# Flood Retention Facility Project Update

Chehalis River Basin Flood Control Zone District

September 18, 2024

# Impact to Communities

- Homes, farms, schools, nursing homes, & businesses
- $900 million from 2007 flood

# Impact to Communities

- Floodwaters shut down I-5
- 26-day full closure of SR6 (2007)

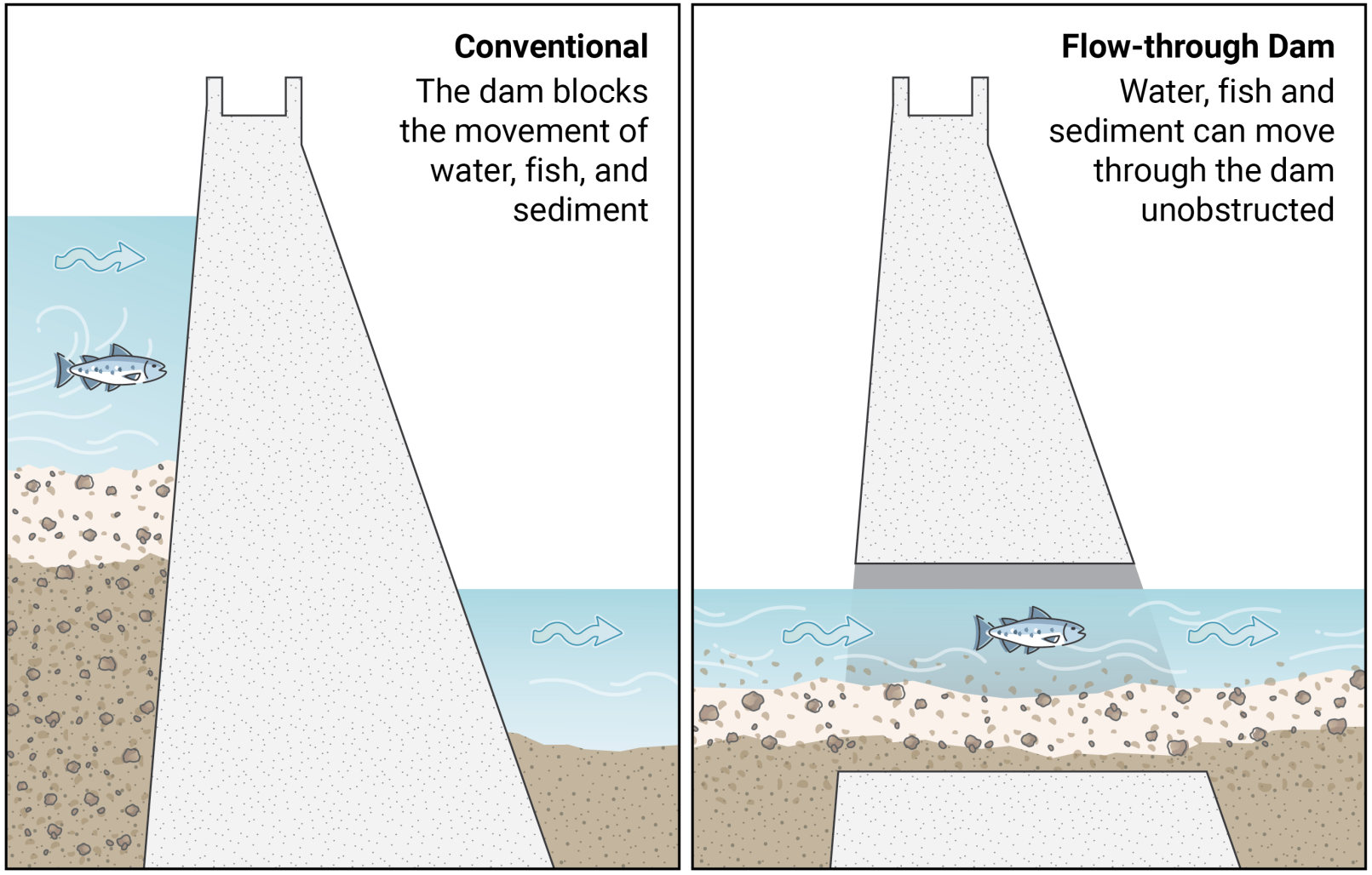
# Impact to Communities

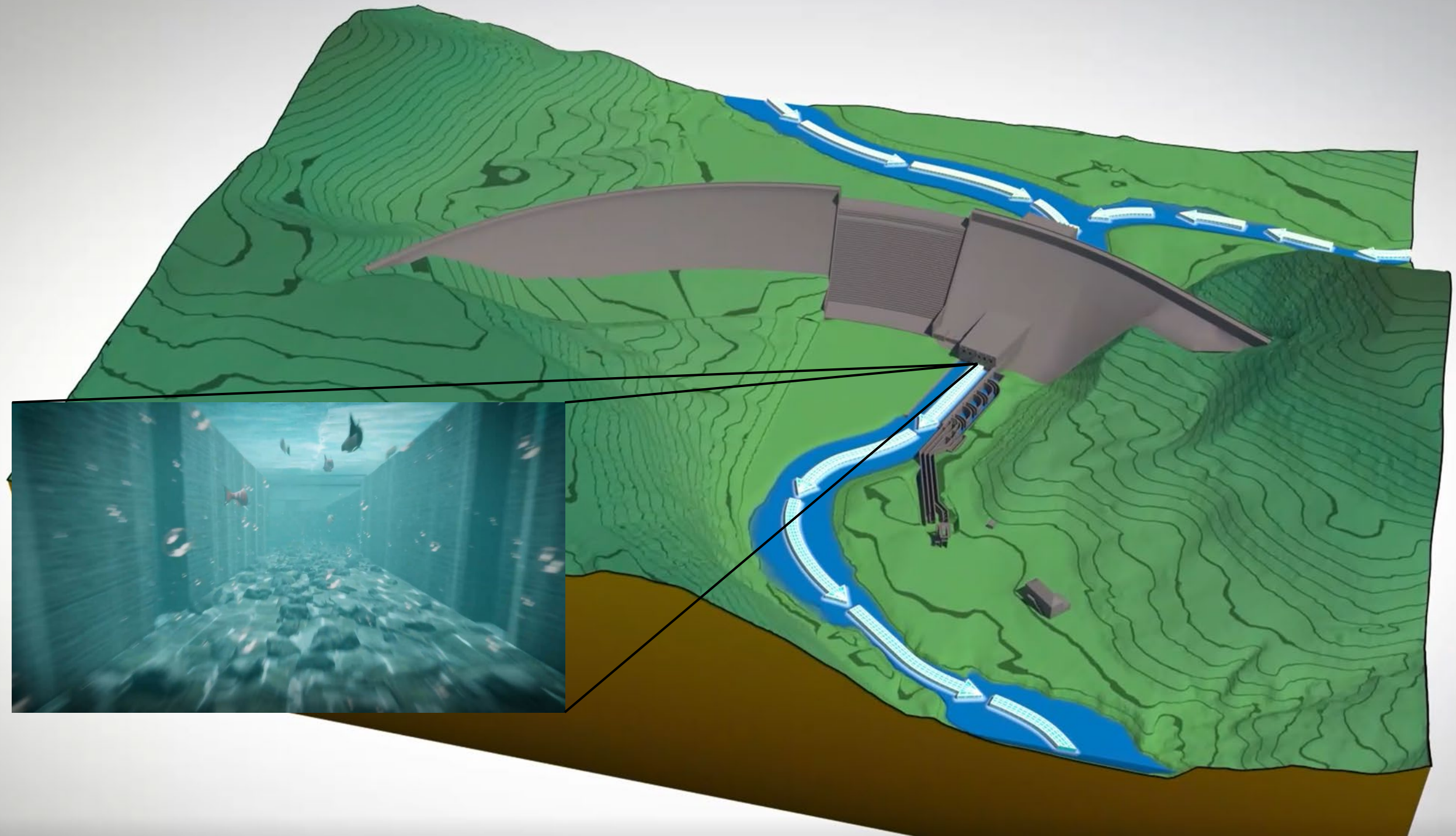
- Washed out roadways and critical infrastructure
- Cutoff access to emergency resources

# SEPA Resources of Significant Concern

- **Air Quality and Greenhouse Gases**
- **Safety**
- **Recreation**
- **Wetlands**
- **Fish Species and Habitats**
- **Public Services and Utilities**
- **Wetlands – Airport Levee**
- **Land Use - Zoning**
- **Water**
- **Wildlife Species and Habitats**

