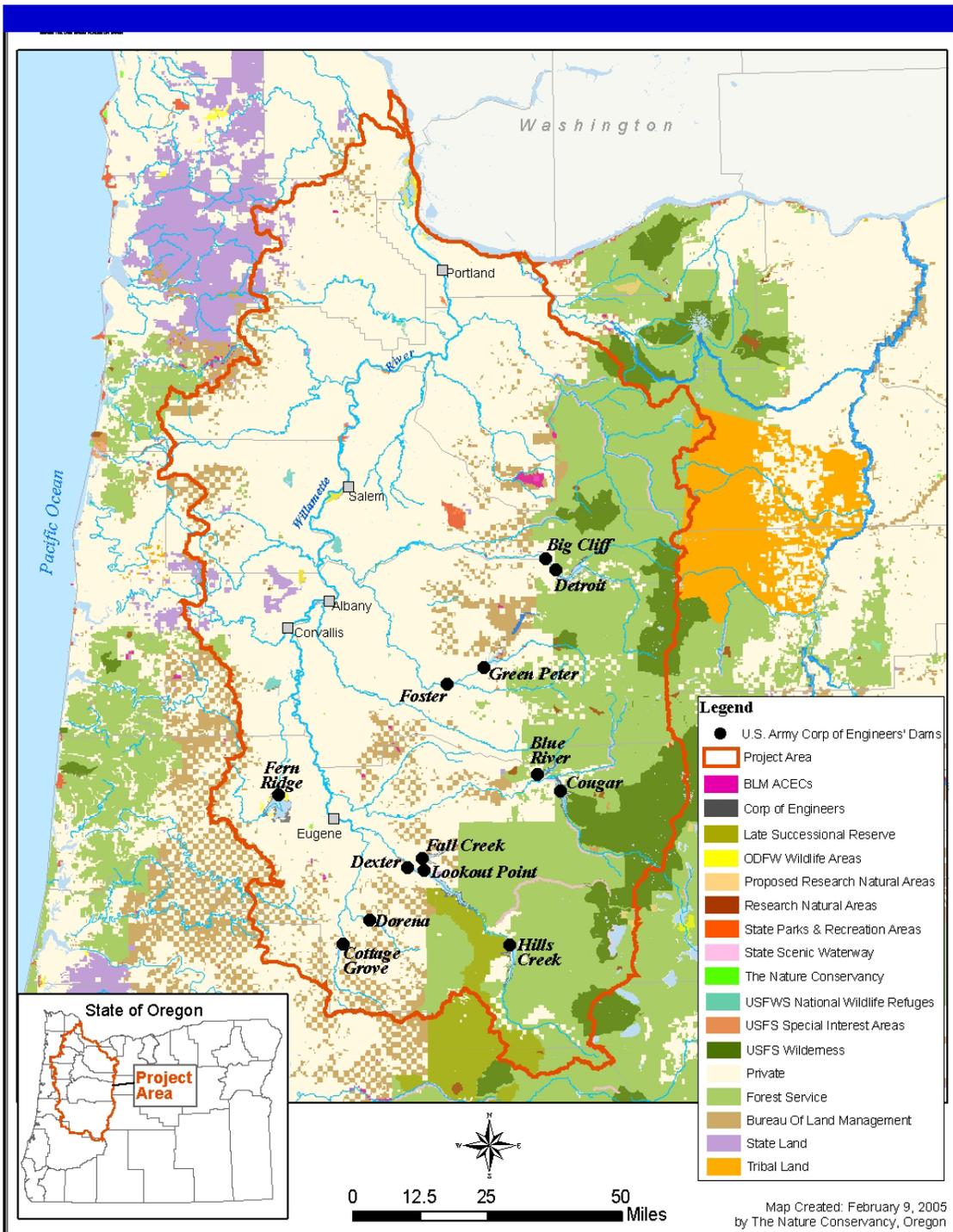


Water Quantity and Quality Restoration Strategies in the Willamette Basin

Leslie B. Bach
Director of Freshwater Programs

