The Dalles East Fish Ladder AWS Backup – Overview of Brainstorm Meeting Alternatives
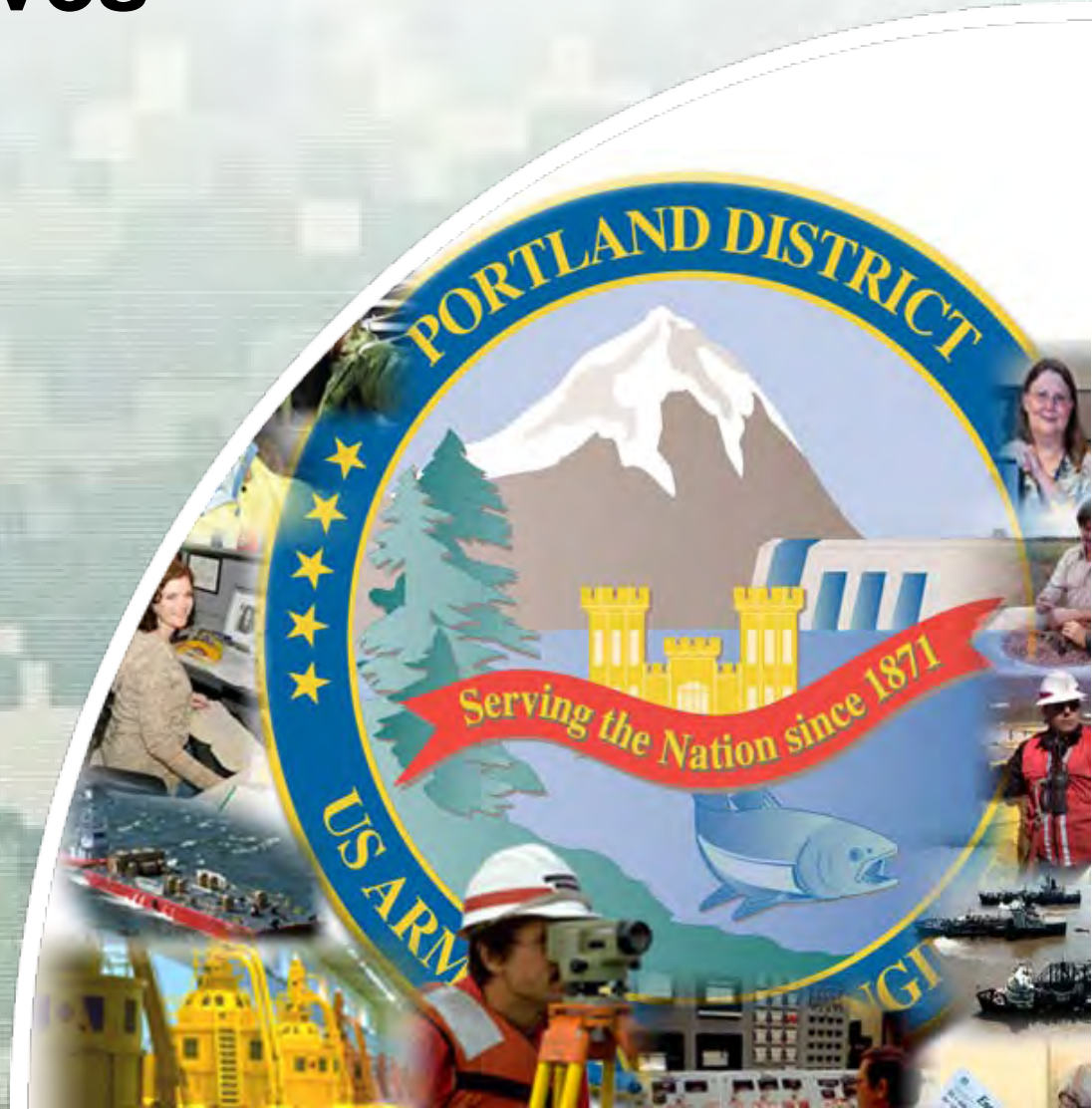
Special FFDRWG

