

BONNEVILLE B-BRANCH SHORELINE STABILIZATION

Phase 1A Criteria and Constraints

Presented at FFDRWG on 4/2/2026

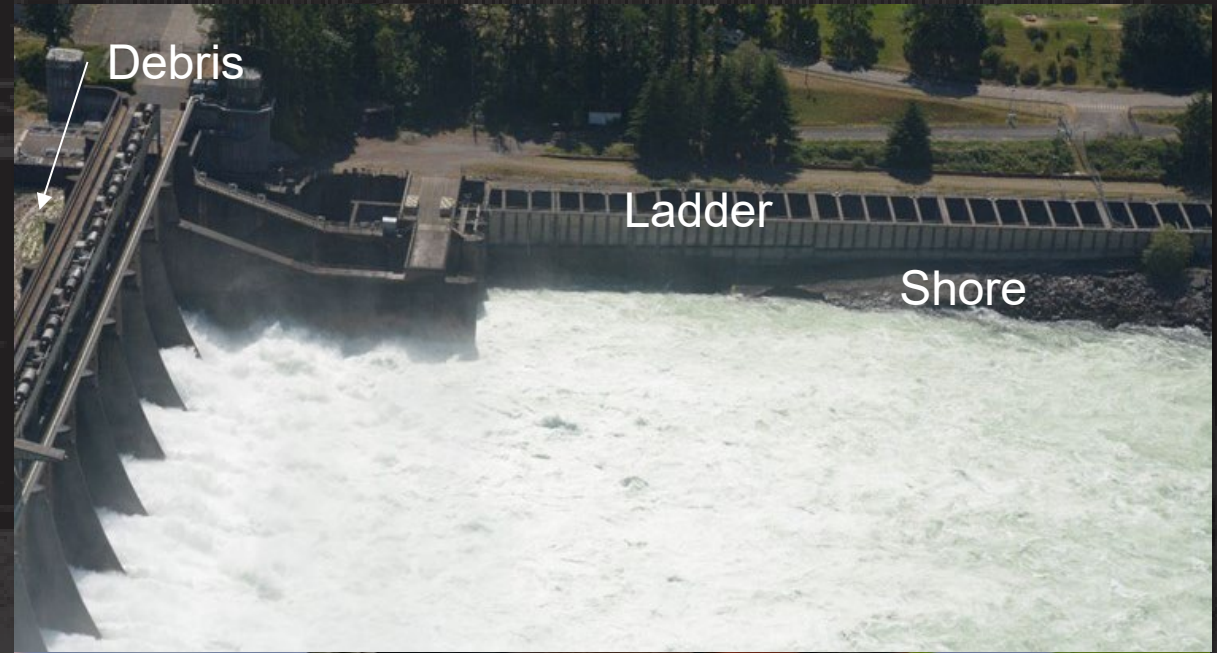


Photo in 2016 of Area Repaired in 2012

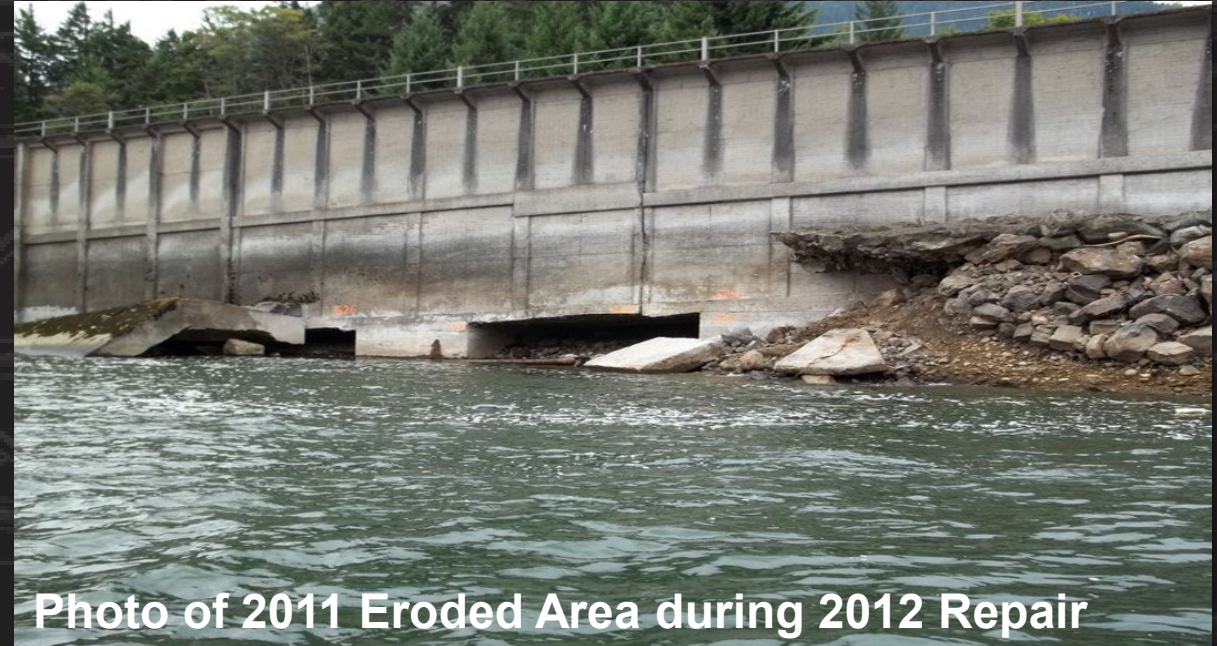


Photo of 2011 Eroded Area during 2012 Repair



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OVERVIEW

OBJECTIVE

This project is to evaluate the portion of shoreline at Bonneville adjacent to Spill Bay 18 and provide a recommendation to provide a corrective action with greater longevity than previous repair efforts [1965, 2012, 2016]. This project will develop an alternatives analysis (Phase 1A report) to generate a **recommended alternative** with the goal to provide Bonneville an acceptably **improved shoreline and protection for the Bradford Island B-Branch fish ladder, specific to the Bay 18 shoreline stabilization.**

- ***Shoreline/ladder protection***
- ***Debris flushing operations***

Constraints are the real-world limitations that are imposed on the project and design. Constraints must be kept in mind when designing, evaluating, and constructing the recommended alternative.

- In-water work window
- Fish passage spill volumes (FPP)
- Run-of-the-river spill volumes
- Chum salmon tailwater elevation operations
- Shoreline velocities