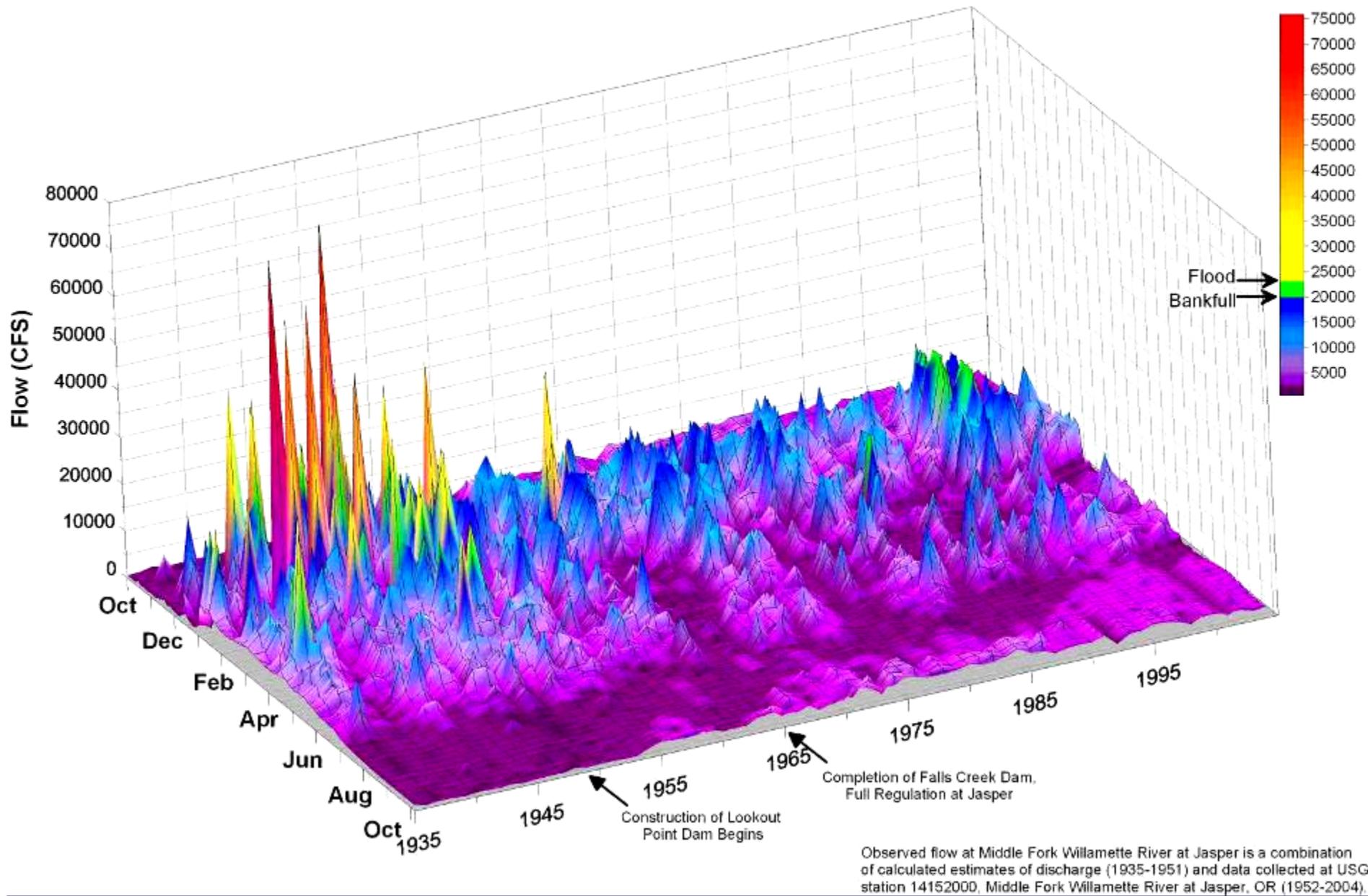
05.4.17



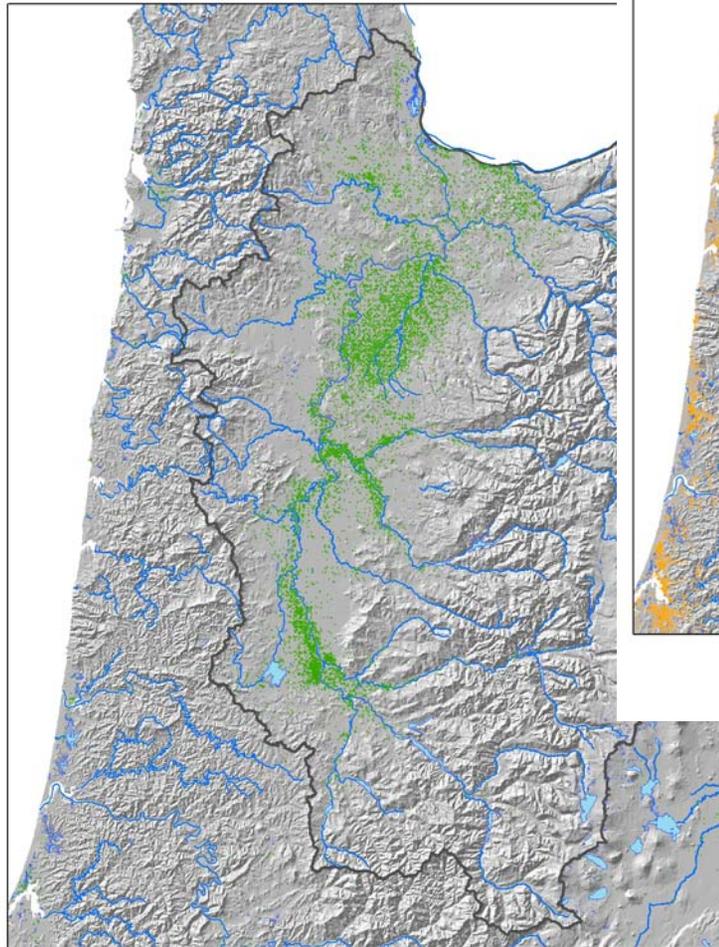
Issues

- Flow Changes - Dams
- Current and Future Water Use
- Groundwater Protection
- Water Quality (TMDLs)

