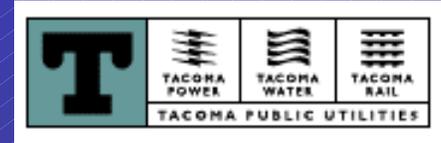




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Wynoochee Dam Section 1135 Fish Passage Project

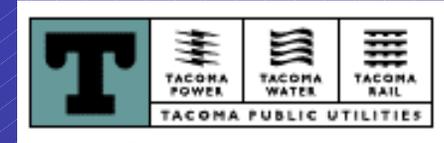
.....a joint effort between Washington
Department of Fish and Wildlife,
Tacoma Power, and U.S. Army Corps
of Engineers.



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Project Background

- Dam built in 1972 by Corps
- Used for water supply, flood control, and recreation
- Transferred to Aberdeen in 1993
- Hydropower installed by Tacoma in 1994
- 1135 Project began as part of transfer to Aberdeen to restore downstream fish passage
- Project was put on hold in 1998 due to legal and financial constraints
- Resumed project development in 2002



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1135 Project & Funding

- Corps of Engineers 1135 program goal: Improve fish passage through Wynoochee Dam Project.
- Cost sharing:
 - 25% non-Federal sponsor
 - 75% Corps of Engineer
- \$1.8 Million available in Wynoochee fish trust fund for non-Federal cost-share (includes capital construction and maintenance).



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Existing Downstream Fish Passage:

- Currently, multi-level surface withdrawal system used to pass fish.
- Hydroelectric unit not in operation during 77-day fish window.
- Adverse affects include unacceptable mortality and residualization.
- Studies suggest new passage system (the 1135 project) will improve survival and out migrants attraction.



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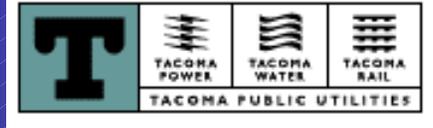
Wynoochee Smolt Monitoring

- Define window of smolt outmigration.
- 10 year study which began in 1994, concludes in 2003.
- Monitoring period : March 15 – July 30.
- 77-day turbine shut down period currently from April 15 – June 30.
- Final results will be reviewed by resource agencies and FERC.



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Hydroacoustics





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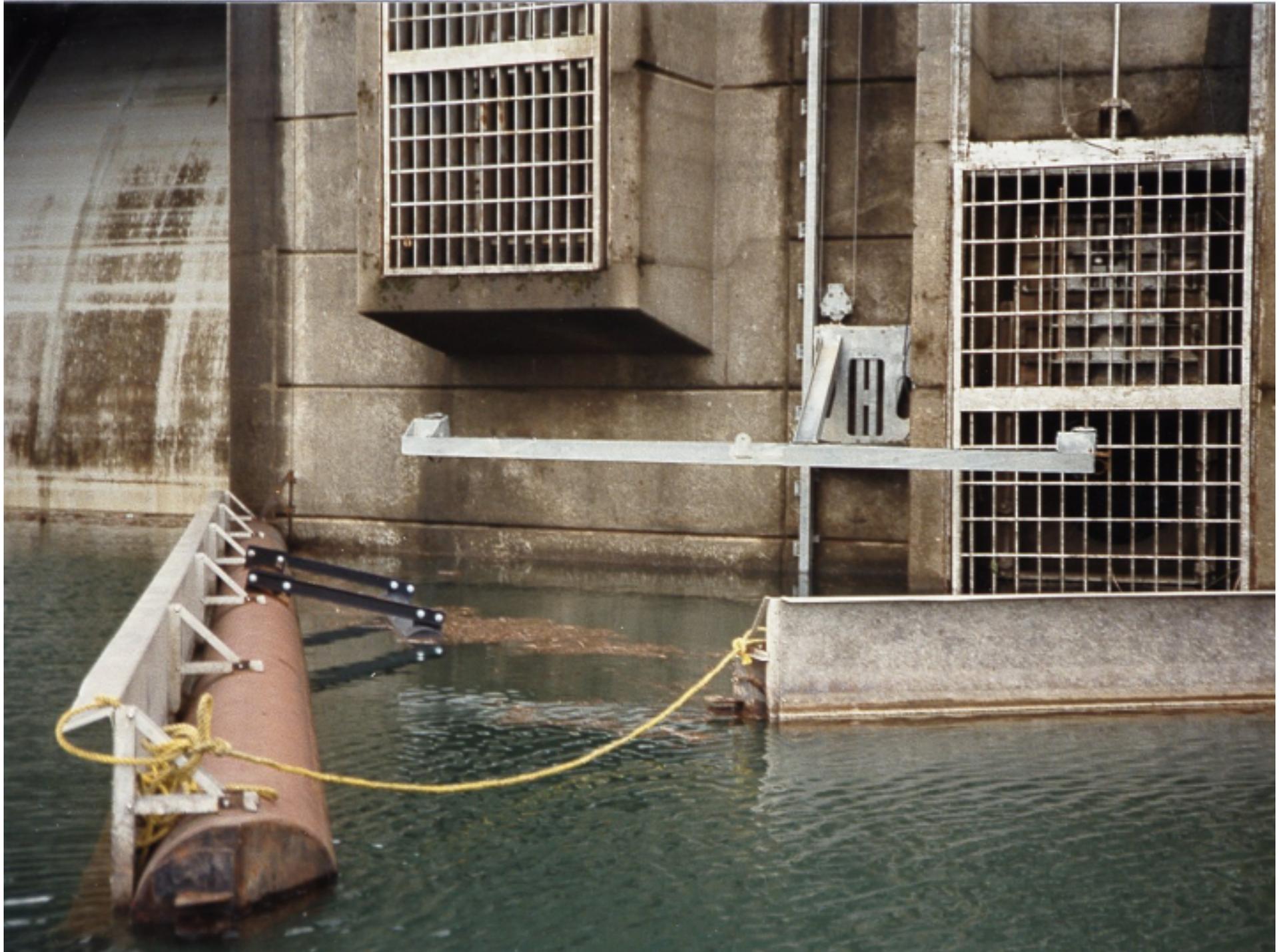
Hydroacoustic Capabilities

