

Puyallup River Basin General Investigation Study ETF Information meeting

April 8, 2010



Pierce County

Public Works and Utilities
Surface Water Management



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US Army Corps of Engineers
BUILDING STRONG®



Federal Objective and Study Goal

Federal Objective: Contribute to the National Economic Development (NED) consistent with protection to the nation's environment, pursuant to national environmental statutes, applicable executive orders, and other Federal planning requirements.

Study Goal: Recommend a plan that maximizes the National Economic Development (NED) benefits for flood risk management, that minimizes life safety risks, and results in the least amount of environmental impact within the Puyallup River Basin.



Flood Risk Management Measures

Potential federal actions that address flood risk in the Puyallup River Basin.

- Initial measures list should be comprehensive
- Measure list must include non-structural measures
- Measures should address the Study Goal and Objectives
- Can be prescreened prior to design
- Will be designed, sited and combined to make Flood Risk Management Alternatives



Levee Systems

- **Construct new levees:** An embankment built along a body of water to prevent flooding by high water.
- **Construct setback levees:** An embankment constructed to prevent flooding that is positioned some distance away from the edge of the a body of water.
- **Repair/Improve levees:** Repair damaged levees and/or improve existing levees to help prevent flooding by raising the structure, armoring the bank, or upgrading the levee material.
- **Remove/Breach levees:** Remove/breach existing levee to restore hydrologic connectivity to river.
- **Construct overtopping levee:** An embankment built along a body of water with a mild backslope that is designed to overflow.
- **Construct flood walls:** A vertical concrete wall designed to prevent flooding by high water in locations where space is scarce.
- **Hardened vegetated buffer:** A more natural looking form of a flood wall, is constructed by stacking logs to create a complex wood revetment.



Channel Control

- **Channel widening:** Increase the width of the channel.
- **Channel alignment:** Realignment of the river to change the distance of the river channel.
- **Construct bypass channel:** Construct new channel to divert excess water from the river during high flows.
- **Construct diversion channel:** Reroute existing channel to new location.
- **Modify bridges/road prisms:** Assess and modify bridges and road structures to eliminate or reduce constrictions and sediment accumulation points.
- **Reconnect wetlands, side channels, and tributaries:** Reconnect side channels and tributaries, and freshwater wetlands to direct backwater and provide a return pathway for flood water.
- **Overbank Storage:** Excavate historic backwater areas filled for agricultural or residential usage for flood storage.
- **Large woody debris:** Install large, unmilled wood (large tree trunks with root wads) in floodplain to manage flows.



Interior Drainage

- **Culverts: a) add; b) remove; c) replace; d) upgrade:** Alterations to culverts to manage water levels and/or influence routing of flows to improve interior drainage.
- **Subsurface drainage:** Install buried drain pipe or tile drains to improve drainage in agricultural areas.
- **Ground water pumping system:** Install extraction wells to reduce ground water elevations.
- **Creek management with use of gates and pumps:** Physical barrier that prevents flood water from creeks/tributaries from entering main stem by forcing the creeks to backwater.



Dredging

- **Mainstem dredging:** Remove accumulated sediments from mainstem river channel
- **Spot-dredge:** Removal of accumulated sediments at specific points in the mainstem river channel.
- **Gravel bar scalping:** Remove sediment at specific locations along banks and accumulated gravel bars outside of mainstem river channel.
- **Sediment trap:** Large excavated hole that allows for repetitive accumulation and removal of sediments.



Dams

- **Construct new dam:** A barrier constructed to contain and manage the flow of water.
- **Raise high pool elevation of Mud Mountain Dam:** Raise elevation of existing spillway and/or top of dam in order to increase storage capacity behind dam or spillway gates.
- **Raise low pool elevation of Mud Mountain Dam:** Increase the low pool elevation, the velocity of the water in the pool decreases allowing the sediment to settle.



Non-Structural

- **Enhance existing roadways:** Raise road elevations in potential flood areas (low spots) or enhance existing roadways and bridges to redirect the flow of traffic out of frequently inundated areas.
- **Install stream gauges:** Stream gauges measure the volumetric discharge of a body of water to help anticipate flooding.
- **Bank stabilization:** Large woody debris, netting, or other physical barrier placed on at-risk river banks to prevent sedimentation.
- **Flood warning system:** A method or system whereby local, regional, or national authorities can contact members of the public en masse to warn them of an impending flood
- **Response plan for local residents:** An action plan to advise local residents how to respond to a flood warning.
- **Relocate residents:** Relocate residents subjected to multi-year flood incidents either by moving the house to a different location on the same property or developing "safe" neighborhoods either on or off the floodplain.
- **Agricultural best management practices:** Management practices such as nutrient management or providing an elevated fill area (critter pad).



Questions?