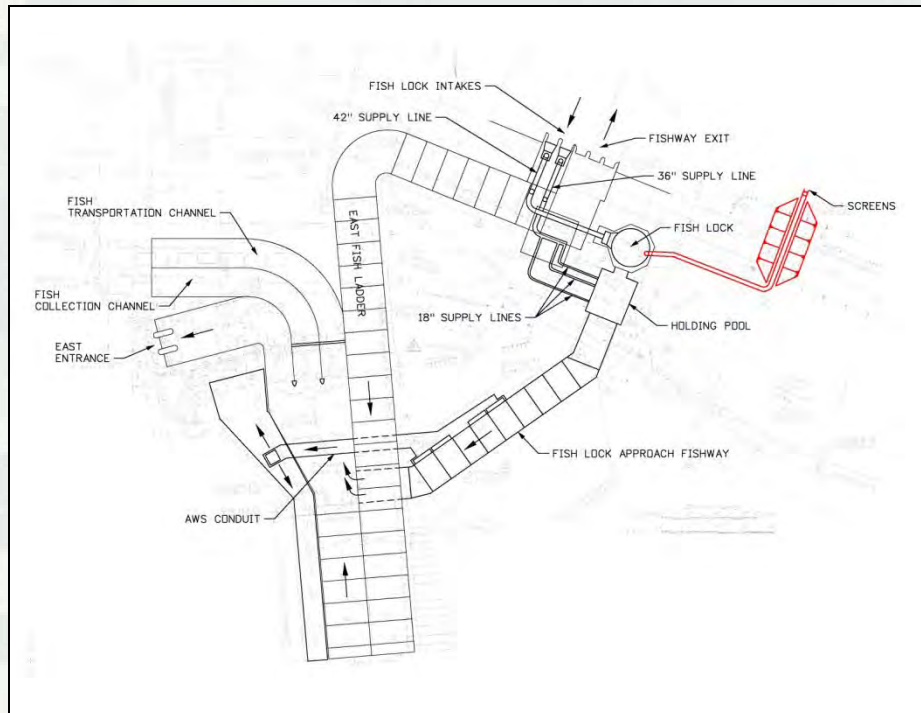9 May 2011

US Army Corps of Engineers
BUILDING STRONG®

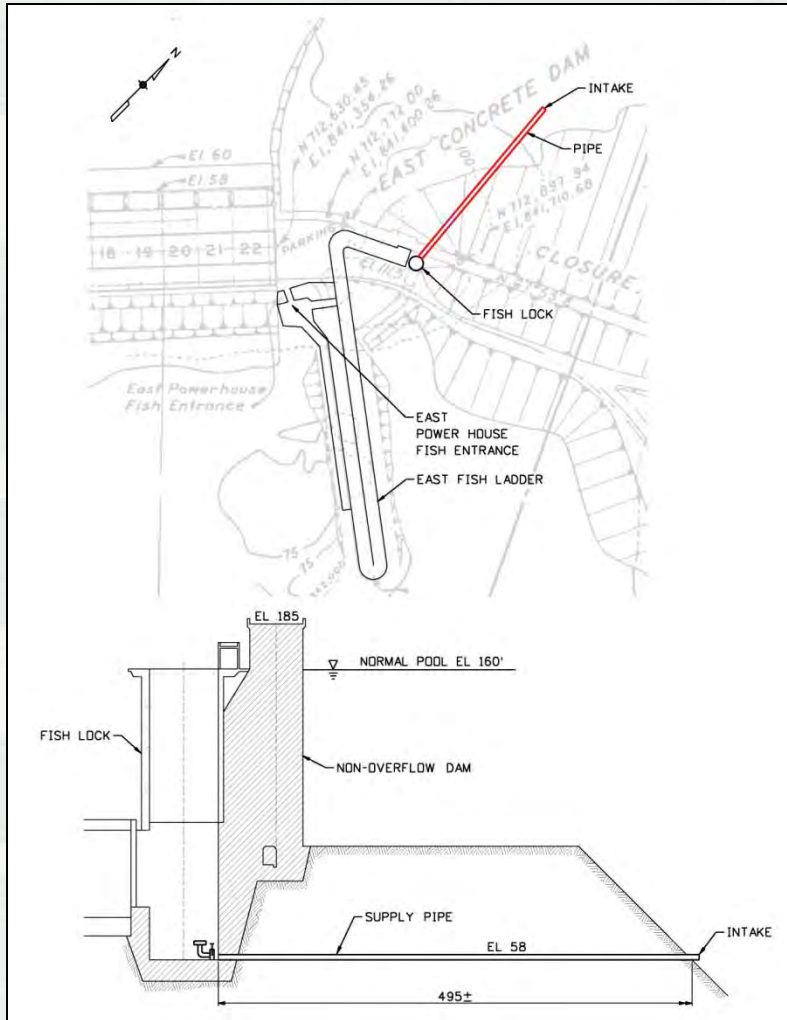# TDA EFL AWS Backup
Alt 1. Siphon to Fish Lock