- Estimation of fish numbers passing the acoustic beam.
- Select for a specified fish size range.
(coho and steelhead: 100mm to 240 mm)
- Track fish movement in three dimensions.
- Determine outmigration timing through the project.



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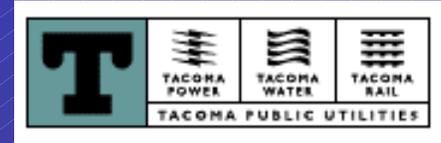




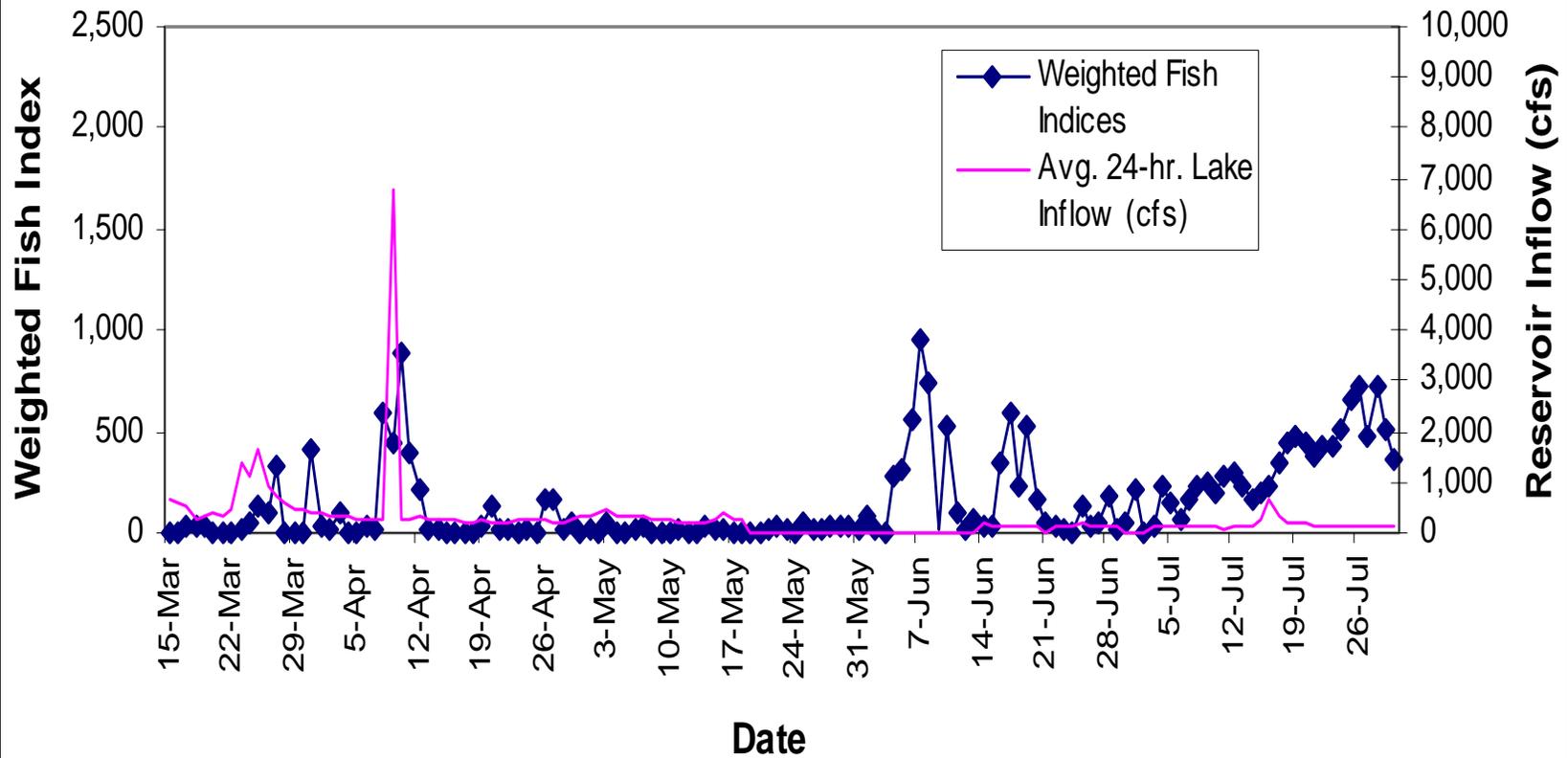
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**Figure 6. Weighted Fish Indices vs. Avg. Reservoir Inflows
Wynoochee Hydroacoustic Evaluation, 1998**