# Flow-Through Dam Design





UN environment programme

CTCN
UN Climate Technology Centre & Network

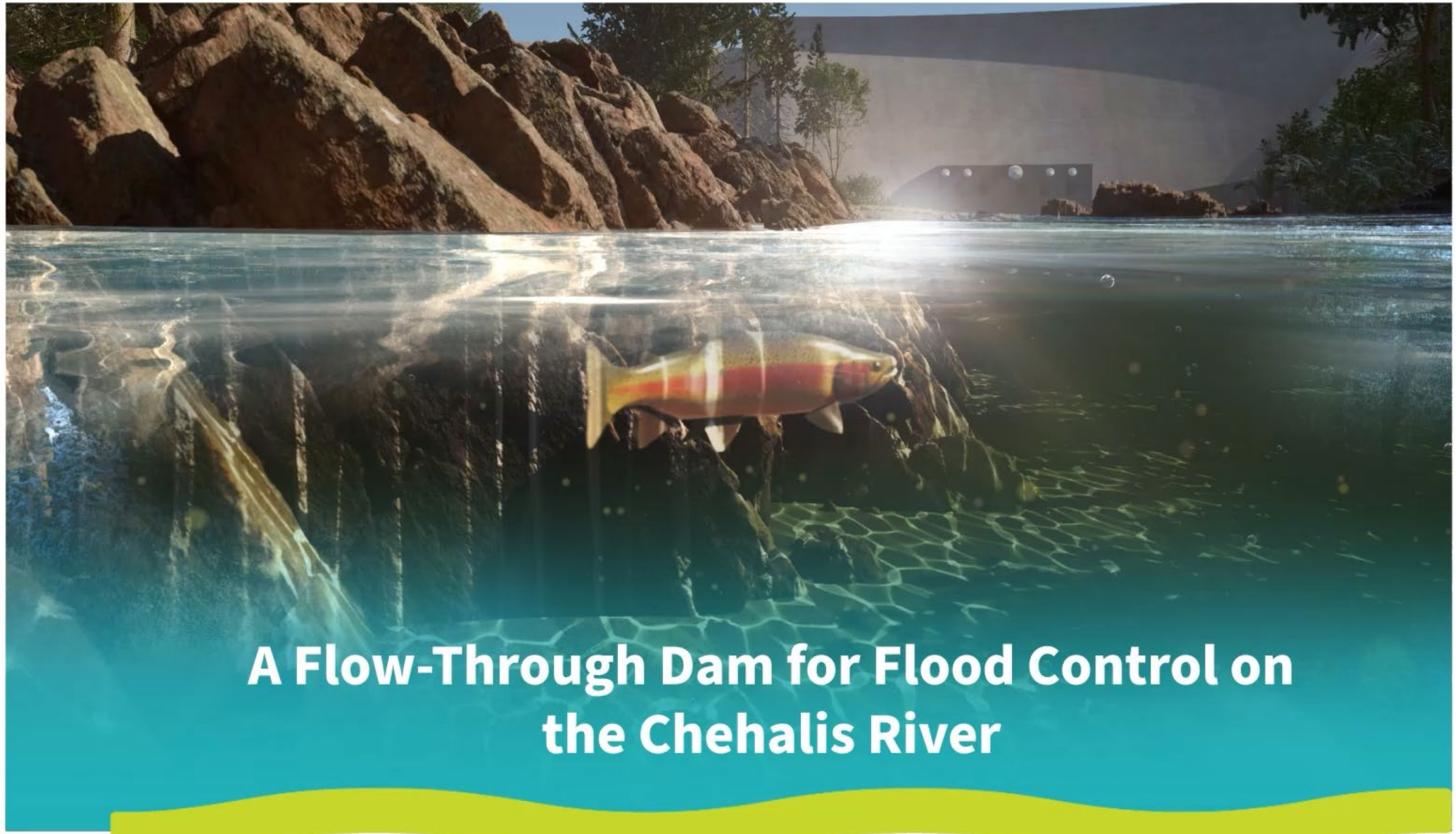
# CLIMATE CHANGE ADAPTATION TECHNOLOGIES FOR WATER

## A PRACTITIONER'S GUIDE TO ADAPTATION TECHNOLOGIES FOR INCREASED WATER SECTOR RESILIENCE

UN Environment-DHI Centre on Water and Environment

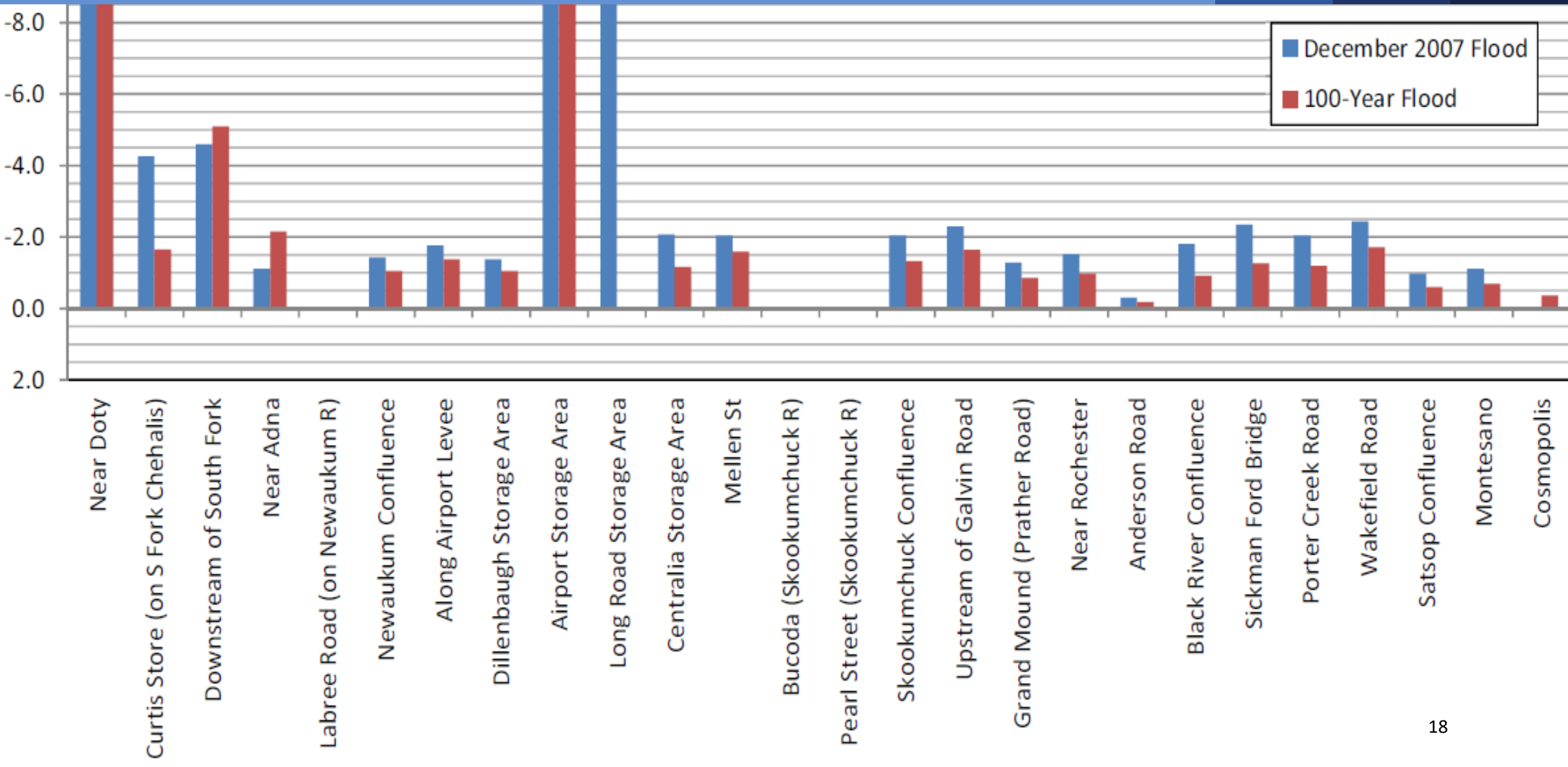
CTCN
CLIMATE TECHNOLOGY CENTRE & NETWORK