Observed Flow at Middle Fork Willamette River at Jasper, OR

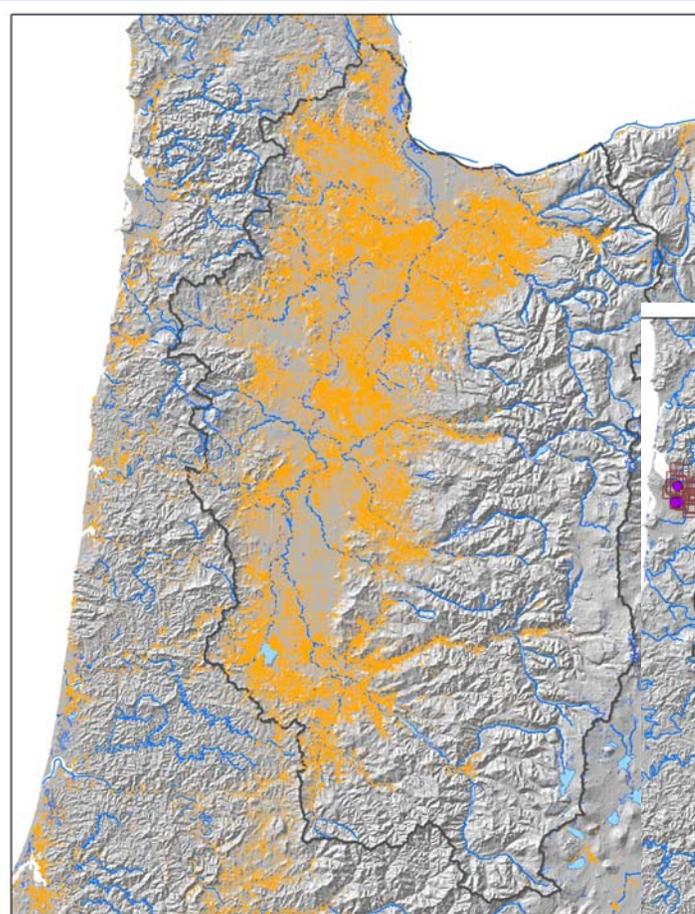


Groundwater Use



Irrigation, Community, and Industrial Wells

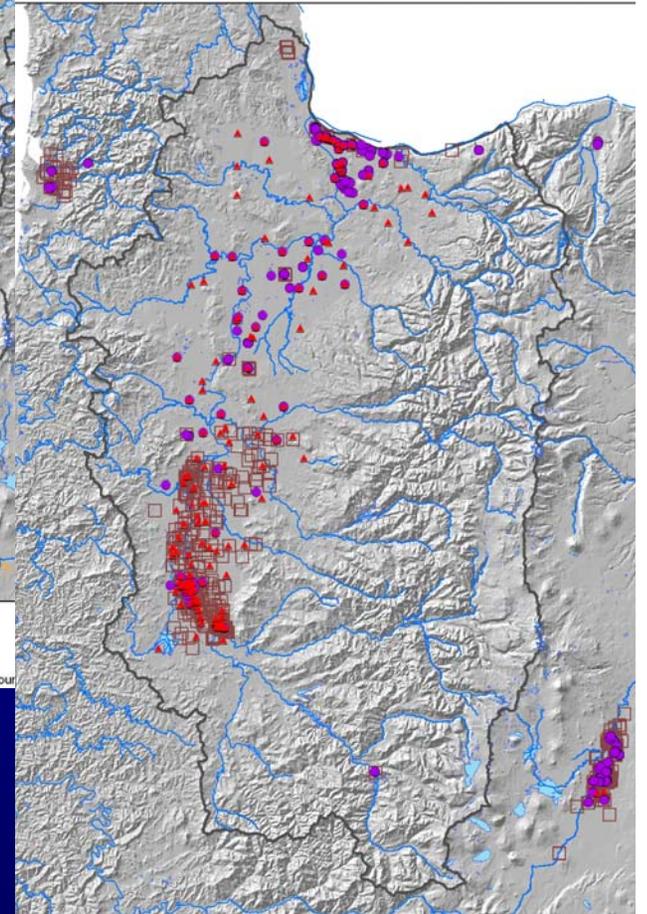
Source: Oregon Water Resources Department