- Key Issues
  - ► Operationally
    - Priming (pump)
    - Valve
  - ► Maintenance
    - Pump and Valve
  - ► Fish Screens required?
- Combine w/other alts

TDA EFL AWS Backup
Alt 2. River Wet Trap

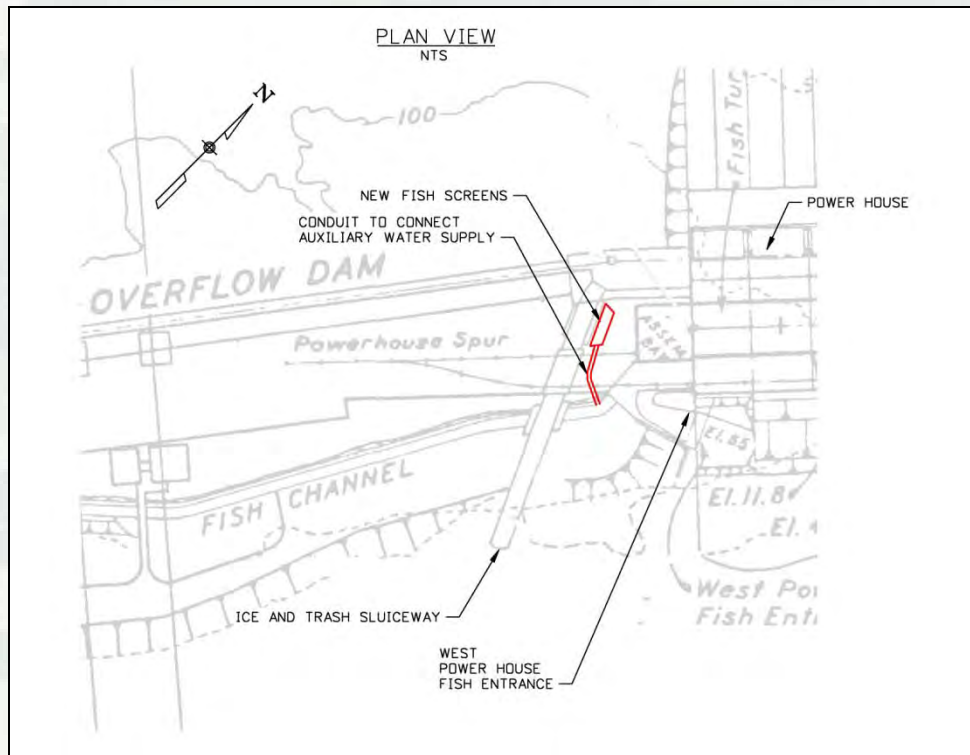
- **Key Issues**
  - ▶ Construction
    - Mining under dam
    - Control valve
    - Energy dissipation system
  - ▶ Dam Safety
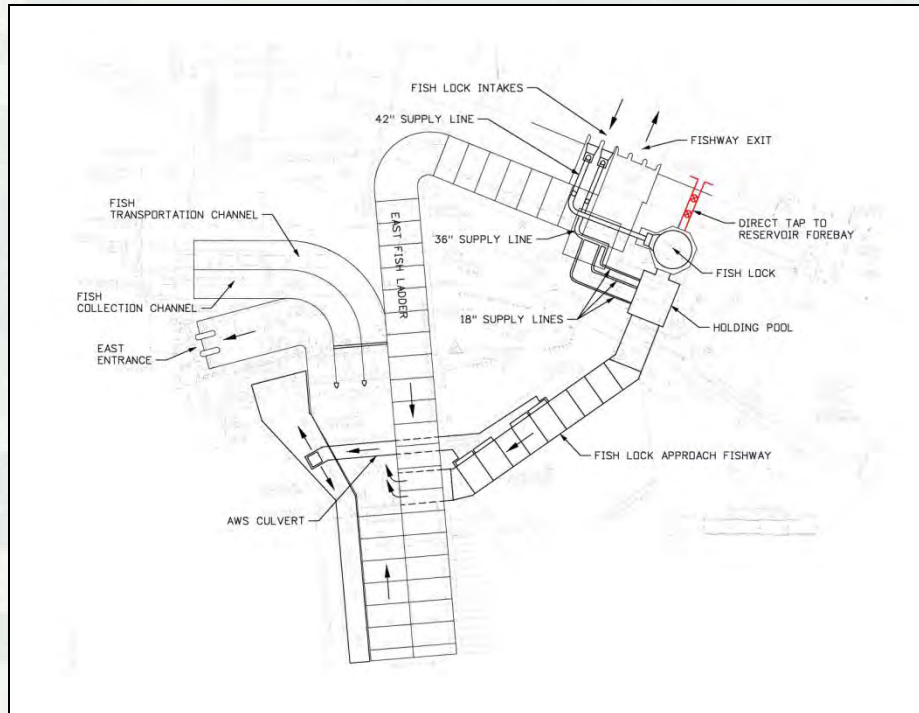 - ▶ Fish Screens Required?

