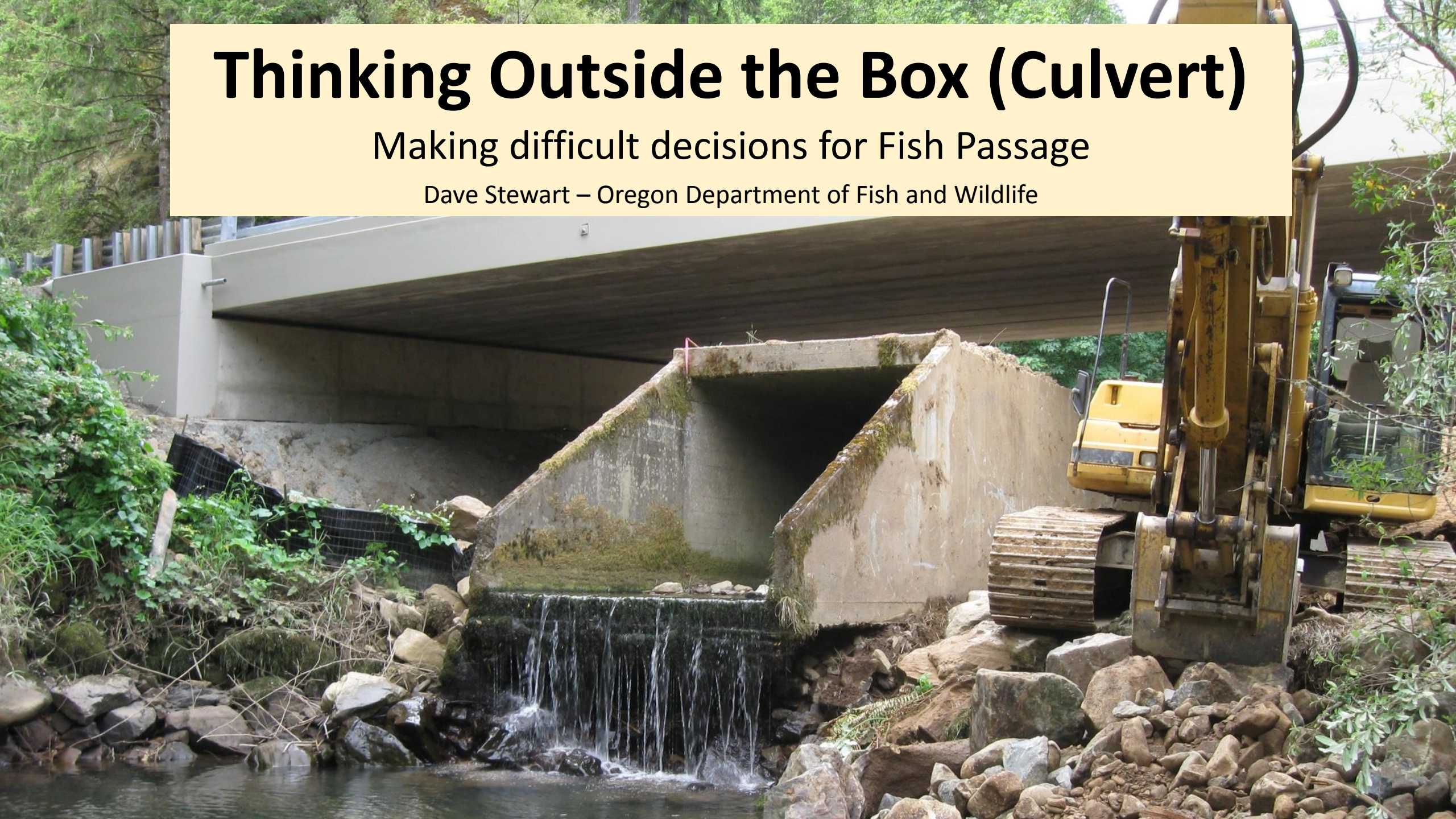
Thinking Outside the Box (Culvert)

