Pilchuck River Dissolved Oxygen and Temperature TMDL

Public Workshop – October 29, 2020

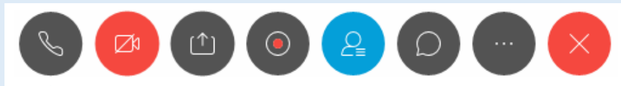
Welcome!

We will get started soon.

Please connect your audio using steps 1, 2, and 3

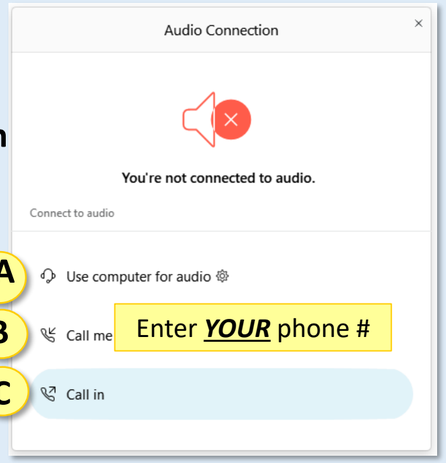
We will do a sound check shortly.

1 **Move cursor to bottom of your screen to show Webex controls.**



2 **Select "Connect to Audio" icon.**

3 **Choose Audio Connection**



3 Options

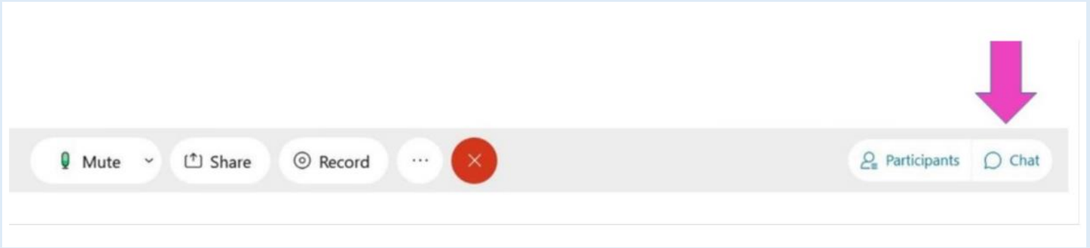
A. Use computer for audio.

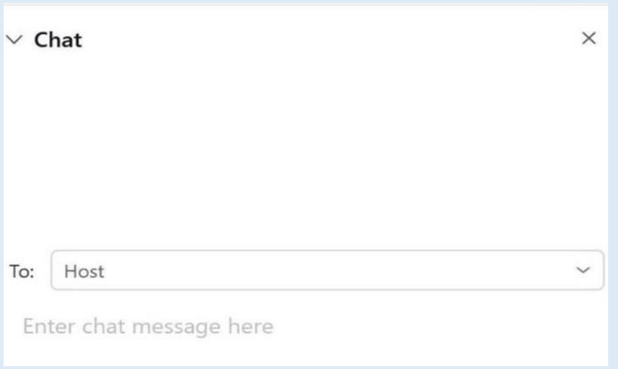
B. Call me at (enter your phone number).
- WebEx calls you.
  - You listen through your phone

C. Call in (using your phone).
- Call toll free: 855-929-3239
- Enter meeting code: 133 093 2807

How to Participate

You can ask questions via the chat function





You can also ask questions by raising your hand so we can unmute you to participate

We ask that you:

1. **State your name** first before speaking.
2. **Mute your audio** unless speaking.
3. **Lower your hand** when you are done speaking

