or dam	Presence of discharge valve/pipe	Submerged hydraulic jump	Submerged underwater structures	Remote control flow equipment	Automatic control flow equipment	Steep or slippery banks	Falling from height>3 metres	Pinching or crushing	Thin ice	Changing flow/depth may result in Stranding	Floating debris	Flow or level changes as a result of maintenance	Unsecured mechanical/electrical equipment	Unsecured or exposed live electrical conductors	Inadequate guardrails/handrails for public	Open holes or tripping	Other (define)	Other (define)	Signage	Public Education (Local Initiatives)	Safety Buoys	Safety Booms	Audible Danger Signalling Devices	Visual Danger Signalling Devices	Fencing	Baricades (Vehicle or People)	Security Patrols	24/7 Video Surveillance	Operational Controls (Procedures)	Write a letter to the Adjacent Property Owner	Other (define)	Other (define)	Incident Likelihood Rating (ILR)	Incident Consequences Rating (ICR)	Risk Rating	Risk Level																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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John Horgan Dam & G.S. – Public Safety Management Plan

Date	Name	Signature
12 May '26	Dare Cattanach	

Downstream

This area includes the shoreline and waterway immediately downstream of the security perimeter to Old Fort

Location Name	Nááche mege & John Horgan Dam and Generating Station
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		Potential Hazard																											Risk Reduction Measures Present at the Time of Assessment														Risk Assessment				Risk Level at the Time of Assessment																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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John Horgan Dam Boater Communications Protocol

July 28, 2026

1.0 Introduction

The purpose of this boater communications protocol is to outline how BC Hydro will communicate with stakeholders, the public, and Indigenous Nations about navigational hazards on Náách̓e Mege (formerly the Site C reservoir) during operation of the John Horgan Dam and Generating Station (formerly the Site C Clean Energy Project). This document has been prepared in accordance with Condition 38 of the Environmental Assessment Certificate (EAC).

2.0 Communications Content

The boater communications protocol will provide information on the following:

- Reservoir Overview
- General Navigation Map
- Bathymetric Map
- Recreational Access Sites
- Emergency Contact Information
- Public Notices when:
 - Discharges from the reservoir in excess of 2700 m³/s
 - Drawdowns below 460.0 meters
 - Surcharges greater than elevation 461.8 meters
- Boater Portage Program (as applicable)

3.0 Audiences

BC Hydro will implement the boater communication protocol to reach the following audiences:

Primary

- General Public
- Indigenous Nations
 - Blueberry River First Nations
 - Dene Tha' First Nations
 - Doig River First Nations
 - Duncan's First Nations
 - Fort Nelson First Nations
 - Halfway River First Nations
 - Horse Lake First Nations
 - Kelly Lake Metis
 - McLeod Lake Indian Band
 - Metis Nation
 - Prophet River First Nation
 - Saulteau First Nations
 - West Moberly First Nations
- Local Governments
 - City of Fort St. John
 - Peace River Regional District
 - District of Chetwynd
 - District of Hudson's Hope
- Local Businesses and Stakeholder Groups
 - North Peace Rod and Gun Club
 - Peace County River Rats
 - Chetwynd Outdoors Society
 - Wolverine Nordic and Mountain Society

- Moose ATV Club
- Northland Trail Blazers Snowmobile Club
- Whiskey Jack Nordic Ski Club Society
- BC Wildlife Federation

Secondary

- Local Media
- Provincial Ministries and the EAO
- Federal Departments / Agencies Ministries
- Regional MLA's

4.0 Communication Methods

The following communication methods and channels will be used to provide information about Nááchę Mege.

• BC Hydro Website

The webpage will be the main way of sharing information about Nááchę Mege. The webpage will include key reservoir information, including:

- Reservoir Overview
 - General Navigation Map
 - Bathymetric Map
 - Recreational Access Sites
 - Emergency Contact Information
 - Public Notices when:
 - Discharges from the reservoir in excess of 2700 m³/s
 - Drawdowns below 460.0 meters
 - Surcharges greater than elevation 461.8 meters
 - Boater Portage Program (as applicable)
- Frequency: Updated as required. In some cases, updates may be limited to seasonal operations of BC Hydro boat launches and recreation sites

• Operational Updates

Operational updates provided to First Nations, local governments and the public. These may take the form of meetings or electronic notifications.

- Frequency: Annually or more frequent as required.

• Reservoir Marine User Group

A Marine Advisory Group will be established in the year BC Hydro's boat launches are opened to the public and will continue for at least five (5) years. BC Hydro will invite interested users of the reservoir to participate to discuss issues or concern related to navigation on the reservoir. BC Hydro will chair the advisory group and hold a minimum of one (1) meeting per calendar year. After five (5) years, the Advisory Group may decide to discontinue meetings.

- Frequency: Annual Meetings

• Signage

In accordance with the Public Safety Management Plan, BC Hydro will maintain updated signage at BC Hydro's recreational access points on Nááchę Mege. Permanent signage will be reviewed for accuracy on an annual basis.