Making difficult decisions for Fish Passage

Dave Stewart – Oregon Department of Fish and Wildlife



Overview

Fish Passage History – Fast Version

Where are we at Now

Approval Process

ODOT and Passage

The Johnson Creek Challenge

What you can do today

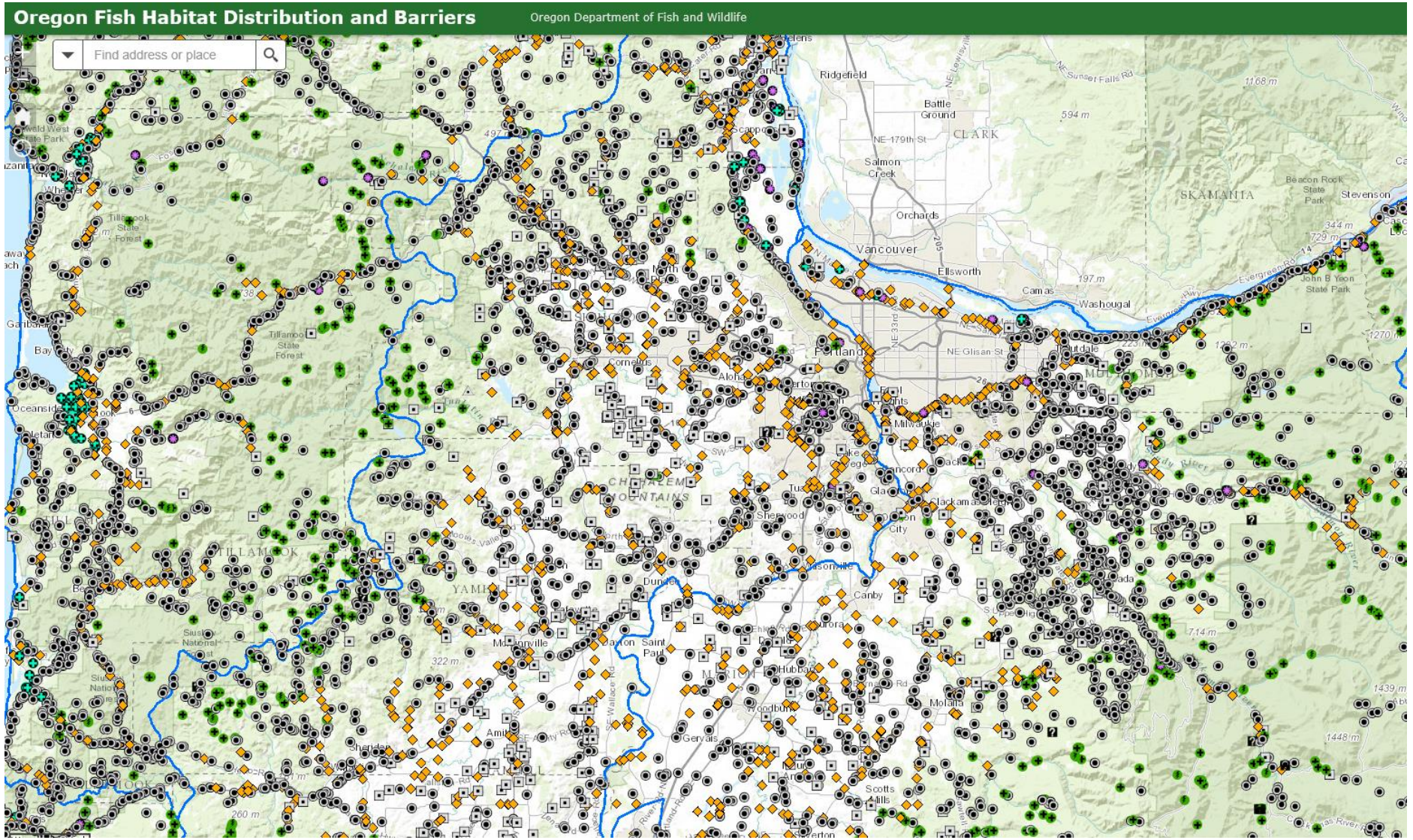
HISTORY

- **First fish passage laws were prior to statehood (1859)**
  - **1848: Oregon Territorial Constitution, Section 12:**

    "The rivers and streams of water in said territory of Oregon in which salmon are found or to which they resort shall not be obstructed by dam or otherwise, unless such dams or obstructions are so constructed as to allow salmon to pass freely up and down such rivers and streams."

