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Columbia River Project Water Use Plan

Physical Works Terms of Reference

- **CLBWORKS-11B Burton South Boat Launch Maintenance**

May 4, 2017

CLBWORKS-11B Burton South Boat Launch Maintenance Physical Works Terms of Reference

1 Background

1.1 Introduction

The Burton South boat launch¹ is located approximately 5 km south of the village of Burton on the eastern shore of the Arrow Lakes Reservoir as shown in Figure 1 below. Developed as a brand new site, the concrete boat ramp at Burton South extends down to a toe elevation of El. 425.4 m (1396.7 ft.) and also includes breakwaters, boarding floats, parking lot, a toilet and a picnic bench. Construction on the ramp was completed in April 2015 under CLBWORKS-11A Burton South Boat Launch. This site is operated by BC Hydro under a Licence of Occupation from the province of British Columbia.

The Burton South boat launch is both a requirement of Clause (m) of the storage licence for Arrow Lakes Conditional Water Licence (CWL) 27066, and the Columbia River Project Water Use Plan (WUP) dated January 26, 2007 (Schedule D, Clause 4(a)(i), and Conditional Columbia Works and Effective Monitoring Studies attachment, Clause 6 (a)).

The purpose of this Terms of Reference (TOR) is to outline the areas of responsibility, scope of work and budget for maintenance of the Burton South boat launch.

Figure 1: Aerial view of Burton South boat launch, 49°57'54.85"N 117°55'0.69"W, June 17, 2015; Reservoir elevation: 435.3 m (1428.1 ft.)

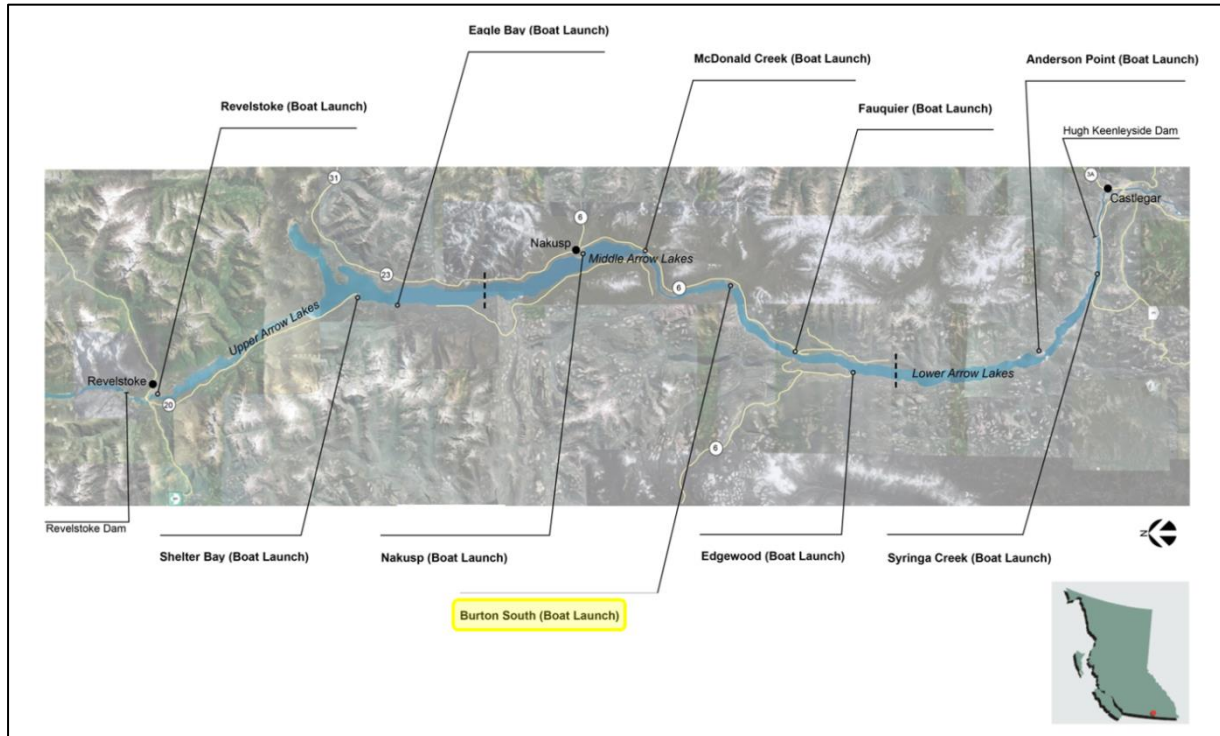


¹ Boat ramp refers to the concrete or gravel ramp used to access the reservoir. Boat launch is used more broadly to refer to all related facilities, including the ramp, walkways, breakwaters, etc. and may include other non-access related facilities such a parking lots etc.