Domestic and Livestock Wells

Source: Oregon Water Resources Department

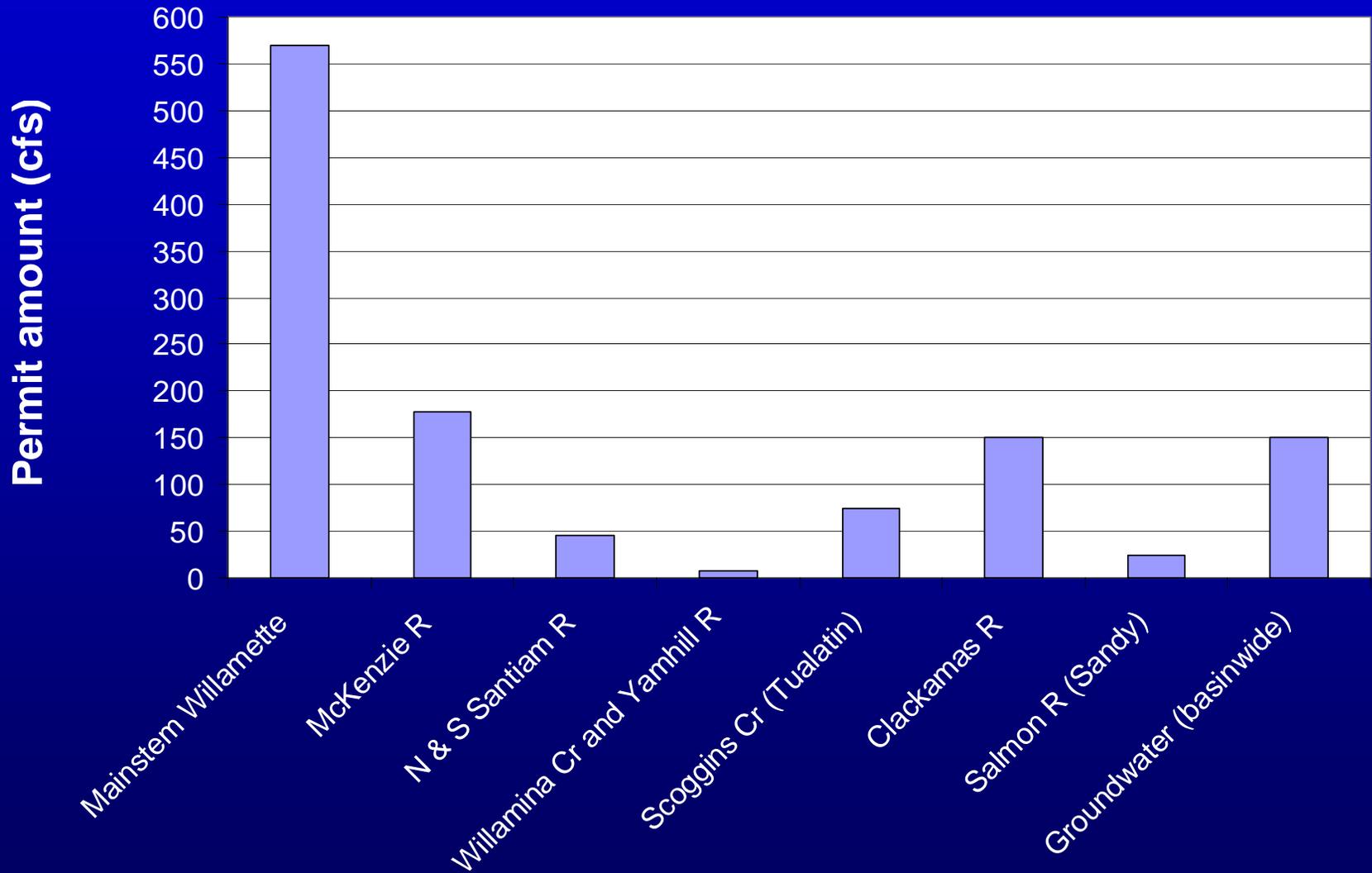
Groundwater Quality



▲ Pesticides □ Nutrients ● Other Industrial Chemicals

Source: Oregon Department of Environmental Quality (2007), US Environmental Protection Agency (2007)

Undeveloped Municipal Permits



Willamette Flow Management Project

Achieve more ecologically sustainable flows while continuing to meet the authorized purposes of the dams



Recommended Flows:

Middle Fork below Dexter Dam

Winter/Spring Bankfull Pulses

Recommendation:

Time period: Nov 15 - Mar 15

Number of events: 1 - 5 depending on precipitation

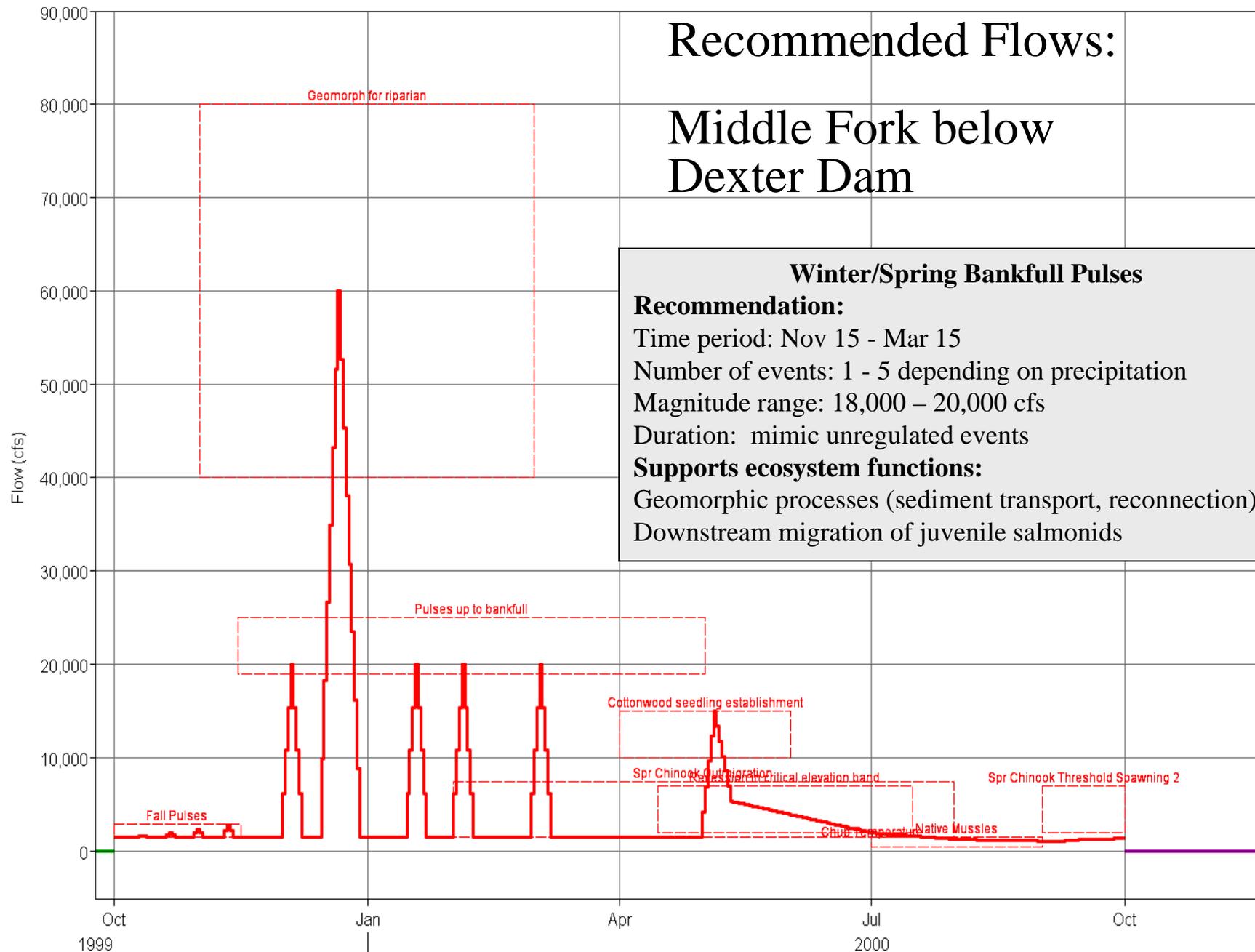
Magnitude range: 18,000 – 20,000 cfs

Duration: mimic unregulated events

Supports ecosystem functions:

Geomorphic processes (sediment transport, reconnection)