UNEP DTU PARTNERSHIP



# A Flow-Through Dam for Flood Control on the Chehalis River

# Flooding Reduction Benefit



# SEPA Resources of Significant Concern

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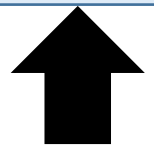
# SEPA Draft EIS Assumptions

- **Air Quality and Greenhouse Gases**

"Construction and operation would cause over 123,000 metric tons of greenhouse gas emissions."



Assumption

**Existing vegetation would be removed from the entire inundation area and then burned.**

# Final EIS Commitments

- **Air Quality and Greenhouse Gases**

"Construction and operation would cause over 123,000 metric tons of greenhouse gas emissions."

Assumption

**Existing vegetation would be removed from the entire inundation area and then burned.**

**Commitments**

**Large woody debris will not be burned. Instead large wood will be used for habitat restoration, adding woody debris to the river.**

*Vegetation Management Plan,* 12/17/2021, *Plant Replacement Plan*, 9/3/2021
*Large Woody Material Management*, 9/3/2021

# SEPA Resources of Significant Concern

- ✓ Air Quality and Greenhouse Gases
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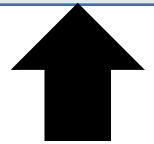
# SEPA Draft EIS Assumptions

- **Public Services and Utilities**

A water supply line for Pe Ell's water system may be affected by construction of the FRE facility and the line could require relocation or improvement.



Assumption

**Pe Ell's water supply will be disrupted during construction or operation.**

# Final EIS Commitments

- **Public Services and Utilities**

A water supply line for Pe Ell's water system may be affected by construction of the FRE facility and the line could require relocation or improvement.

Assumption

**Pe Ell's water supply will be disrupted during construction or operation.**

**Commitments**

**The FCZD will provide funding and conduct the engineering necessary to ensure that Pe Ell's water supply will not be disrupted.**

*SEPA DEIS Comments* 5/27/2020, *Cover Letter* 9/3/2021

# SEPA Resources of Significant Concern

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# SEPA Draft EIS Assumptions

- **Wetlands – Airport Levee**

7 acres of wetlands and 44 acres of wetland buffers would be eliminated for construction of the Airport Levee Changes.

Assumption

**The footprint of the levee will extend into the adjacent wetlands.**

# Final EIS Commitments

- **Wetlands – Airport Levee**

7 acres of wetlands and 44 acres of wetland buffers would be eliminated for construction of the Airport Levee Changes.

Assumption

**The footprint of the levee will extend into the adjacent wetlands.**

**Commitments**

**The FCZD will utilize construction techniques and materials to remain within the existing levee footprint.**

*Airport Levee Wetland Avoidance*, 8/20 & 2/22/2021

# SEPA Resources of Significant Concern

- ✓ Air Quality and Greenhouse Gases
- **Safety**
- **Recreation**
- **Wetlands**
- **Fish Species and Habitats**
  - **Fish Passage**
- ✓ Public Services and Utilities
- ✓ Wetlands – Airport Levee
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# SEPA Draft EIS Conclusion & Assumptions

- **Safety**

Risk = 1 in 2.5 Billion

# SEPA Draft EIS Conclusion & Assumptions

- **Safety**

Risk = 1 in 2.5 Billion

**Commitments**

**Facility will be constructed to meet strict state and federal seismic standards.**

*Dam Safety Standards and Seismic Fault Study Review, February 23, 2022*

# SEPA Resources of Significant Concern

- ✓ Air Quality and Greenhouse Gases
- ✓ Safety
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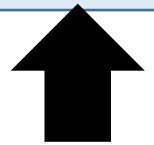
# SEPA Draft EIS Conclusion & Assumptions

- **Recreation**

Permanent loss of access to 13.8 miles of river for kayaking and 6.4 miles of river for recreational fishing.