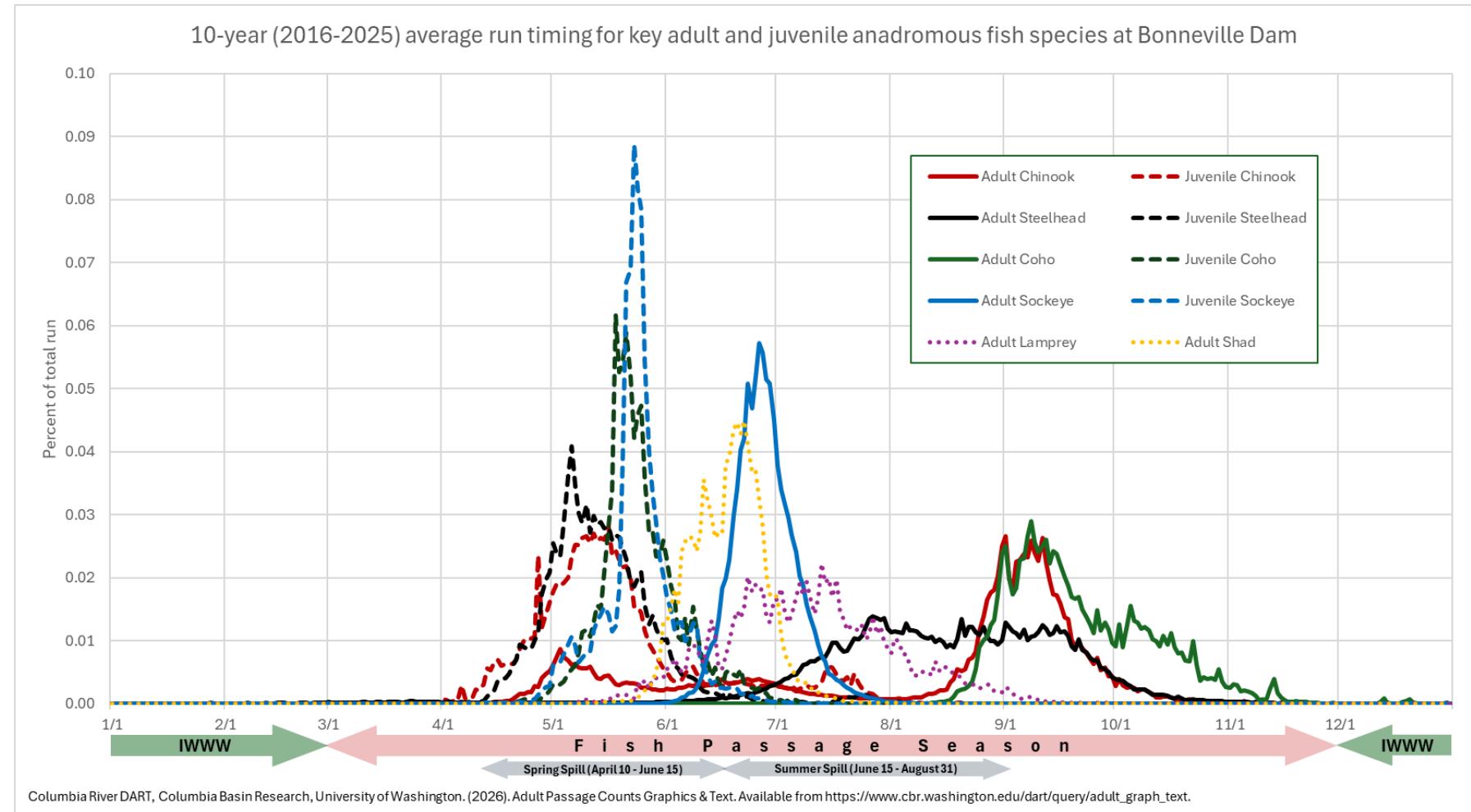
Criteria are guidelines for the project and design that define its success. The project and design must adhere to these items to be considered successful.

- Spillway capacity
- Adult fish migration
- O&M tail
- Dam safety



IN-WATER WORK WINDOW (IWWW) CONSTRAINT

- Primary Window: Dec 1 – end of Feb
 - Any work beyond these dates requires a variance from FPOM, which is unlikely to be granted during peak migration periods.
- Non-routine, within 100' of the fish ladder entrance and 50' of the ladder.
 - Construction needs to be coordinated in-advance with FPOM





SPILL VOLUME CONSTRAINTS

Fish Passage Spill Volumes:

Bonneville generally maximizes spill during the juvenile migration season to encourage juvenile fish passage through the spillway. Current fish passage spill volumes are to the 125% gas cap up to a maximum of 150 kcfs for fish passage spill. This constraint is based on physical model observations indicating an increased incidence of rock deposition into the spillway stilling basin at spill greater than or equal to 150 kcfs, which has caused erosion to the stilling basin structure in the past.

BLAB: This project cannot diminish the capacity of the Bonneville Dam spillway to pass FPP/FOP spill volumes.

Run-of-the-river Spill Volumes:

Involuntary high spill volumes during the freshet can exceed volumes that have been known to cause rock movement (150 kcfs), implying the shoreline repair will likely experience spill volumes exceeding fish passage spill thresholds every year.

BLAB: This project cannot diminish the capacity of the Bonneville Dam spillway to pass involuntary spill.

Chum Salmon Tailwater Elevation Operations:

Minimum tailwater throughout the in-water work period to protect chum spawning grounds and redds downstream of Bonneville Lock & Dam. Tailwater operation restrictions are established and coordinated through the Technical Management Team (TMT) and published annually in the Water Management Plan.

Shoreline Velocities:

The recommended alternative cannot increase shoreline velocities along Bradford and Cascades Islands. The recommended alternative cannot exacerbate damage to either river-bank riprap or fish ladders along Bradford and Cascades Islands.