Downstream migration of juvenile salmonids



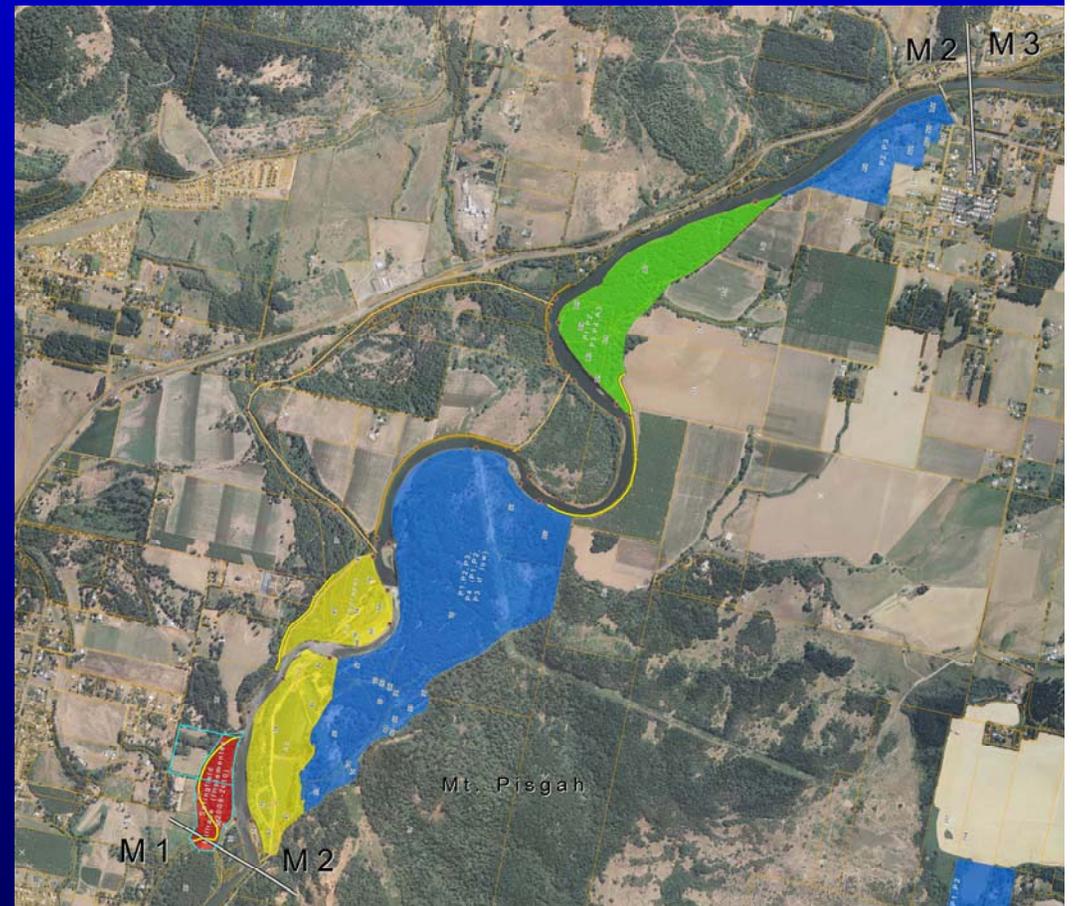
Middle/Coast Fork Willamette Floodplain Restoration Study

“Assess opportunities to modify existing floodplain features in the Willamette Valley to reduce flood damages while restoring natural wetlands and promoting ecosystem restoration”



Possible Floodplain Restoration Projects or Features

- Acquire floodplain lands and easements
- Remove, modify or vegetate bank revetments
- Remove or set back levees
- Reconnect or restore hydrologic connections to natural storage features (oxbows, sloughs, overflow channels)