1.2 Location

The location of the Burton South boat launch is shown in relation to the other Arrow boat launches in Figure 2 below.

Figure 2: Boat Launches on the Arrow Lakes Reservoir



1.3 BC Hydro's approach to boat launch maintenance

BC Hydro filed its approach to boat launch maintenance for the Arrow reservoirs with the Comptroller of Water Rights (CWR) on January 30, 2017. As described in this letter, BC Hydro will undertake structural and routine maintenance of access-related facilities at boat launches where BC Hydro has licence or WUP responsibilities. In some locations, such as at Burton South, additional non-access facilities may have been constructed or upgraded as part of the recent boat launch projects.

Only in a few circumstances does BC Hydro take on maintenance of non-access related facilities. Typically, non-access related facilities are part of a park and are integrated with the park facilities. The Park Operator will hold the responsibility for maintenance of these non-access facilities as part of their crown Licence of Occupation or tenure and would be specified in their Crown Management Plan responsibilities. However, in circumstances where BC Hydro holds the right and responsibilities by the Licence of Occupation, such as at Burton South, BC Hydro must take on maintenance (structural and routine) of these non-access-related facilities which is reflected in this TOR.

These terms are defined below:

- **Access-related facilities** are defined as those structures and facilities that provide safe access to the reservoir (i.e., ramps, low-water turnarounds, breakwaters, and boarding floats).
- **Non-access related facilities** are defined as those structures and facilities that provide related infrastructure adjacent to the boat launch but are not directly related to access (e.g., access roads, day use areas, parking lots, toilets).
- **Structural maintenance** refers to work that occurs at infrequent intervals to ensure the physical facilities are structurally sound and are functioning as intended (i.e., to ensure

safe access to the reservoir). Examples would include, repair of a major crack that has formed in a ramp, replacing breakwaters when they can no longer be effectively repaired, etc.

- **Routine maintenance** refers to the work that must occur on a routine and regular basis such as annual activities in preparation for the recreation season, or throughout the recreation season, as required. For access-related facilities for example, this includes debris, or sediment removal, replacing safety signs, any pre-season repairs to walkways or breakwater bumpers.

2 Burton South boat launch maintenance

2.1 Maintenance period

BC Hydro will undertake routine and structural maintenance at Burton South to ensure that the general public have safe access to the reservoir for the peak recreation season, and during the spring and fall shoulder recreation seasons when the ramp is available for launching. For the Arrow reservoir, these periods are defined as follows:

- Peak season: June 15 to September 15;
- Spring shoulder season: May 15 to June 14; and
- Fall shoulder season: September 16 to September 30.

In the event that a significant safety issue arises in the Burton South boat launch outside of the maintenance period, BC Hydro will use reasonable efforts to ensure the site is secured until the hazard can be removed.

2.2 Area of responsibility

The yellow-highlighted area shown in Figure 3 represents BC Hydro's area of responsibility for the Burton South boat launch. This Area of Responsibility is provided to give greater clarity and certainty on which parts of the launch are part of BC Hydro's ongoing obligations under CWL 27066.

Figure 3: Burton South boat launch. Yellow highlights represent BC Hydro's area of responsibility for facility maintenance.



2.3 Facilities to be maintained

As mentioned in Section 1.3 above, BC Hydro holds the Licence of Occupation for the Burton South boat launch. As there is no other operator for this area, BC Hydro will undertake structural and routine maintenance of both the access-related and non-access facilities at the site.

Table 1 below provides a list of the facilities that require maintenance at the Burton South boat launch and examples of the types of work typically required. The work listed in the 'Details' section of the table below is not exhaustive and is provided for illustration. Other miscellaneous maintenance items may be necessary for the general public's safe use of the Burton South boat launch during the maintenance period.

All items below are to be inspected at least once annually with repairs to be done as needed. Any public safety hazards will require immediate action.

A list of suppliers, model numbers and other technical information for these facilities can be found in the Operations and Maintenance Manual for Burton South (Moffat and Nichol, 2015).