Workshop Ground Rules

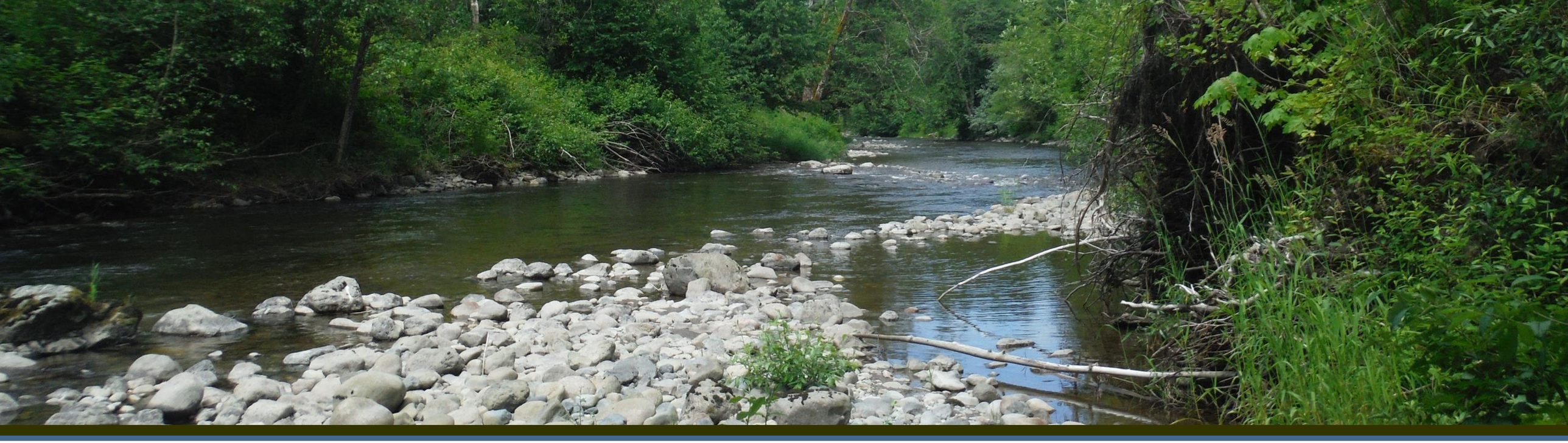
- Use respectful language
- Direct all input to Ecology
- Hang up webinar audio before accepting another phone call. Hold music will interrupt the presentation otherwise.

Hello! Who's here today?

Heather Khan
Presenting

Jessica Huybregts
Facilitating

Tricia Shoblom
Facilitating



Pilchuck River Temperature and Dissolved Oxygen TMDL: Water Quality Improvement Plan

Heather Khan, Water Clean-up Lead

Public Workshop

October 29, 2020

DEPARTMENT OF ECOLOGY
State of Washington

Today's Overview

1

TMDL 101

Introduction to the TMDL process

2

Background

About land use, the impairments and permitted sources

3

Studies and Major Findings

About Temperature, Dissolved Oxygen and Streamflow

4

Key Strategies

Activities needed to improve impairments

5

Next Steps and Q&A

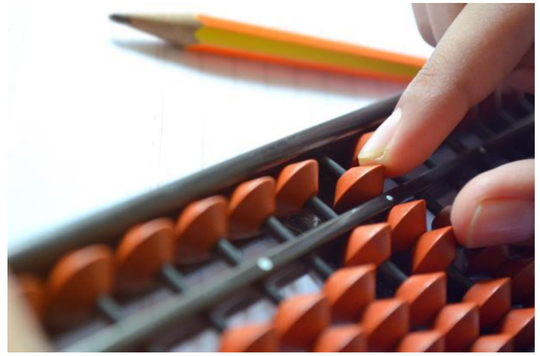
Schedule, eComments, and Q&A

What is a TMDL?

TMDL or **Total Maximum Daily Load** = the maximum input of a pollutant that still allows a water body to meet standards.

