Lower Columbia River Fish Facility Design Review Work Group (FFDRWG)

USACE, Portland District

# June 2021 Meeting Notes

June 3, 2021 09:00-11:00

Join Meeting: <https://usace1.webex.com/usace1/j.php?MTID=m5c365c1bf762dad74cbaa2985e8e04fb>

Meeting password: FFDRwG2021!

*(\*if using your phone for audio, log in through Webex and have the meeting call you)*

Join by phone (audio only, no Webex): (844) 800-2712 | Access Code: 199 571 1422

## Introductions

FFDRWG members:

**BPA**

\*Scott Bettin

Kim Johnson

Siena Lopez-Johnston

\*Christine Petersen

Greg Smith

\*Leah Sullivan

Ben Hausmann

**NOAA**

\*Blane Bellerud

\*Gabriel Brooks

\*Trevor Conder

Kinsey Frick

Claire McGrath

Josie Thompson

Logan Negherbon

**USFWS**

\*Dave Swank

**States**

\*Erick Van Dyke (ODFW)

\*Charles Morrill (WDFW)

**CRITFC/Tribes**

\*Tom Lorz (CRITFC)

Blaine Parker (CRITFC)

Tom Skiles (CRITFC)

Laurie Porter (CRITFC)

Casey Baldwin (CTCR)

Michael Karnosh (CTGR)

Lawrence Schwabe (CTGR)

Torey Wakeland (CTGR)

Aaron Jackson (CTUIR)

\*Ralph Lampman (YN)

**NPCC**

Leslie Bach

Kris Homel

**FPC**

\*Erin Cooper

**PSMFC**

Alan Brower

Darren Chase

Roger Clark

Mark Leonard

\*Scott Livingston

Nicole Tancreto

Don Warf

**CENWD**

\*Doug Baus

Tim Dykstra

Dan Feil

Mike Langeslay

\*Cindy Studebaker

Lisa Wright

**CENWW**

Karl Anderson

Chris Peery

Marvin Shutters

Denise Griffith

**CENWP-OD**

\*Andrew Derugin

Rebecca Cates

Jeanette Wendler

Bob Cordie

Jeffrey Randall

Scott Fielding

\*Eric Grosvenor

Michael Lotspeich

Laura Rickets

Tammy Mackey

Darren Gallion

\*Nathan McClain

Robert Wertheimer

\*Karrie Gibbons

**CENWP-PM**

Jim Adams

\*Eric Bluhm

Ian Chane

Jeff Hicks

Steve Sipe

Bob Winters

Brad Eppard

David Griffith

Fenton Khan

Rachel Laird

\*Jake Macdonald

Rich Piaskowski

\*Jon Rerecich

Ida Royer

David Trachtenbarg

Jeremiah Woodard

Erin Kovalchuk

**CENWP-ENC**

\*Adam White

Brandt Bannister

Bridget Bell

Jonathon Brink-Roby

\*Shari Dunlop

Laurie Ebner

Curtis Lipski

\*Chris Motti

\*Steve Schlenker

\*Max Wilson-Fey

Mehdi Roshani

\*in attendance

## Action items from last meeting

* Weiland et al (2016) was sent to FFDRWD by Jake Macdonald on 5/14 (relevant to discussion over Bonneville spillway survival)
* Axel et al (2020) was sent to FFDRWD by Christine Petersen on 5/6 and Jake Macdonald on 5/14 (relevant to discussion over the PIT barge at Bonneville)

