

Reintroduction of Fish Passage in the Deschutes River Basin

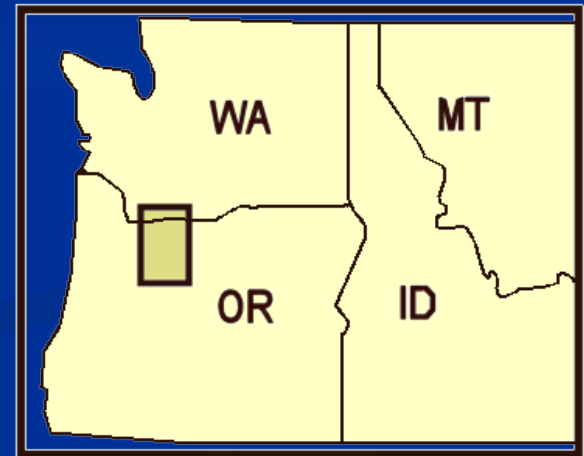
Jens Lovtang

Fisheries Management Supervisor
Confederated Tribes of Warm Springs
and

Mike Gauvin, PRB Mitigation Coordinator
Oregon Department of Fish and Wildlife

Jm Bartlett, Fish Facilities Team Leader
Megan Hill, Native Fish Studies Team Leader
Portland General Electric, PRB Project