- Frequency: As required. In some cases, updates may be limited to seasonal operations of BC Hydro boat launches and recreation sites
- **Emergency Planning Guide**
Use the communication channels and process outlined in the Emergency Planning Guide (EPG) to communicate significant change to reservoir operations, including flows into or from Nááché Mege. The distribution list for the Peace EPG is reviewed on an annual basis.
 - Frequency: As required

Boater Safety and Shoreline Monitoring Plan

Version:	5.0
Release Date:	1 June 2026

Document Revision History

Version	Release Date	Author	Comments
1.0	2022-07-13	Dave Cattanach	Issued for review
2.0	2022-09-12	Dave Cattanach	Review comments incorporated
3.0	2023-12-15	Dave Cattanach	Update based on new reservoir filling date
4.0	2024-08-23	Dave Cattanach	Incorporated comments from EAO
4.1	2024-10-03	Dave Cattanach	Addressed additional comments from EAO
5.0	2026-06-01	Dave Cattanach	Updated to reflect changes in hazards and control measures since reservoir filling in preparation for reservoir opening in June 2026.

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1. INTRODUCTION

The Boater Safety and Shoreline Monitoring Plan (BSSMP) describes the measures BC Hydro has undertaken to support boater safety at Nááchę Mege, formerly known as Site C reservoir. The objective of the plan is to reduce the risk to the boating public by understanding the hazards and implementing risk reduction control measures. These measures incorporate BC Hydro's comprehensive monitoring program that assesses the stability of the shoreline which has a direct impact on boater safety on the reservoir.

This plan assesses public safety risks associated with boating and other recreational activities in and around Nááchę Mege. Risk is assessed by examining public use of the reservoir, hazards the public could be exposed to, potential consequences of encountering the hazards, and mitigations BC Hydro has implemented to reduce public safety risk to acceptable levels.

The *Canadian Dam Association (CDA) Guidelines for Public Safety around Dams* (2011)^{Ref 1} provides guidance to dam owners in Canada on the assessment and mitigation of risk to the public due to the construction, presence, and operation of hydroelectric and water storage dams. BC Hydro adopted these guidelines in 2011 and applies this methodology to all its hydroelectric facilities. The CDA is the only public safety legislation applicable to dams and powerhouses in Canada.

This plan applies the CDA guidelines by ensuring the following:

- all regulatory requirements are met,
- the anticipated public use of the reservoir and shoreline is understood,
- the hazards to the public are identified,
- the public safety risk is documented using the established CDA methodology,
- appropriate control measures are recommended, such that when they are implemented, the risk to the public is reduced to acceptable levels.

These procedures, although focused on the public, also apply to work activities on the reservoir and shoreline.

Additional technical engineering risk assessments will be used to address the specific hazards associated with reservoir shoreline stability.

This plan has been developed in accordance with Canadian Navigable Waters Act (CNWA) Approval 2008-500822 (Appendix A), which outlines the requirements for ensuring boater safety at Nááchę Mege.

2. JOHN HORGAN DAM DESCRIPTION AND RESERVOIR OPERATING LEVELS

John Horgan Dam and Generating Station (formerly known as Site C Dam) is a 61.5m high (from the riverbed) earthfill dam with a till core. The crest elevation is at El. 469.4m and the overall length is just over 1km. An approach channel on the right bank, supported by a roller compacted concrete buttress, provides water to the power intakes and spillway. A dam safety boom extends across the entrance to the approach channel to minimize the volume of debris entering the approach channel.

Nááchę Mege is approximately 83km long. And has a total surface area of approximately 9,330 hectares. Nááchę Mege experiences only minor fluctuations in water levels as it relies on the existing Williston reservoir for water storage.

The operating range of Nááchę Mege is between a normal Minimum Reservoir Level (Min NRL) of El. 460.0m and a normal Maximum Reservoir Level (Max NRL) of El. 461.8m. The reservoir will only be below the Min NRL in exceptional circumstances, such as an emergency drawdown of the reservoir.

Dinosaur Reservoir, which was first filled in 1980 and is 21km long, has never been operated below the Min NRL in its 41 years of operation. Similarly, the Revelstoke reservoir which was first filled in 1983 and is 81km long has never been operated below Min NRL in its 38 years of operation. Given BC Hydro's operating practices, it is extremely unlikely that Nááchę Mege will operate below the Min NRL.

Similarly, Nááchę Mege will only exceed the Max NRL in exceptional conditions, such as a severe flood that would exceed the spillway design flood of 11,000 m³/s.

3. PUBLIC USE OF NÁÁCHĚ MEGE

The small daily fluctuations in operating levels make the reservoir ideal for recreation, particularly boating, shoreline camping, and picnicking. There are no seasonal variations in reservoir level. BC Hydro has constructed three formal boat launches which will be associated with small recreational areas that feature picnic tables, pit toilets, and garbage bins. The boat launches are located at D.A. Thomas recreational site at Hudson's Hope, Lynx Creek, and Halfway River.

4. HAZARDS FOR BOATING ON NÁÁCHĚ MEGE

This section outlines the hazards at Nááchę Mege. Details for the risk mitigation measure that address these hazards are described in Section 6.

4.1 Floating Woody Debris

Floating woody debris is a concern on most reservoirs, particularly those that have a large annual operating range. Due to its narrow operating range, Nááchę Mege is expected to have a low volume of debris. This debris will largely be a result of flood events on the Halfway River and sloughing of the reservoir slopes. Prevailing winds tend to push most of this floating woody debris toward the upstream face of the dam.

