

A photograph of a rocky stream flowing through a dense forest with green foliage. The stream is filled with numerous grey and brown rocks of various sizes. The water is clear and reflects the surrounding greenery. The forest is thick with trees and bushes, creating a lush, natural setting.

**Deschutes TMDL Advisory Group
Watershed Field Trip
June 4, 2009**

Attendees

Dan Adkins, WA Dept. of Fish & Wildlife

Sue Danver, Black Hills Audubon Society

Sue Davis, Thurston County

Betsy Dickes, WA Dept. of Ecology

Karla Fowler, LOTT Alliance

Chuck Hoffman, WA Dept. of Ecology

Karen Janowitz, WSU Extension

Laura Keehan, City of Olympia

John Konovsky, Squaxin Island Tribe

Jeff Mocniak, Citizen-at-Large

Ginny Prest, WA Dept. of Agriculture

Dan Smith, City of Tumwater

Chris Stearns, Thurston Public Utility District

Lydia Wagner, WA Dept. of Ecology

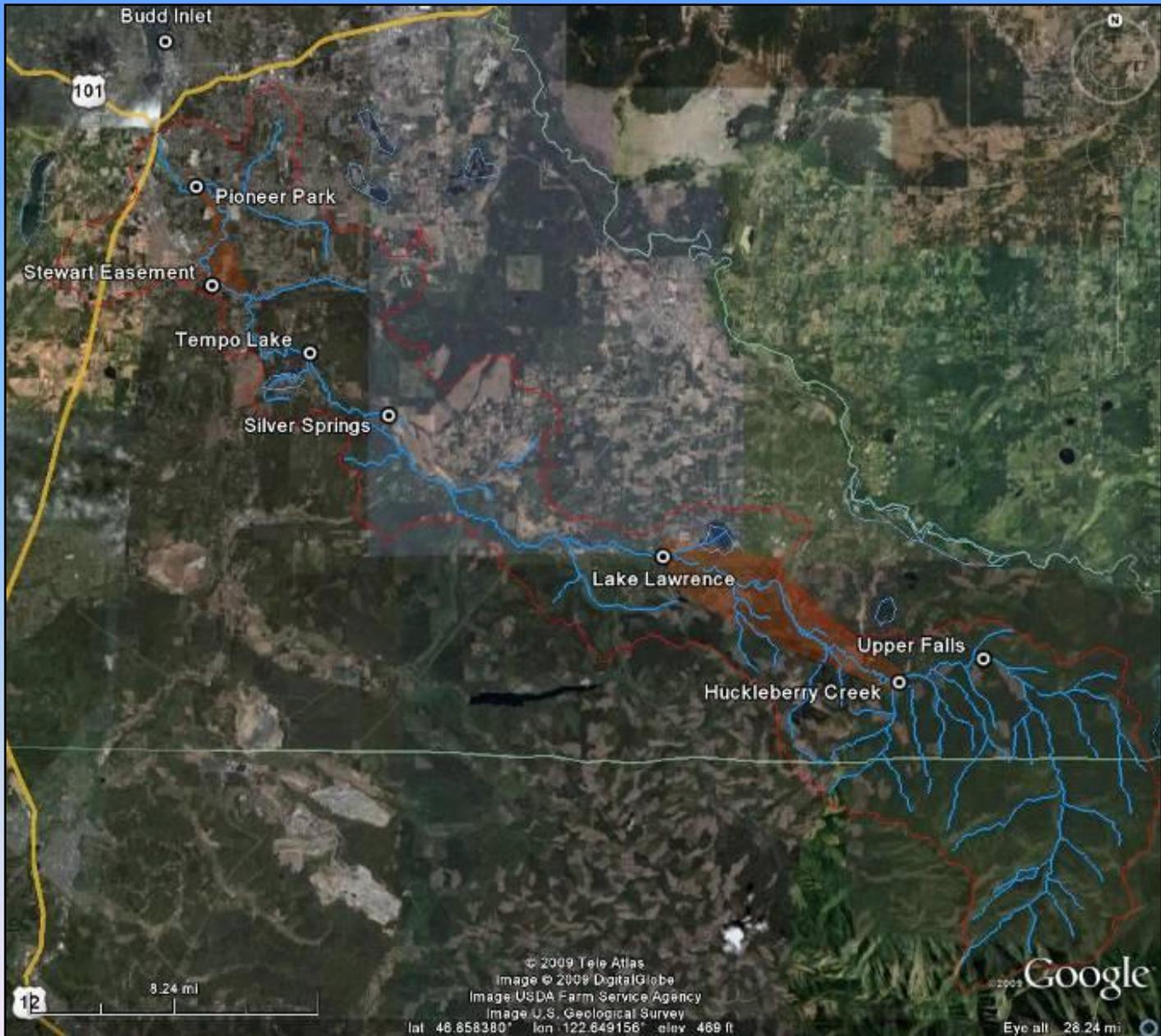
Kathy Whalen, Thurston Conservation District