Assumption

**Project area is currently publicly accessible and would not be accessible after the project.**

# Final EIS Commitments

- **Recreation**

Permanent loss of access to 13.8 miles of river for kayaking and 6.4 miles of river for recreational fishing.

**Clarifications/Commitments**

**Project area is currently private property with limited access requiring permits.**

**Public property creates more opportunity for public access.**

*FRE Facility - Conceptual Level Recreational Improvement Options*

# SEPA Resources of Significant Concern

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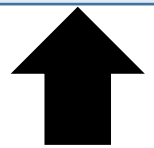
# SEPA Draft EIS Conclusion & Assumptions

- **Land Use - Zoning**

Land use changes would be inconsistent with current land use and zoning designations.



Assumption

**Inconsistent land use is a significant impact.**

# Final EIS Commitments

- **Land Use - Zoning**

Land use changes would be inconsistent with current land use and zoning designations.

**Commitments**

**Land use designation will be changed to be consistent with zoning.**

*Transfer of Use and Jurisdiction, June 1, 2021*

# SEPA Resources of Significant Concern

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- **Water**
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# SEPA Draft EIS Conclusion & Assumptions

- **Fish Species and Habitats - Fish Passage, Construction**

"Adult salmonids would move upstream during construction using a temporary trap-and-transport method with a temporary picket weir… estimated that passage survival would range from 32% to 65%."

Assumption

1. 24/7 Trap and Haul Upstream Passage.
2. Picket barrier technology will be used.

# Final EIS Commitments

- **Fish Species and Habitats - Fish Passage, Construction**

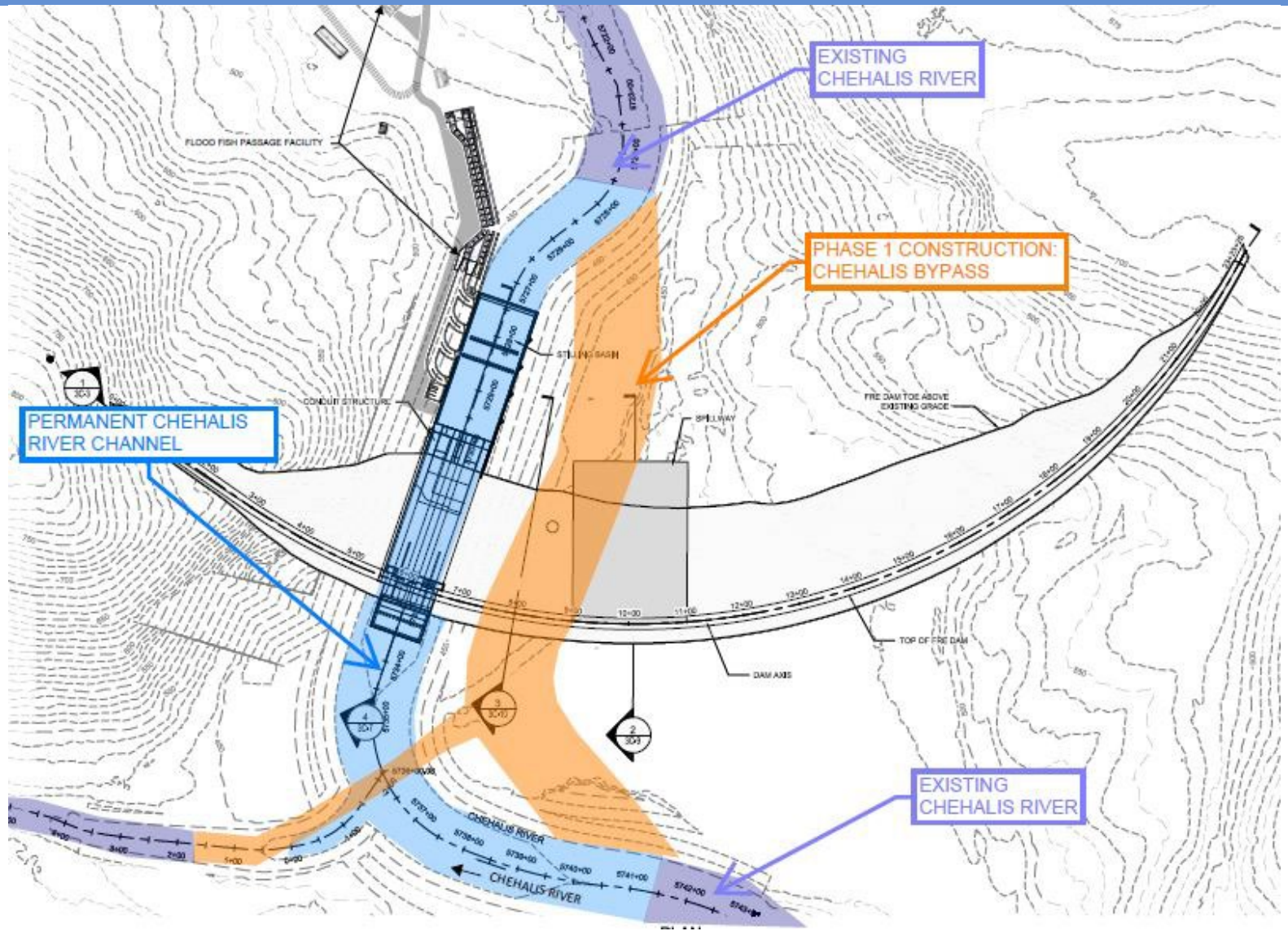
> "Adult salmonids would move upstream during construction using a temporary trap-and-transport method with a temporary picket weir… estimated that passage survival would range from 32% to 65%."