A significant volume of debris occurred during the initial filling of the reservoir in 2024. This initial debris was removed and, as of 2026, the annual amount of debris is in the order of 7000 m³, which is removed each spring freshet, or as required.

4.2 Standing Trees

Prior to reservoir filling BC Hydro carried out an extensive vegetation clearing program where all trees, except those that were too hazardous to workers to remove, were cleared from the reservoir footprint. Those trees that remain are in three areas; the base of Attachie Slide, across from Hudson's Hope and just upstream of Alwin Holland Campground.

4.3 Shallow Water and Submerged Objects

BC Hydro established a safe boater elevation of El 455.0m, which is 5m below the Min NRL. Any structures, such as bridge-piers, higher in El 455.0 m were removed.

The boater safety elevation is applicable to the entire reservoir and was used to determine if any constructed structures needed to be removed before Reservoir Filling. To meet fisheries' requirements, littoral habitat zones have been created within the reservoir. These zones are located near the shoreline at various locations within the reservoir and are designed to a height of elevation 458m. These zones are identified on the reservoir map located at the formal boat launches, which will indicate hazardous and dangerous areas within the reservoir.

A series of sloping bedding planes downstream of Peace Canyon Dam, referred to as the "Fingers", are between El 459m and 459.5m. Given the shallow submergence of these

rock features, warning buoys have been installed on the Fingers to advise boaters of this hazard.

Trees that would intercept the boater safety elevation were removed except in locations where the valley slopes are so steep or unstable such that workers would be exposed to unsafe conditions.

Bathymetric mapping of the reservoir showing shallow areas is posted on BC Hydro's website site as well as a physical map on the kiosks located at D.A. Thomas PUMA and Lynx Creek and Halfway River boat launches.

4.4 Large Waves

Waves can pose a hazard to boaters on Náách̓e Mege. These waves can be generated from both strong winds and landslides into the reservoir.

Similar to all lakes and reservoirs in British Columbia, strong winds can generate waves that can pose a hazard to the public in small watercrafts. The east-west orientation of Náách̓e Mege and its long "fetch" increase the susceptibility of the reservoir to large wind-generated waves. Studies undertaken by Klohn Crippen Berger and SNC Lavalin for BC Hydro have indicated that these wind-generated waves could be in the order of 1 to 2 m high, with wave runups against the shoreline of up to 4 m ^{Ref 4}.

The valley slopes of Náách̓e Mege have been subject to historical and ongoing erosion, and landsliding in both bedrock, and overburden. The creation of Náách̓e Mege is expected to increase the potential for erosion and landslides around the reservoir shoreline.

All landslides have the potential to create waves that may be a hazard to boaters. Typically, smaller landslides will generate smaller waves, which in most cases will not pose a hazard to boaters. However, medium and large landslides have the potential to generate waves with a height exceeding 5 m, and in rare cases greater than 10 m, which will impact boaters if they are exposed to these waves. Landslide generated waves also have the potential to cause runup onto the opposite shoreline, beyond what could be caused by wind-generated waves.

For both Dam Safety and Public Safety, BGC Engineering has conducted detailed geological and geotechnical investigations for BC Hydro to identify slopes which could present the greatest hazard ^{Ref 5}.

An extensive reservoir-wide shoreline monitoring and surveillance program has been developed to understand changes occurring around the reservoir slopes and shoreline during reservoir filling and operations, with near-real time monitoring present at selected slopes. See Section 6.3 for the proposed control measures to reduce public safety risk to boaters on the reservoir from land-slide generated waves.

4.5 Collision with Highway 29 Bridge Piers

Seven sections of Highway 29 were reconstructed at a higher elevation to facilitate impoundment of Náách̓e Mege. As part of this relocation, the following five new bridges were constructed at:

- Cache Creek,
- Halfway River,
- Lynx Creek,
- Dry Creek,
- Farrell Creek.

The 1,042m-long Halfway River Bridge with 12 piers is the longest bridge. These piers have the potential to impede safe boater navigation in low visibility conditions such as darkness and fog. To mitigate hazards, the piers have been marked with high visibility markers (e.g., W-054s) in accordance with conditions of the approvals issued by Transport Canada for the construction of the bridges.

5. HAZARDS FOR PUBLIC RECREATION ALONG THE RESERVOIR SHORELINE

Shoreline recreation such as picnicking, sunbathing, shoreline fishing, and swimming are anticipated at the formal boat launches and at the numerous informal sites along the reservoir shoreline.

The reservoir level will fluctuate within a narrow range, which makes it ideal for shoreline recreation.

As described in Section 4.4, wind and landslide-generated waves can pose potential hazards to shore-based recreational activities. Landslides also have the potential to create waves that will run-up onto the Nááchę Mege shoreline. Studies have been conducted at sites with a history of large volume landslides and potential landslide generated waves could cause significant runup onto the shoreline. such as where low bank slopes are located across from high bank slopes on the opposite bank.

The measures to be implemented to protect the public on the shore from flooding, landslides and landslide-generated waves are detailed in Section 6.

6. PROPOSED CONTROL MEASURES TO REDUCE PUBLIC SAFETY RISK

Control measures, in increasing level of complexity, will consist of the following:

- reducing or eliminating the hazards,
- dual-purpose public safety and debris booms,
- reducing or eliminating the likelihood of occurrence,
- public awareness,
- effective signage,
- Shoreline Monitoring Program (Section 6.6)

- identifying unauthorized access.

