

John Hart Dam Seismic Upgrade Project



November 6, 2019

Agenda

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JHT Dam – General Arrangement



Project Objectives

- Upgrades to the earthfill and concrete dams to improve their seismic performance
- Permanent flood and flow imbalance risk mitigation upgrade including:
 - Addition of an overflow spillway
 - Post-seismic operability and reliability upgrades to the spillway gates system

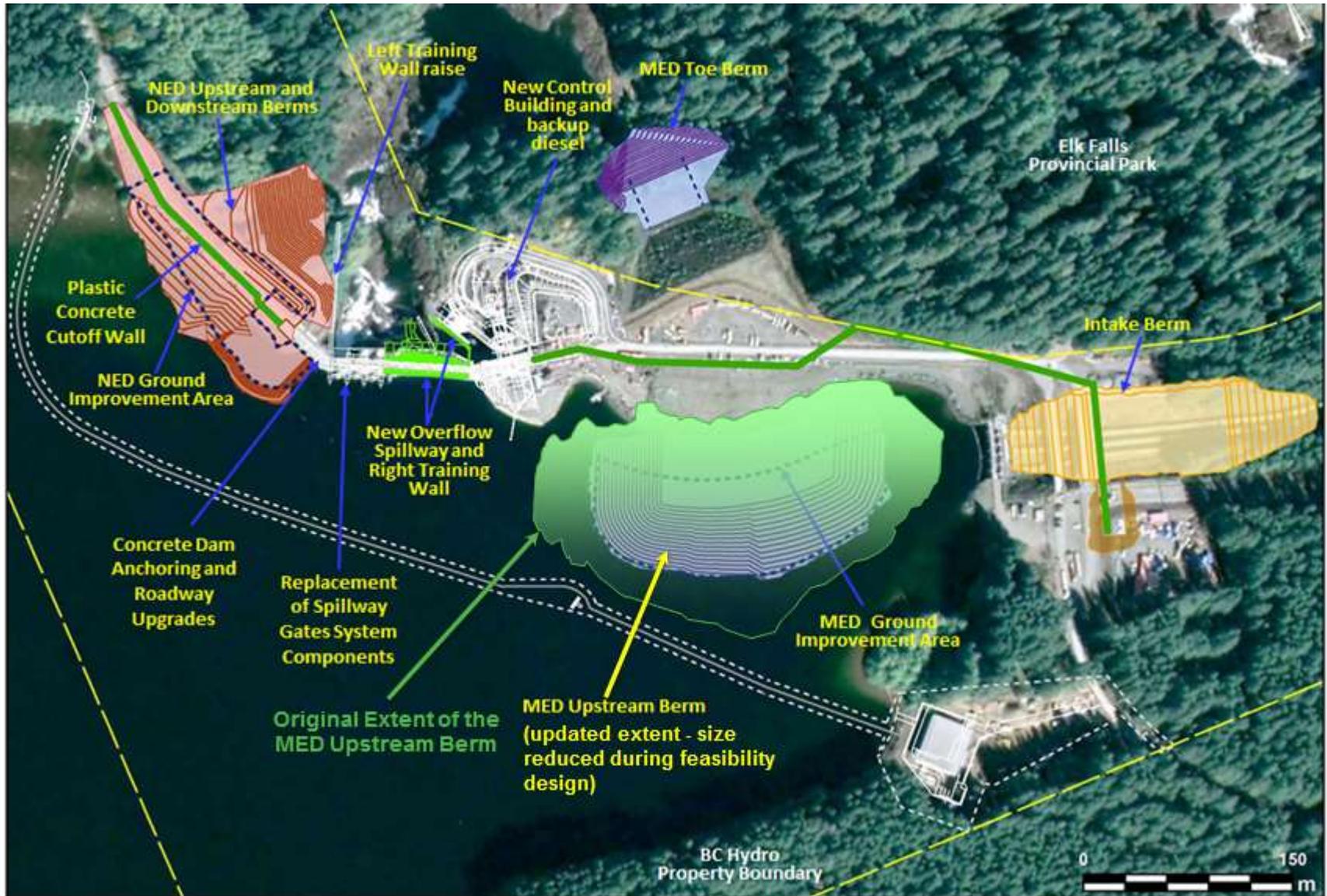
Project Status

- Feasibility design stage of the project has been completed.
- In June 2019, BC Hydro Board of Directors approved the project to proceed to the next stage (preliminary design/Definition Phase).
- Development of preliminary design is now underway and is focusing on:
 - Optimization of extent of the berms and ground improvement areas
 - Confirmation of length of the new seepage cutoff wall
 - Optimization of alignment of the seepage cutoff wall (i.e. moving it as far from the Park boundary as possible).
- Size of the MED upstream berm has already been reduced/optimized in late stages of the feasibility design – no major changes are expected during preliminary design stage.
- Physical hydraulic model testing with the existing and proposed discharge facilities has been completed.

Scope of the Upgrades

- Earthfill dams will be strengthened through a combination of ground improvements, stabilization berms and additional seepage barriers.
- Anchoring of the concrete dam structures and reinforcement of roadway deck support structures will be carried out at the concrete dam.
- The aging spillway gate system will be replaced.
- A free crest overflow spillway will be constructed.

Scope of the Upgrades



Physical Hydraulic Modelling



Objectives of the physical model:

- To test hydraulic performance of the existing spillway and the proposed overflow spillway, when they operate independently or together.
- To obtain hydraulic information for design purposes.

Constructability Planning

Scope of the current stage of the project includes evaluation of:

- Dredging equipment and methods
- Methods to prevent exceedance of turbidity levels at the City's intake and to prevent any adverse environmental impact
- Methods for removal of tree stumps and large boulders
 - Dive survey in the area of the proposed MED upstream berm is planned for spring 2020
- Options for handling and disposal of dredged materials
- Settlement ponds - size and location