The Deschutes River and the Warm Springs Reservation



Area of Detail

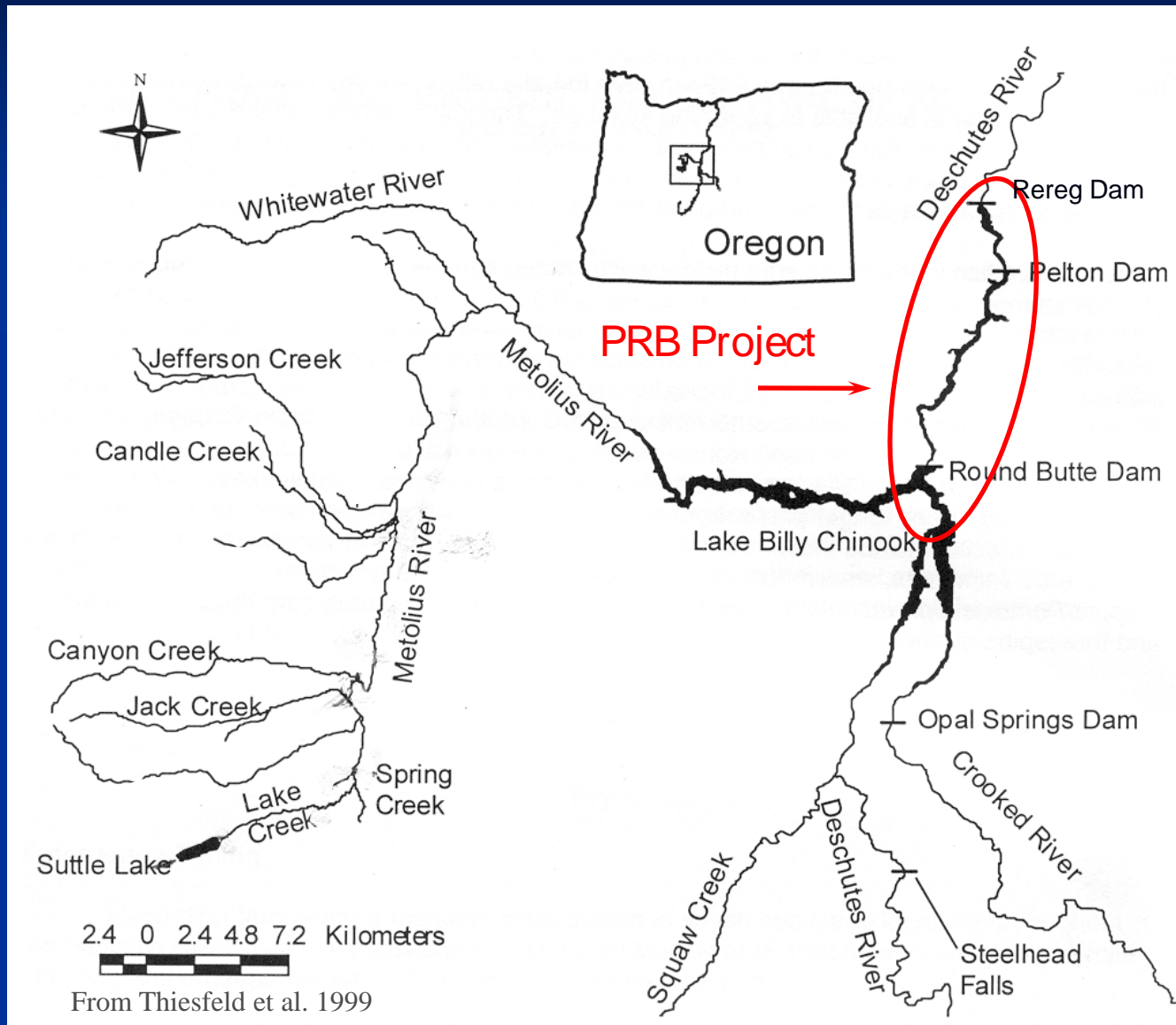
Salmonids in the Deschutes Basin

- Chinook
 - Spring
 - Fall
- Steelhead
- Sockeye
- Coho?
- Bull Trout



Courtesy: Deschutes River Council

Pelton Round Butte Project and Lake Billy Chinook,



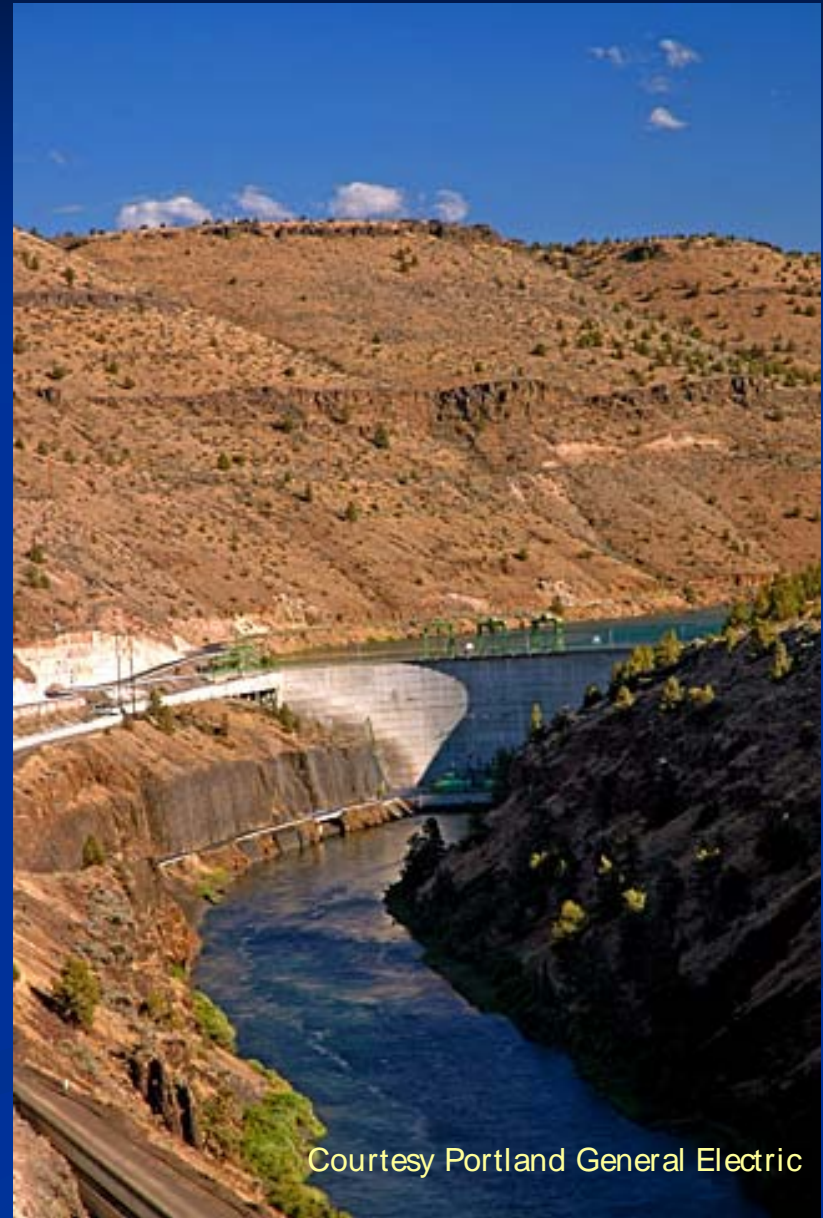
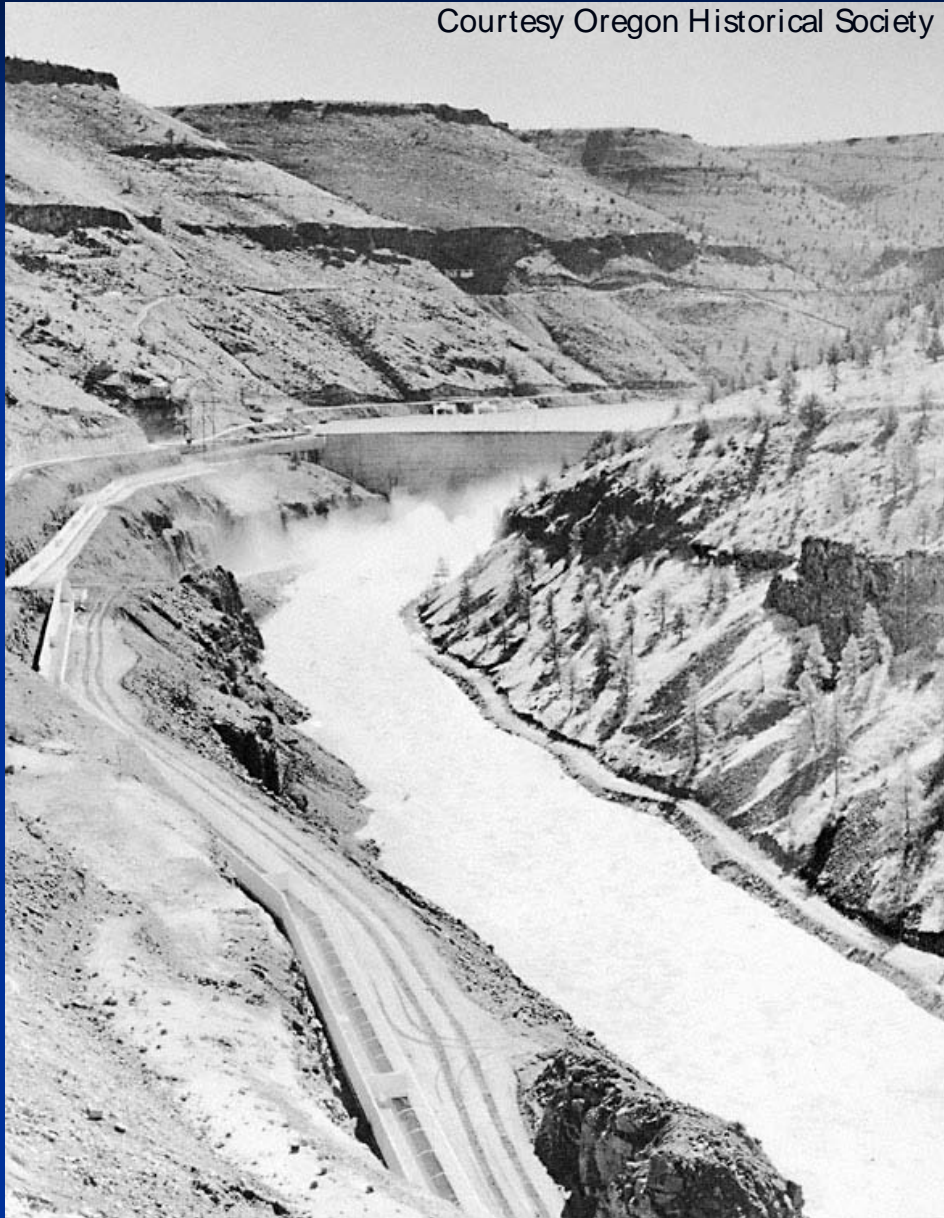
Reregulation Dam (1958)

Courtesy: Portland General Electric



Pelton Dam (1958)