TDA EFL AWS Backup
Alt 3. Ice & Trash Sluice Tap

- Fish Screen Required
- Maintenance
  - ► Fish Screen (Debris)
- Operations
  - ► High Water Velocities
  - ► Juvenile Fish Route

TDA EFL AWS Backup
Alt 4. Fish Lock Direct Tap to Forebay
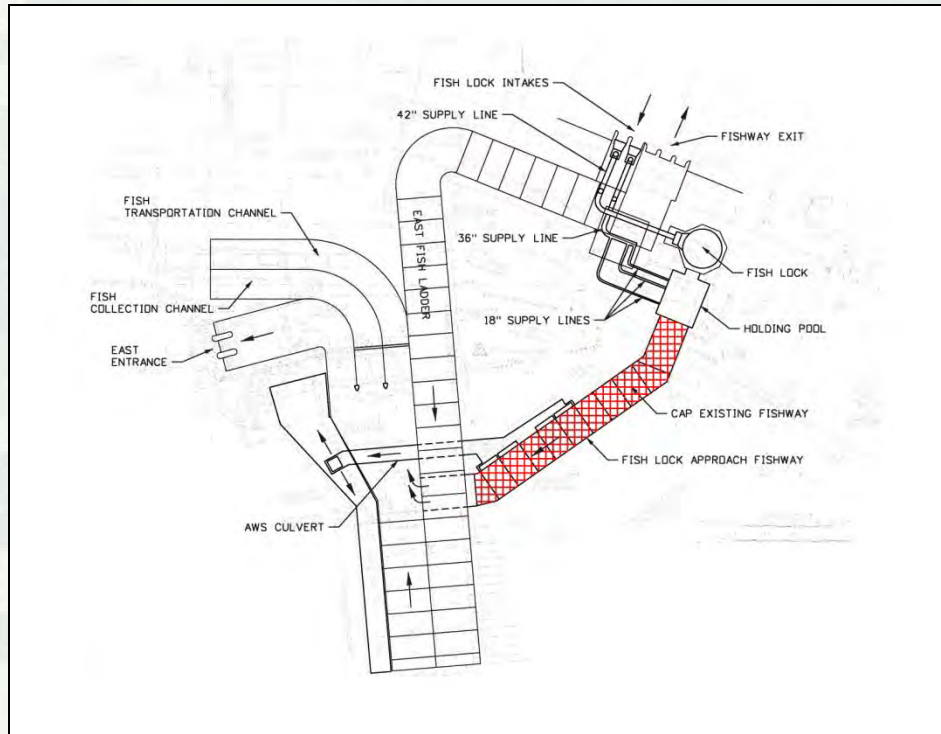

- Similar to Alt. 1
- Key Issues
  - ▶ Maintenance
    - Control Valves
  - ▶ Dam Safety
    - Mining through dam
- Combine w/other Alts.