Ann Wick, WA Dept. of Agriculture

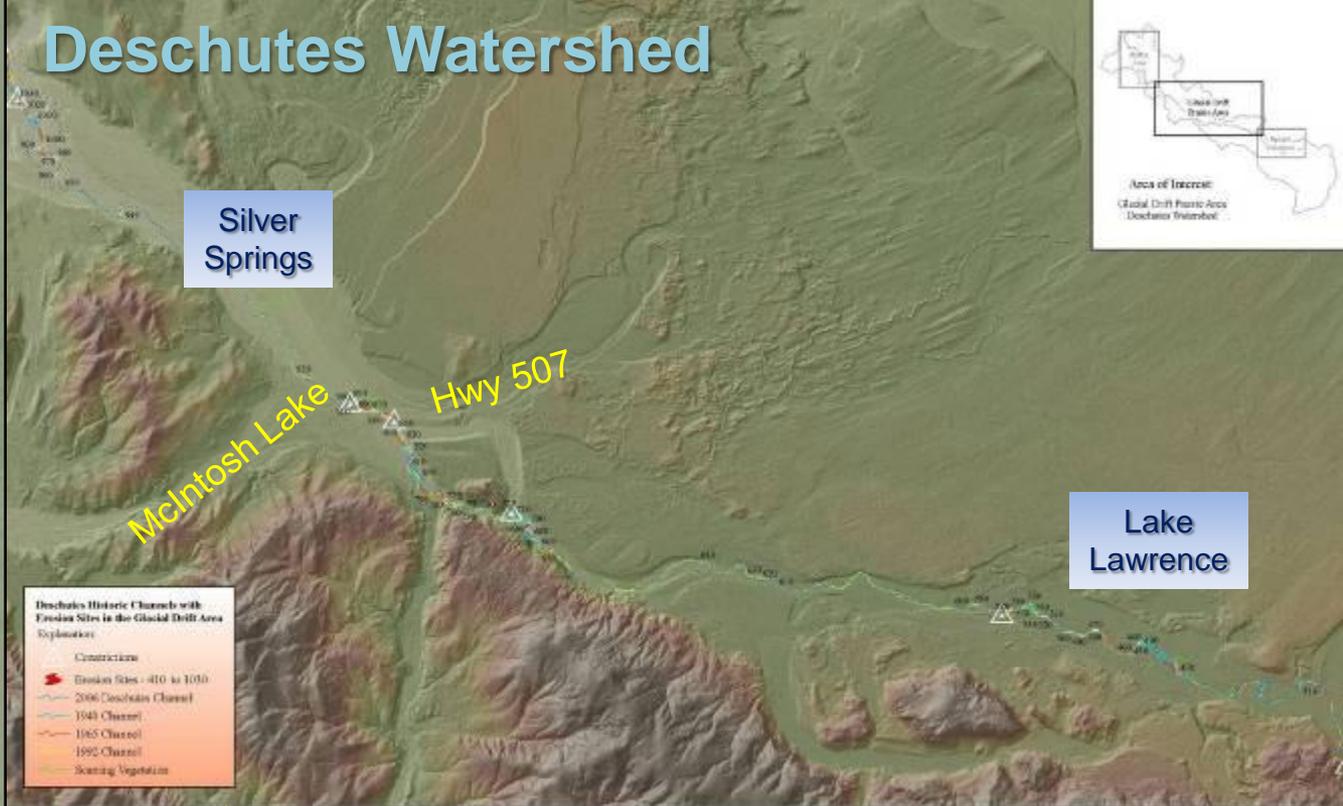


City of
Tumwater



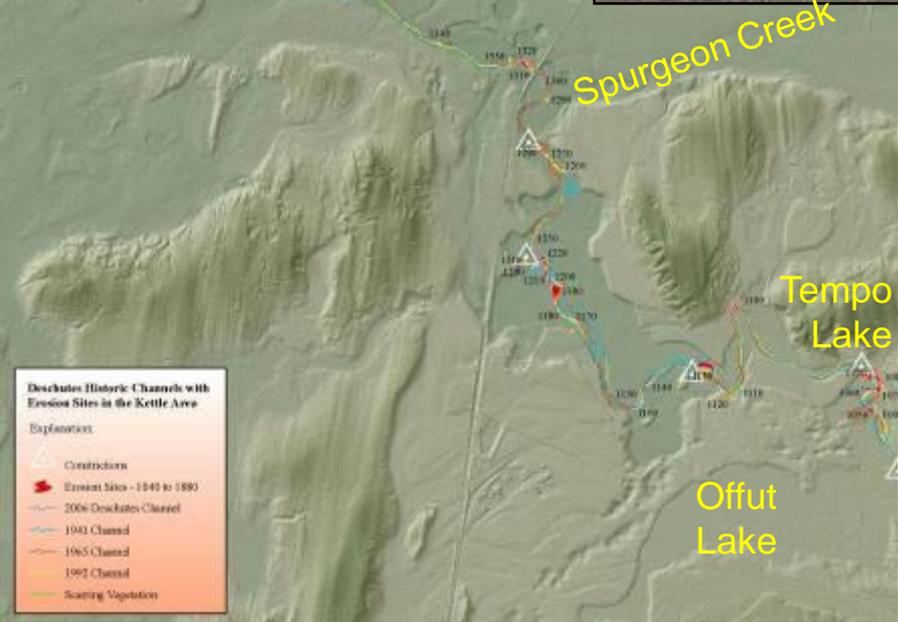


Deschutes Watershed



Deschutes Historic Channels with Erosion Sites in the Glacial Drift Area
Explanation:

- Constructions
- Erosion Sites - 410 to 1010
- 2006 Deschutes Channel
- 1943 Channel
- 1965 Channel
- 1992 Channel
- Scaring Vegetation



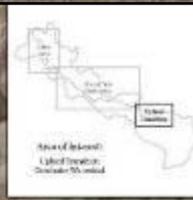
Deschutes Historic Channels with Erosion Sites in the Kettle Area
Explanation:

- Constructions
- Erosion Sites - 1040 to 1890
- 2006 Deschutes Channel
- 1943 Channel
- 1965 Channel
- 1992 Channel
- Scaring Vegetation



Deschutes Historic Channels with Erosion Sites in the Upland Transition Area
Explanation:

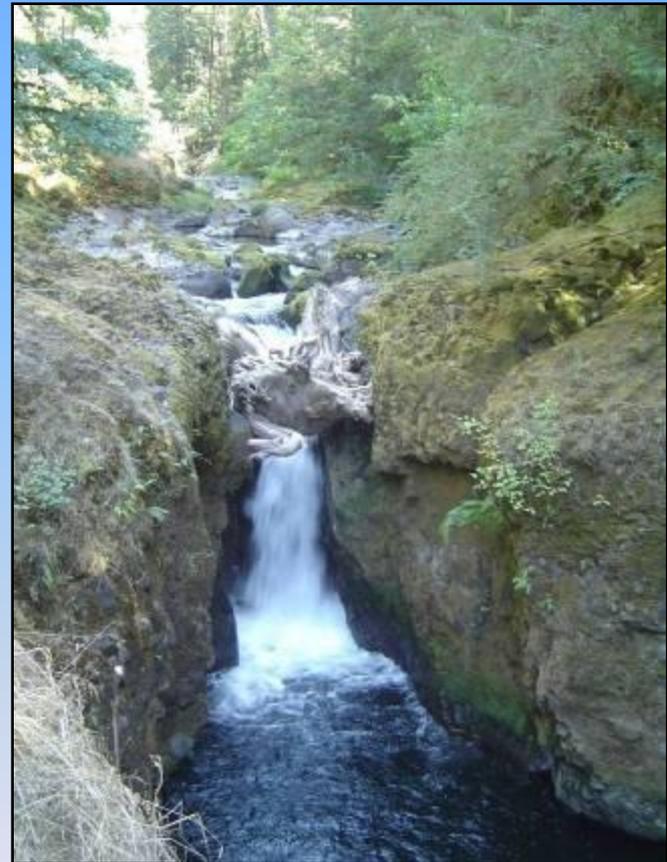
- Constructions
- Erosion Sites - 100 to 410
- 2006 Deschutes Channel
- 1943 Channel
- 1965 Channel
- 1992 Channel
- Scaring Vegetation



Upper Falls

Topics discussed:

- ❖ Young geology, unpaved roads & fine sediment load
- ❖ Land use (*forest cover, impervious surface*) & water quality