## Topics for FFDRWG Discussion/Review/Coordination

* [BON spillway rock removal/mitigation – Jeremiah Woodard (PM), Max Wilson-Fey (TL), Jacob Macdonald (FC)](#_BON_Spillway_Rock_1)
  + Draft modeling report was sent to FFDRWG by Jake Macdonald on 6/1. Questions/comments?
  + **Dave Swank (USFWS)** asked about the ramp and adjacent bathymetry. End of section 5.1, barrier alternative is feasible with the following modifications. Max Wilson-Fey (ENC): – placing the barrier at the high point of the ramp might allow rocks to move onto the apron. Suggestion is to place the barrier lower on the ramp. This area could be monitored and cleaned out if/when needed.
  + **Tom Lorz (CRITFC):** concerned that the barrier is higher than the apron invert. The 2x4 used in the model sticks above the apron, I assume it will be custom fit to the prototype. **Max:** It will be custom fit, basically a jersey barrier shape but not higher than the end sill.
  + **Trevor Conder (NOAA):** What role does plunging flow from 14’ deflectors play in rock recruitment? Would 7’ deflectors have less impact? Deflectors are rising to the top of his suspect list for survival and erosion issues. **Max Wilson-Fey (ENC)** will ask Laurie Ebner about the effects of deflectors and report back to FFDRWG. **Scott Bettin (BPA):** Can we develop spill patterns for different tailwaters? **Jacob Macdonald (NWP)** will invite Laurie Ebner to next FFDRWG, reschedule for a later week in July before Laurie retires for good.
* [BON adult lamprey passage improvements: Washington Shore control section redesign – Bob Winters (PM), Shari Dunlop (TL), Jacob Macdonald (FC)](#_BON_Washington_Shore_2)
  + **Shari Dunlop (ENC):** Designing to avoid electric motors and moving parts that might interfere with PIT detection. Current modeled configuration has 10 pools with 9 slots and orifices (only on north side). Pools decrease in length and slot widths vary as you move upstream.
  + **Trevor Conder (NOAA)** would rather see a proven design used vs. new design. Something that we know works, like John Day North ladder with adjustable weir slots where we could fine tune flows for optimal passage, rather than something that we think will work. PIT detection is important, but salmon passage is NOAA’s main concern. **Shari Dunlop (ENC):** There are several designs for fish ladders and John Day North is one of the few with actuated sills. They are seldom used, primarily in the winter when there is little fish passage.
  + **Max Wilson-Fey (ENC)** went on to show a summary table of three alternatives compared to WA shore existing, JDA north, and Lower Granite (not a great example as river flow and fish ladder flow are lower).
  + **Dave Swank (USFWS)** asked if the criteria for lamprey passage could be added to the table and offered to share a best practices manual for lamprey passage. The USFWS white paper from 2017 is already being consulted as they work through design.
* [BON adult lamprey passage improvements: Bradford Island Ladder extensive minor modifications to serpentine section for lamprey – Bob Winters (PM), Adam White (TL), Jacob Macdonald (FC)](#_BON_Bradford_Island_2)
  + **Dave Swank (USFWS)** asked if bollards might be a better alternative to refuge boxes, one broke loose and bollards won’t have that problem. **Andrew Derugin (ODB)** said there was a problem with one box, the latch was not installed correctly, no other problems since then. Boxes protect lamprey from sunlight which can cause them to move down ladder and fall out of the fishway. Refuge boxes can be time consuming while recovering lamprey but can be removed during dewatering. Bollards would make it difficult to move through the ladder with nets.
  + Other ideas to help improve lamprey passage at Bradford Island included:
    - placing a wetted wall upstream from its current location where night observations showed lamprey struggling to ascend the ladder as the velocity increased.
    - placement of traffic pucks at high velocity areas, which would create heterogeneous flow and still allow use of a beach seine type-net during fish salvage.
    - a 4” suction tube on the floor of the fishway, however length of tube could lead through unpassable velocities, dependent on head differential. It could be supplied with attraction water via a pump, like the LPS systems.
    - A gravity fed wetted wall, taking water from the AWS LPS
    - Passage (lamprey orifices and/or wetted wall) from serpentine section to AWS channel
* [JDA adult lamprey passage improvements: North Fish Ladder LPS water supply upgrade – Eric Bluhm (PM), Adam White (TL), Jacob Macdonald (FC)](#_JDA_North_Fish_1)
  + **Jake Macdonald (NWP)** presented slides (previously presented 5-OCT-2017) showing the previous concept for drawing water from above the current north ladder LPS/trap and asked for NOAAs concerns. **Bellerud and Conder** will need to revisit and see what concerns they had initially. Some concerns about entraining salmonid fry and keeping screens clean. PDT will continue to move forward as NOAA revisits notes about possible salmon concerns. **Derugin** reports success using air burst systems to keep screens clean at Bonneville.
* [TDA adult lamprey passage improvements: East Fish Ladder junction pool LPS – Eric Bluhm (PM), Adam White (TL), Jacob Macdonald (FC)](#_TDA_East_Fish)
  + Jake asked about any red flags. Bellerud responded, pretty much the same concerns, screening to fry criteria and making sure the screen stays clear. Gravity feed is an option for this location.
  + **Ralph Lampman (YNF)** asked about the potential to present the floating adult lamprey collector? Jake Macdonald (NWP) suggested further prioritization discussion within the Corps-Tribal lamprey workgroup (next meeting on 23-June) and presenting at a future FFDRWG as warranted. **Lampman** followed up asking if the collector could be tested at the Bonneville hatchery lamprey holding facility (former brood stock building). **Macdonald** suggested coordination with ODFW at the Bonneville Hatchery.
* Next two meetings will be adjusted to avoid the July 4th holiday, TBD.
* Meeting ended at 10:45