Table 1: Facility details at Burton South with a description of maintenance activities

Facilities	Details
Access Related Facilities	
Concrete boat ramp	<ul style="list-style-type: none"> V-groove pre-cast concrete panels. Structural maintenance: inspect for cracks, depressions and any other significant abnormalities that will impede safe access to the reservoir. Routine maintenance: remove sediment and/or debris where it obstructs access and/or could harm the facilities (e.g., logs that could become entangled in boarding floats, etc.).
Scour protection (toe and sides of ramp)	<ul style="list-style-type: none"> 250 kg class riprap and filter stone. Structural maintenance: inspect for slumps and depressions. Routine maintenance: removal of debris and/or vegetation that could displace the riprap.
Breakwaters	<ul style="list-style-type: none"> Two floating timber breakwaters with lock-block anchors and chains. Structural maintenance: inspect equipment (e.g., connecting chains, shackles, navigational lights, etc.) for wear and tear and proper function. Routine maintenance: removal of debris, replacement of end caps, etc.
Boarding Floats	<ul style="list-style-type: none"> A line of floating wharves with each wharf attached to a steel piling. Structural maintenance: inspect for any reduction in freeboard, missing hardware, etc. Routine maintenance: removal of any unauthorized equipment; replacement of loose boards and staining of the decking.
Pilings	<ul style="list-style-type: none"> 14 steel pipe supports. Structural maintenance: inspection for pitting, corrosion or other abnormalities in the supports. Routine maintenance: removal of any unauthorized signs, structures, boats, etc. to the pilings.
Non-Access Related Facilities	
Picnic Table	<ul style="list-style-type: none"> 1 pre-cast concrete picnic table with concrete pad Structural maintenance: inspect for cracks or other abnormalities. Routine maintenance: removal of graffiti or garbage, etc.
Parking lots & upland turnaround	<ul style="list-style-type: none"> 1 Upper Lot (approx. 9 spots), 1 Lower Lot (approx. 11 spots). Structural maintenance: inspect for potholes, slumping and other abnormalities. Routine maintenance: removal of garbage, replacement of bumper stoppers where necessary.
Toilet	<ul style="list-style-type: none"> 1 precast concrete toilet building with 750 gallon vault capacity. Structural maintenance: inspect hardware for proper function (e.g., door, toilet stem, etc.) Routine maintenance: toilet pumping and cleaning.

Facilities	Details
Erosion protection	<ul style="list-style-type: none"> • Below access road on reservoir edge. • Structural maintenance: inspect for slumps and depressions. • Routine maintenance: removal of debris or vegetation that could displace the erosion protection.
Access road	<ul style="list-style-type: none"> • Inspected annually and repaired as needed. Dirt/gravel road (approx. 215 m long and 5-9 m wide). • Structural maintenance: inspect for potholes, slumping and other abnormalities. • Routine maintenance: removal of garbage, replacement of bumper stoppers where necessary.
Shoreline between ramp and breakwaters.	<ul style="list-style-type: none"> • BC Hydro's role is limited to removing significant safety hazards or removing debris and/or other items that pose a danger to the public/facilities or impede access to the reservoir. BC Hydro will remove significant safety hazards that may exist on the beach area between the ramp and breakwaters or restrict access to the boat launch or reservoir.
Shoreline outside of breakwaters.	<ul style="list-style-type: none"> • These areas will be left in a rustic or natural state.
Vegetation management	<ul style="list-style-type: none"> • Danger tree assessments and falling. • Vegetation maintenance to reduce fire hazards and maintain sight lines.

2.4 Permit information

As the site of the new ramp is located on Crown Lands, BC Hydro acquired the following access rights which must remain valid prior to commencing work:

- The Licence of Occupation No. 440956 (issued Aug 1, 2010, expires Aug 1, 2020);
- Permission to construct, use and maintain access to a Provincial Public Highway from the BC Ministry of Transportation and Infrastructure; and
- Notification to Ministry of Forests Lands and Natural Resource Operations for maintenance works within an existing footprint according to *The Approved Work Practices for Boat Launch Construction and Maintenance in BC Hydro Managed Freshwater Systems (AWP)*.

2.5 Safety

All work must be in compliance with all WorkSafeBC health and safety regulations and must be undertaken following BC Hydro's current processes for ensuring worker and contractor safety.

3 Budget

Total Program Cost \$413,923.

4 References

Moffat and Nichol, (May 12, 2015). *Burton Boat Launch Ramp Completion Report and Operation & Maintenance Manual*. Prepared for BC Hydro. 135pp.

BC Hydro (May 13, 2014). *Approved Work Practices for Boat Launch Construction and Maintenance in BC Hydro Managed Freshwater Systems*. 21pp.