Courtesy Oregon Historical Society



Courtesy Portland General Electric

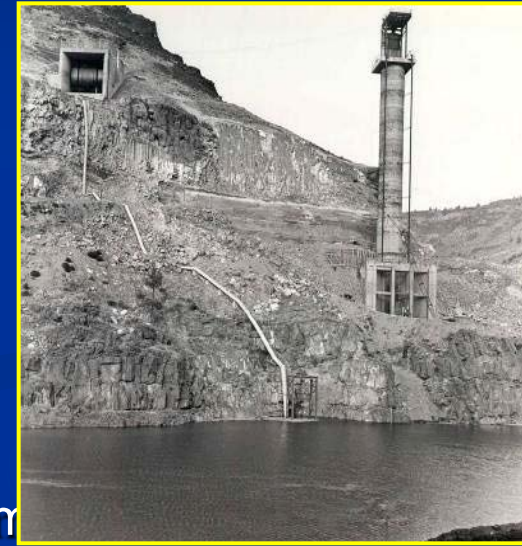
Round Butte Dam (1964)

Courtesy: Oregon Historical Society



A Quick History of the PRB Project

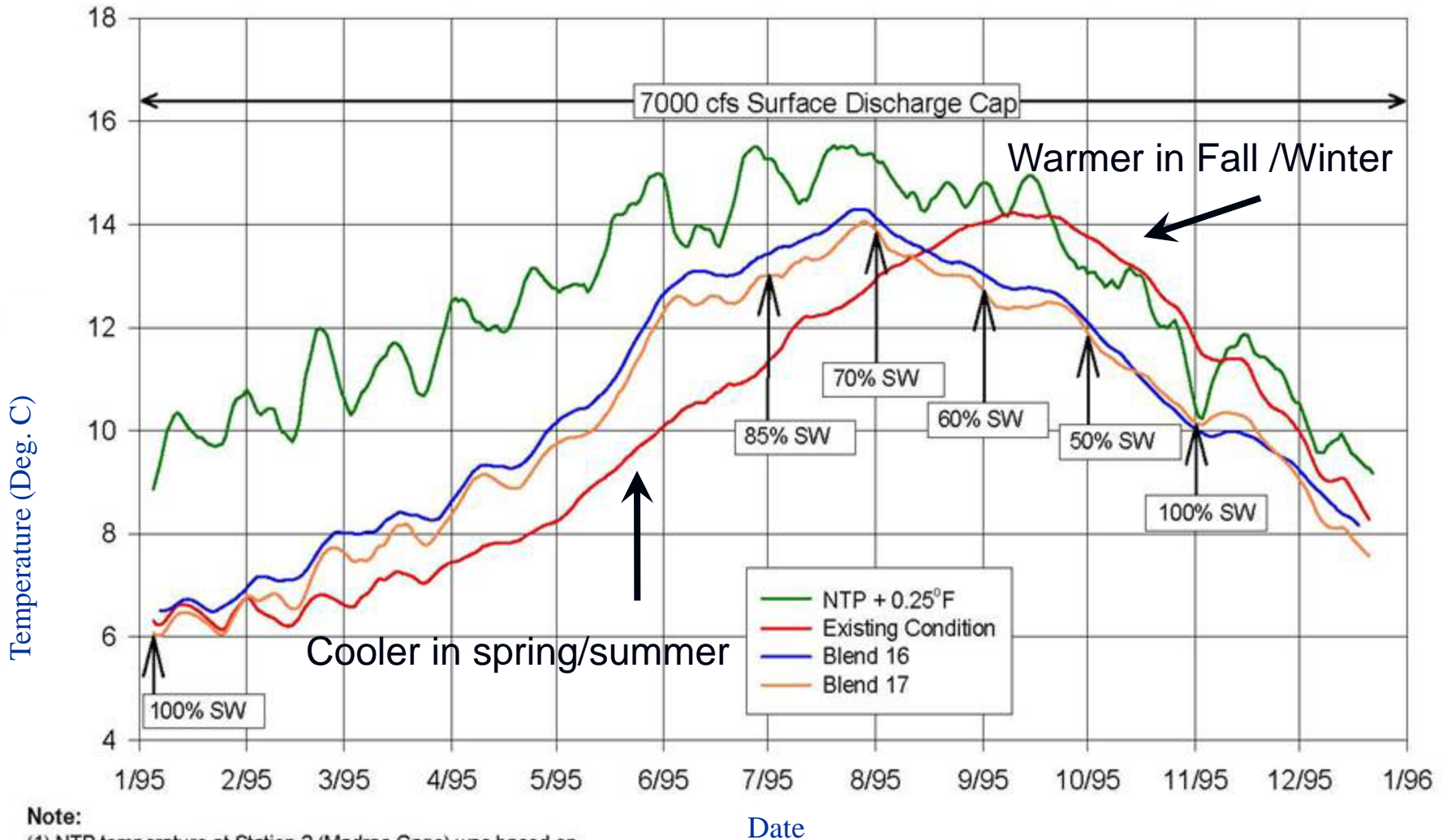
- Pelton Round Butte Complex constructed between 1957-1964
- Upstream and Downstream facilities were part of original construction
- 1968 Passage terminated
- 1974 Round Butte Hatchery constructed
- Pelton Trap constructed to collect adult broodstock
- Original goals - 1800 STS, 1200 SPC
- New target mitigation prod. of 162K STS and 240K SPC smolts
- 1997 Relicensing process started
- 2004 Settlement Agreement completed with full complement of Protection, Mitigation, and Enhancement Measures
- Fish passage, screening, habitat enhancement, Pelton fund
- FERC license issued June, 21 2005



Key Pelton-Round Butte License Requirements

- Meet water quality standards for lower river & project reservoirs
 - Temperature
 - pH
 - Dissolved oxygen
- Screen 100% of powerhouse flows
- Provide a downstream fish passage system
 - Modify reservoir currents for fish attraction
 - Minimize travel time to collection facility
 - Minimize opportunities within collection facility for predation & injury

Deschutes River Temperatures at Madras Gage



Note:

- (1) NTP temperature at Station 2 (Madras Gage) was based on
 $T_{station2} = 2.8 + 0.79 \cdot T_{LBCinflow} + 0.071 \cdot T_{Air}$
 (Huntington, Hardin, and Raymond (April 1999))
- (2) Rereg regression between Station 3 (Lake Simtustus tailrace) and Station 2 (Madras Gage) for Blend 17 is
 $T_{station2} = 1.0339 \cdot T_{station3} - 0.235$
- (3) 7DADM - 7-day average of daily maximum