- **Former statutes required passage, did <u>not</u> allow waivers, and were not followed (leaving many outside law)**

Current Status



https://nrimp2.dfw.state.or.us/FHD_FPB_Viewer/index.html

SCOPE OF PROBLEM IN OREGON

- road-stream crossings: 10,000s
- dams: 1,000s
- tide gates: 1,000s
- dikes, etc.: ?

Upstream and Downstream Fish Migration has been Bisected Throughout Oregon

PRIMARY CAUSES OF PROBLEMS

- Water velocities exceed swimming capabilities of fish
- Water surface to water surface drop/jump heights
- Structural supports blocking channels (dams, bridge piers, culverts, dikes, levees, tide gates)
- Shallow water depths in receiving pools
- Abandoned structures
- Excessive culvert lengths
- Shallow water depths in culverts
- Water over-allocation “no water in stream”
- Poor water quality
- Attraction flows at fishway entrances
- Combination of multiple factors

ODFW Fish Passage Plan for a Road Stream Crossing

OREGON DEPARTMENT OF FISH AND WILDLIFE

Fish Passage Plan for a Road-Stream Crossing

- *If you unlock and re-lock this Form, information already entered may be lost in certain versions of MS Word.*
- *If your project includes multiple crossings, please complete this form for each crossing.*

APPLICANT INFORMATION

APPLICANT:
ORGANIZATION:
ADDRESS:
CITY:
PHONE:
FAX:
E-MAIL ADDRESS:

TITLE:
STATE: **ZIP:**

SIGNATURE: _____ **DATE:** _____

AUTHORIZED AGENT *(if any)*:
ORGANIZATION:
ADDRESS:
CITY:
PHONE:
FAX:
E-MAIL ADDRESS:

TITLE:
STATE: **ZIP:**

SIGNATURE: _____ **DATE:** _____

OWNER *(if different than Applicant)*:
ORGANIZATION:
ADDRESS:
CITY:
PHONE:
FAX:
E-MAIL ADDRESS:

TITLE:
STATE: **ZIP:**

SIGNATURE: _____ **DATE:** _____

LOCATION

- **COUNTY**
- **ROAD**
- **RIVER/STREAM**
- **TRIBUTARY OF**
- **BASIN**
- **COORDINATES** [a] Longitude: °W Latitude: °N
- **LEGAL DESCRIPTION** ¼ / ¼: Section: Township: Range: Tax Map #: Tax Lot #:

[a] *geographic projection using NAD_83 and formatted as decimal degrees to at least 4 places*

Stream Simulation Design Method Approach:

- new structure width is at least ≥ active channel width
- slope and elevation continuous
- bed material:
    - Similar to surrounding natural stream
    - is stable and remains in place
    - natural or supplemented
    - over-sized rock if >40' long
    - placed during construction
    - maintains water depth and velocity

“Natural/Nature Like” Solutions

- Rock Weirs
  - Large channel spanning rock
  - Effectively backwaters obstruction/provides adequate water surface elevation for passage and diversion
  - Water differentials meet needs of NMF present
- Roughened Channels
  - “Over steepened” sections
  - Provides depths and velocities that meet the needs of NMF present
- Stream simulation Channels
  - Channel reflects conditions in the natural stream- gradient, velocities, depths, etc.

“Of the 273 stream crossings assessed for fish passage, we found 202 or 74% of them to be fish passage barriers.”