TDA EFL AWS Backup
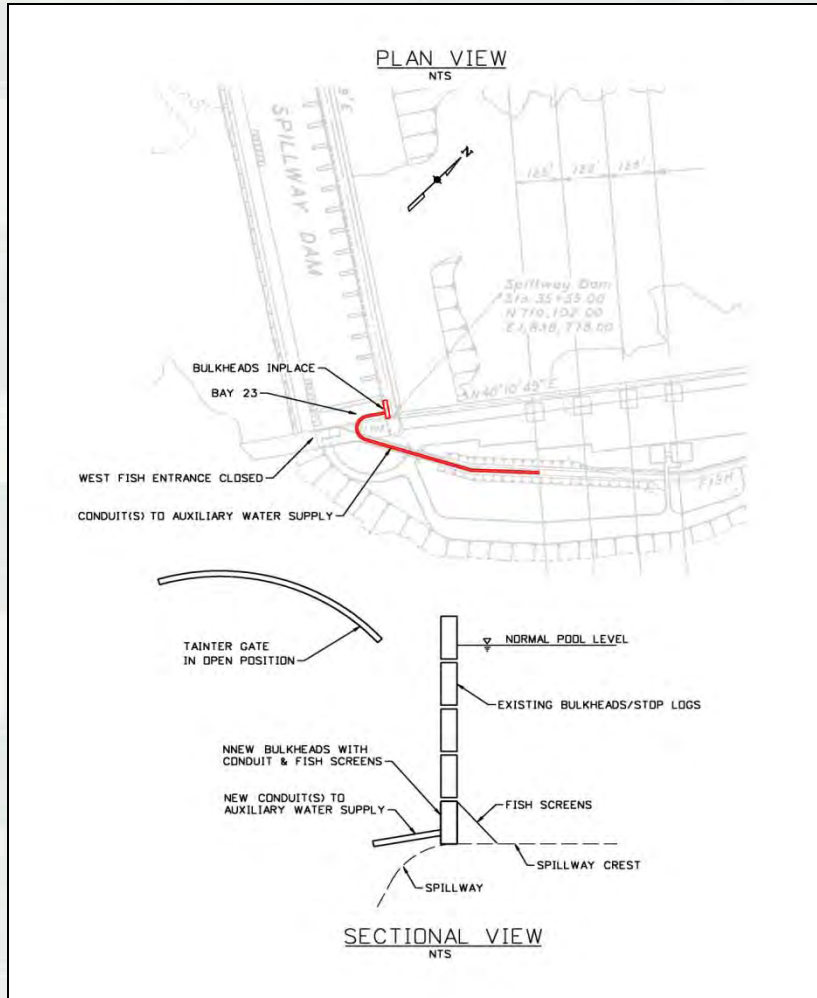## Alt 5. Install Concrete Lid on Fish Lock Approach Channel

- Pressurizing provides higher discharges to the AWS
- Need to be combine w/other Alts.
- Constructability
  - ► New stoplogs

TDA EFL AWS Backup
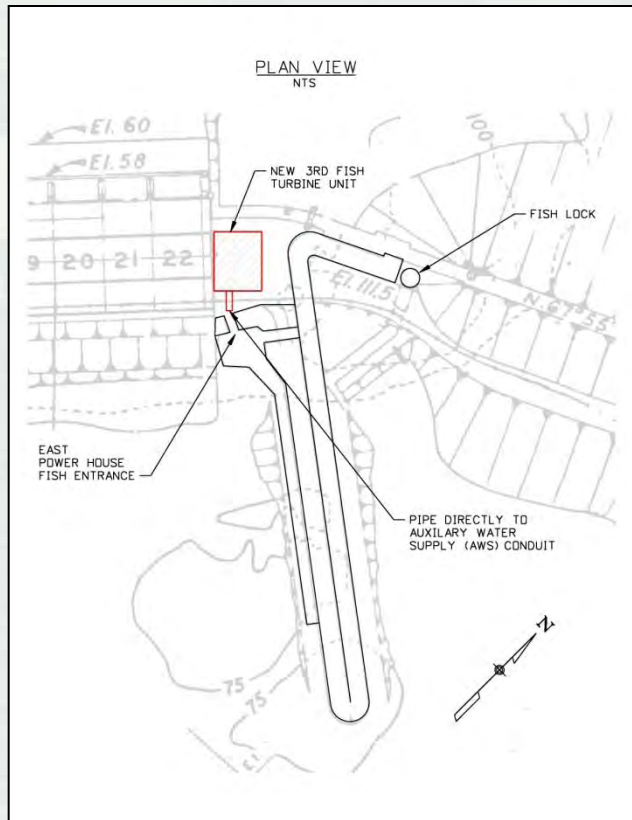## Alt 6. Stop Log Mods. To Tainter Gate 23