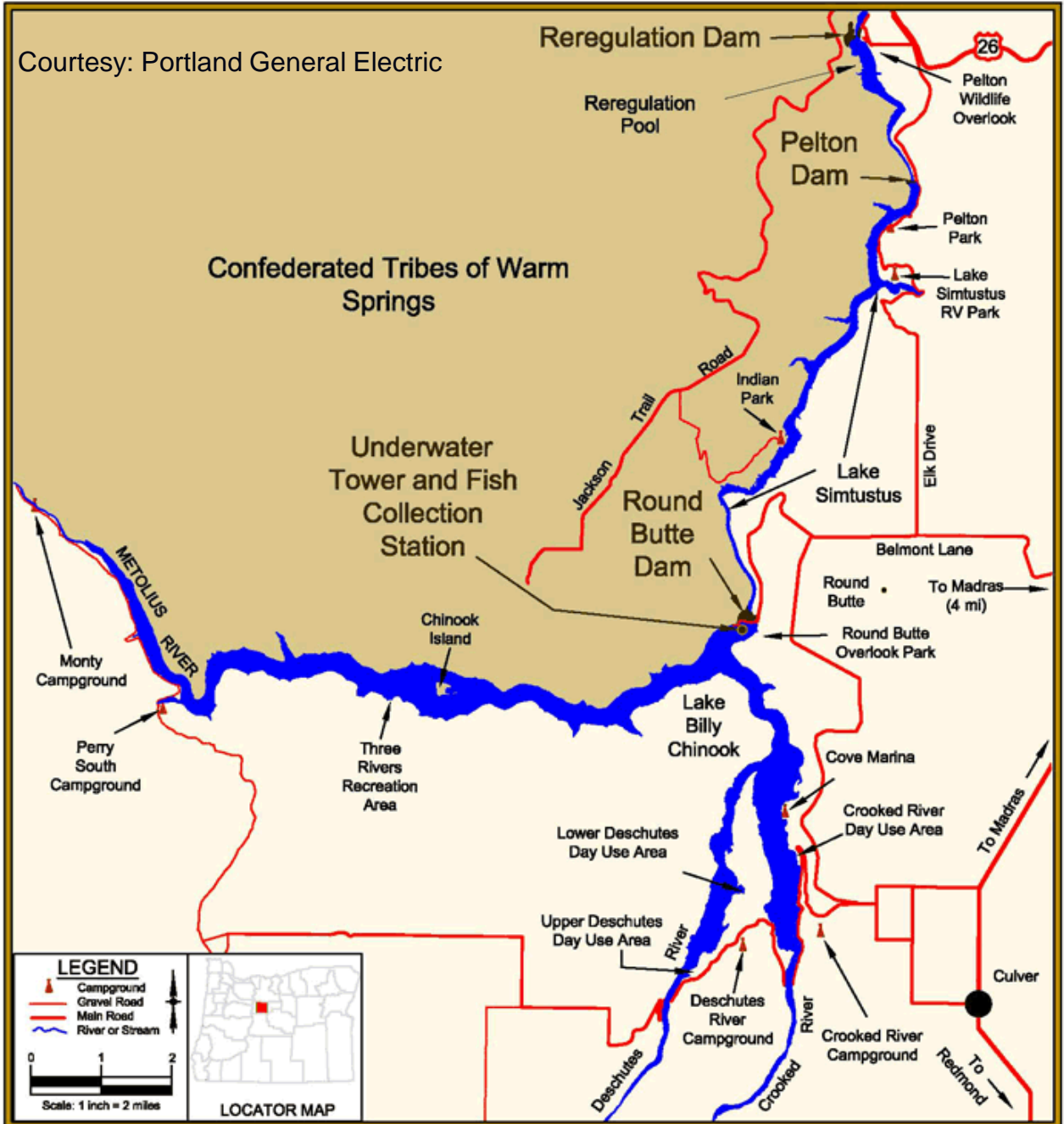
Courtesy PGE

History of Fish Passage

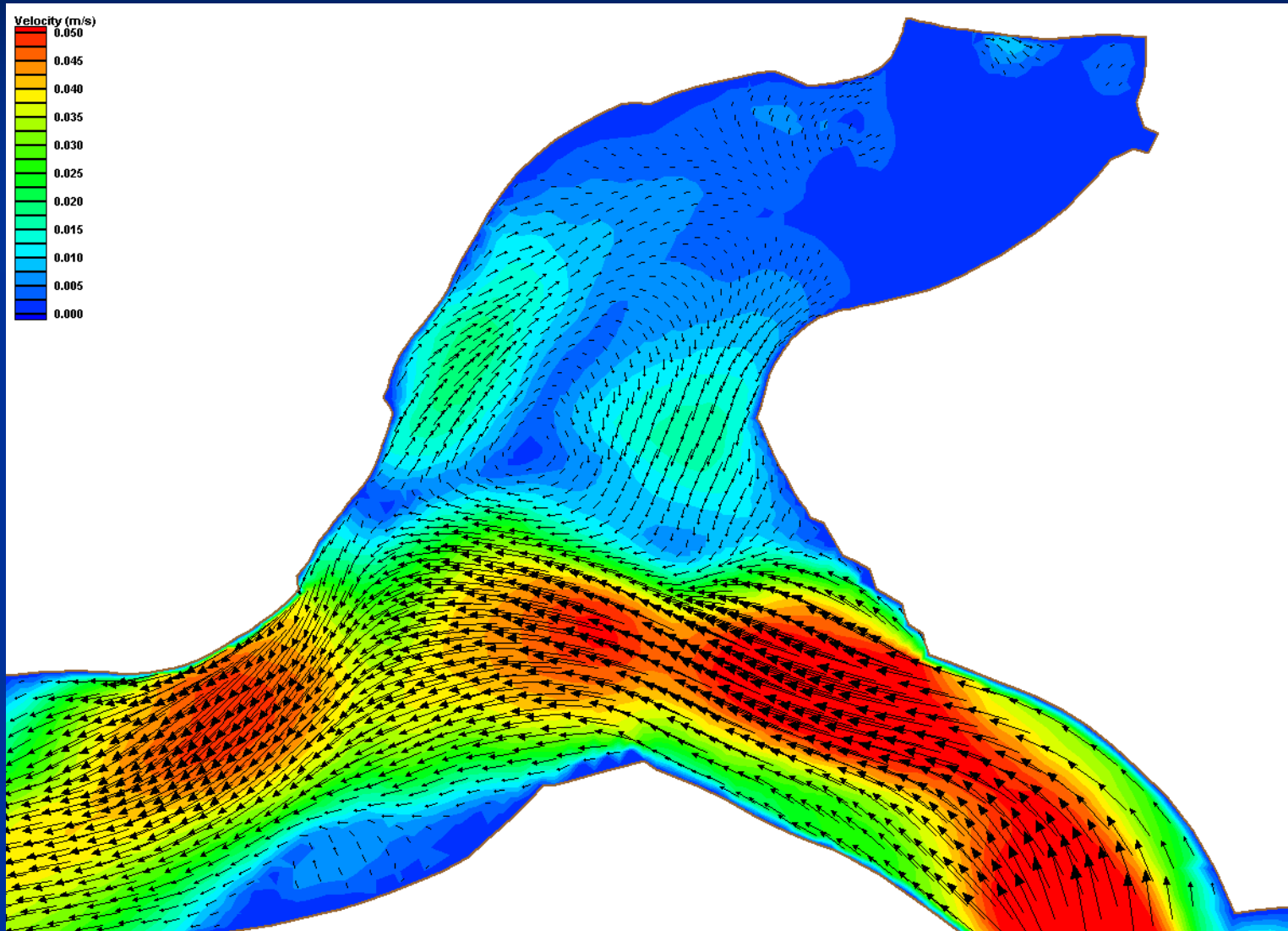
- Passage facilities were in place when the PRB Project was completed.
 - 3 mile fish ladder from Rereg dam to Pelton Dam
 - Fish “Tramway” at Round Butte Dam
 - Collection facilities in Round Butte Forebay and Pelton Forebay to collect outmigrating juveniles.
- But passage failed, primarily due to conflicting currents in Lake Billy Chinook.
 - In 1968 Round Butte Hatchery was build as a mitigation facility