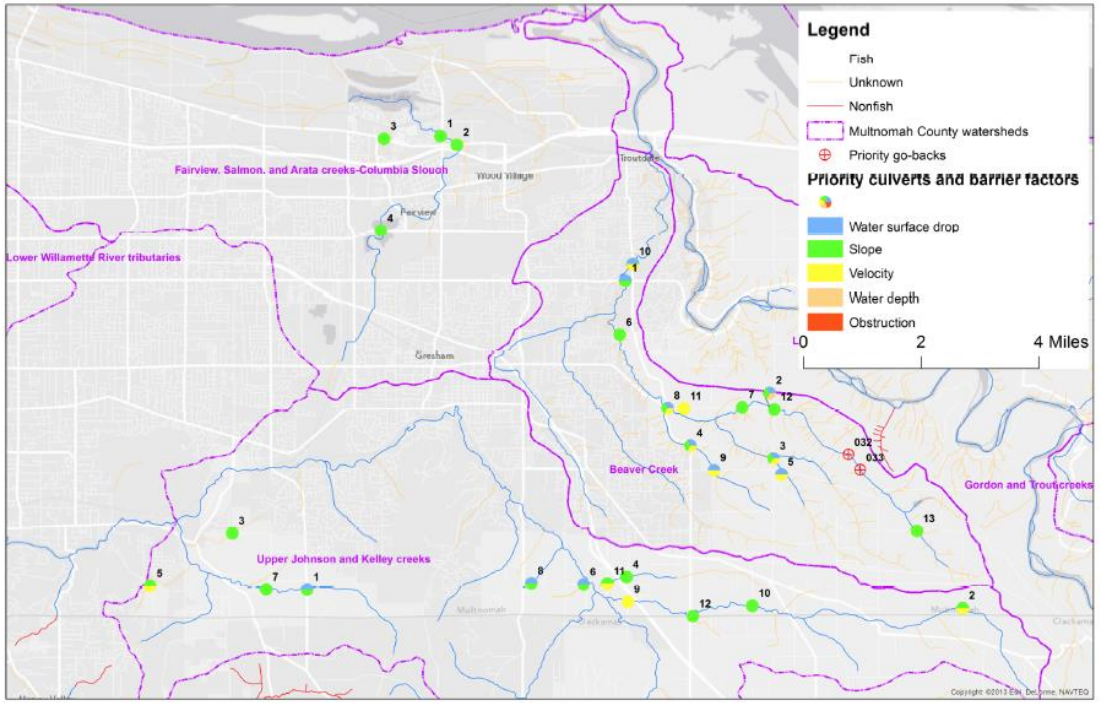
-Johnson Creek Watershed Council 2015 to 2025 Action plan

(http://jcwc.org/wp-content/uploads/2015/06/JCWC-Action-Plan-10.4_small.pdf)

List of projects completed in Johnson Creek

- New Data
- Prioritization
- Implementation
- Crystal Springs Example
- Ongoing projects