- Mods. Or construction of new stop logs.

- Bottom stop log mod. To pass water to a conduit attached to AWS

TDA EFL AWS Backup
Alt 7. New Third Fish Turbine

PLAN VIEW
NTS

- Provide 5000 cfs

- Issues
  - ► Construction
    - Cost
    - Time (>24 months)
    - Disruption to operations

- Fish Screens Required

TDA EFL AWS Backup
Alt. 8 Pipe(s) to AWS Culvert
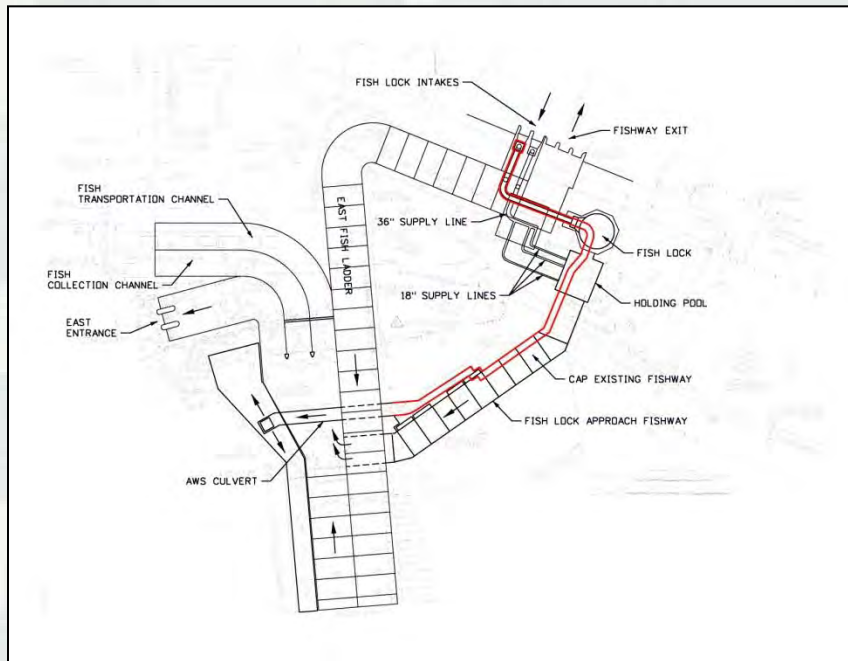
- Construct large dia. Pipes (4' to 7')
- Connect to existing fish lock intake and discharge directly into AWS culvert
- Maintenance
  - ► Fish Screens if req.