The PRB Project

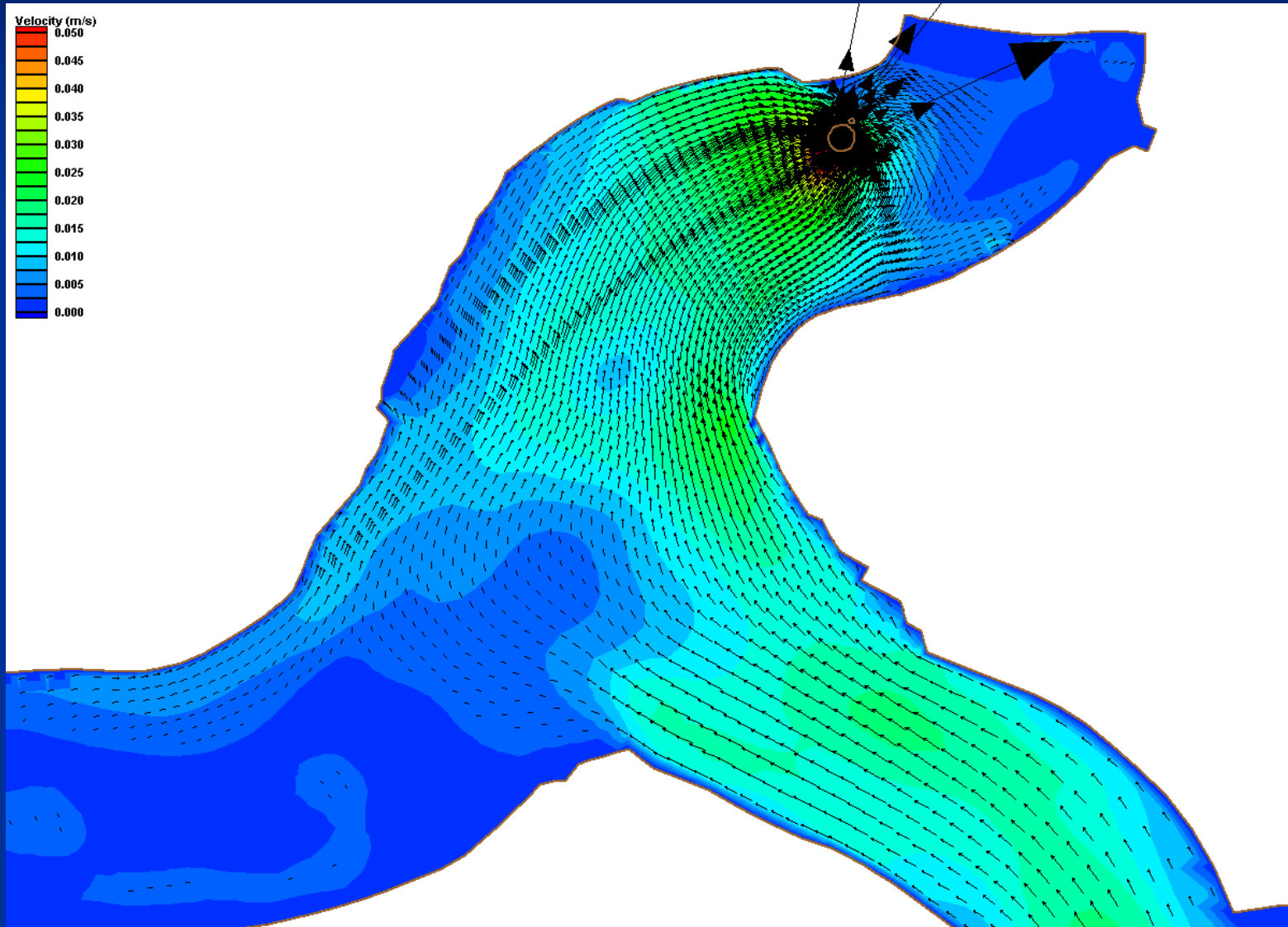
Courtesy: Portland General Electric



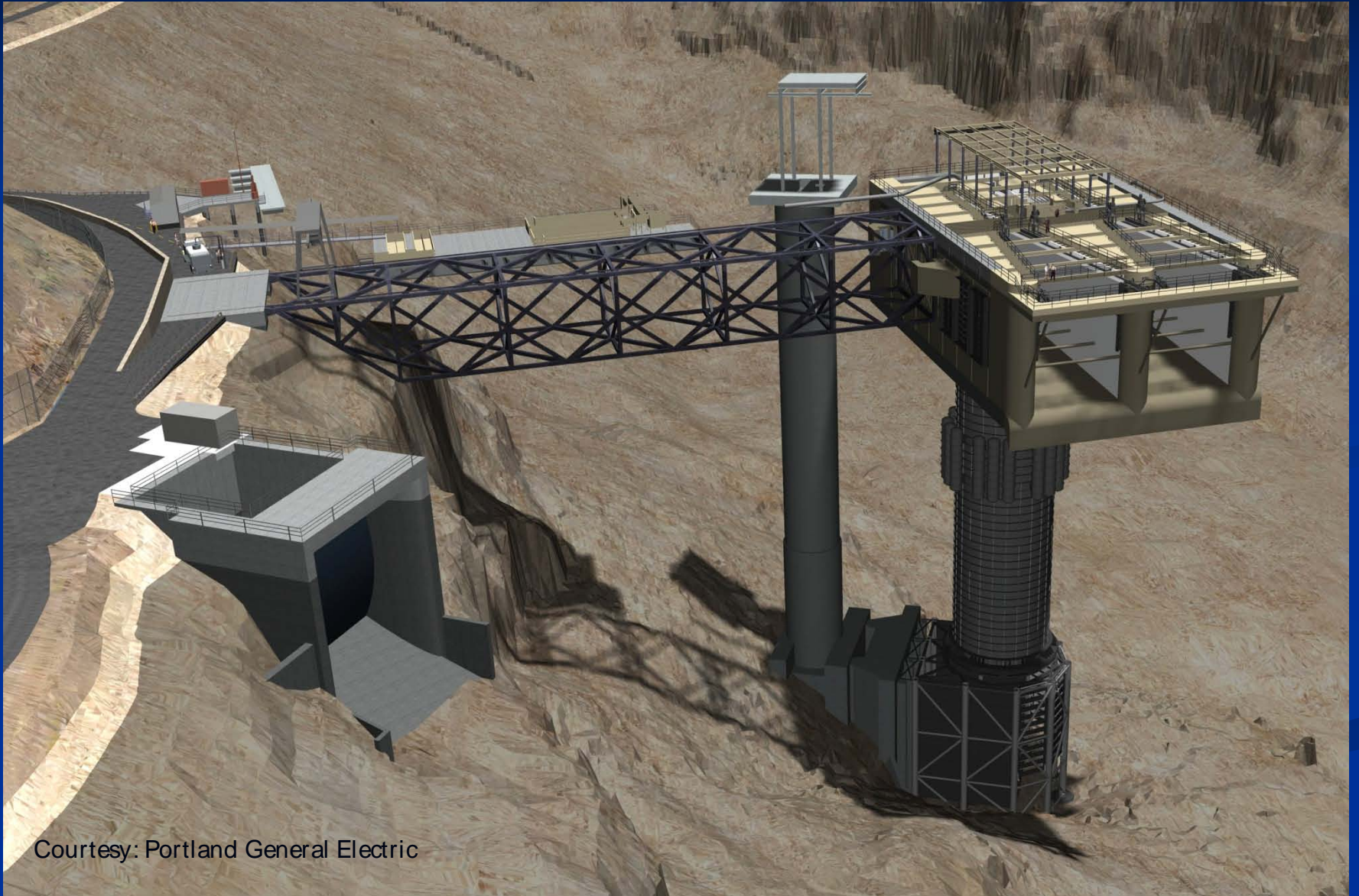