These control measures have been implemented at Náách̓e Mege and are further discussed below.

6.1 Reducing or eliminating the hazard

As described above, the main public safety hazards on the reservoir include:

- exposure to floating debris and submerged objects,
- reservoir landslides entering the reservoir quickly, which have the potential to generate large waves on the reservoir which could potentially run up onto the opposite shoreline,
- collision with man-made structures such as bridge piers.

6.2 Dual-purpose Public Safety and Debris Booms

The Debris Management Plan for Site C Reservoir Filling submitted in accordance with CNWA Approval 2008-500822-001 provides information on the debris management system for the reservoir. This plan will be made available to EAO on request. The debris control facilities operate at the damsite. These facilities consist of a shear boom that directs debris towards the left abutment of the earthfill, where it is mechanically removed, and a debris boom located at the upstream end of the approach channel that prevents debris from entering the power intakes and spillway. The debris boom also acts as a public safety boom that physically prevents watercraft entry into the approach channel.

6.3 Public Awareness

In accordance with the requirement of CNWA Approval 2008-500822, BC Hydro chairs a reservoir marine user group. The marine group holds at least one meeting per year and will continue for at least 5 years. After 5 years, the user group may make a motion to end the meetings.

BC Hydro's website is used to announce the status of the reservoir and shoreline for public boating and use as it changes over time and with the seasons.

6.4 Signage

There is an extensive sign program advising the public of the hazards on the reservoir. Details of the signs and their location are included in the Public Safety Management Plan.

Large warning signs have been installed at both the east and west ends of Highway 29 between Hudson's Hope and Cache Creek to advise the public of hazards on the reservoir. Unexpected large waves, submerged hazards and floating debris are listed on these large signs.

At the D.A. Thomas recreational site and the Lynx Creek and Halfway River boat launches large signs, housed in the kiosks provide the following:

- A map of the reservoir showing DANGER and WARNING zones downstream of Peace Canyon Dam and upstream of John Horgan Dam, shallow water and the location of warning buoys
- Safe use of the recreational site/boat launch
- Hazards on the reservoir
- Safe boater practice
- QR code that links to BC Hydro's recreational webpage and an electronic map of the reservoir.

In addition to the kiosk sign, there is an additional WARNING sign specific to the hazards related to the reservoir slopes that have a potential to produce landslide and landslide-generated waves.

Located on the reservoir are signs that advise boaters of the presence of the two dams and submerged hazards.

6.5 Warning Buoys

Warning buoys have been installed to advise boaters of submerged hazards at the following locations:

- The Fingers downstream of Peace Canyon Dam
- Fish Enhancement structures on the right bank downstream of Peace Canyon Dam
- Shallow water around an island upstream of Alwin Holland Campground
- Shallow water on the right shore across from Hudson's Hope
- Submerged tress at the base of Attachie Slide
- Shallow water and exposed rocks upstream of Peaceview Island

A series of 10 large warning buoys have been installed 2 km upstream of the John Horgan dam informing the public of the hazards at the dam and to stay away

6.6 Reservoir Slopes and Shoreline Monitoring Program

BC Hydro has established a comprehensive program, through BGC Engineering, to assess and monitor the reservoir shoreline and slopes.

The monitoring program consists of multiple, complementary methods for monitoring slope stability and shoreline erosion. Some monitoring tools will be used on a regular, planned schedule for general surveillance. The frequency of monitoring may be increased, or additional methods added, depending on results from the ongoing baseline monitoring program.

Table 1 identifies BC Hydro's monitoring methods. Other methods such as use of satellite-based InSAR, unmanned aerial vehicle (UAV) based lidar, and helicopter or UAV-based

photogrammetry may be used to support the planned monitoring methods. BC Hydro's Dam Safety Engineer will make this decision in collaboration with BGC Engineering.

Table 1. Monitoring Methods.

Monitoring Method	Description and Frequency
Visual surveillance - ground inspections	Ground inspections of key slopes are carried out twice a year. Results from ground inspections are reported to the Dam Safety engineer who will determine if additional inspections are required based on changes relative to baseline conditions.
Aerial safety survey of the reservoir	An annual aerial survey of the reservoir is conducted before the start of boating season. If any new hazards are identified, action will be taken by BC Hydro to mitigate the risk to boaters.
Visual surveillance - aerial inspection	Aerial inspections of the entire reservoir will be carried out at least annually. Results will be reported to the Dam Safety engineer who will determine if additional inspections are required based on changes relative to baseline conditions
Airborne lidar change detection	Airborne lidar can be used to detect, measure and map topographic change and shoreline erosion on the reservoir slopes. Airborne lidar change detection can detect movement on the order of 10 to 20 cm. Surveys planned to take place every two years until at least five years after Reservoir Filling.
Slope inclinometer readings	On higher risk slopes that are monitored by slope inclinometers, manual readings will take place at least twice every year. Results will be reported to the Dam Safety engineer who will determine if additional manual readings are required based on changes relative to baseline conditions. Inclinometers monitored with automated data acquisition systems (ADAS) will have near real-time processing.
Piezometer readings	On higher risk slopes that are monitored by piezometers, manual readings or data downloads will take place at least twice every year. Results will be reported to the Dam Safety engineer who will determine if additional manual readings or data downloads are required based on changes to relative to baseline conditions. Piezometers monitored with ADAS will have near real-time processing.
Global navigation satellite system (GNSS) rovers	GNSS will be installed on selected slopes to measure 3D point displacements. They will operate constantly with near real-time processing. Data will be reviewed every other month unless trigger alerts are received.