**Revised Design**

**Open channel flow through a channel engineered to match the natural channel with a projected survival rate similar to the natural channel.**

*Revised Project Description, April 2024*

# Fish Passage: Construction Phase




Benefits:

- Bypass will mimic the river flow of natural channel
- Trap and haul & diversion tunnel no longer needed

# Misconceptions – Fish Passage Operations

The conduits are unnatural constrictions in the river and cause fish to avoid them, delaying upstream and downstream movement.

**Correction of Misconception**

- **Conduits are specifically designed to mimic depths and velocities naturally occurring within the Chehalis River at this location.**

*Phase 1 Mitigation—Fish Passage Presentation,* 10/21/2019; *2018 Supplemental Design Report, FRE Dam Alternative*

# Misconceptions – Fish Passage Operations

## Correction of Misconception

- **Structure mimics the hydraulic characteristics of the Chehalis River at this location.**

*Phase 1 Mitigation—Fish Passage Presentation,* 10/21/2019;

*2018 Supplemental Design Report, FRE Dam Alternative*

Photograph illustrating channel conditions within footprint of proposed facility.

# SEPA Resources of Significant Concern

- ✔ Air Quality and Greenhouse Gases
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  - ✔ Fish Passage
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# SEPA Resources of Significant Concern

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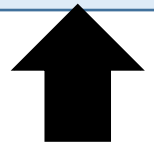
# SEPA Draft EIS Conclusion & Assumptions