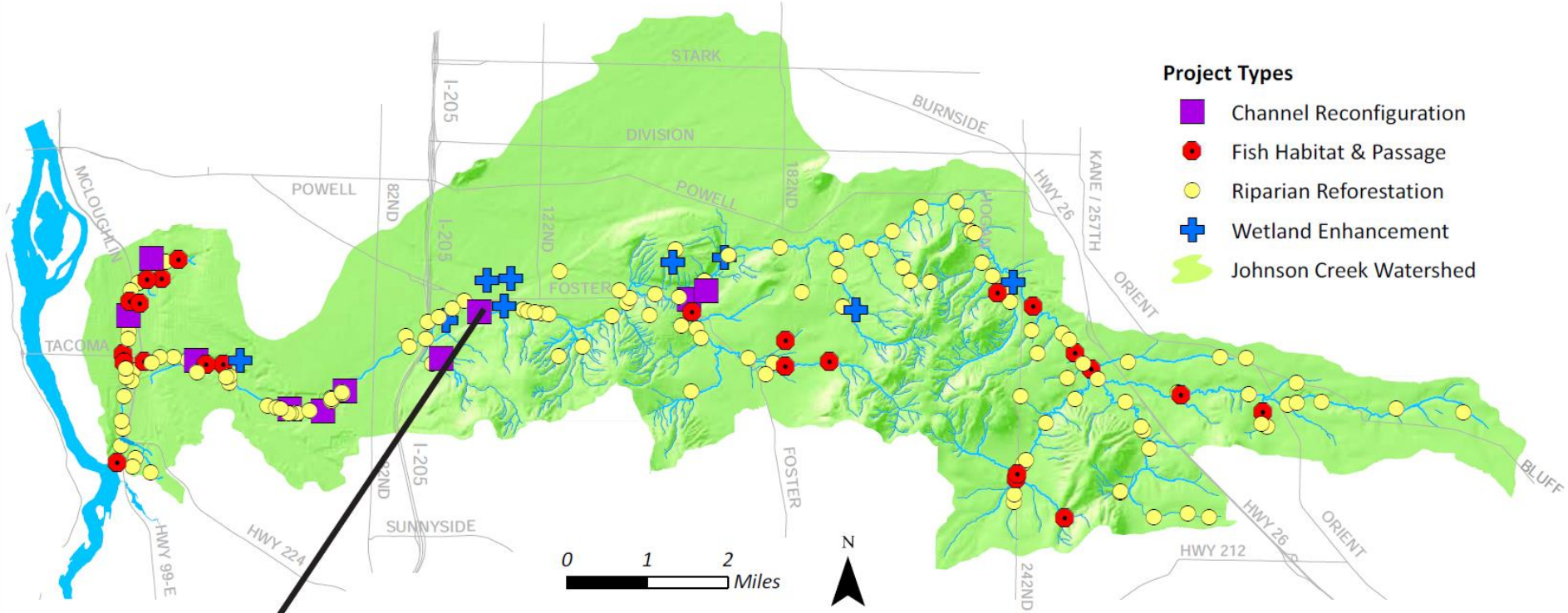
Appendix Figure E. Fish passage barriers prioritized by watershed based on relative importance to fish recovery in Fairview-Salmon-Arata, Upper Johnson-Kelley, and Beaver Creek watersheds. Private crossings with the potential to block >2 km of upstream habitat that need follow up are also highlighted in red.



Multnomah County Fish Passage Assessment Page 31 of 36

https://multco.us/file/8686/download

PROJECTS IMPLEMENTED TO DATE BY ALL PARTNERS[2]