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Estimate of annual smolt production (coho and steelhead)

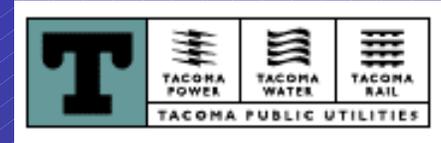
Adult Fish Year (July 1 -June 30)	Adults above dam	Smolt Monitoring Year (March 15 - July 30)	st.smolts passing dam (Weighted fish index)
1991-1992	1215	1994	16481
1992-1993	795	1995	not calculated
1993-1994	1104	1996	16388
1994-1995	512	1997	9833
1995-1996	871	1998	20987
1996-1997	2034	1999	21688
1997-1998	519	2000	being recalculated
1998-1999	1400	2001	being recalculated
1999-2000	2002	2002	17921
2000-2001	1199	2003	pending
2001-2002	3744		



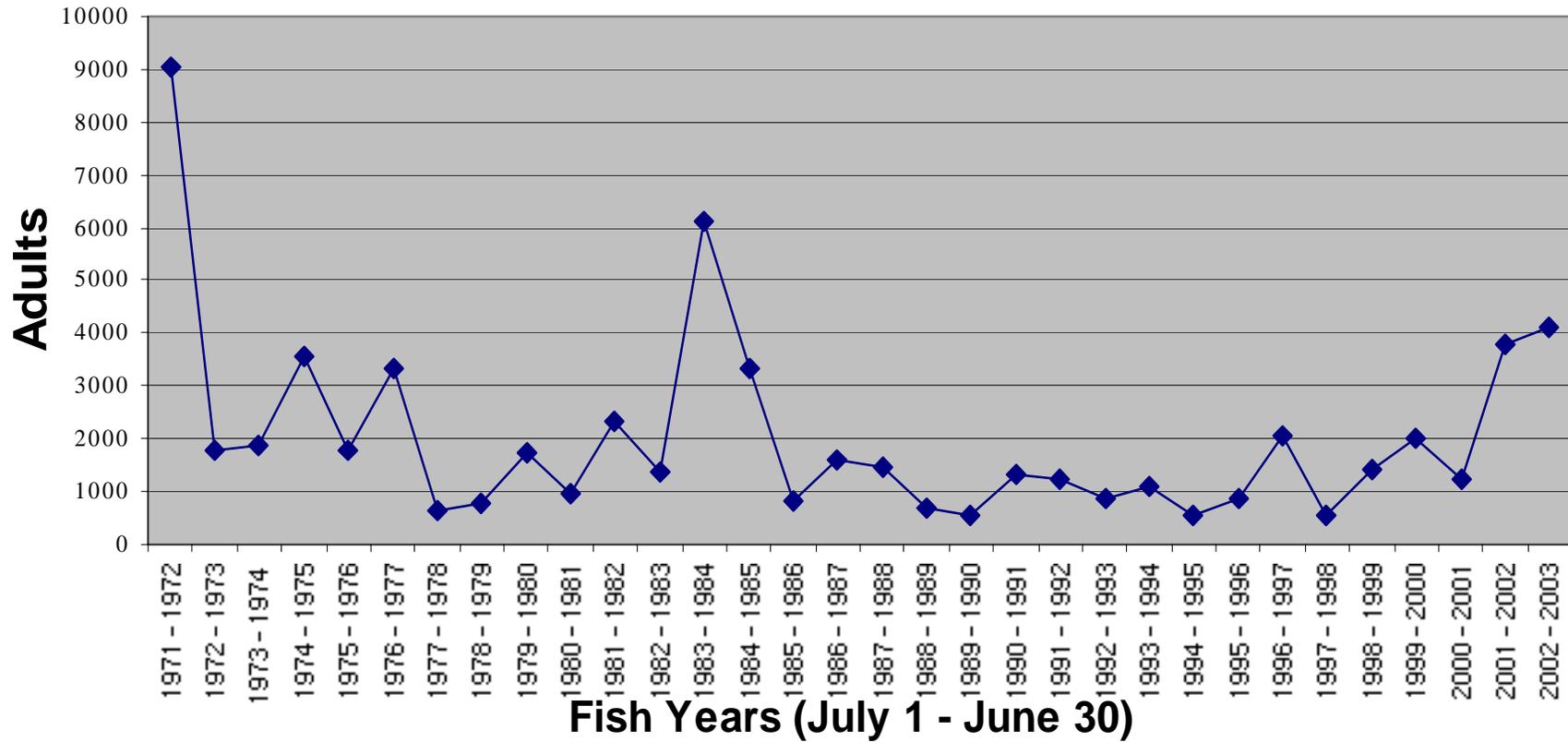
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Adult Returns





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Results to Date

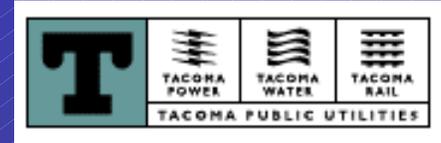
- Smolt outmigration closely related to inflow events to the reservoir.
- Trends show mid – April as beginning of first substantial smolt numbers.
- First part of July marking the end of out migration.
- Estimated average of 17,500 smolts passing the dam annually (weighted fish indices).



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How will this data be used

- Define the optimum 77 – day turbine shutdown period under current operations.
- Ultimately decide when the Eicher screen will be deployed.