Surface Velocity Distribution Pre - SWW



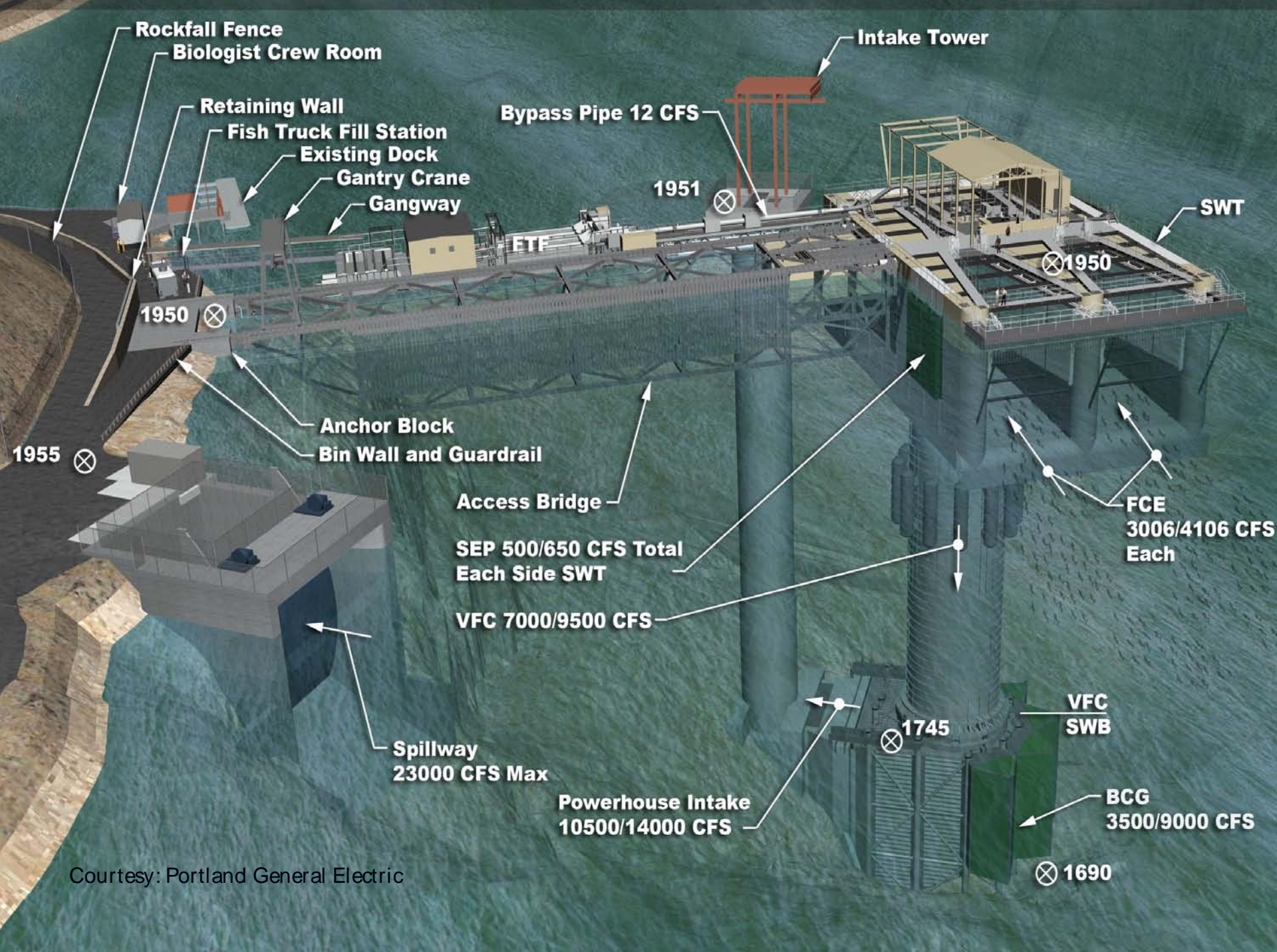
Surface Velocity Distribution Post - SWW