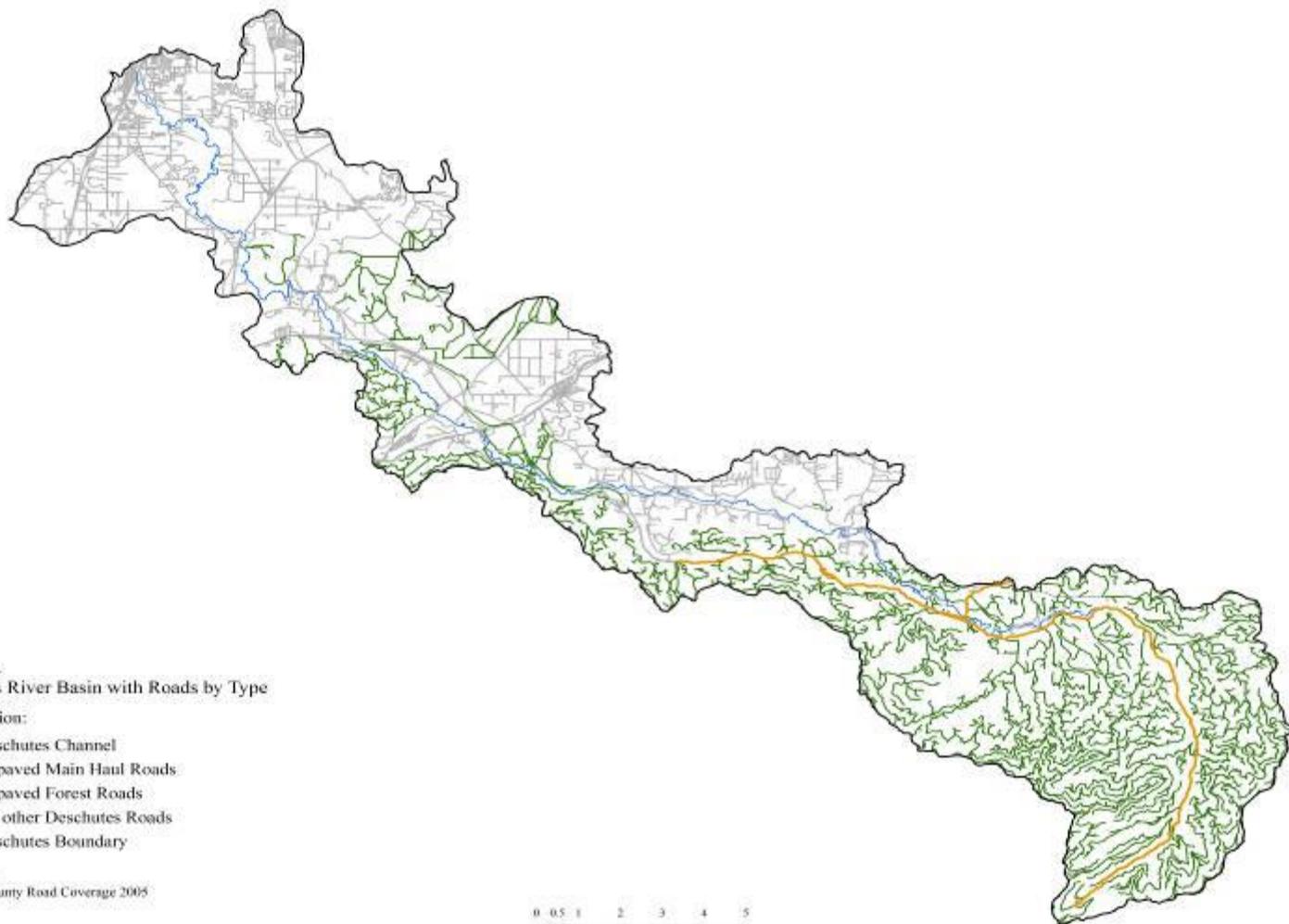


Figure 14.
Deschutes River Basin with Roads by Type

Explanation:

- Deschutes Channel
- Unpaved Main Haul Roads
- Unpaved Forest Roads
- All other Deschutes Roads
- Deschutes Boundary

Data Source:
WA-DNR County Road Coverage 2005

0 0.5 1 2 3 4 5
Miles

Upper Watershed Water Quality Research

- Mainstem mean winter turbidity has declined from ~8 NTUs in the 1970s to ~2 NTUs* in the 2000s. (Weyerhaeuser)
- Mainstem fine sediment has increased from 12% in 1992 to 17% in 2004. (Squaxin)
- Even after significant forest road improvements (Weyerhaeuser), 50% of fine sediment load remains anthropogenic. (Squaxin)

**NTU: Nephelometric turbidity unit, measures water clarity.*

Huckleberry Creek

January 1990

Topics discussed:

- ❖ Historic fishery, land slides & fine sediment
- ❖ Floodplain development & habitat disconnection