## Written project updates

* [JDA turbine rehab – Steve Sipe (PM), Curtis Lipski (TL), Jon Rerecich (FC)](#_JDA_Turbine_Rehab_1)
* [TDA AWS Debris Management– Erin Kovalchuk (PM), Mehdi Roshani (TL), Jon Rerecich (FC)](#_TDA_Backup_AWS)
* [BON Second Powerhouse FGE – Jim Adams (PM), Bridget Bell (TL), Jon Rerecich (FC)](#_BON_Washington_Shore_2)
* [JDA adult lamprey passage improvements: South Ladder entrance improvements (rounded crest, slot cover) – Eric Bluhm (PM), Adam White (TL), Jacob Macdonald (FC)](#_JDA_Turbine_Rehab)

* [TDA adult lamprey passage improvements: East Fish Ladder control section weir modifications – Eric Bluhm (PM), Adam White (TL), Jacob Macdonald (FC)](#_TDA_East_Fish)
* [BON1 adult lamprey passage improvements: Bradford Island B-Branch entrance improvements (variable width entrance weir, bollards, and transition pool LPS) – Bob Winters (PM), Adam White (TL), Andrew Derugin (FC)](#_BON_Bradford_Island)
* [BON2 adult lamprey passage improvements: Cascades Island LPS flume modifications – Bob Winters (PM), Andrew Derugin (TL), Andrew Derugin (FC)](#_BON_Cascades_Island_2)

Fish Facility Design Review Work Group (FFDRWG)

USACE, Portland District

Project Update

Date Prepared/Updated: 2021-04-01

# JDA Turbine Rehab

|  |  |
| --- | --- |
| Project Identifier: | P2 # |
| Project Manager (PM): | Steve Sipe (CENWP-PMF-P)  *Steven.C.Sipe@usace.army.mil* |
| Technical Lead (TL): | Curtis Lipski (CENWP-ENC-HD)  *Curtis.L.Lipski@usace.army.mil* |
| FFDRWG Coordination (FL): | Jon Rerecich (CENWP-PME)  *Jonathan.G.Rerecich@usace.army.mil* |

## Project Description

The purpose of this project is to address reliability concerns and maximize production of hydroelectric power at JDA, which includes electrical energy production and electrical grid ancillary services while at the same time, improving survival of fish passing through the turbines. Maximum production of hydroelectric power at JDA will be realized through increased reliability and increased efficiency. Reliability improvements will be realized through a combination of replacement and refurbishment of powertrain equipment to include, but not limited to, turbine runners, shafting, generators, isophase bus, breakers, switches, and transformers. Efficiency improvements will be realized through increased turbine efficiencies associated with new turbine runners and other modifications to the turbines.

The purpose of this project is also to increase survival of turbine passed fish. Increased survival of turbine passed fish will be realized through developing state-of-art hydroelectric turbines to obtain improved fish passage survival through the turbines. The design of the state-of-the-art turbines will be an iterative and collaborative process that focuses on fish-friendly design features and criteria. This iterative and collaborative design process will be similar to the ongoing Ice Harbor L&D turbine runner replacement design and upcoming McNary L&D turbine runner replacement in NWW. Phase 1A recommendations include replacing up to 14 units with combination fixed blade & adjustable blade to obtain improved fish passage survival through the turbines.