TDA EFL AWS Backup
Alt. 9 Remove Flow Constrictions on Current System
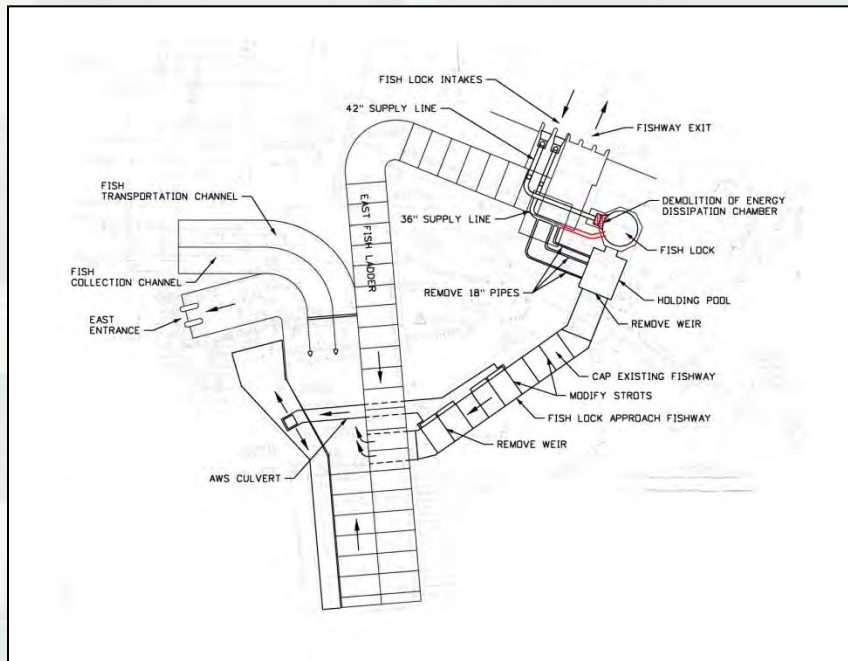
- Use in combination with other Alts.
- Not likely to provide required AWS Backup flow

TDA EFL AWS Backup
Alt. 10 Single Pumphouse on East Side
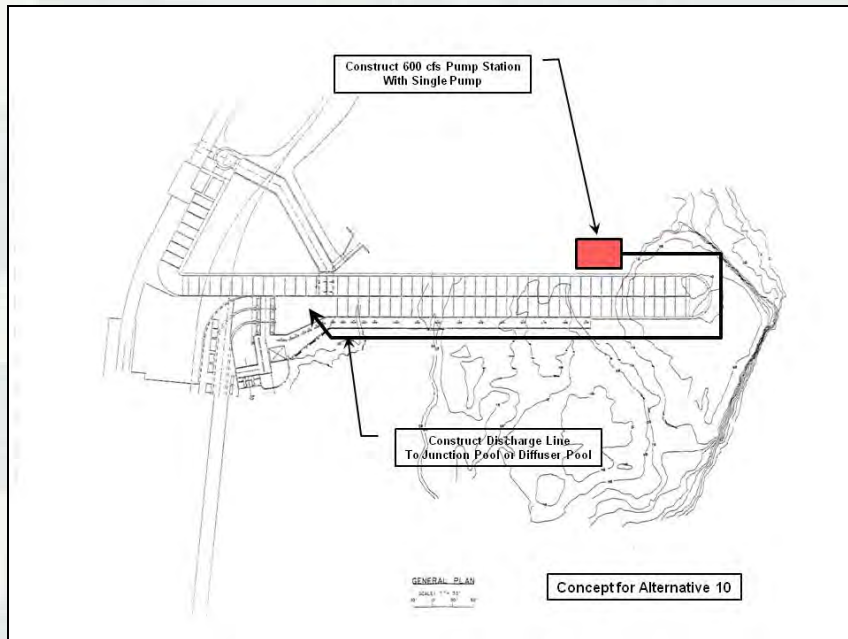
- Used in combination with other alts. (#9)
- Single pump (Q=600 cfs)
- Key Issues
  - ► Construction
    - Cofferdam needed
  - ► Maintenance