BC Hydro will interpret the data from all the shoreline monitoring methods described above to assess the stability of the shoreline and provide guidance on the public use of the reservoir. If a developing situation is occurring where the public could be at risk, action will take place to reduce that risk.

7. PROVIDING PUBLIC ACCESS TO BOAT LAUNCHES

BC Hydro provides public access to the reservoir at D.A. Thomas Recreational site and boat launches at Lynx Creek and Halfway River. Prior to opening this access BGC Engineering provided BC Hydro a comprehensive risk assessment of the reservoir slopes and impact to boaters, which is compliant with the regulatory requirements noted in Section 8 and discussion with Transport Canada.

8. WORKER QUALIFICATIONS AND TRAINING

Worker qualifications and training related to the Boater Safety and Shoreline Monitoring Plan will be in accordance with Section 5 of the Worker Safety and Health Management Plan (WSHMP). The WSHMP forms Appendix D of the overall OSMP. Section 5 outlines roles and responsibilities of workers, including training requirements.

9. REGULATORY REQUIREMENTS

BC Hydro is committed to meeting or exceeding the requirements of Transport Canada for boater safety in the reservoir. Surveys and reports identified below will be provided to the Environmental Assessment Office on request. The following are the requirements per CNWA Approval 2008-500822:

- Maintain an active debris management system for the first 5 years.
- Conduct an annual safety survey of the reservoir before each boating season and report any potential navigation safety concerns to Transport Canada.
- Conduct a bottom survey of the Halfway River embayment to determine sediment deposition rates, bank to bank 1.5km upstream of the new bridge to the confluence at 10- and 15-year increments.
- Produce and make publicly available, through BC Hydro's website, a series of maps of the reservoir at a scale that is usable to vessel operators. Navigational hazards shall be marked on the maps.
- Boater information signs shall be placed at the Halfway River and Lynx Creek boat launches and the D.A. Thomas Recreational site.
- Establish and chair a reservoir marine user group in the year that the public boat launches open. Hold a minimum of one meeting every year after that. Meetings may conclude after 5 years.

- Ensure that the public and emergency services can access a docking or landing facility at the dam site for emergency use. Signs at this facility shall have emergency contact information. First Responders are provided with the codes to all locked access routes to the reservoir.

10. REPORTING

Reporting will be completed in accordance with the requirements of Canadian Navigable Waters Act Approval 2008-50082. BC Hydro will:

- Conduct an annual safety survey of the reservoir prior to the boating season and report any potential navigation safety concerns to Transport Canada.
- Conduct a safety inspection at any time for all or a portion of the reservoir and report the findings to Transport Canada upon request.

Reports will be made available on the Environmental Assessment Office on request.

11. PLAN REVIEW AND UPDATES

The Boater Safety and Shoreline Monitoring Plan will be reviewed for potential updates after the first five years of operations.

12. QUALIFIED PROFESSIONALS

This plan was prepared by David Cattnach, Senior Public Safety Advisor.

13. References

1. Canadian Dam Association (CDA) Guidelines for Public Safety Around Dams (2011)
2. Vegetation Clearing and Debris Management Plan, BC Hydro, Site C Clean Energy Project, Revision 3, July 15, 2019.
<https://www.sitcproject.com/sites/default/files/vegetation-clearing-and-debris-management.pdf>
3. Debris Management Plan for Site C Reservoir Filling, BC Hydro, Site C Clean Energy Project, DRAFT, October 2021
4. Site C Reservoir – Flood Impact line Memorandum, Klohn Crippen Berger and SNC Lavalin, November 2012
5. Preliminary Reservoir Impact Lines [Report], BGC Engineering Inc., November 2012

APPENDIX A

Canadian Navigable Waters Act Approval 2008-500822

Available online:

https://www.sitcproject.com/sites/default/files/Approval-2008-500822-9-1-Dam-Spillway-Cofferdams-Diversion-Tunnels-Generating-Station-and-RSEM-R5b_0.pdf

John Horgan Dam and Generating Station Operations Worker Safety & Health Management Plan

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0.0	January 13, 2023	First Draft – issued to BCH stakeholders
1.0	August 1, 2023	Submitted to regulators, agencies, Indigenous Nations for review
2.0	September 9, 2024	Updated in response to EAO comments.
2.1	October 3, 2024	Updated in response to EAO comment.
3.0	July 28, 2026	Updated following Operations Year 1 review

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1. INTRODUCTION

BC Hydro is committed to operating the John Horgan Dam and Generating Station in a manner that protects worker and public safety and health. As part of the overall Operations Safety Management Plan, the objective of the Worker Safety and Health Management Plan (WSHMP) is to describe BC Hydro's safety management system processes and requirements for working in and around the John Horgan Dam and Generating Station. The plan seeks to create and maintain a workplace that minimizes risks and hazards, ensuring the safety and well-being of all employees and contractors.