CRITERIA

Identified so far:

1. Spillway capacity

- Alternatives that increase Bonneville's capacity for spill are preferred.
- Alternatives that decrease Bonneville's capacity for spill are not preferred.

2. Fish passage

- Alternatives likely to improve conditions for fish passage are preferred.
- Alternatives likely to degrade conditions for fish passage are not preferred.

3. O&M tail

- Alternatives of the 'set it and forget it' variety are preferred.
- Alternatives with cumbersome O&M requirements are not preferred.

4. Dam Safety

- Alternatives that are reversible if found to cause unanticipated problems are preferred.
- Alternatives that damage the existing structure or its functionality are not preferred.

Additional suggestions from FFDRWG (4/2/26):



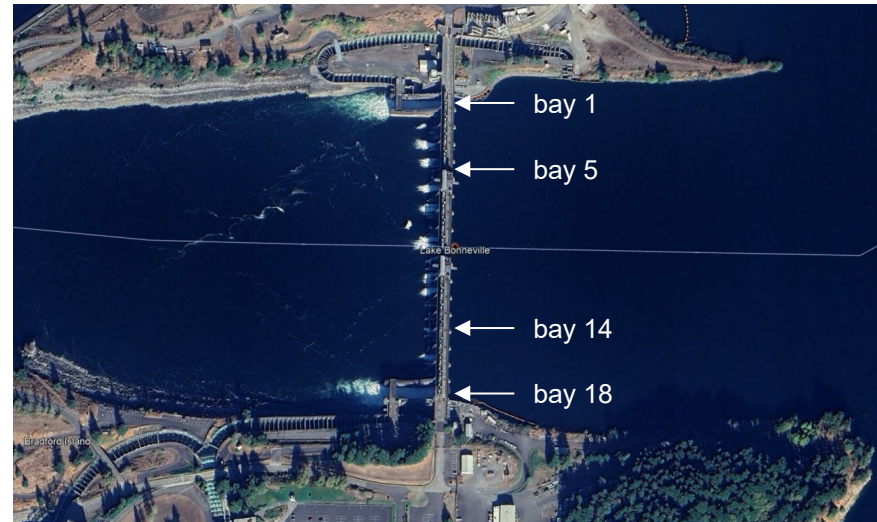
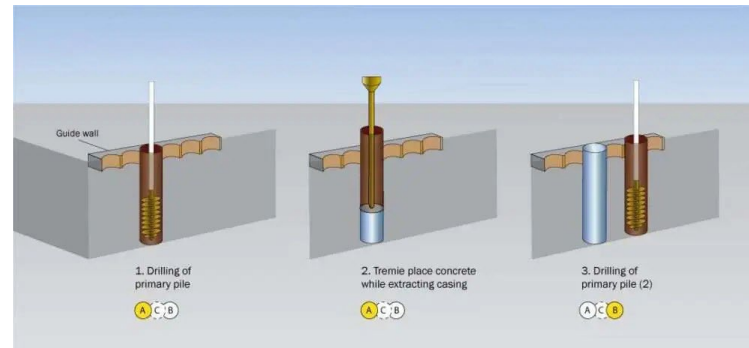
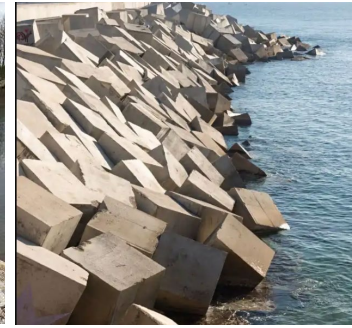
NEXT STEP: IDENTIFY ALTERNATIVES FOR ANALYSIS

Identified so far:

1. No Action
2. Rip-rap or dolos (dolosse) armoring
3. Wall structure (sheet pile, formed concrete, secant piles)
4. Forebay debris management (debris accumulates at bay 18, but needs to pass the spillway through bays 5-14)

Additional suggestions from FFDRWG (4/2/26):

- Surface spill in middle bays for debris management
- Debris boom/curtain between bay 14 and BI shore



QUESTIONS, COMMENTS, WORDS OF WISDOM?



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