## Project Schedule

|  |  |  |
| --- | --- | --- |
| Phase 1 Short Term Schedule | Start | Finish |
| 30% DDR/P&S review | 3/12/2020 | 4/1/2020 |
| 60% DDR/P&S review | 8/28/2020 | 9/18/2020 |
| 90% DDR/P&S review | 9/21/2021 | 2/18/2022 |
| BCOES review | 1/24/2022 | 11/11/2022 |

|  |  |
| --- | --- |
| Overall Schedule Milestones | Date |
| Contract award | October 2024 |
| Collaborative design process Model testing | 2024-2029 |
| First unit installation | 2031-2033 |
| Unit installation complete | 2040-2045 |

## Current Status

* Final VE study report due Feb. 19, 2021
* The 1:25 scale physical observational turbine model rehab and relocation is complete. The model will be used to inform the development of the Phase 1 Plans and Specifications package, to document the hydraulic conditions that affect the biological performance of the existing JDA turbines, and to support the collaborative and iterative design process in Phase 2. ERDC baseline model validation testing with the existing runner has been scheduled for last week and this week. Baseline model data collection for Test Series 1 will be occurring until May 2021 at which time ERDC is scheduled to transition back to McNary. This task includes preparation of a data report documenting the runs performed, results, conclusions, and recommendations. Runner evaluation tests will need to carry over to Test Series 2 (not yet scoped), which is expected to occur in late 2021 or early 2022.
* Tailrace flow patterns have been validated in the 1:45 JDA general model and in a CFD model. Model runs will commence after further HAC modeling is complete and preliminary options for the turbine mix are established. The focus of the tailrace modeling will be to assess juvenile egress and conditions for adult approach to the fish ladder entrances.

## Topics for FFDRWG Review/Coordination

None currently.

Fish Facility Design Review Work Group (FFDRWG)

USACE, Portland District

Project Update

Date Prepared/Updated: 2021-06-03

# TDA Backup AWS Debris Management EDR

|  |  |
| --- | --- |
| Project Identifier: | P2 # |
| Project Manager (PM): | Erin Kovalchuk (CENWP-PMF)  *Erin.H.Kkovalchuk@usace.army.mil* |
| Technical Lead (TL): | Mehdi Roshani (CENWP-ENC)  *Mehdi.Roshani@usace.army.mil* |
| FFDRWG Coordination (FC): | Jon Rerecich (CENWP-PME)  *Jonathan.G.Rerecich@usace.army.mil* |

## Project Description

This project is to evaluate alternatives to remove debris from The Dalles Dam Auxiliary Water Supply (AWS) trash rack. Debris build-up on the rack currently causes high head differential across the rack. Fish Unit Rehab, potentially starting in the year 2024, requires the AWS backup system to operate during the rehab to provide adequate flow for fish attraction. Fish Unit Rehab duration is one year per unit for a total of two years. Long term use of the backup AWS system will be part of the alternatives evaluation.

## Project Schedule

|  |  |  |
| --- | --- | --- |
| **Milestone** | **Start** | **End** |
| **Criteria and Constraint Report** | 4/19/2021 | 8/6/2021 |
| **Value Management** | 8/9/2021 | 8/20/2021 |
| **Alternative Evaluation Report** | 8/23/2021 | 12/10/2021 |
| **Draft Final Report** | 12/13/2021 | 4/1/2022 |
| **ATR** | 3/21/2022 | 4/1/2022 |
| **Final Report** | 4/4/2022 | 5/27/2022 |
| **Closeout** | 5/30/2022 | 6/3/2022 |

## Current Status

Working on the Criteria and Constraints for the EDR.

## Topics for FFDRWG Review/Coordination

None currently. PDT will solicit FFDRWG participation during the Engineering Design Report (EDR) process.

Fish Facility Design Review Work Group (FFDRWG)

USACE, Portland District

Project Update

Date Prepared/Updated: 2021-03-30

# BON Second Powerhouse FGE

|  |  |
| --- | --- |
| Project Identifier: | P2 # |
| Project Manager (PM): | Jim Adams (CENWP-PMF)  *James.R.Adams@usace.army.mil* |
| Technical Lead (TL): | Bridget Bell (CENWP-ENC)  *Bridget.M.Bell@usace.army.mil* |
| FFDRWG Coordination (FL): | Jon Rerecich (CENWP-PME)  *Jonathan.G.Rerecich@usace.army.mil* |

## Project Description

Steel plates were installed in all units in the A and B gatewells to restrict flow. During routine inspections, however, it became apparent that the anchoring system for the steel plates was inadequate. In effect, the nuts and anchoring bolts holding down the plates had come lose, posing the risk that the plates could detach and potentially take out a unit. All flow restriction plates were removed from the units.