The plan has been developed in accordance with applicable provincial legislation, BC Hydro's safety policies, and with Condition 73 of the Project's Environmental Assessment Certificate. In particular, the plan describes:

- Legislative framework and BC Hydro policies
- BC Hydro safety governance
- John Horgan Dam facility safety hazards and risk management
- Worker qualifications and training requirements
- Compliance and effectiveness monitoring
- Reporting requirements, and
- Process for revising and updating the plan

This plan is a summary of safety processes and requirements set out in other BC Hydro documents. This plan does not replace any safety plans or task specific requirements established through other BC Hydro safety practices or guidelines.

2. SCOPE OF PLAN

The John Horgan Dam and Generating Station is the third hydroelectric facility on the Peace River, located downstream of BC Hydro's existing generating facilities at G.M. Shrum (GMS) and Peace Canyon (PCN) and the respective Williston Lake and Dinosaur Lake reservoirs. The scope of the WSHMP includes work tasks performed on the following John Horgan Dam facility components:

- 500-kilovolt (kV) switchyard
- six-unit generating station (1,100 – 1,230 MW capacity)
- dam, reservoir (formally known as Náách̓ Mege)
- power intakes, penstocks, spillway
- associated structures and grounds/roadways

Figure 2.1 below shows the general arrangement of the earth fill dam and concrete structures. The WSHMP describes safety management processes and requirements related to work tasks in and around these structures. These tasks include, but are not limited to:

- Work planning and scheduling for executing maintenance and manual equipment operations
- Equipment switching, isolation, grounding and manual equipment operations

- Equipment inspection, cleaning, testing, measurements, repairs, calibration, fluid and filter changes, and troubleshooting
- Trades staff support for capital projects implementation
- Spillway field operations and water conveyance
- Safety inspections, emergency, and off-hours equipment trouble response



Figure 2.1 General Arrangement of Earthfill Dam and Concrete Structures

3. LEGISLATIVE FRAMEWORK

British Columbia's Workers Compensation Act (WCA)¹ is the predominant legislation that establishes responsibilities for employers to identify and manage occupational health and safety risks.

WorkSafeBC is the British Columbia provincial regulator for occupational health and safety. WorkSafeBC establishes the legal expectations for managing and controlling occupational health and safety risks through the Occupational Health and Safety Regulation (OHSR).

OHSR Section 19.16 is of critical importance to BC Hydro, as it sets out the requirements for work on high voltage electrical equipment.² This regulation requires high voltage equipment to be completely isolated, grounded, and locked out before any work can be done on that

¹ The WCA is available at: [Table of Contents - Workers Compensation Act \(gov.bc.ca\)](https://www.gov.bc.ca/wsa/wsa-viewcontent.aspx?id=10322)

² OHSR Section 19 regarding electrical equipment is available at: [WorkSafeBC](https://www.worksafebc.com/en/legislation-and-regulation/occupational-health-and-safety-regulation)

equipment. Section 19.16 also allows, however, work on energized equipment under certain circumstances if written safe work procedures acceptable to WorkSafeBC are followed.

BC Hydro requires the ability to perform work on energized, de-energized, and isolated equipment. BC Hydro's Safety Practice Regulations (SPR) provide direction on the safe performance of energized work. WorkSafeBC have recognized BC Hydro's SPR as acceptable procedures. Any worker trained and authorized to work on the Power System is required to comply with the appropriate safety protection protocol defined in BC Hydro's SPR.³

BC Hydro is subject to both the British Columbia WCA and OHSR and is committed to meeting or exceeding the requirements of this legislation.

As it pertains to occupational health and safety, BC Hydro is also subject to, but not limited to the following legislation:

- British Columbia Hydro and Power Authority Act
- Wildfire Act
- Transportation of Dangerous Goods Act and Transportation of Dangerous Goods Regulations
- Waste Management Act
- Safety Standards Act, in respect of electrical equipment
- Canadian Aviation Regulations
- Criminal Code
- BC Fire Code

4. BC HYDRO SAFETY FRAMEWORK

BC Hydro's Safety Framework is the foundation for safety and health in BC Hydro workplaces. It guides the development of our safety processes and programs and the execution of our work in a consistent, disciplined, and structured way to support improved safety outcomes and BC Hydro's vision.

The Safety framework has adopted five elements that are aligned with Canadian Standards Association (CSA) Z45001:19, the nationally recognized standard for occupational health and safety management systems. It is also benchmarked against the requirements of the British Columbia Workers Compensation Act and WorkSafeBC's Occupational Health and Safety Regulation.

Table 4.1 describes the five elements that comprise BC Hydro's Safety Framework: lead, plan, support, integrate & operate, and assure and improve.

BC Hydro's Safety Framework applies to occupational health and safety management across all aspects of BC Hydro's operation, including:

- All routine and non-routine activities of all individuals with access to the workplace
- All facilities and equipment at all workplaces owned and operated by BC Hydro
- BC Hydro activities at customer sites or third-party premises where BC Hydro workers perform work for BC Hydro
- Design, testing, production, assembly, construction, service delivery, and maintenance of equipment and assets

³ BC Hydro's Safety Practice Regulations are available online at: [2020 Safety Practice Regulations \(Updated April 2023\) \(bchydro.com\)](https://www.bchydro.com/spr)

Implementation of BC Hydro's framework is carried out by all BC Hydro employees, contractors, and partners is described below.