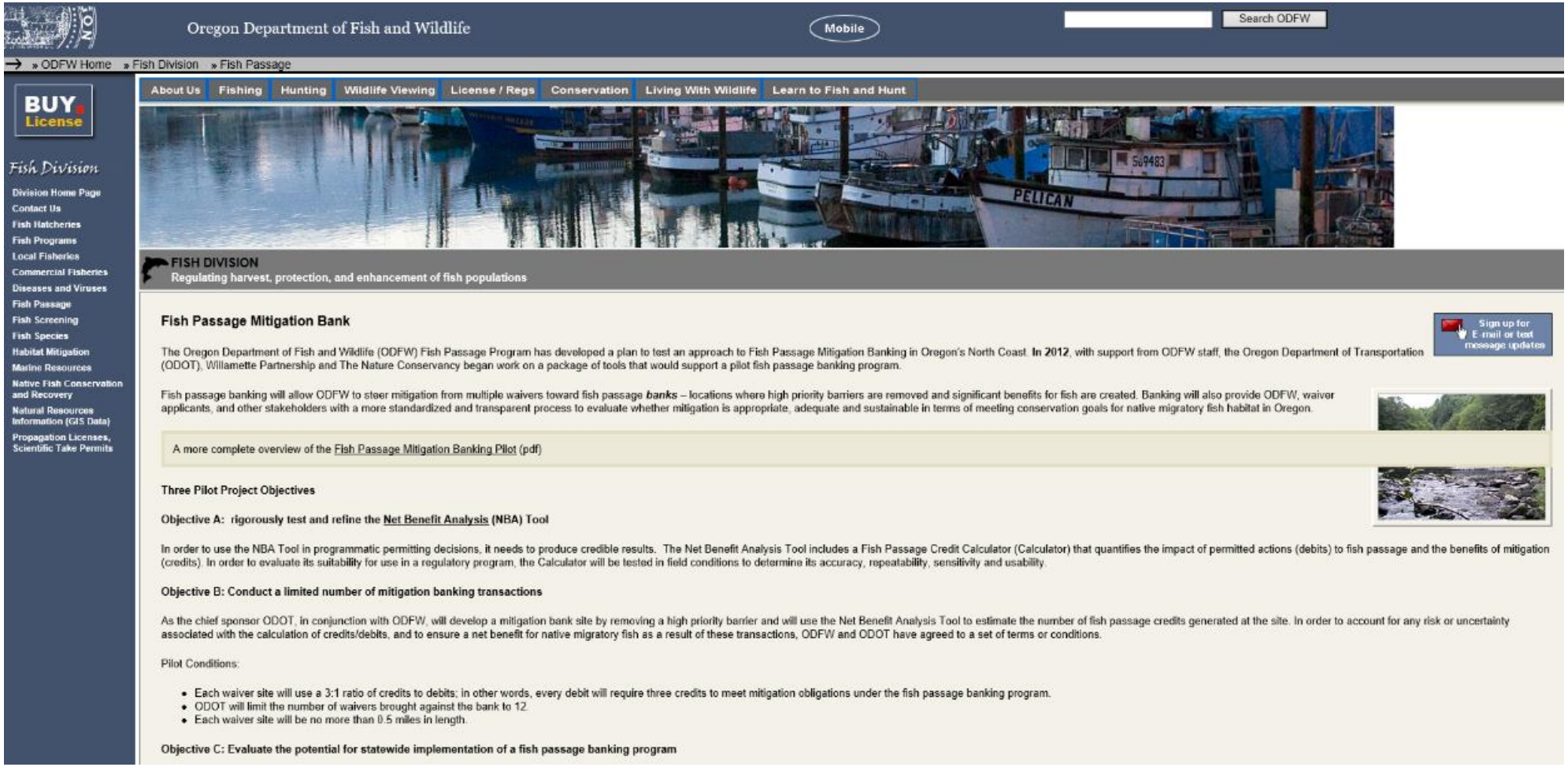
The East Lents Floodplain Restoration Project removed 60 houses from the 100-year floodplain, all purchased from willing sellers, to reduce local flooding and enhance fish and wildlife habitat. Restoration of the 63-acre site included excavation of 50,000 cubic yards of soil, removal of three roads, installation of 200 logs for habitat, and planting of 90,000 native trees and shrubs. Implemented by the City of Portland BES, it has reduced the risk of flooding on Foster Road to one-third the previous rate and restored a natural area.