A concrete corbel will be installed in the same location as the flow control plates with the design goal to achieve similar gatewell hydraulic conditions as the flow control plates. This new concrete corbel has been designed to meet the flow criteria established and tested for the previous flow restrictor plates to meet the hydraulic and biological goals.

## Project Schedule

Awarded 21 December 2020 to Northbank Civil and Marine. Notice to proceed 29 December 2020.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CLIN | Status | Description | Award/Exercise Date | Construction Execution Window |
| 1 | Mandatory | Mobilization/Demobilization | December 2020 Award |  |
| 2 | Mandatory | Unit 15 Construction | December 2020 Award | February 2021-April 2021 |
| 3 | Optional | Second Mob/Demob and Unit 11 Construction | Sept. 30, 2021 | Dec 2021-Feb 2022 |
| 4 | Optional | 2 Additional Units | Sept. 30, 2021 | Extend through May 2022 |
| 5 | Optional | 2 Additional Units | Nov. 30, 2021 | Extend through August 2022 |
| 6 | Optional | 2 Additional Units (Unit 18 + 1 more Unit) | Nov. 30, 2021 | Extend through February 2023 |

## Current Status

* Construction in unit 15 is underway and on track. Unit 15 is on the outage schedule March 1-April 20. The contract states the unit must be completed by April 15th.
* Hydraulic Testing Spring 2021 – During March contract negotiations with NWP, the A/E contractor expressed concerns in meeting the testing deadline and deliverables due to procurement of equipment, preparation/calibration of equipment, and staffing limitations. Hydraulic testing will not occur this year.
* Hydraulic tests will be needed next spring to meet the upper 1% test range of 18.0-18.5 kcfs.
* Impacts to the B2FGE concrete work contract are being evaluated. The concrete work will be delayed by one year.
* Rerecich owes Lorz a beer.

## Topics for FFDRWG Review/Coordination

None currently.

Fish Facility Design Review Work Group (FFDRWG)

USACE, Portland District

Project Update

Date Prepared/Updated: 2021-06-04

# JDA South Ladder entrance improvements (rounded crest, slot cover)

|  |  |
| --- | --- |
| Project Identifier: | P2 # 492402 |
| Project Manager (PM): | Eric Bluhm (CENWP-PM-FP)  *Eric.V.Bluhm@usace.army.mil* |
| Technical Lead (TL): | Adam White (CENWP-ENC)  *Adam.J.White@usace.army.mil* |
| FFDRWG Coordination (FC): | Jacob Macdonald (CENWP-PME)  *Jacob.Macdonald@usace.army.mil* |

## Project Description

Entrance weir improvements (rounded crest, slot filler). Caps cannot be added to South Ladder entrance weir due to FPP submergence criteria, so the weir needs to be modified more extensively to provide rounded weir crests and guide slot covers.

## Project Schedule

* Design: FY2021
* Construction: Winter 2021/2022
* Evaluation/Closeout: FY 2022

## Current Status

Internal scoping meeting occurred on 4/12. PDT kickoff meeting occurred on 5/17. Upcoming PDT meetings on 6/15 and 6/29.

## Topics for FFDRWG Review/Coordination

None currently.

Fish Facility Design Review Work Group (FFDRWG)

USACE, Portland District

Project Update

Date Prepared/Updated: 2021-05-04

# TDA East Fish Ladder junction pool LPS

|  |  |
| --- | --- |
| Project Identifier: | P2 # 492403 |
| Project Manager (PM): | Eric Bluhm (CENWP-PM-FP)  *Eric.V.Bluhm@usace.army.mil* |
| Technical Lead (TL): | Adam White (CENWP-ENC)  *Adam.J.White@usace.army.mil* |
| FFDRWG Coordination (FC): | Jacob Macdonald (CENWP-PME)  *Jacob.Macdonald@usace.army.mil* |

## Project Description

Design junction pool LPS to tailrace deck collection box.