Table 4.1 BC Hydro Safety Framework

ELEMENT	THIS IS HOW (SOME EXAMPLES)	
1 : LEAD Demonstrate leadership and commitment, establish policy, governance, roles and responsibilities	○ Our mission: To safely provide reliable, affordable, clean electricity throughout B.C. ○ Our value: We are safe ○ Code of Conduct (Safety section) ○ Safety calls ○ Safety Governance Manual ○ General Safety Responsibilities ○ Safety Stop ○ Courage to Intervene and Just Culture	
2 : PLAN Identify compliance and conformance requirements, evaluate safety risks and opportunities, set objectives, and establish plans	○ WorkSafeBC Regulations ○ Safety Practice Regulations ○ Goal of zero fatalities and permanent disabling injuries ○ Hazard identification and risk assessments ○ BC Hydro Annual Safety Plan ○ Business groups' Annual Safety Requirements Plan	
3 : SUPPORT Establish programs, provide resources, ensure competency, ensure awareness, involve and communicate with workers and stakeholders	○ Safety Programs (e.g., Arc Flash, Asbestos, Confined Space) ○ OSH Specialists, Safety Advocates, Trades Training Instructors ○ New employee safety orientation ○ Site safety orientation and local component ○ Trades and safety training ○ Life Saving Rules competency assessments ○ Joint Health and Safety Committees, Technical Working Groups, local safety meetings ○ Monthly Safety Package	
4: INTEGRATE & OPERATE Eliminate hazards, implement controls, manage changes, procurement, contractors and emergencies	○ Safety by Design ○ Job planning and tailboards ○ Hazard Barrier Reference Sheet ○ Safety Protection Guarantees ○ Work procedures ○ Personal protective equipment ○ Site safety coordination ○ Contractor Safety Program ○ Emergency plans and procedures	
5: ASSURE & IMPROVE Monitor compliance and conformance, conduct audits, manage and learn from incidents, evaluate performance and effectiveness, conduct management review and continually improve	○ Safe Work Observations ○ Workplace inspections ○ Safety audits ○ Senior Safety Leadership Team meetings ○ Injury, near miss and good catch reporting, investigations and corrective actions ○ Safety pulse check reports	

5. BC HYDRO ROLES AND RESPONSIBILITIES

BC Hydro places ‘Safety Above All’, meaning that safety is an overarching, organization-wide, core value at BC Hydro. Consistent with the organization’s Code of Conduct policy, the intended outcomes of BC Hydro’s Occupational Health and Safety (OH&S) Management system include:

- Continual improvement of OH&S performance
- Fulfilment of legal requirements and other requirements
- Achievement of OH&S objectives

Ultimate responsibility for safety at BC Hydro resides with the President and CEO. The Senior Vice President Safety & Chief Compliance Officer is responsible for the development and implementation of the Occupational Health and Safety Management System. The Director of Safety and the Safety Department support this system.

Each specific work location is responsible for implementing and complying with the directions outlined in BC Hydro’s Occupational Health and Safety Management System. Overarching responsibility for the operations and maintenance of the John Horgan Dam facility is directed by the Stations Field Operations (SFO), North Interior Stations Regional Manager located in Fort St. John. The SFO mandate is for the safe and efficient maintenance and operation of its stations assets to ensure reliability and maximize overall asset value.

Locally the site staffing is comprised of tradespersons (red seal ticketed) and technologist employees with Senior Field Manager, Field Managers, Engineers, Planner/Schedulers and administrative support for the trades and work management. Subsidiary support for the safety, health and skills development of the local staff are provided by an Occupational Safety and Health Specialist (OSHS), Safety Advocates and Trades Training Instructors.

Table 5.1 describes the key roles and safety responsibilities of BC Hydro employees, contractors and partners.

Table 5.1 BC Hydro Key Roles and Safety Responsibilities

ROLE DEFINITIONS	KEY SAFETY RESPONSIBILITIES	WHO (NOT EXHAUSTIVE)
Worker —everyone is a worker, regardless of their title or work environment.	Complete training and follow safety rules and procedures. Act safely in the workplace. Report unsafe conditions and refuse to carry out unsafe work.	Everyone from a Power Line Technician to our CEO; includes contractors
Supervisor —anyone who instructs, directs and controls workers or who has the most knowledge of a task.	Ensure the safety of all workers under your direct supervision. Know the applicable safety regulations and rules and make sure those requirements are met.	Manager, Trainer, Foreperson, Subforeperson, Crew Lead
Workforce Manager —anyone who has a direct reporting relationship with supervisors, workers, managers or team leads.	Ensure the safety of all workers on BC Hydro worksites. Ensure compliance with the Workers Compensation Act and applicable safety regulations.	Team Lead, Field Manager, General Manager, Project Manager, Construction Manager, people in management role