- Dredged material will be stored in the penstock corridor.
 - Other potential disposal areas will be evaluated – a need for use of additional area(s) will depend on volume of dredged material and volume available in the penstock corridor.

Regulatory & Permitting Requirements

- The project will require BCUC Authorization.
- The project does not trigger provincial or federal environmental assessment process.
- FLNRO advised that, based on the scope of the project, it does not trigger changes to the current water license for JHT facility.
- However, the project will require Change of Works Approval under dam safety regulation.
- Other “standard” environmental permits/approvals will also be required.

Environmental Studies

Key Tasks Currently Underway in Definition Phase

- Environmental and Socio-economic Impacts Assessments currently underway. Planned completion March 2020
- TUS study requested by K'omoks First Nations currently underway - Planned completion early 2020
- Exploring potential sites for spoil disposal has commenced
- Barn Swallow bird nests observed on the spillway structures - barn swallows are designated threatened species
- Mitigations measures for protecting swallows will be designed in Definition Phase and potentially implemented in advance of construction period.

Environmental Studies

Tasks Planned in Definition Phase

- Complete environmental and socio-economic effects assessment to support BCUC application;
- Complete site selections for spoil disposal;
- Obtain environmental regulatory approvals as needed;
- Develop mitigation compensation measures (including for bird nesting) as needed and;
- Draft EMP for construction period.

Procurement Approach

It is currently planned that:

- The civil work, including upgrades to the earthfill and concrete dams and addition of an overflow spillway, will be constructed by a single general civil contractor procured by RFP.
- The spillway gate system upgrade will be completed by a specialized hydro-mechanical supply/ install contractor procured by RFP.



Project Schedule

- Preliminary design is expected to be completed by end of 2020.
- Submission of the BCUC Application is scheduled for early 2021, with the approval expected by end of 2021.
- BC Hydro approval to proceed with project implementation is targeted for fall 2022.
- Construction is planned from 2023 to 2028.
- Construction of the spillway gates upgrades will proceed after completion of civil work.

Questions