Surface Water Withdrawal (SWW)



Courtesy: Portland General Electric

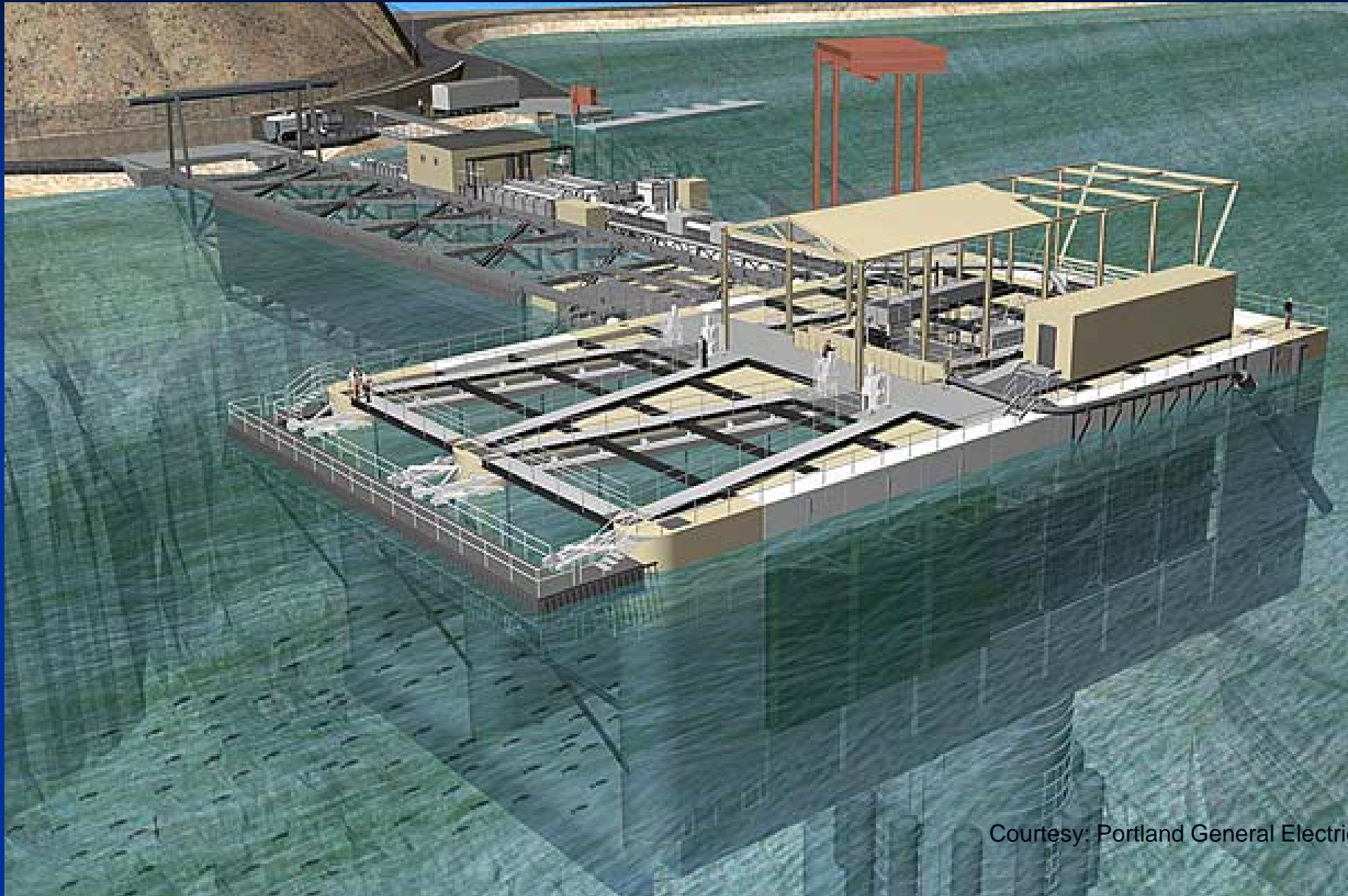


Courtesy: Portland General Electric



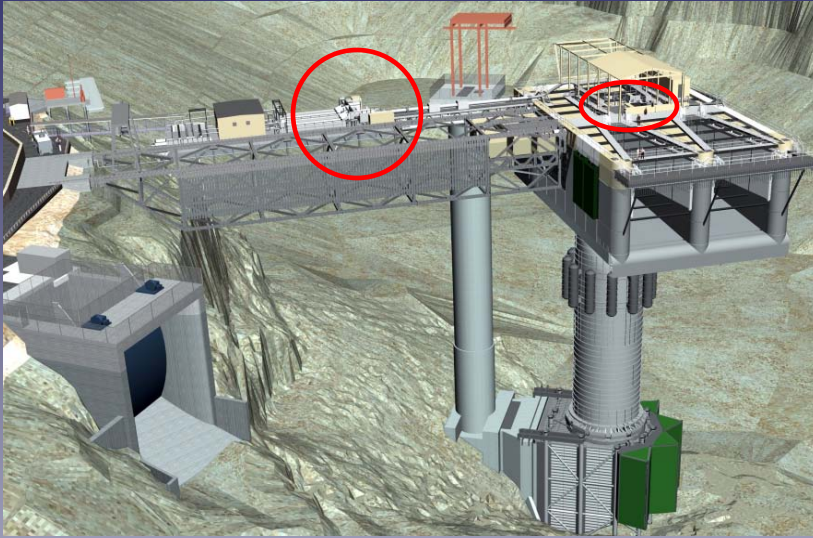
Photo Courtesy PGE

Fish Transfer Facility (FTF)