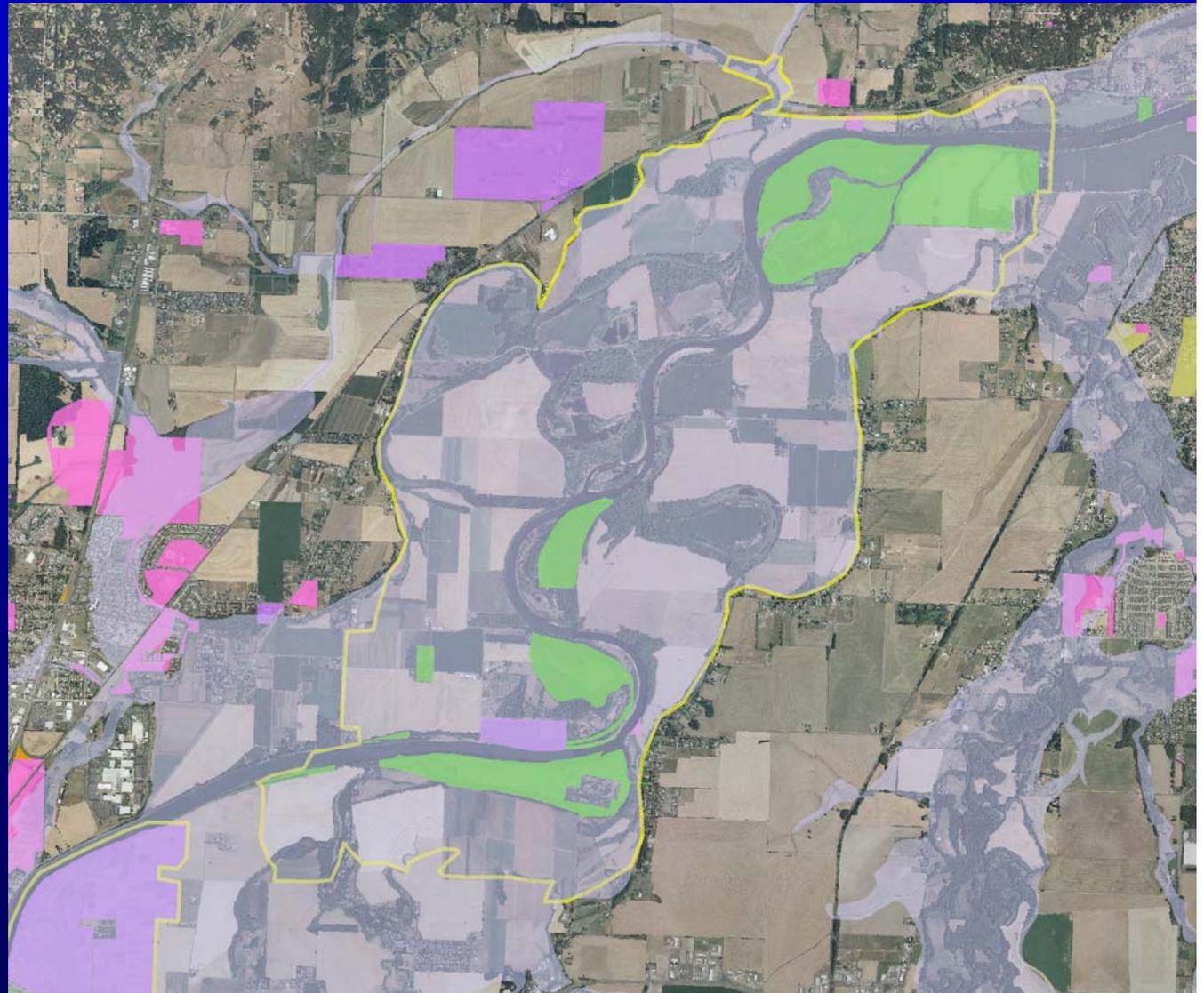
Willamette Synthesis Project



- Identify priority floodplain properties in mainstem and lower tributaries
- Integrate regional conservation prioritization processes
- Cooperative venture of TNC, ODFW, ODEQ, The Wetlands Conservancy, The Willamette Partnership, BLM, Oregon Natural Heritage Information Center

Delineation of Willamette Floodplain Priorities

- Major River Confluences
- 100-Year Floodplain
- Public ownership
- High restoration potential from Hulse et al.
- 3 meanders per site
- Major infrastructure as constraint





Water Quality Markets - Example



- Release 30 cfs/d stored water in July and August
- Shade 35 miles of riparian area

Grey Infrastructure

Cooling Towers

Compliance Achieved

Cost - \$60 Million



Green Infrastructure

Restore 35 miles of streams

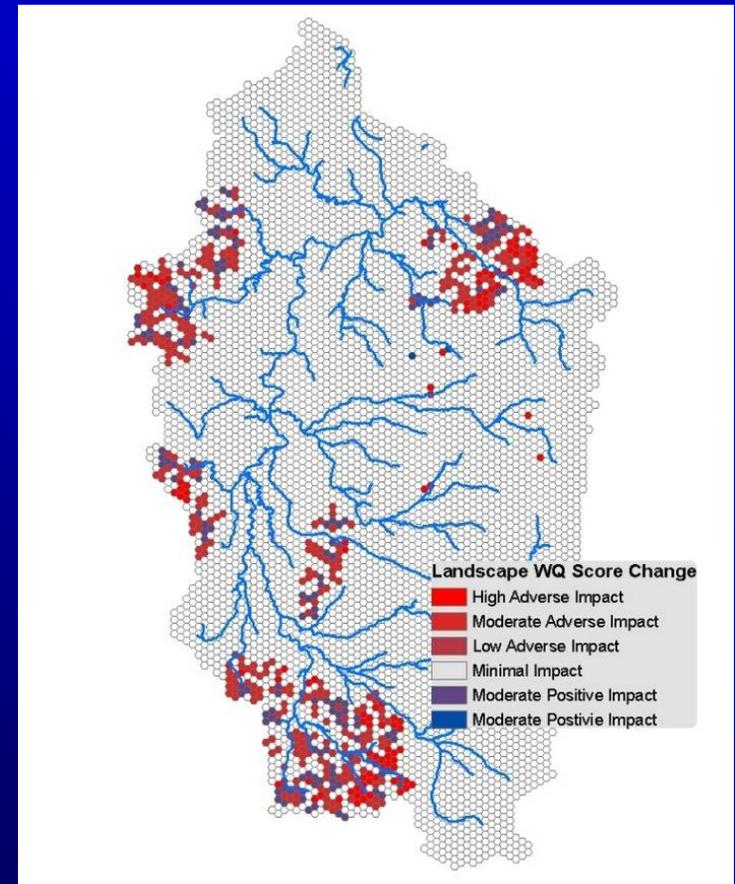
Compliance Achieved

Cost - \$10 Million



Future Efforts – Ecosystem Markets

- New markets: Nutrients, Dissolved oxygen, stormwater
- Water quantity benefits: water retention, flood control, groundwater recharge
- Integrating markets for water quality and quantity with wetlands, carbon, and species markets
- Ecosystem Services Assessments: EPA, Natural Capital Project