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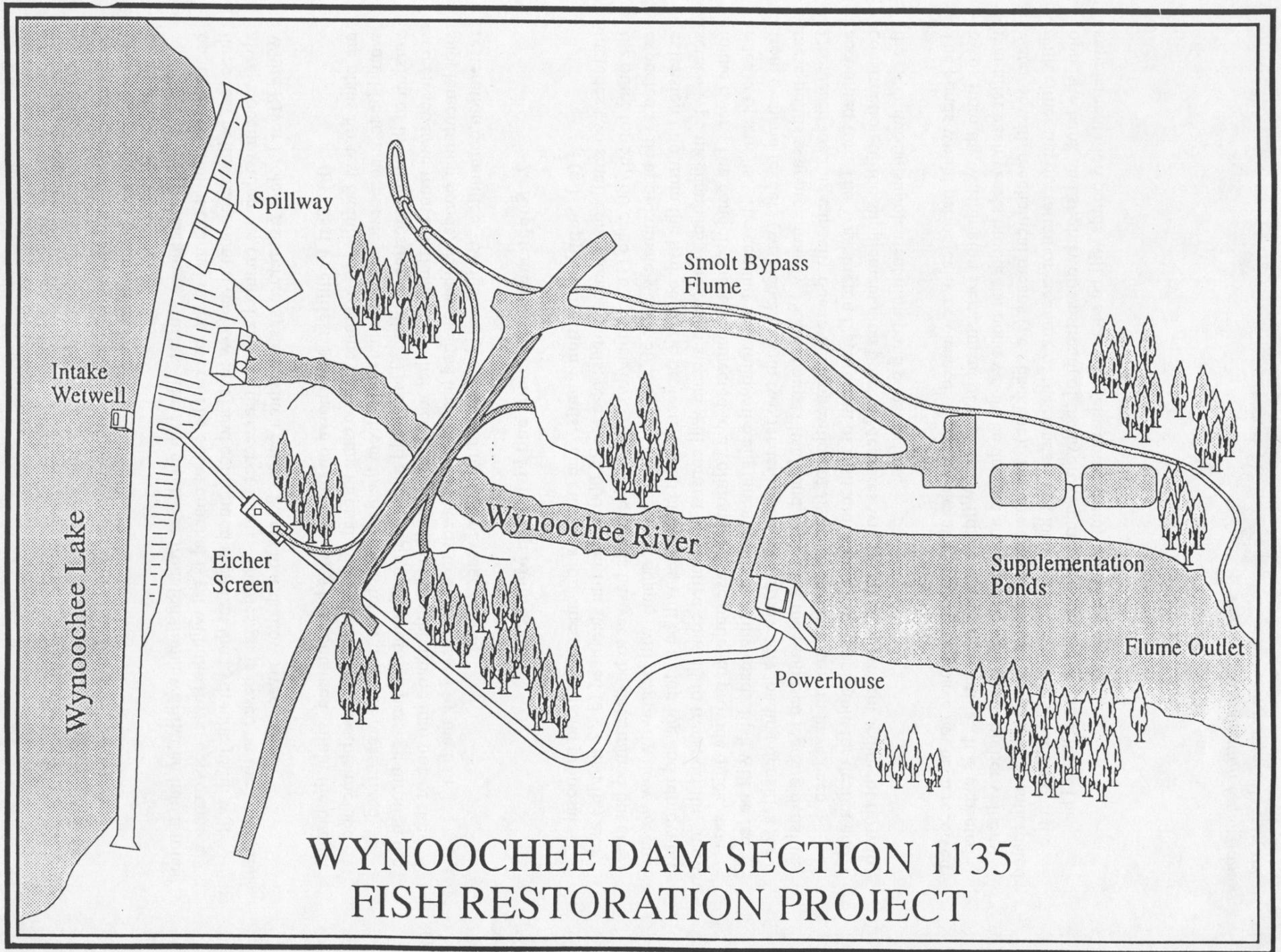


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Proposed Fish Passage

- Goal to improve downstream passage survival to >95%
- Penstock Eicher Screen with flume return to river.
- Provide habitat restoration or supplementation ponds.
- Modifications to adult trap and haul facility.