“Expand network of Lamprey Passage Structures (LPSs) to bypass impediments in existing fish ladders **(Lamprey Passage Structures)**. Ramp-like flume structures would be installed or modified in fish ladders at Bonneville, The Dalles, and John Day dams to guide adult lamprey out of fish ladders and into parallel systems for volitional passage or collection for upstream transport or passage studies. The LPSs would use independent water sources (pumps or gravity flow

systems) and may be placed in various locations within fish ladders, such as collection channels, junction pools, and auxiliary water supply channels. New structures may be installed at Bonneville Dam’s Bradford Island and Washington Shore fish ladders, The Dalles Dam’s east fish ladder, and/or John Day Dam’s south fish ladder. At John Day Dam, the existing lamprey passage structure on the north fish ladder may be extended from the tailrace deck to the forebay” ***-January 2020 CRS BA § 2.5, pg. 2-85****.*

## Project Schedule

* Design: FY 2021 – FY 2022
* Construction: Winter 2022/2023
* Evaluation/Closeout: FY 2023

## Current Status

New startup. Internal scoping meeting occurred 4/21. PDT kickoff meeting scheduled for 5/20.

## Topics for FFDRWG Review/Coordination

None currently.

Fish Facility Design Review Work Group (FFDRWG)

USACE, Portland District

Project Update

Date Prepared/Updated: 2021-06-04

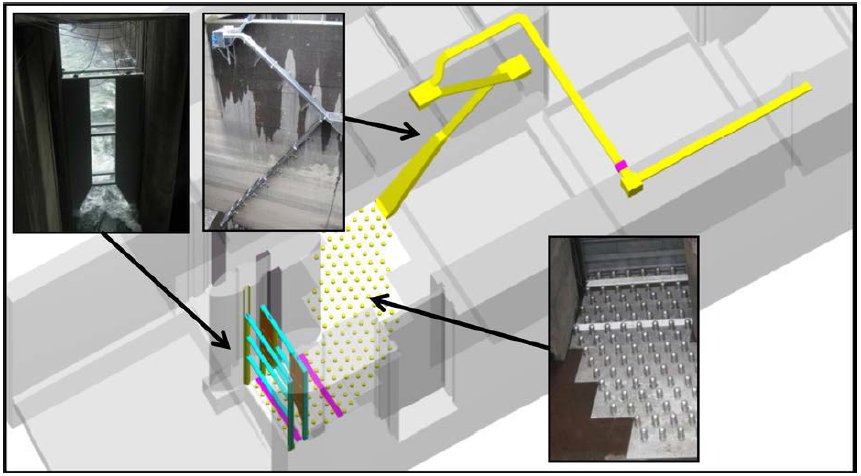
# BON Bradford Island B-Branch entrance improvements (variable width entrance weir, bollards, and transition pool LPS)

|  |  |
| --- | --- |
| Project Identifier: | P2 # 492400 |
| Project Manager (PM): | Bob Winters (CENWP-PM-FP)  *Robert.Winters@usace.army.mil* |
| Technical Lead (TL): | Adam White (CENWP-ENC)  *Adam.J.White@usace.army.mil* |
| FFDRWG Coordination (FC): | Andrew Derugin (CENWP-PME)  *Andrew.G.Derugin@usace.army.mil* |

## Project Description

Design B-Branch (Spillway) entrance improvements, including variable width weir, bollards, refuge boxes or other cover, as feasible. Implement in conjunction with transition pool LPS at this fishway.

* Modeled after Cascades Island and JDA North (mirror image of Cascades Island entrance)



*Cascades Island entrance improvements (2009)*

## Project Schedule

TBD

## Current Status

PDT site visit occurred on 5/24. PDT kickoff meeting occurred 5/27. Upcoming PDT meetings on 6/10 and 6/24.

## Topics for FFDRWG Review/Coordination

None currently.

Fish Facility Design Review Work Group (FFDRWG)

USACE, Portland District

Project Update

Date Prepared/Updated: 2021-03-03

# BON Cascades Island LPS Flume modifications

|  |  |
| --- | --- |
| Project Identifier: | P2 # 492401 |
| Project Manager (PM): | Bob Winters (CENWP-PM-FP)  *Robert.Winters@usace.army.mil* |
| Technical Lead (TL): | Adam White (CENWP-ENC)  *Adam.J.White@usace.army.mil* |
| FFDRWG Coordination (FC): | Andrew Derugin (CENWP-PME)  *Andrew.G.Derugin@usace.army.mil* |

## Project Description

Lamprey flume needs to be lowered to eliminate the mid-system lift pumps. This may require rerouting existing plumbing and moving electrical equipment in the area, as well as fabricating new brackets and a new flume section.



## Project Schedule

* Design: FY 2021
* Construction: FY 2021-2022
* Evaluation and Closeout: FY 2022

## Current Status

Initiating design.

## Topics for FFDRWG Review/Coordination

None currently.