Set limits:

Wasteload allocations (WLA) + load allocations (LA) + margin of safety + reserve for growth = loading capacity



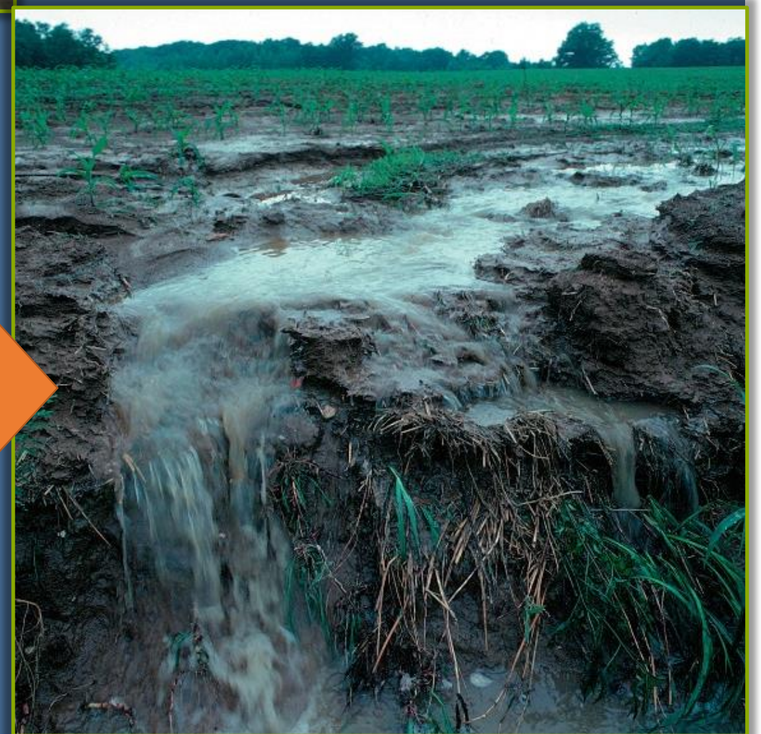
Defining Pollution

Point Source - WLA

