Floodplain Programs that Support Natural Beneficial Functions in the State of Washington

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Washington contains several mountain ranges, most notably, the Cascades.

Population: 7,300,000.

78% of population is west of the Cascades.

Nearly two-thirds of the population is in the Puget Sound Region.
Tribal Fishing Rights
Past practices saw flood control work and habitat restoration work disconnected and often in conflict.

New approaches and support were needed!
Floodplains by Design is a Partnership

• Major Partners
  ➢ The Nature Conservancy
  ➢ Puget Sound Partnership
  ➢ Department of Ecology

• Every individual project develops its own partnership of local governments, flood control districts, salmon recovery organizations, environmental organizations, tribes, and local property owners.
Key Features of a Floodplains by Design Project

• Suite of specific actions
• Significant flood hazard reduction
• Significant Ecosystem restoration
• Benefits to agriculture, water quality, and recreation
• Strong partnerships and strategies
• Readiness to proceed
Upper Carlson Levee Setback

- Levee removal & setback
- Engineered logjams
- Reconnects ~20 acres of floodplain

**Benefits:** Flood protection, water quality, habitat restoration.
- Reconnect 60 acres of floodplain
- Reduce flood heights in reach Fish friendly overflow channel
- Irrigation structure protection

Several year (4-phase) project
Naches River N-9 Project
Floodplains by Design
Progress to Date

• Natural riverine processes restored along 10 miles of river
• One thousand acres of floodplain reconnected
• 430 residences removed from high risk floodplain areas
• Five miles of new (primarily setback) levees

Source: The Nature Conservancy
What’s Next for Floodplains by Design?

• **Program Assessment**
  2018 legislative proviso directed the Department of Ecology to conduct an assessment of the program and make recommendations for the future.

• **2019-21 Grant Round is Underway**
  Full applications are currently be prepared. Review and recommendation to the Governor by October to prepare for the 2019 legislative session.
History of Habitat Degradation

• Harvest has been limited by poor runs over the last 30 years
• Habitat productivity has been degraded by up to 87%

<table>
<thead>
<tr>
<th>Fish Type</th>
<th>Impaired Percentage</th>
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<tbody>
<tr>
<td>fall-run Chinook salmon</td>
<td>54% impaired</td>
</tr>
<tr>
<td>winter-run steelhead</td>
<td>56% impaired</td>
</tr>
<tr>
<td>coho salmon</td>
<td>72% impaired</td>
</tr>
<tr>
<td>spring-run Chinook salmon</td>
<td>87% impaired</td>
</tr>
</tbody>
</table>
The Floods Are Getting Worse

- Five largest flood events occurred since 1986

![Peak Flow Rates for Major Chehalis River Flood Events](chart.png)

- Peak Flow Rates near Grand Mound (cfs)
- Five largest flood events
Office of the Chehalis Basin

• Created by 2016 Legislature, initiated by funding in 2017-19 biennium.
• Established a Board to provide oversight for implementation of the Chehalis Basin Strategy
• “...set up a single state office to provide a more unified, efficient, and consistent structure for policies and projects, especially for larger projects as they advance.”
• “aggressively pursue implementation of an integrated strategy and administer funding for long-term flood damage reduction and aquatic species restoration in the Chehalis River basin.”
Aquatic Species Habitat Restoration

- Restore riparian habitat
- Remove priority fish barriers
- Restore off-channel habitat
- Add wood structures
- Reconnect the floodplain
- Create, restore, and enhance wetlands
2018 ASRP Barrier Correction Projects

Funded Project Summary

• 11 barrier correction construction
• 3 barrier correction designs
• End result:
  • 32.5 miles good quality habitat fully accessible to fish
Chehalis Flood Damage Reduction Activities

**Large Scale Activities**
- Flood Retention Facility (dam)
- Restorative Flood Protection
- Aberdeen/Hoquiam North Shore Levee

**Local Scale Activities**
- Acquisition
- Building elevation
- Barriers
- Other floodproofing
- Farm pads
State Public Investment

**Floodplains by Design**

**2013-15 Budget**
- $50 million awarded for:
  - Nine Coordinated Puget Sound projects.
  - $11.25 million for competitive grant round that ultimately funded 13 projects.

**2015-17 Capital Budget**
- $35.5 million allocated for seven major projects.

**2018 Capital Budget**
- Funded seven new large project with $35 million.

**Chehalis Basin**

**2015-17**
- $50 million. Approximately half for advancing the long term strategy for flood damage reduction and half for flood and restoration projects on the ground.

**2018 Capital Budget**
- $50 million. Approximately half for advancing the long term strategy for flood damage reduction and half for flood and restoration projects on the ground.
Critical Area Ordinances and Frequently Flooded Areas
Five Critical Areas Included in Critical Area Ordinances (CAOs)

• Wetlands
• Aquifer Recharge Areas
• Fish and Wildlife Habitat
• Erosion and Landslide Hazard Areas
• Frequently Flooded Areas
CAOs Must Use Best Available Science (BAS)  
Typical Characteristics of a Valid Scientific Process

- Peer review  
- Methods are clearly stated and able to be replicated  
- Logical conclusions and reasonable inferences  
- Quantitative analysis using appropriate statistical or quantitative methods.  
- The information is placed in proper context  
- References
Frequently Flooded Areas

Definition

“Frequently flooded areas” are lands in the flood plain subject to at least a one percent or greater chance of flooding in any given year, or within areas subject to flooding due to high groundwater.

Frequently Flooded Areas can also include:

- Area of flood of record
- Areas of groundwater flooding
- Future flow floodplain
- Tsunami, high tides, and sea level rise
- Channel migration zones
Frequently Flooded Area Standards – Habitat Protection

• Floodplains are vital habitat for anadromous fisheries.
• WAC 365-190-080(2) encourages communities to give special consideration to conservation or protection measures necessary to preserve or enhance anadromous fisheries.
• Supporting information can be found in:
  ➢ Salmon Recovery Plans
  ➢ Channel Migration Zone Mapping
• Overlap with other CAO chapters
Programmatic Response to NFIP
Puget Sound Biological Opinion

• Frequently Flooded Areas chapters can integrate the various parts of the CAO to be part of a programmatic response to the Puget Sound Biological Opinion.

• A complete programmatic response will likely include wetland, Fish and Wildlife Protection and possibly other chapters.

• FEMA has guidance for proposing a programmatic response at http://www.fema.gov/media-library/assets/documents/85336
Support for Improved Frequently Flooded Area Guidance

• New climate change data and modeling.
• Washington Department of Commerce CAO guidance release later in 2018.
• Advances in Best Available Science related to frequently flooded areas.
Questions?

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