- **Wetlands, Fish Species and Habitats, Water, Wildlife Species and Habitats**

Up to 3°C increase in water temperature in the area

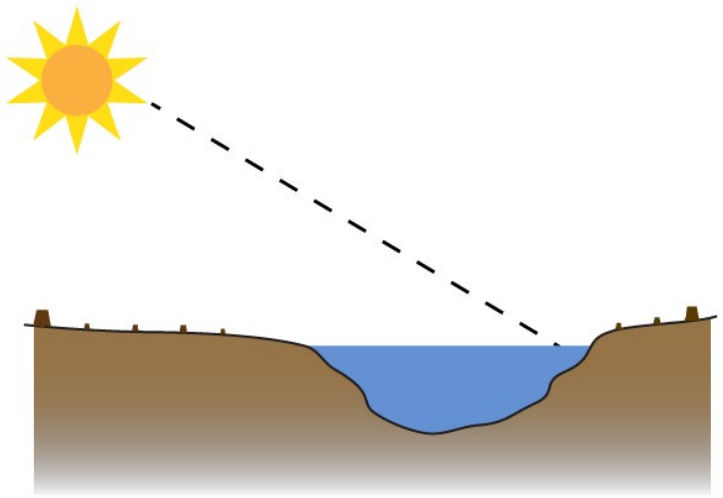


Assumption

**All trees larger than 6 inches diameter would be cut down. Trees would not grow back in the entire inundation area.**

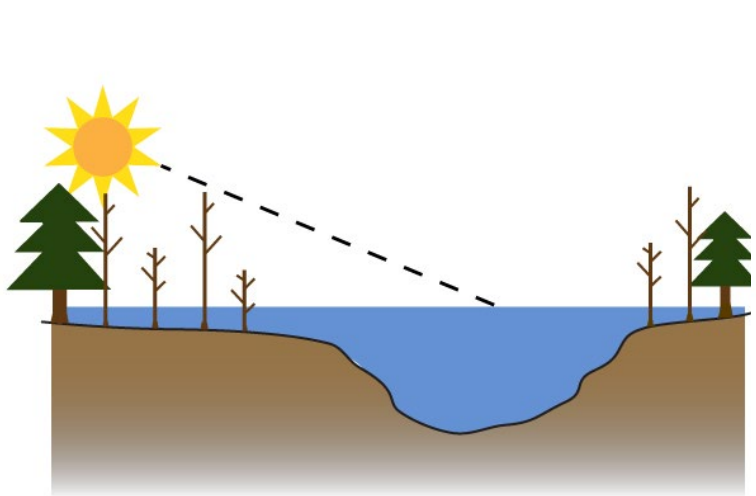
# Vegetation Management

## SEPA Draft EIS

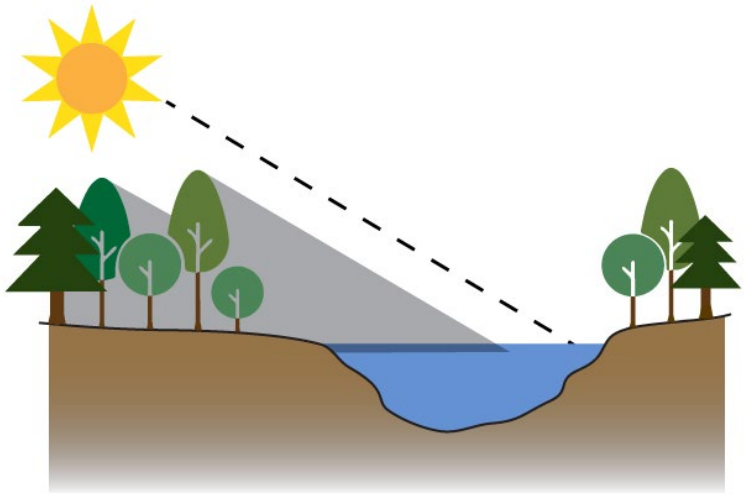


Vegetation Cut Down
No Shade

## District Study



Flood Operation
Winter Dormant Leaf Off



Non-flood Operation
Summer Leaf On
Shade

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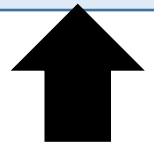


Assumption

**All trees larger than 6 inches diameter would be cut down. Trees would not grow back in the entire inundation area.**

## Commitments

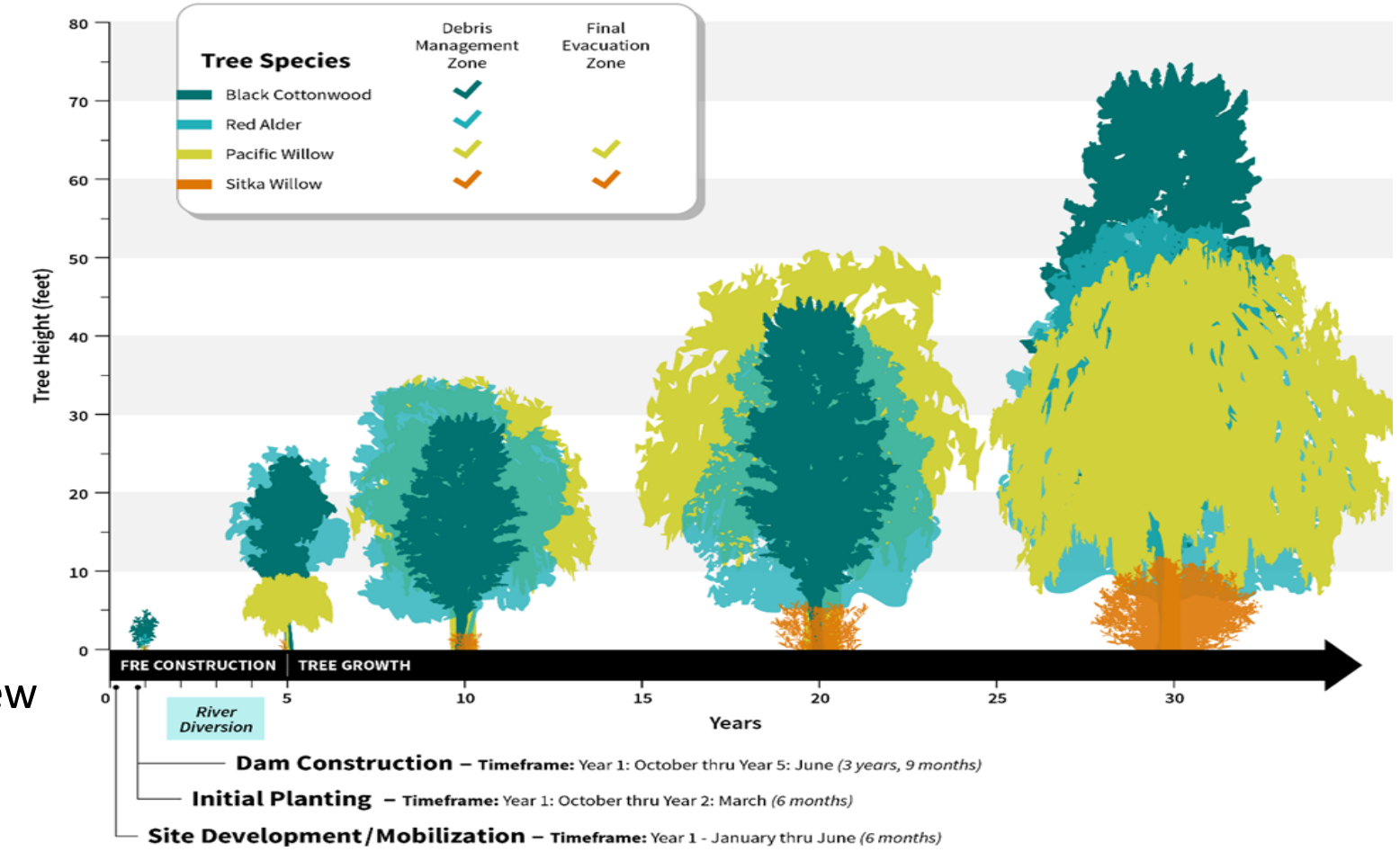
Minimize disturbance and leave existing vegetation.