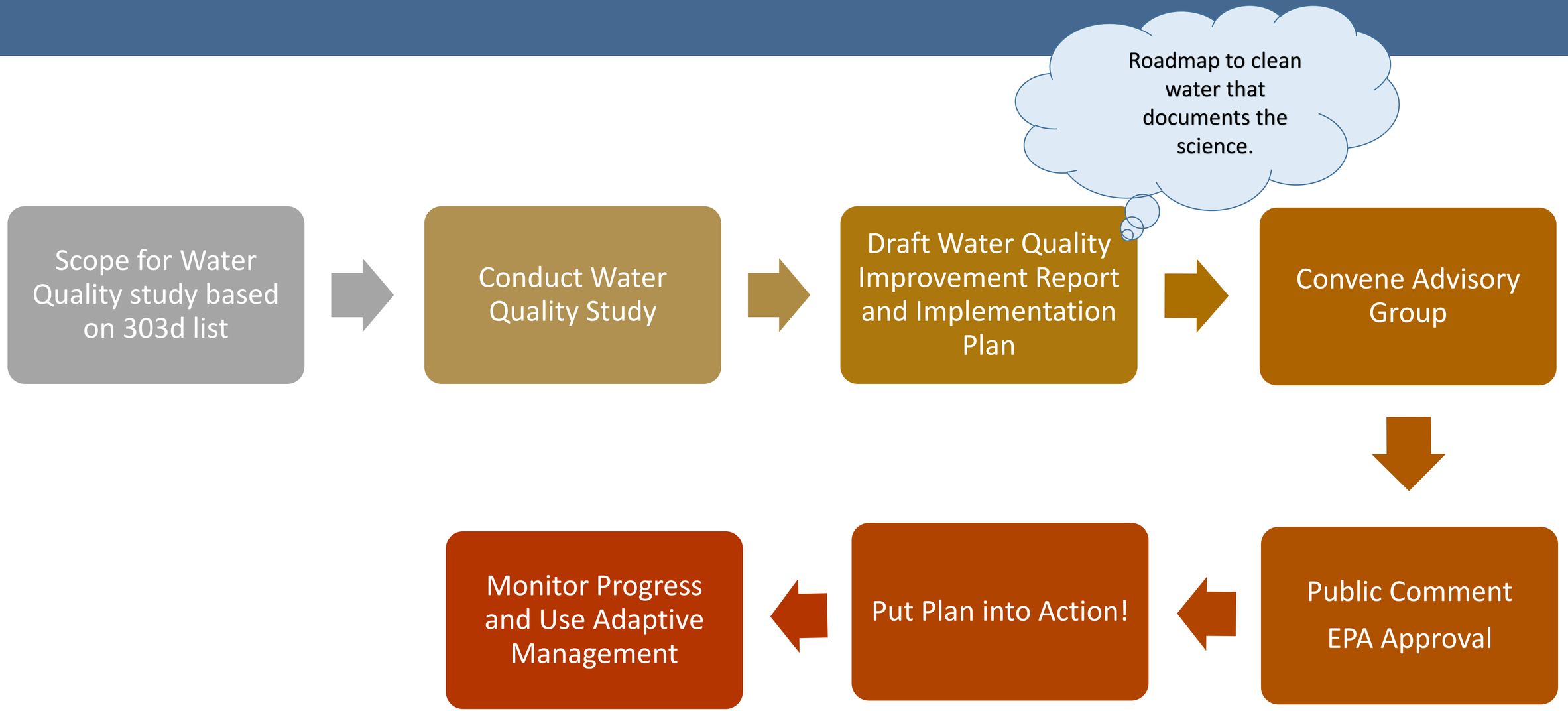
- Granite Falls WWTP
- 9 sand and gravel permits
- Stormwater Permits
  - 5 municipal SW permits (NPDES)
  - 1 transportation (WSDOT)
  - 3 industrial general permits
  - construction SW general permits