ODFW and ODOT team up to address a big issue

Oregon Department of Transportation

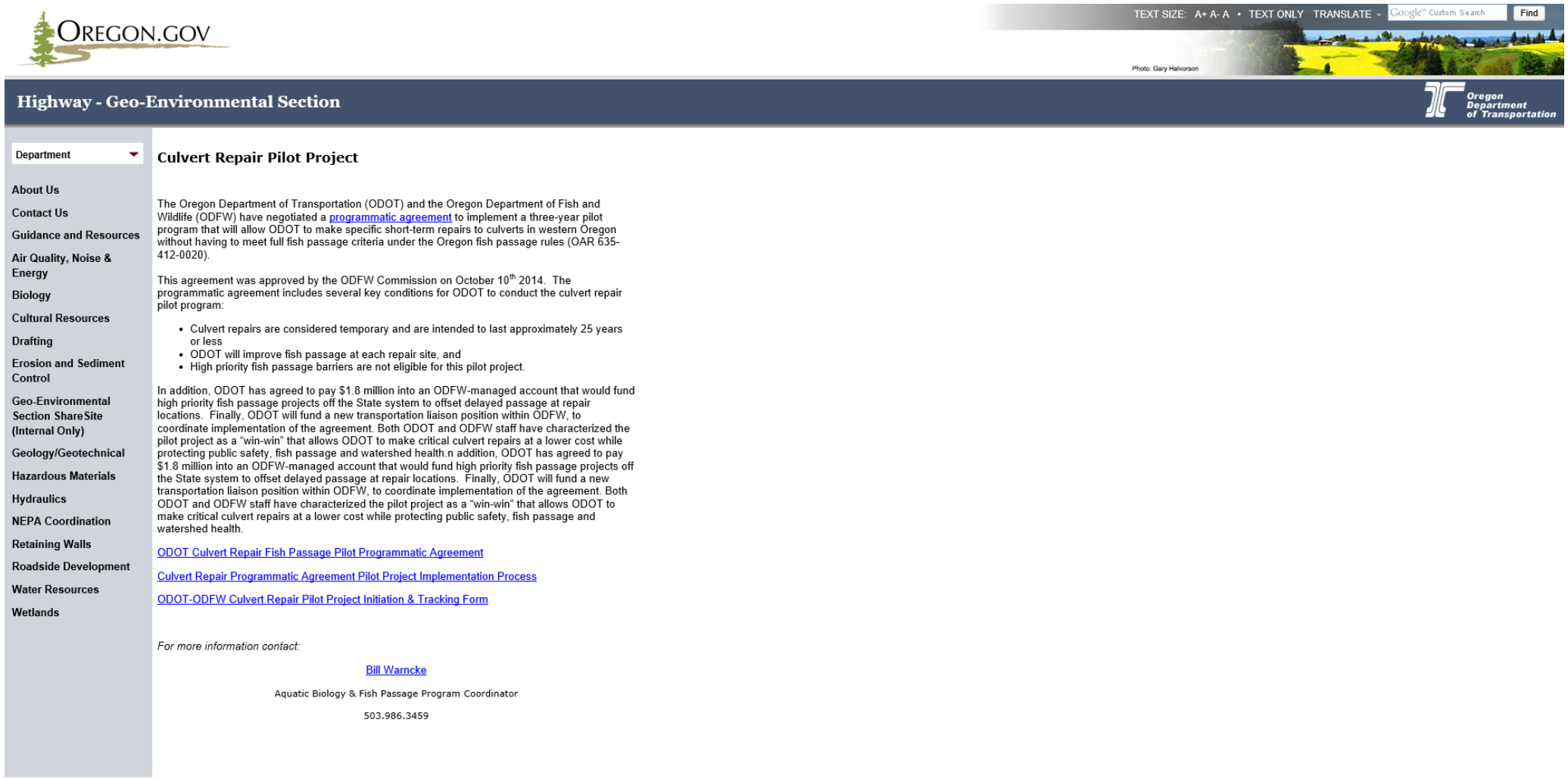
OREGON Fish & Wildlife

Fish Passage Mitigation Banking



http://www.dfw.state.or.us/fish/passage/mitigation.asp

Passage Repair Pilot



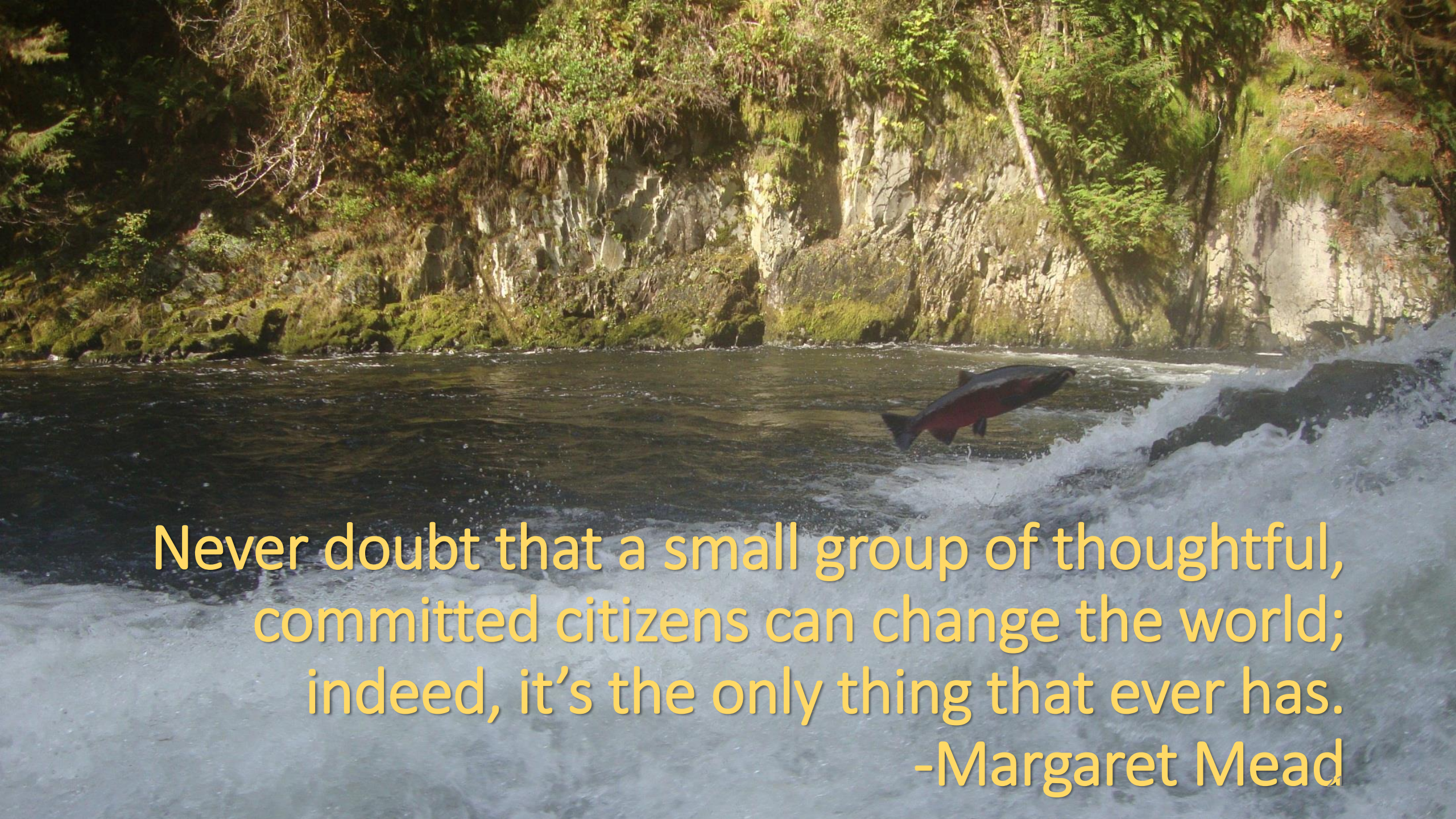
https://www.oregon.gov/ODOT/HWY/GEOENVIRONMENTAL/Pages/Culvert-Repair-Pilot-Project.aspx

Would these programs be a good fit for Johnson Creek?

- Is there one high priority site that would provide a 10X benefit to fish if we spent the money there, and didn't provide passage at another location?
- Are there other ideas for addressing some of the other questionable passage sites?

Completed and Upcoming.....

The One Thing


Never doubt that a small group of thoughtful,
committed citizens can change the world;
indeed, it's the only thing that ever has.
-Margaret Mead

Your time is limited, so don't waste it living someone else's life. Don't be trapped by dogma -- which is living with the results of other people's thinking. Don't let the noise of other's opinions drown out your own inner voice. And most important, have the courage to follow your heart and intuition. They some how already know what you truly want. Everything else is secondary.

-Steve Jobs