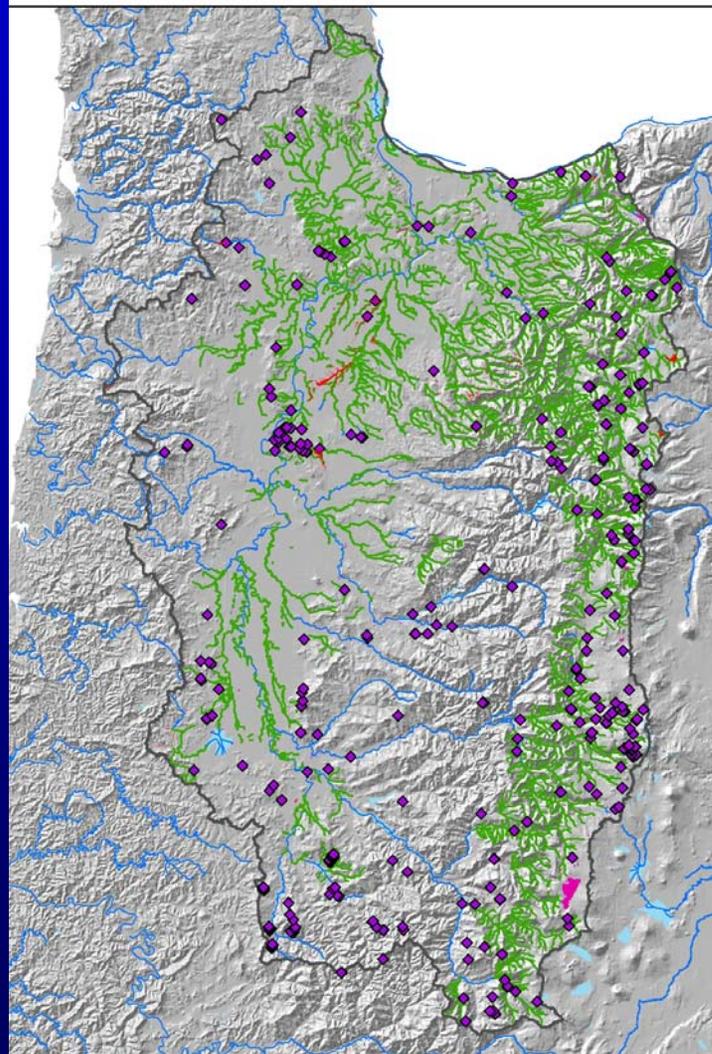


Long-term Water Management Planning?

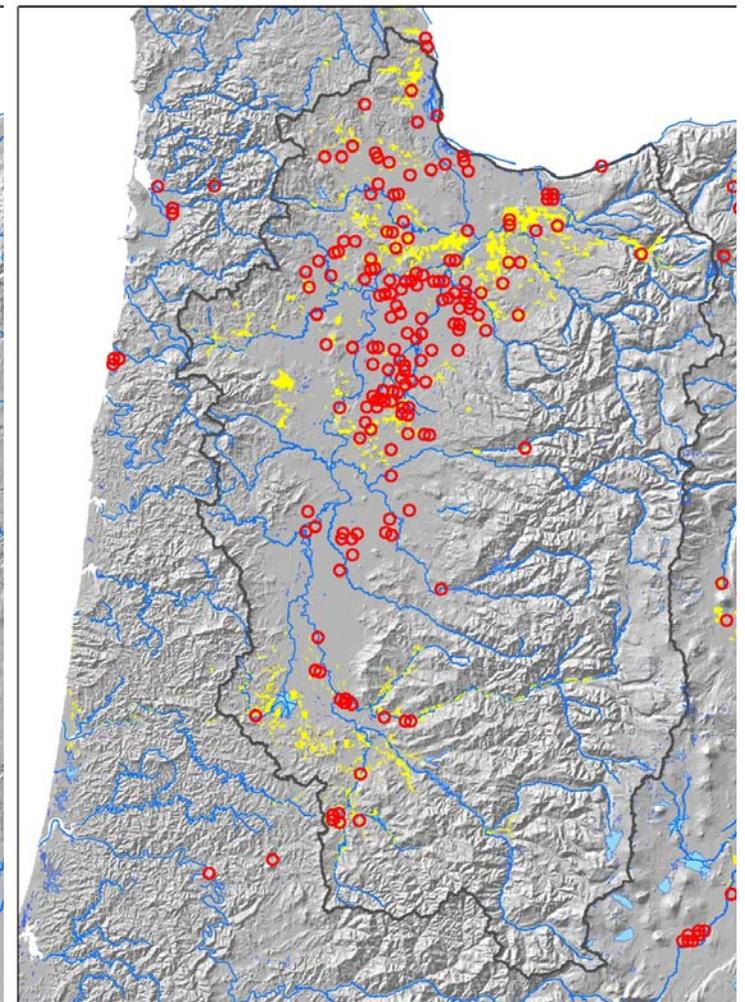
Water Rights-
Municipal
Instream

Groundwater
Management

Climate
Change



Wetlands Springs Rivers Lakes



Pending Groundwater Rights Applications
Rural Residential Zoning in Counties
Expected to Grow >15% by 2020

Sources: OR Office of Economic Ana
OR Department of Transportation (19
OR Department of Land Conservator
Oregon Water Resources Department