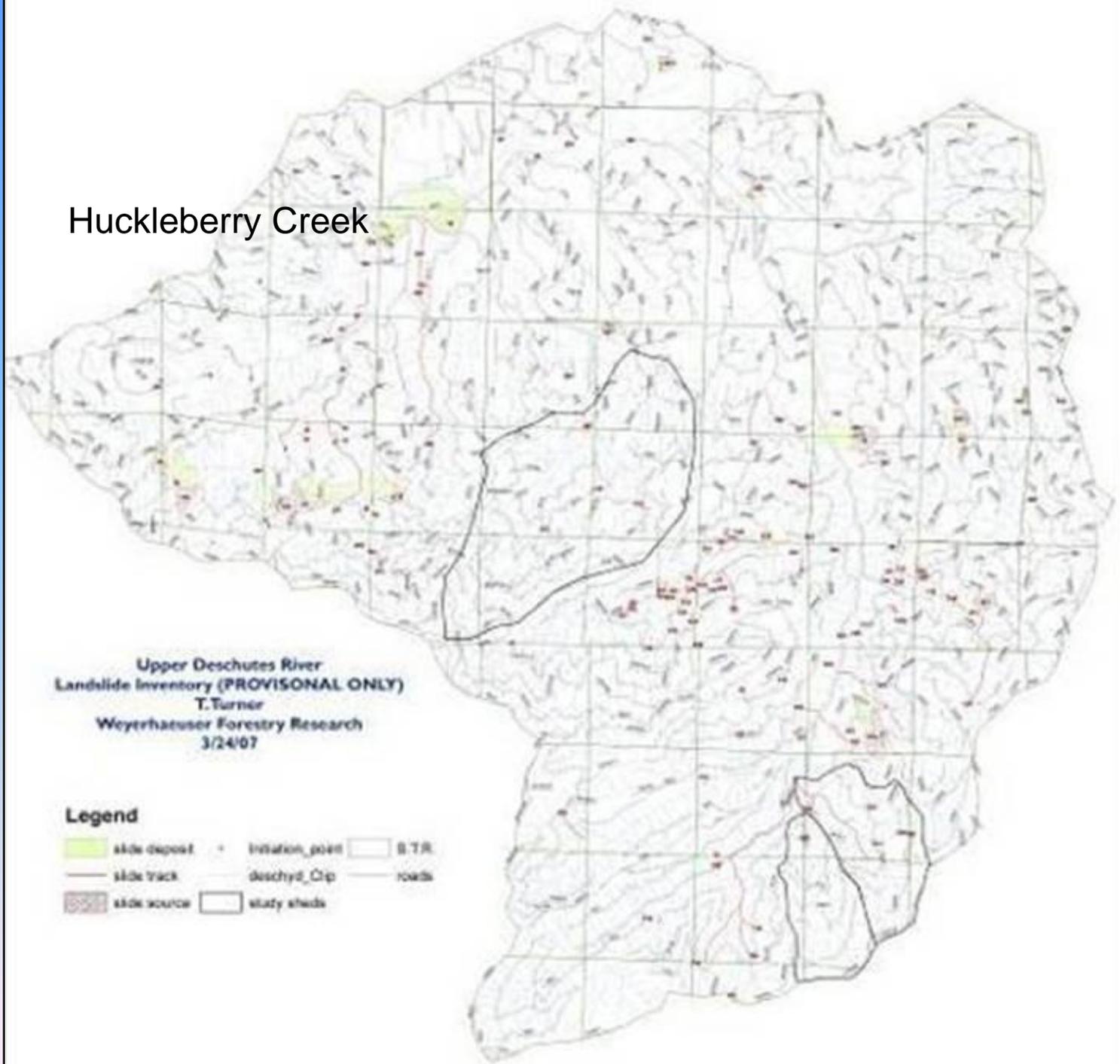


Huckleberry Creek

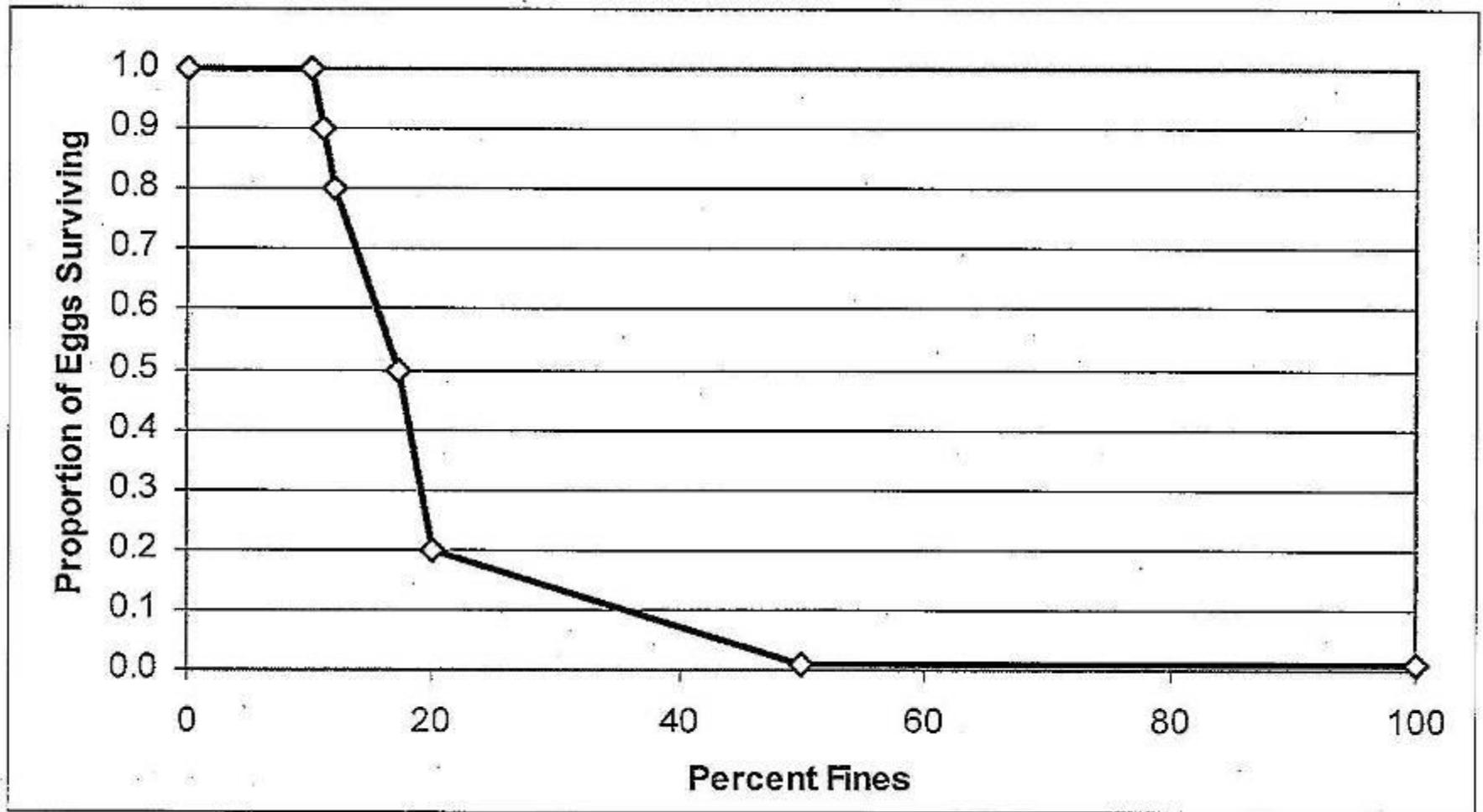
Upper Deschutes River
Landslide Inventory (PROVISIONAL ONLY)
T. Turner
Weyerhaeuser Forestry Research
3/24/07

Legend

- | | | | | | |
|---|---------------|---|------------------|---|-------|
|  | slide deposit |  | initiation point |  | BTR |
|  | slide track |  | deschyd Clip |  | roads |
|  | slide source |  | stazy sheds | | |



Fine Sediment Functional Relationship



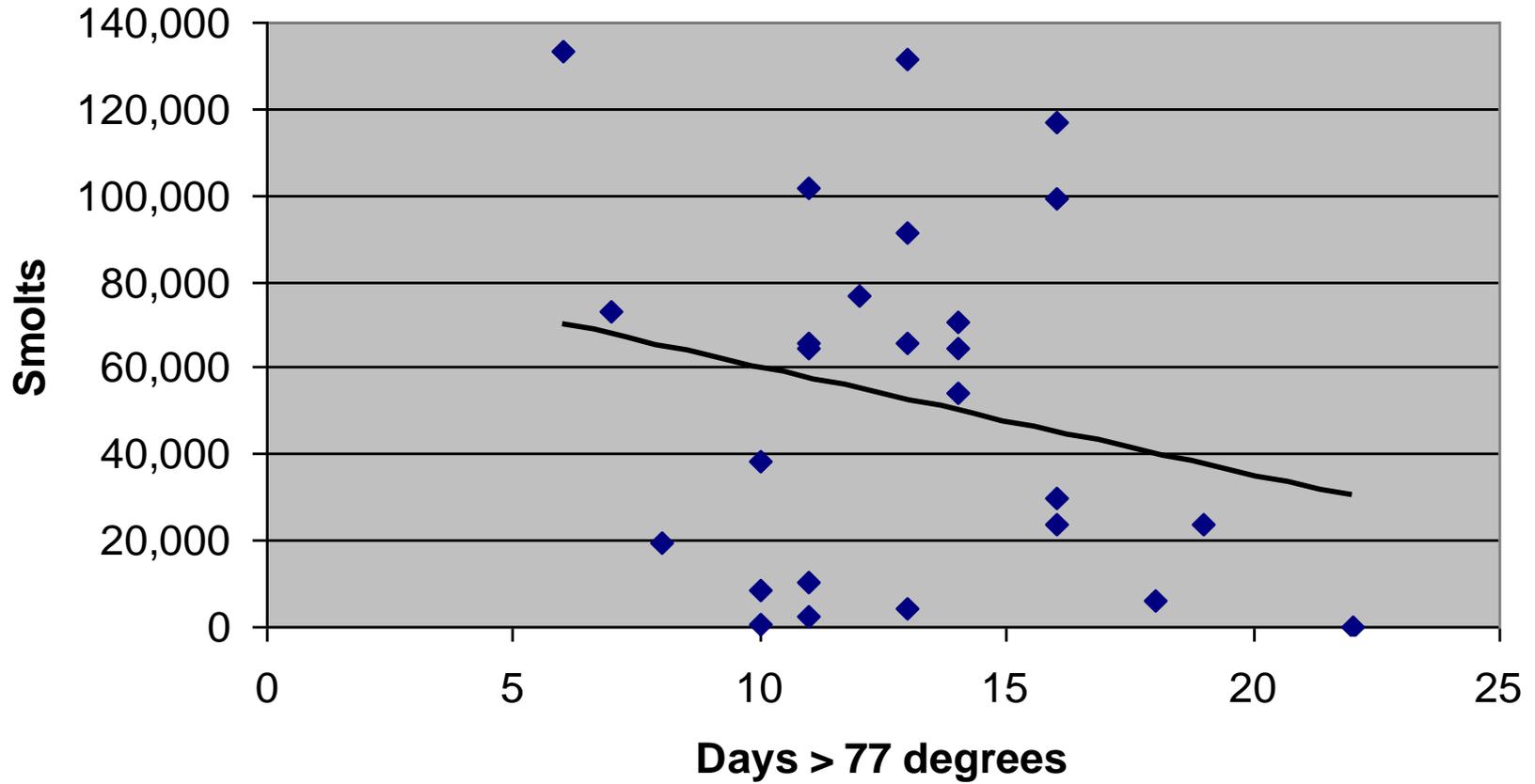
Mitchell Creek & Deschutes River

Topics discussed:

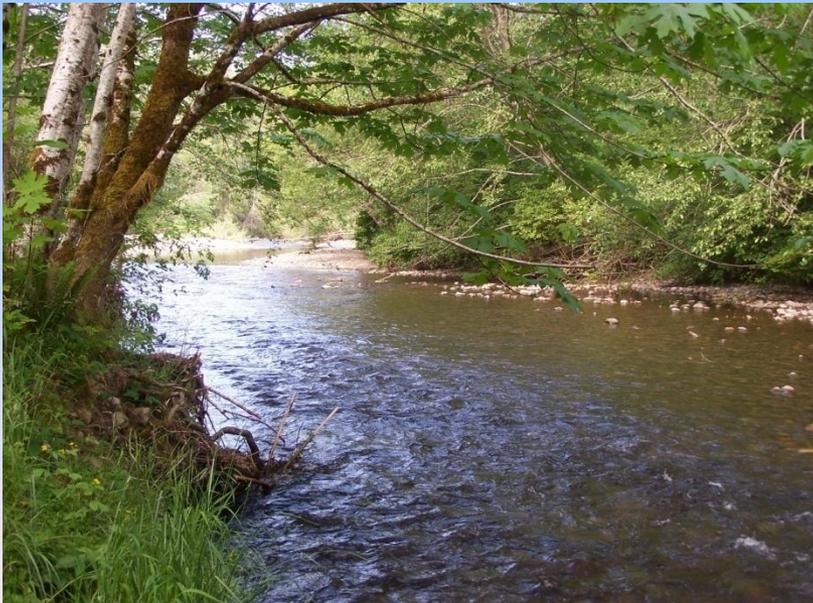
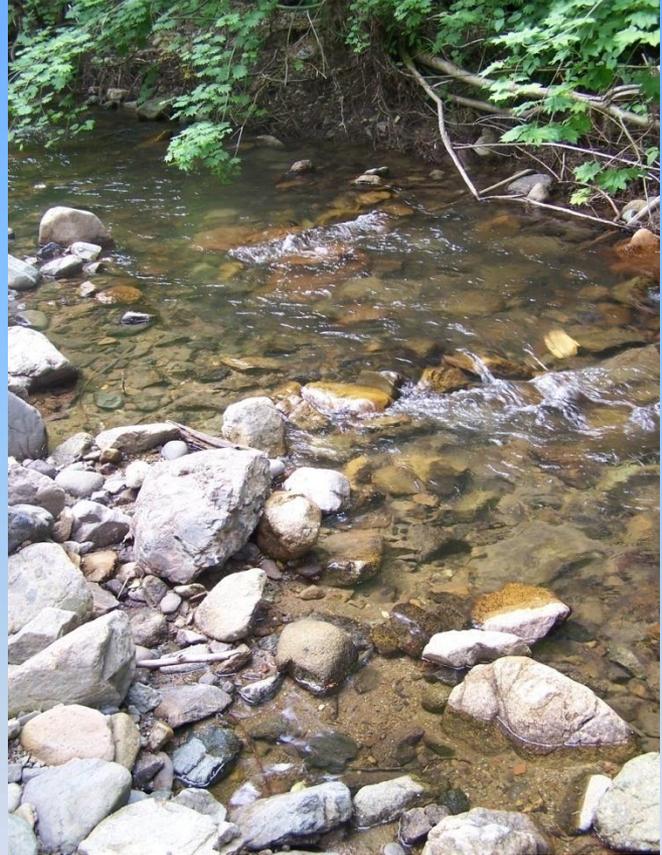
- ❖ Beginning of sensitive reach
- ❖ Water temperature, dissolved oxygen, riparian cover & large woody debris



Temperature Functional Relationship











Along Vail Road near the sheep farm referred to as the “Smith Ranch”

Items discussed:

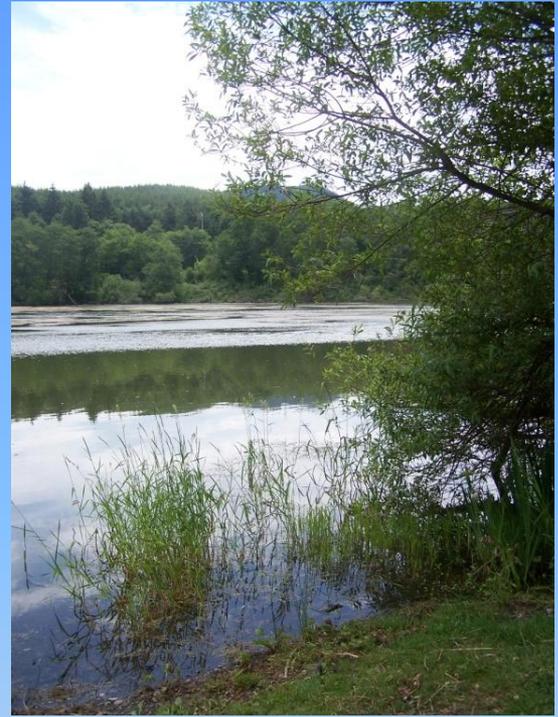
- ❖ Livestock & fecal coliform bacteria
- ❖ Simplified channel morphology & instream fish habitat







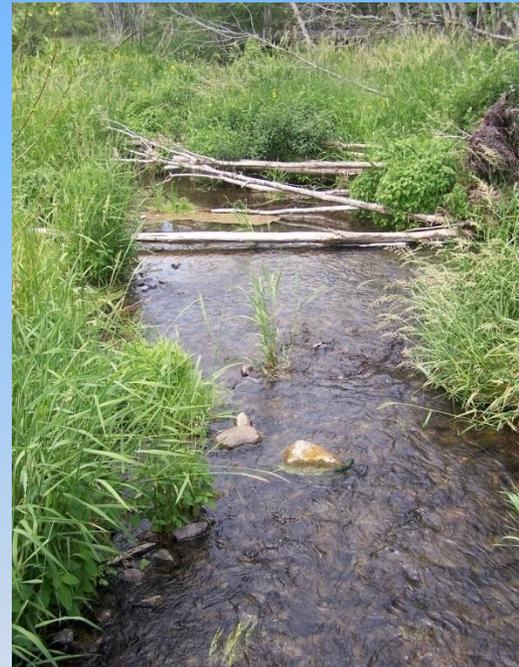




Silver Springs

Items discussed:

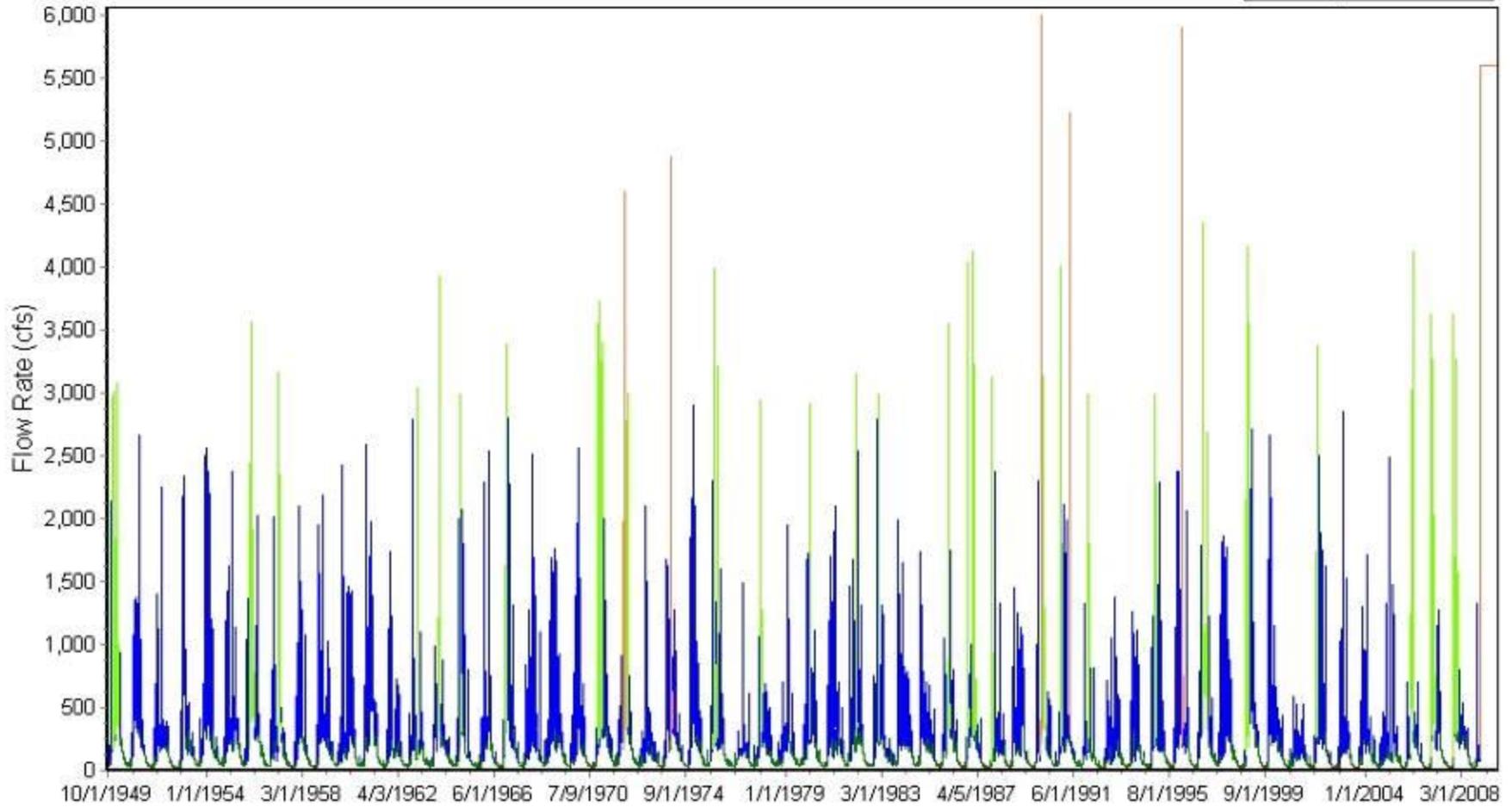
- ❖ Environmental streamflow changes
- ❖ Groundwater pumping, diminished low flows & water temperature



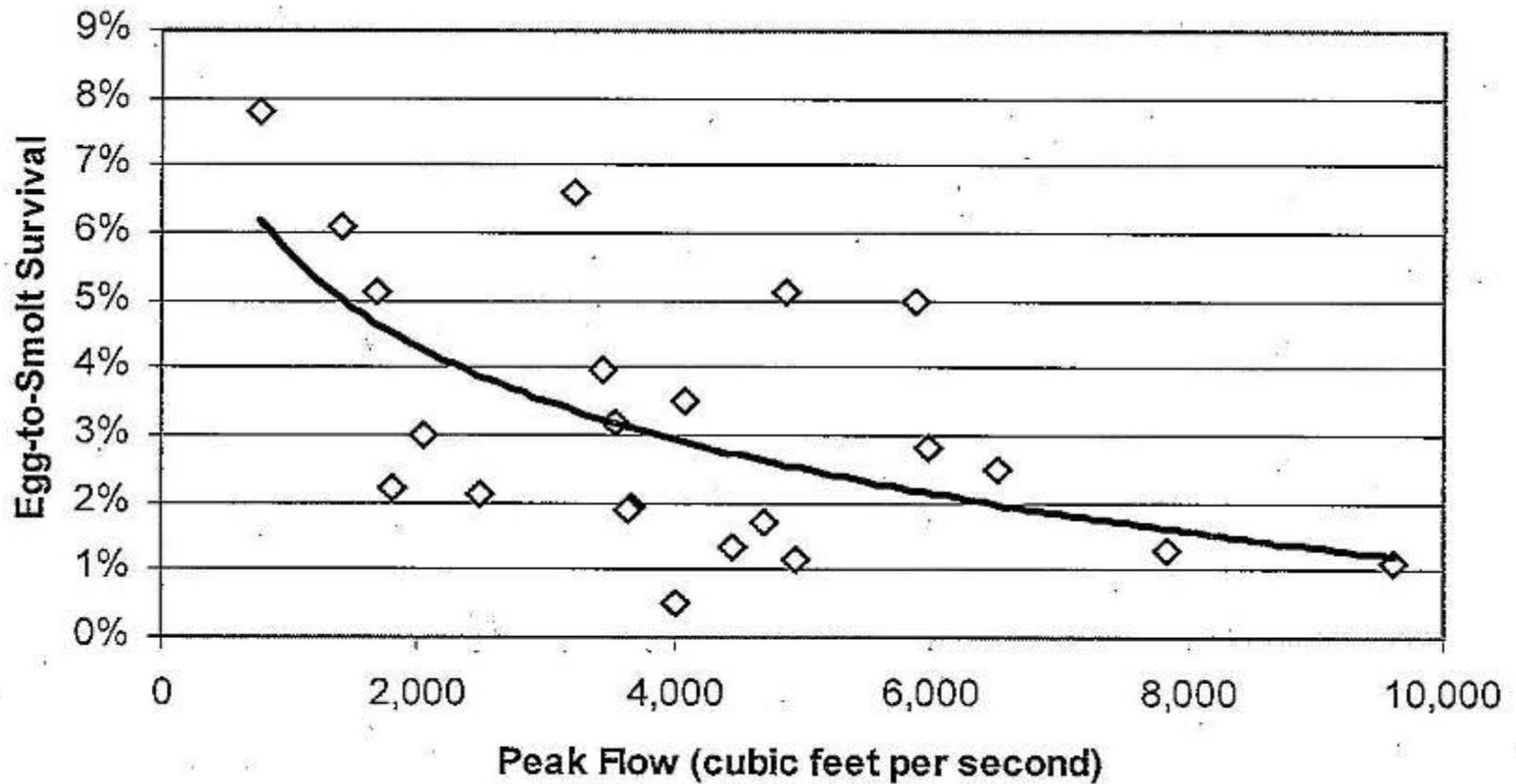


Vail 2009 Environmental Flow Components (1950-2009)