*Active Monitoring:* *Monitor vegetation survivability*

*Adaptive Management:* *Replace dead non flood tolerant species*

# Type and Height Survivability

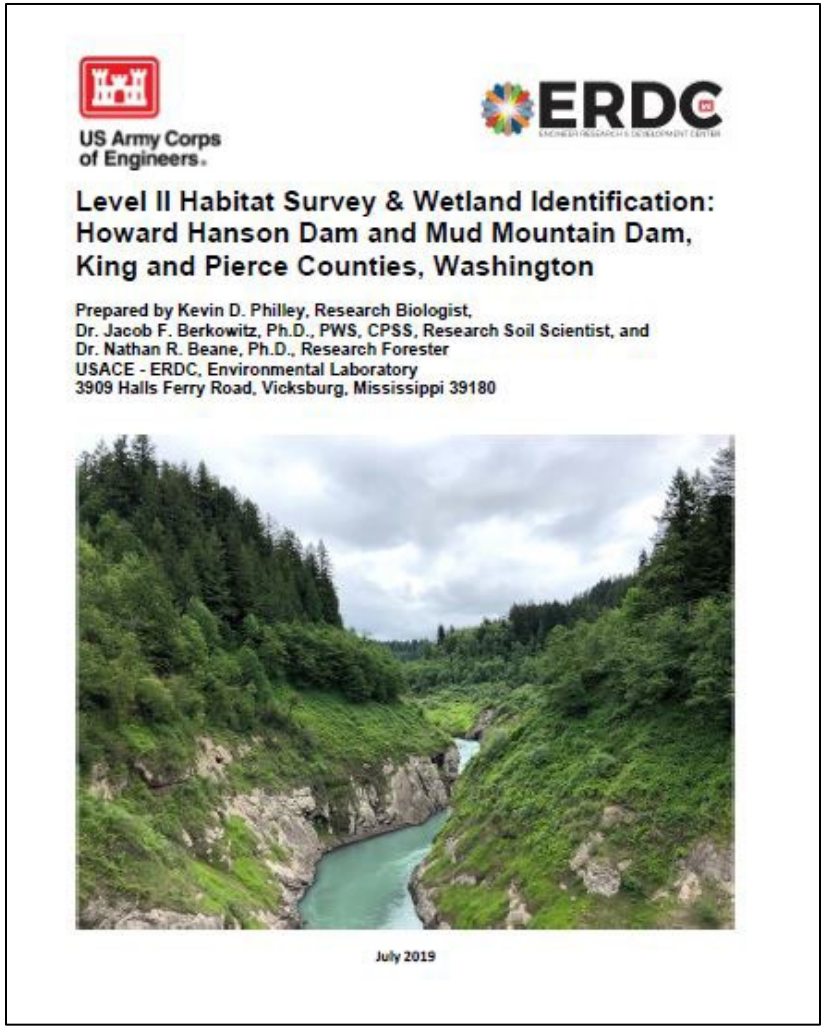
- Tree Species
  - Cottonwood
  - Alder
  - Willow
- Tree Height
  - 5 to 20 feet Low
  - 75 to 90 feet High
- Validation
  - Mud Mtn Dam Vegetation
  - Independent  Silviculturist Review



# Mud Mountain Example

- 1947 - **70 miles** away
- reservoir clear cut
- Revegetated naturally

**Trees Established and Survive in Reservoir Area**



US Army Corps of Engineers.

ERDC

**Level II Habitat Survey & Wetland Identification: Howard Hanson Dam and Mud Mountain Dam, King and Pierce Counties, Washington**

Prepared by Kevin D. Philley, Research Biologist,
Dr. Jacob F. Berkowitz, Ph.D., PWS, CPSS, Research Soil Scientist, and
Dr. Nathan R. Beane, Ph.D., Research Forester
USACE - ERDC, Environmental Laboratory
3909 Halls Ferry Road, Vicksburg, Mississippi 39180

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# SEPA Draft

- **Wetlands, Fish Species, and Habitats**

**Proposed Mitigation Plan**

- Aquatic Species and Habitat
- Riparian and Stream Buffer
- Wildlife Species and Habitat
- Large Wood Material
- Surface Water Quality
- Wetland

**Commitments**

No net loss of habitat and function

Create ecological lift – improve habitat function over existing condition

Generate ecosystem benefits to the headwaters basin and upper Chehalis River

# Upcoming Schedule

## Environmental Review Milestones

- SEPA Draft EIS scheduled for release in Fall of 2025
- SEPA Final EIS scheduled for release in Early 2026