Nonpoint Source - LA

- Diffuse sources
- Tributaries
- Solar-radiation



TMDL Process



What laws support TMDLs?

Clean Water Act 1972 (CWA) – EPA - authorized to implement pollution control program. EPA – "States make your waters fishable and swimmable…"

Washington's Water Pollution Control Act (aka RCW 90.48) – gave Ecology authority to carry out provisions of CWA.

Federal law requires TMDLs be prepared for impaired waters.

- 40 CFR § 130.7 (c)(1)(ii)
- 40 CFR 122.44(d)(1)(vii)(B)

Chapter 173-201A WAC – Water Quality Standards

Water Quality Assessment (Categories)

Category 1: Good water quality

Category 2: Water of concern

Category 3: Not enough data

Category 4: Impaired, yet has a plan

- 4a: Has TMDL
- 4b: Local pollution control plan
- 4c: Impaired by non pollutant

Category 5: Segment is polluted and on 303(d) list

Water Quality Standards (WQS)

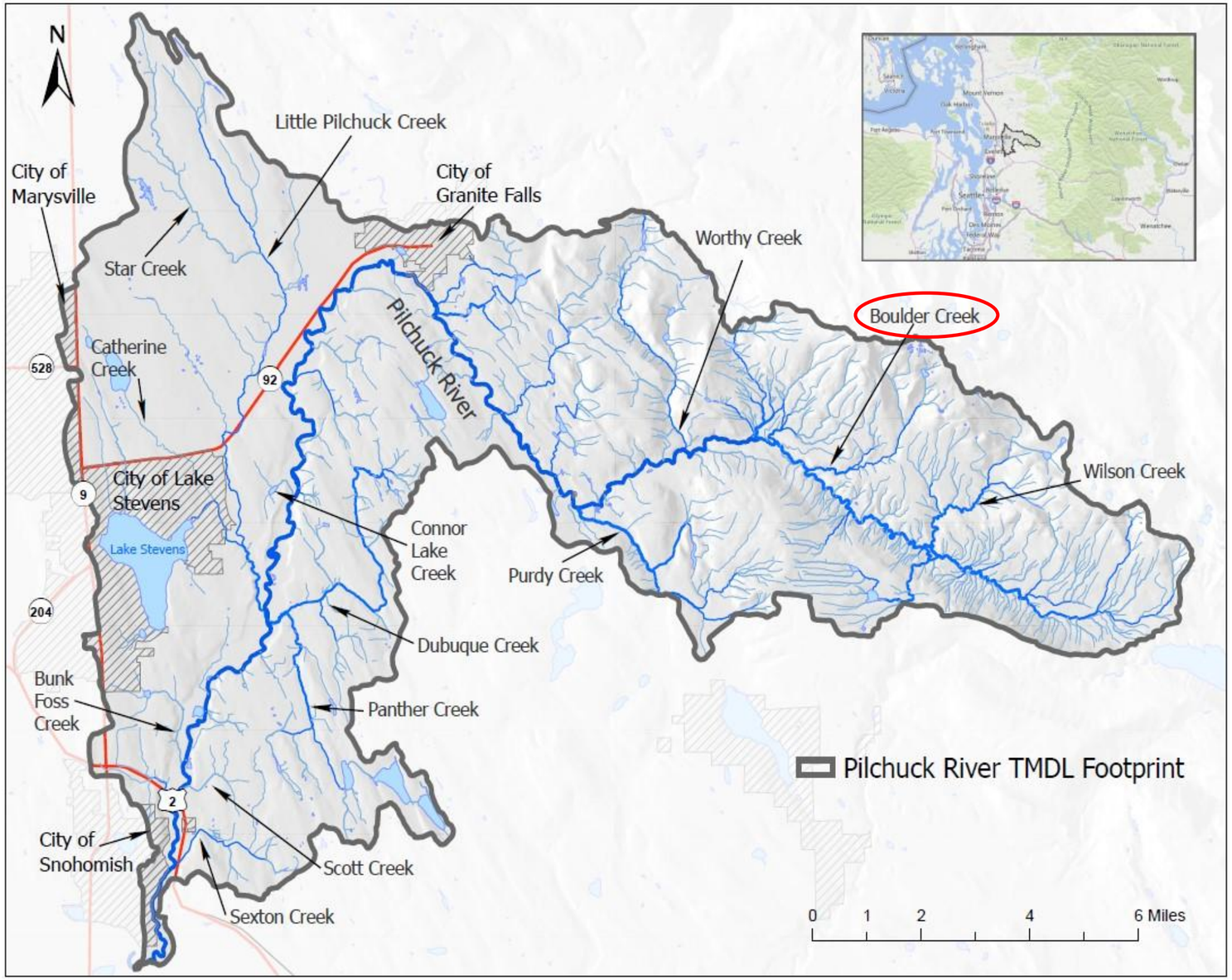
1) **Beneficial Uses**: Aquatic Life Use – salmonid, char, shellfish

- Recreational Use – bacteria (primary, secondary contact)
- Water Supply Use – domestic, industrial, agricultural, stock watering
- Miscellaneous Use – wildlife habitat, fish harvesting, commerce & navigation, boating, aesthetics

2) **Criteria**: Narrative (set limits through non-numeric statements) – e.g. natural conditions

Numeric (set numeric limits for conventional and toxic pollutants)

3) **Antidegradation policy**: Restore and maintain highest possible quality of surface waters.



Temperature

Above Boulder – Char Spawning & Rearing

< 12˚C 7-DADMax

Below Boulder – Core Summer Salmonid Habitat (June 15-Sept 15)

< 16˚C – 7DADMax

Dissolved Oxygen

> 9.5 mg/L – 1 D-min

Wait… more on WQS!

- More stringent temperature criteria - targeting salmonid populations who spawn and incubate in the stream bed in late spring to early fall.

- In the case of the Pilchuck River….