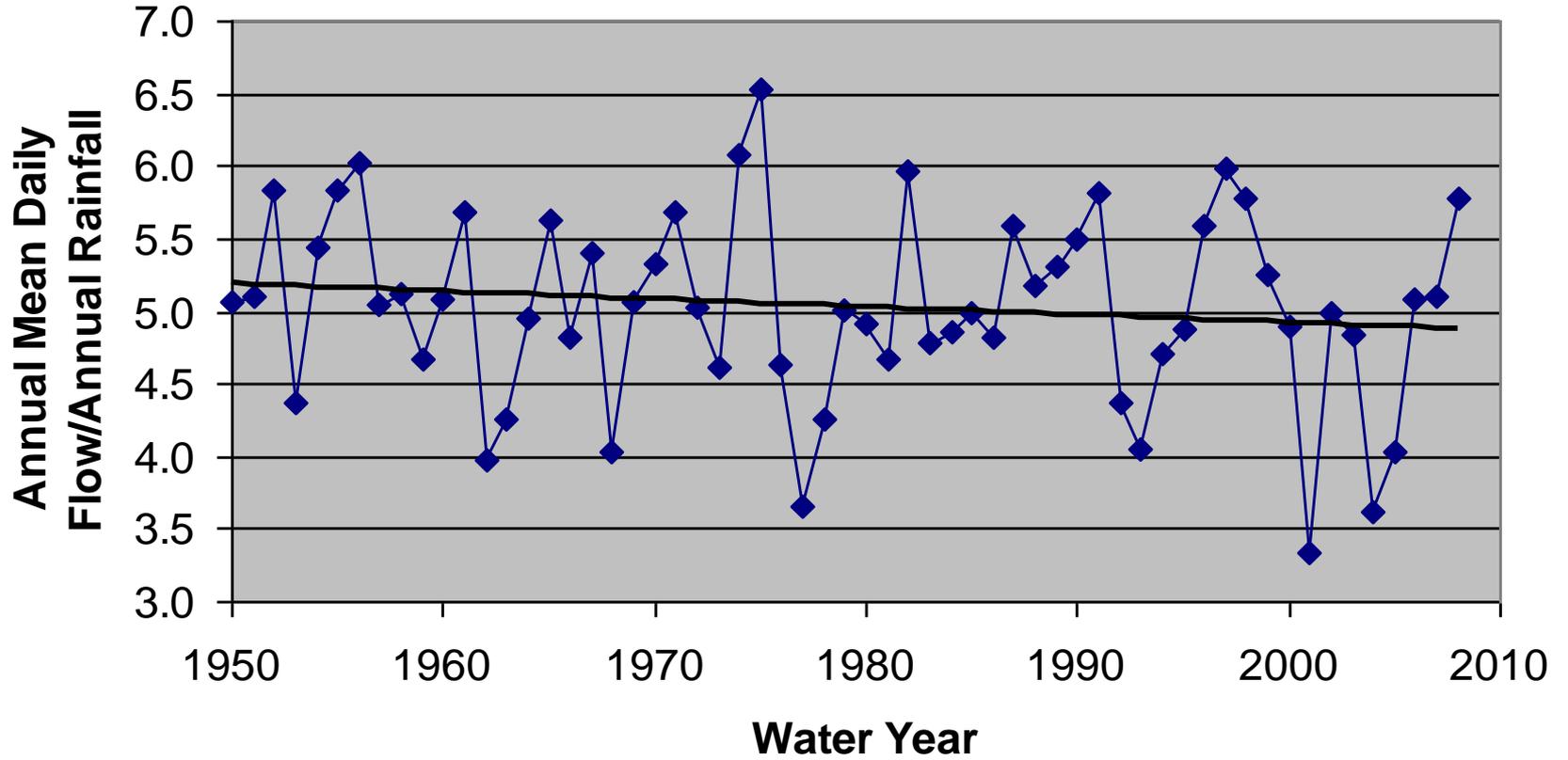
- Extreme Low Flows
- Low Flows
- High Flow Pulses
- Small Floods
- Large Floods