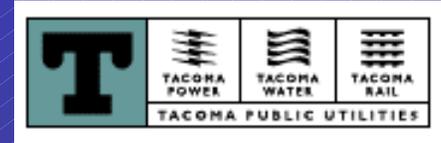




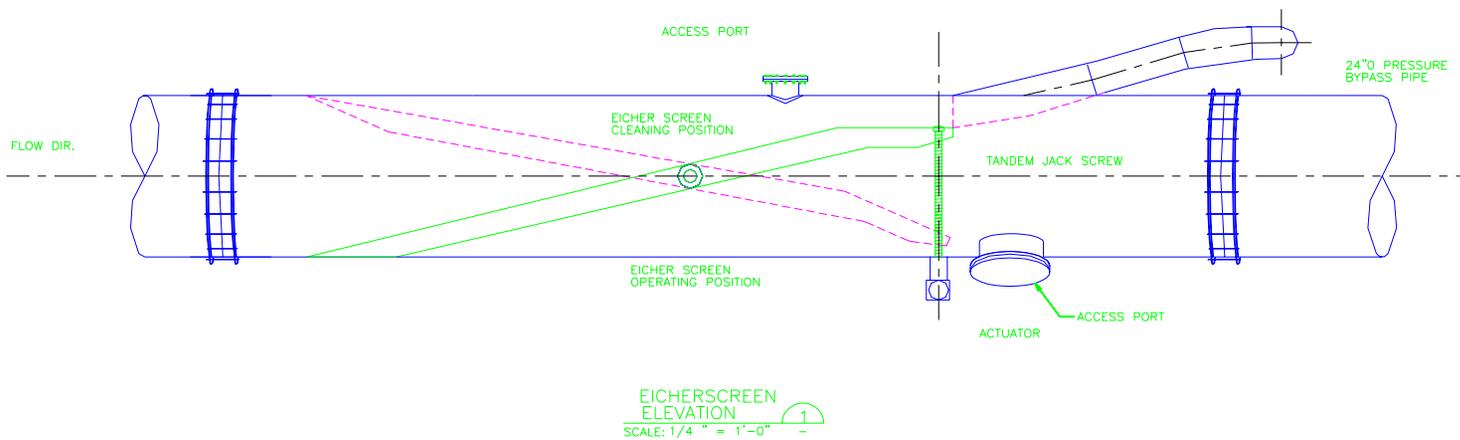
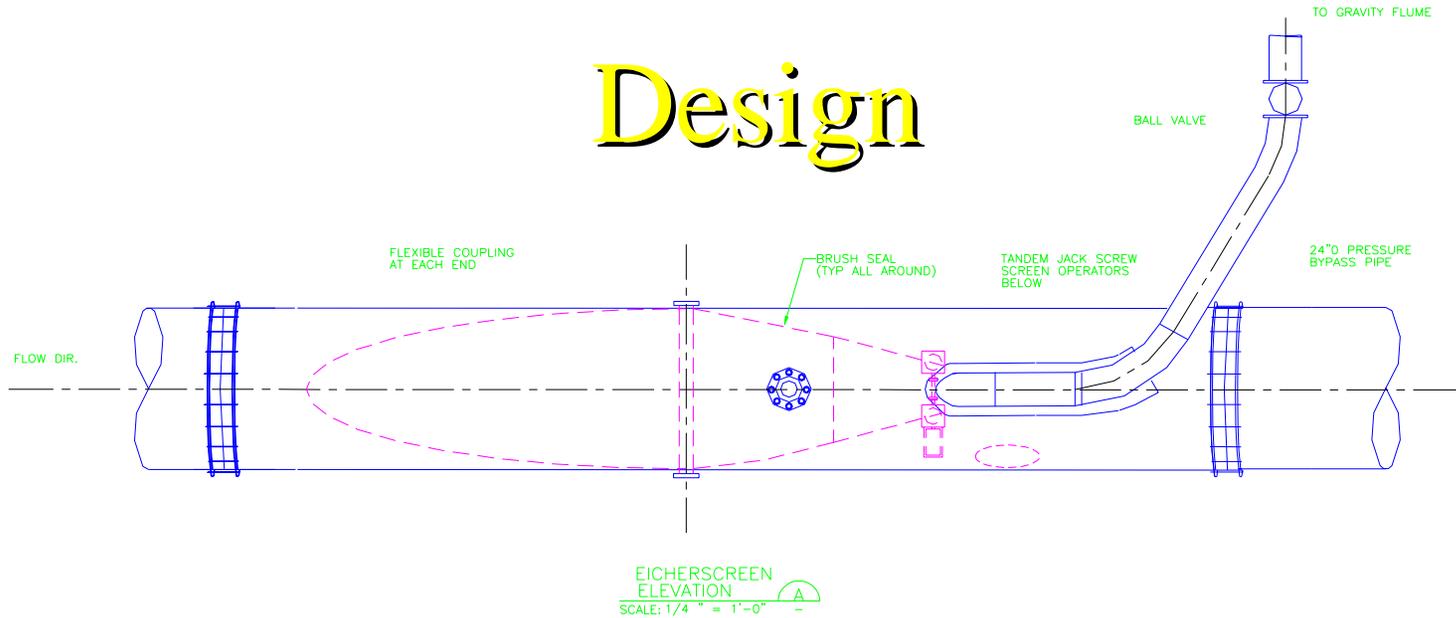
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Design





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Other Restoration Opportunities

- Any remaining Wynoochee fish trust fund could contribute funds for a non-Federal sponsor to use for their project cost share requirement.
- Considering habitat restoration instead of supplementation ponds.
 - Replace / repair culverts
 - Create side channel habitat
- Now soliciting project proposals.



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Benefits

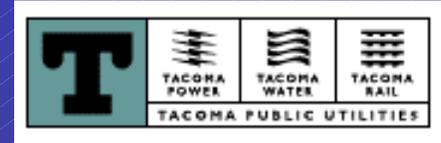
- Restoration proposed could meet or exceed goals of fish production at hatchery.
 - 25,000 Steelhead
 - 55,700 Coho
- Goal of supplementation ponds was to “jump start” fish production until natural production improves due to fish passage.
- Restoration activities are more cost effective and environmentally sustainable than hatchery programs.



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Questions and More Information

- www.nws.usace.army.mil (Civil Works Home / Projects / Wynoochee)
- Chris Pollock
 - Christopher.E.Pollock@usace.army.mil
 - (206) 764-6947
- Mark Wicke
 - Mwicke@ci.tacoma.wa.us
 - (253) 502-8196