Courtesy: Portland General Electric

Large, Medium, and Small Fish Separator Efficiency



Large



Small

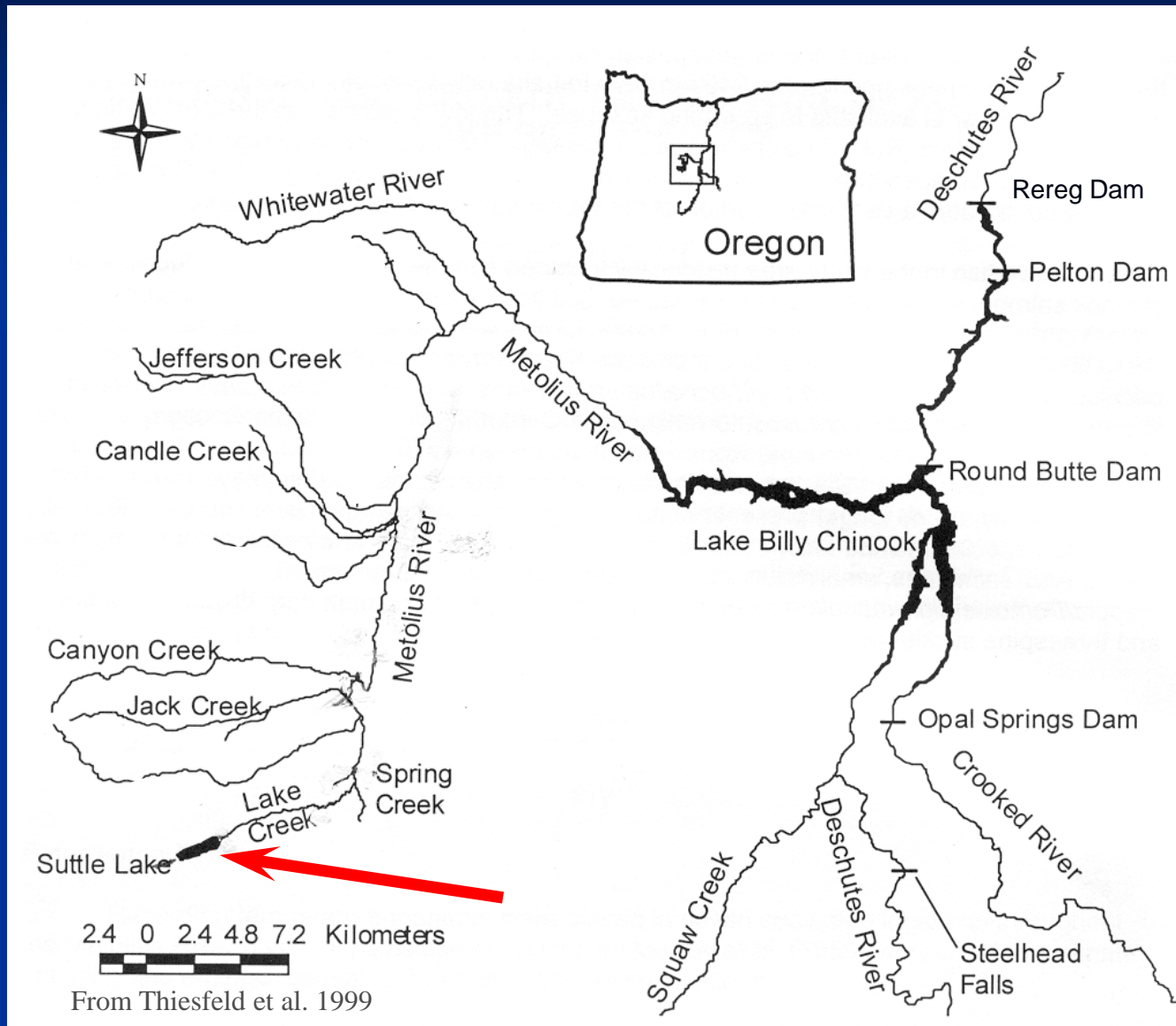


Medium

Reintroduction Plan

- Phase I: Get the Juveniles out!
 - Hatchery-reared Steelhead and Chinook Salmon
 - Fry releases in tributaries
 - Monitor passage through LBC
 - Capture at FTF and haul below the Project
 - Sockeye (Plan in Development)
 - Pass a % of 1+ kokanee downstream to make Sockeye
 - CTWSRO Sockeye Development Project
 - Spawning Escapement Estimates
 - Hydroacoustic sampling (reservoir recruitment)
 - Suttle Lake?

Pelton Round Butte Project, LBC, and Suttle Lake



Summer Steelhead Fry Released Above the Pelton Round Butte Project

Water Body	2007	2008	2009	2010
Deschutes River (Includes Whychus Creek)	275,000	291,000	370,407	247,259
Crooked River (Includes Ochoco and McKay Creek)	0	234,000	461,881	364,528
Total	275,000	525,000	832,228	611,787



Data Courtesy ODFW



Spring Chinook Fry Released Above the Pelton Round Butte Project

Water Body	2008	2009	2010
Metolius River (Includes Lake and Spring Creek)	140,000	334,108	311,994
Deschutes River (Includes Whychus Creek)	0	71,603	81,897
Crooked River (Includes Ochoco and McKay Creek)	0	185,345	133,740
Total	140,000	591,056	527,631



Data
Courtesy
ODFW

Total Number of Fish Captured at Fish Transfer Facility 2010

MONTH	BCR	BLG	BRB	BRT	BUT	CHM	CHS	CRP	KOK	LMB	MWF	RBT	SMB	SOC	STB	STS
Jan	1	15	1	5	10	0	132	0	77	0	0	0	0	71	35	1
Feb	0	13	0	1	3	0	233	0	94	0	0	1	0	40	18	1
Mar	0	37	0	10	11	0	2244	0	2759	0	0	9	1	783	11	5
Apr	0	41	0	35	71	0	9606	0	6066	0	0	66	40	30275	5	552
May	0	16	3	19	112	2	13751	1	5438	0	0	31	52	14936	12	3076
June	1	18	16	249	122	0	13812	1	2498	1	17	33	163	3061	0	4050
July	0	15	24	40	19	4	2097	0	942	0	3	36	230	546	0	45
Aug	0	6	5	2	8	2	121	0	971	0	0	2	75	22	0	2
Sept	1	2	0	1	0	0	8	0	78	0	0	0	1	0	0	0
Oct	0	12	1	9	12	0	128	0	457	0	0	2	0	0	3	1
Nov	0	11	2	47	42	0	720	0	4591	1	4	6	0	0	45	0
Dec	0	3	0	21	14	0	1165	0	1359	0	0	5	0	0	41	0
Total	3	179	52	439	424	8	44017	2	25330	2	24	191	562	49734	170	7733

Data Courtesy Jim Bartlett, PGE

2010 Fish Passage Facility Smolt Survival

- Chinook - 98.1% Sockeye - 97.5%
- Steelhead - 98.4%

Data Courtesy Jim Bartlett, PGE

Reintroduction Plan

- Phase II – Get the Adults Back Upstream
 - First adults (jacks) anticipated in 2011
 - Four-year olds expected int 2012
 - Trap and haul adults returning from outplants
 - Release upstream to spawn.
 - Keep a portion for hatchery broodstock
- Phase III – Reduce Handling
 - Construct new adult passage facilities
 - Reactivate ladder?
 - Reactivate Tramway?



Photo Courtesy PGE



Courtesy: Mike Gauvin, ODFW