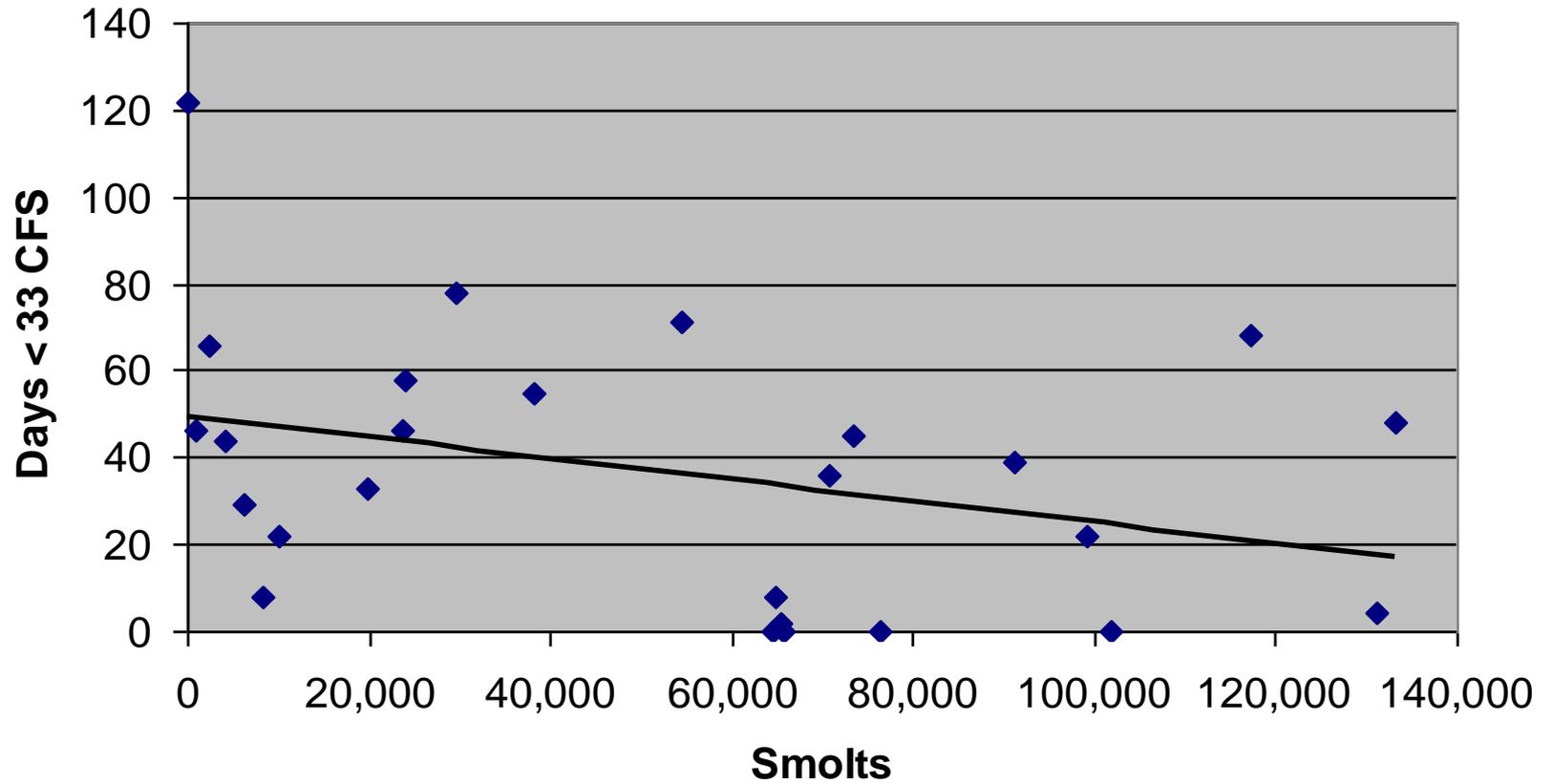
Flooding Functional Relationship



Normalized Vail Streamflow



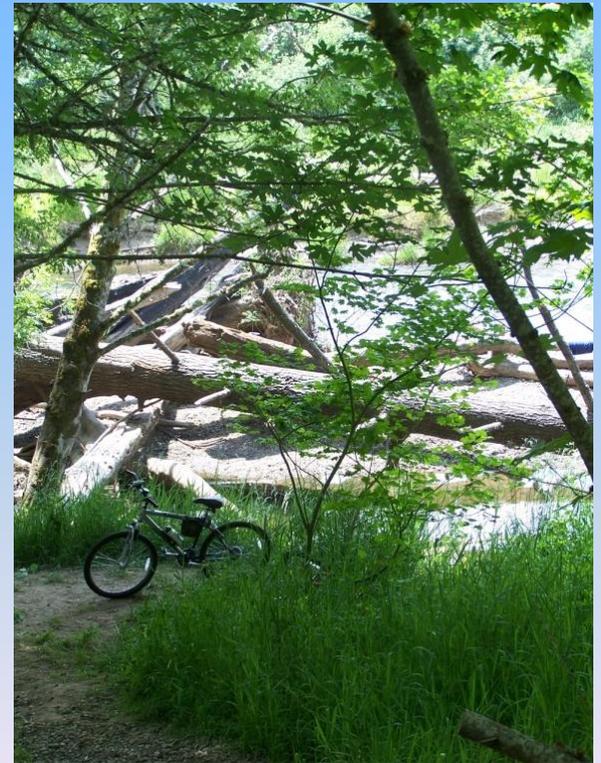
Low Flow Functional Relationship



Deschutes River – Bike trail near Tempo Lake

Items discussed:

- ❖ Tributary loading
- ❖ Wetland alterations & water temperature
- ❖ Septics, nutrients, & dissolved oxygen
- ❖ Simplified channel morphology & summer/winter off-channel habitat



Deschutes River Off-Channel Habitat Inventory



Legend

-  Mainstem and Tributaries
-  Meander Zone
-  100-year Floodplain
-  Wetlands
-  Overflow Channels

Note: Overflow channels and wetlands were digitized from 1996 aerial and topographic photos and represent a subset of existing features. Selection criteria are based on The Deschutes River Off-Channel Habitat Inventory.

Map Produced By:
Theiston Regional Planning Council
for
Squaxin Island Tribe
Natural Resources

All distances in feet



Location Map



Map 6 of 18







Stewart Conservation Easement

Items discussed:

- ❖ Protection vs. restoration
- ❖ Gravel mining, stormwater & fine sediment









Pioneer Park, Tumwater

Items discussed:

- ❖ Accelerated bank erosion & bioengineering
- ❖ Simplified channel morphology & fine sediment storage











Budd Inlet

Items discussed:

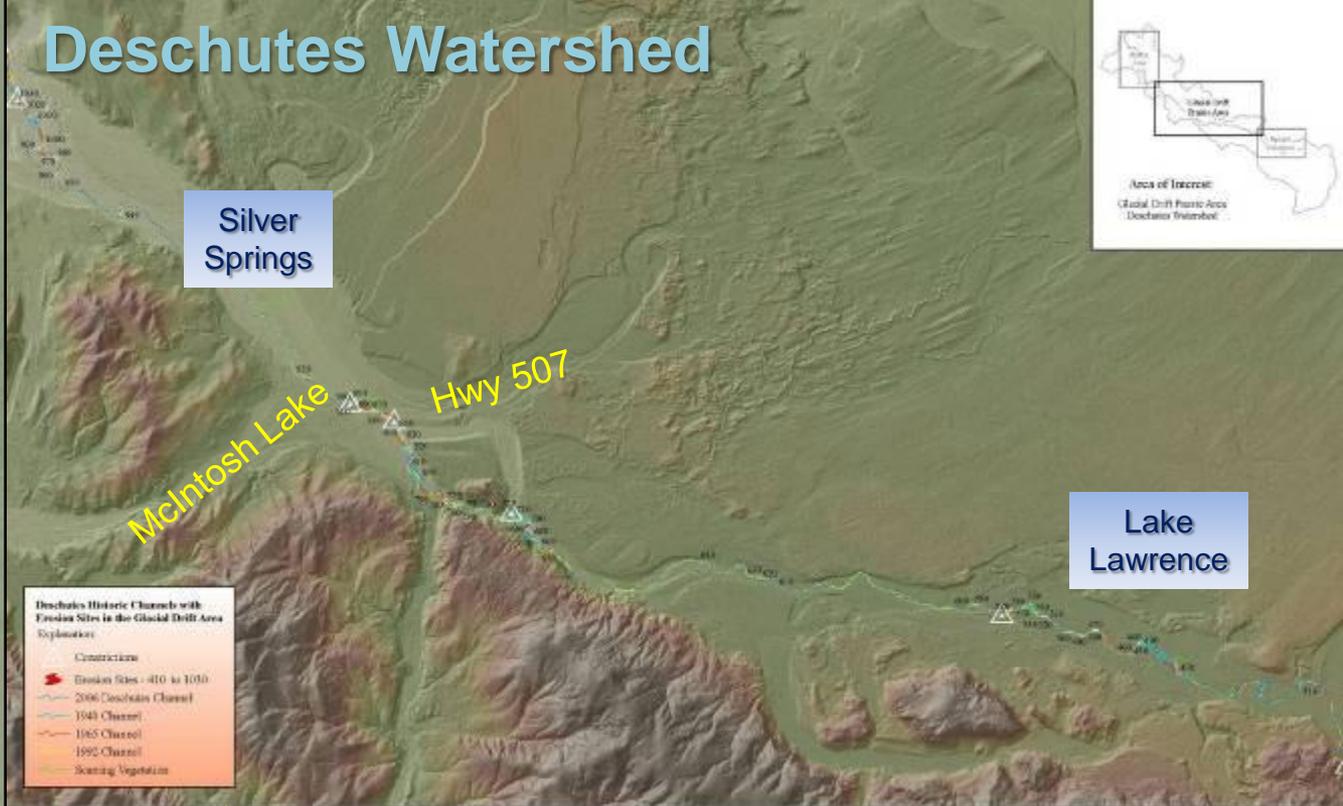
- ❖ Estuary vs. lake
- ❖ West Bay/East Bay water quality
- ❖ Reclaimed water







Deschutes Watershed



Deschutes Historic Channels with Erosion Sites in the Glacial Drift Area
Explanation:

- Constructions
- Erosion Sites - 410 to 1010
- 2006 Deschutes Channel
- 1943 Channel
- 1965 Channel
- 1992 Channel
- Scaring Vegetation



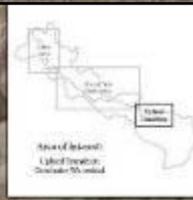
Deschutes Historic Channels with Erosion Sites in the Kettle Area
Explanation:

- Constructions
- Erosion Sites - 1040 to 1890
- 2006 Deschutes Channel
- 1943 Channel
- 1965 Channel
- 1992 Channel
- Scaring Vegetation



Deschutes Historic Channels with Erosion Sites in the Upland Transition Area
Explanation:

- Constructions
- Erosion Sites - 100 to 410
- 2006 Deschutes Channel
- 1943 Channel
- 1965 Channel
- 1992 Channel
- Scaring Vegetation







FYI...

How hot was it during the day?
The high temperature for Olympia
on June 4th was a sweltering