TDA EFL AWS Backup
Alt.11 Upstream Intake Tower w/Siphon

Construct Deep Water Intake Structure

Construct Siphon For AWS Flow of 600 cfs

Concept for Alternative 11
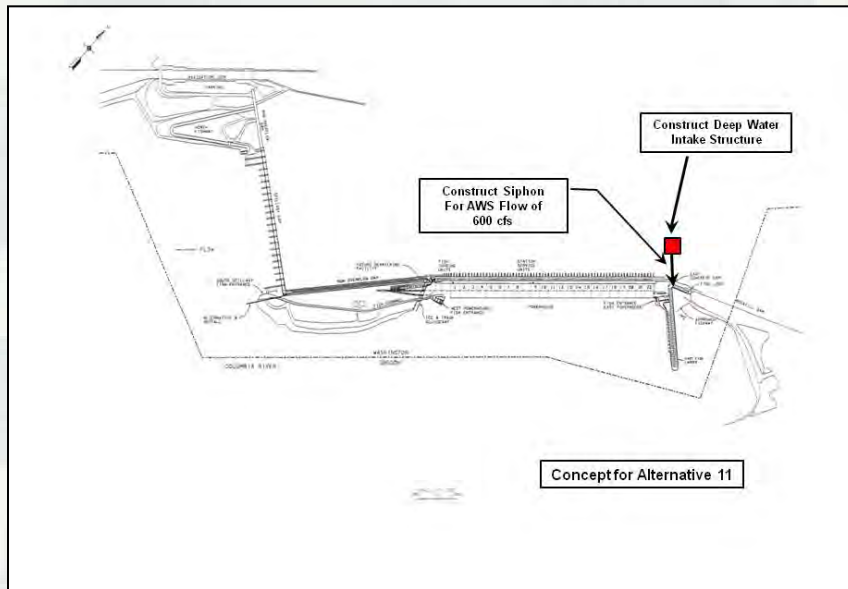
- Discharge directly into AWS via a siphon
- Could be used with other alts. or stand alone
- Maintanance
  - ▶ Gates and valves

TDA EFL AWS Backup
Alt. 12 Floating Plant Pump Station

Construct 600 cfs Floating
Pump Station With Single Pump

Alternate Pump
Station Location

GENERAL PLAN

Concept for Alternative 12

- Similar to Alt. 10
- Constructing near EFL entrance
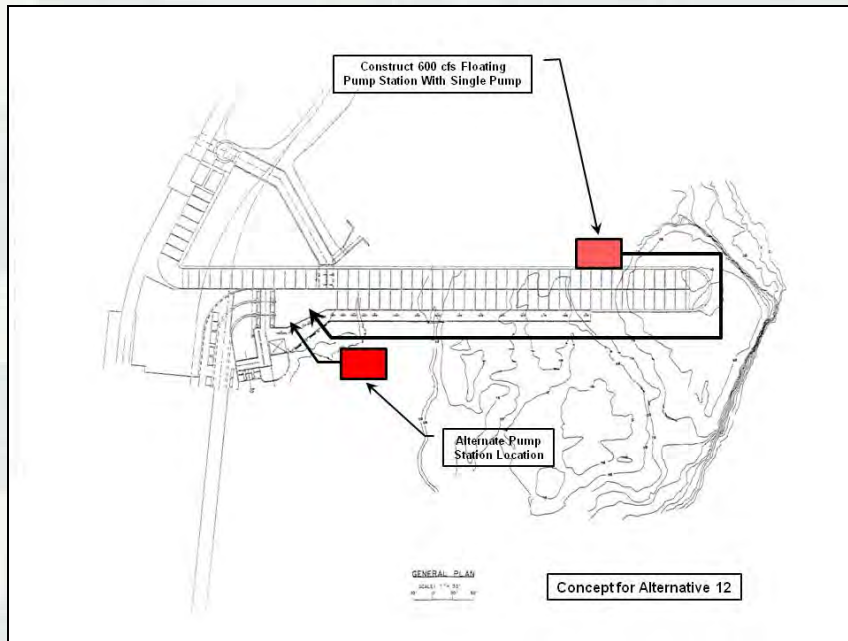
TDA EFL AWS Backup
Alt. 13 Fish Turbine Speed No Load

- Operate on turbine at speed no load
- 10-20% of the fish turbine operational flow
- Combine with other alternatives
- Operational issue
  - ► Can this be used for long term (up to one year)?

TDA EFL AWS Backup
Alt. 14 Ice & Trash Sluice Intake Channel Tap and Diversion

- Key Issues
- Debris handling
- Construction
  - ► Modification to the existing concrete structures for new pipes

TDA EFL AWS Backup

Alt. 15 Siphon w/Entrance at Fish Ladder Exit to AWS Conduit

- Similar to Alt.1
  - ▶ Discharge directly to AWS Conduit
  - ▶ Fish Screens Needed
  - ▶ Possible Energy Diss. Needed
  - ▶ O&M
    - Priming (pump)
    - Valves
- Function with or without existing fish lock

TDA EFL AWS Backup
Continuing Efforts

- Construct 3D CADD Model

- Modifying existing numerical model to allow investigation of alternatives

- Confirm flows from various sources
  - ▶ Existing fish lock system
  - ▶ Equalizing header system