Contract Owner —anyone who hires another party to do work on behalf of BC Hydro.	Communicate and manage the safety risks associated with contract work. Ensure a Prime Contractor is assigned for any multiple employer workplace.	Project Manager, Construction Manager, or other Manager
Delivery Partner —anyone who identifies and packages work and allocates work packages.	Disclose to Contract Owners and Workforce Managers known information about hazards and safety risks associated with work.	Project Manager, Program Manager, Distribution Designer, Scheduler, Planner, Engineer, Engineering Lead
Asset Manager —anyone who is responsible for an asset that is part of our power system, used as a workplace or is used by a worker.	Provide and maintain assets in a manner that ensures the safety of people at or near the workplace. Disclose to employers or Prime Contractors known information about hazards and safety risks in or around the assets, sites and facilities.	Asset Manager, Properties Manager, Fleet Asset Manager, Front Line Manager (for tools)
Executive Team —anyone who is part of the executive team.	Set safety direction and ensure BC Hydro complies with all applicable acts and regulations related to safety.	President and CEO, Vice Presidents, other members of executive team

6. SAFETY PROGRAMS

BC Hydro has developed comprehensive safety programs and exposure control plans to manage the safety risks associated with specific hazards or types of work, such as work in confined spaces. Each program clearly states what must be done and who is responsible. These programs include but are not limited to:

- Arc Flash
- Asbestos
- Confined Space
- Ergonomics
- Fire safety
- First Aid
- Safety Clothing
- Personal Protective Equipment
- Power System Safety Protection
- Lead
- Silica
- Welding

These programs are described in the internal OH&S system which compiles information based on themes such as hazards, work type, job planning, PPE, Tools and Equipment, Rescue/Emergency and Incidents, Rules, Standards and Variances, Safety Management and Transportation, Aviation and Cranes. Safety programs and exposure control plans in this system will be made available to the Environmental Assessment Office on request.

7. ANNUAL SAFETY REQUIREMENTS PLAN

During operations, John Horgan Dam facility Management and workers will be required to develop an Annual Safety Requirements Plan that assesses site-specific safety hazards or types of work, their associated risks and identifies the programs and control measures to be implemented.

The plan details specific activities such as risk assessments, inspections, document development / reviews, training, emergency response and safety equipment maintenance. BC Hydro may also direct corporate initiatives that are to be included in the local plan. The plan will prioritize all activities and will be developed and regularly monitored by the local Joint Health and Safety Committee, management, and workers.

During the year site specific procedures will be developed to provide workers the information they need to perform a specific job or task. These procedures list the required qualifications, training, tools and equipment, and provide step-by-step instructions for doing the work safely.

The Senior Field Manager is responsible for the development and adherence to the Annual Safety Requirements Plan. Each worker must understand and follow the rules and instructions that apply to their job and worksite covered by this plan.

Annual Safety Requirements Plans will be made available to the Environmental Assessment Office on request.

8. COMPLIANCE AND EFFECTIVENESS MONITORING

BC Hydro's safety efforts are supported through ongoing compliance, effectiveness monitoring and communications programs. These include:

- Safety Audits - provide senior management feedback on compliance, effectiveness monitoring and conformance status, improved understanding of safety requirements, and opportunities to improve safety performance.
- Safety calls - quarterly conference calls with the executive team to discuss safety-related questions, on-the-job safety and key safety updates.
- Safety learnings - A central resource of learnings from incidents (including near misses and good catches) and other events to prevent an identified issue from re-occurring.
- Safety reports - These self-serve year to date, monthly, weekly and daily reports provide overall results of safety incidents, safe work observations, corrective action completion and trends.
- Safety moments - This is a central resource of safety moment presentations developed by Safety, for use by anyone at BC Hydro to present to their team
- Safe Work Observations (SWO) are an opportunity for discussion and constructive feedback about safety responsibilities and safe work practices, behaviours, and conditions.
- Joint Health and Safety Committees (JHSC) is made up of workers and employers representatives working together. The JHSCs are intended for everyone at BC Hydro to raise health and safety concerns, and the employer to implement an effective system to address these issues, fostering a safe and healthy work environment.

All of the above noted compliance and reporting documents are reviewed and addressed through the JHSCs, Business Unit dashboards and incorporated (are tracked) in the local safety plans.

The above documents are confidential internal documents and will be made available to the Environmental Assessment Office on request for information purposes.

9. REPORTING

BC Hydro publishes annual reports that describe safety on a company-wide, rather than facility specific, basis. These reports are as follows:

- **Annual Service Plan Report:** BC Hydro publishes an annual Service Plan for the BC Legislature under the *Budget Transparency and Accountability Act*, which outlines our mission, goals, strategies and performance measures each year. One of the plan's performance measures focuses on safety, including a strategy of "empowering workers to share their knowledge and capably execute their work to improve how we learn from our safety performance and focus on preventing fatalities and permanently disabling injuries." Annual Service Plans are available on BC Hydro's website ([here](#)).

BC Hydro's Annual Service Plan Report describes the results of our performance related to the forecasted targets stated in the service plan for the report year. The report includes an assessment of how BC Hydro delivered work safely, including information compiled from all operating facilities. Annual Service Plan Reports are available on BC Hydro's website ([here](#)).

- Environmental, Social and Governance Progress Report (ESG). BC Hydro produces an annual ESG Report which includes key metrics related to safety performance for all of our facilities combined. ESG reports are available [here](#).

10. PLAN UPDATES

This Worker Safety and Health Management Plan will be reviewed for potential updates after the first five years of operations, and every five years thereafter. Documents referenced in this report are updated on an ongoing basis based on effectiveness monitoring as outlined in Section 8.0.

11. QUALIFIED PROFESSIONAL(S)

This plan has been prepared by Kim Symington, BC Hydro Occupational Safety and Health Specialist.