7DADmax - 13˚C – February 15 – June 15

Background

Land use, listings, permitted point sources

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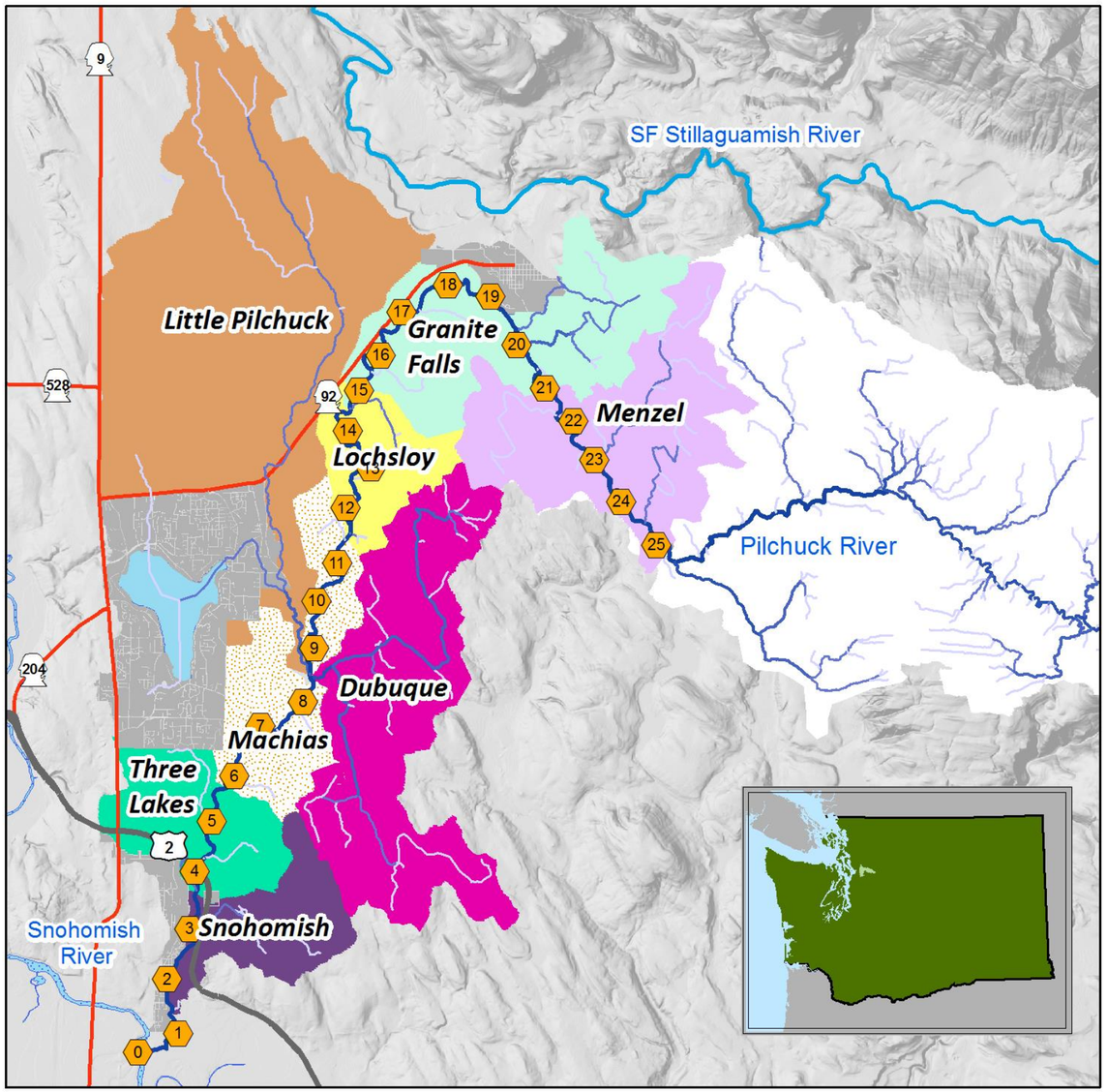
Land Use



Environmental Assessment Program

N W E S

0 1.25 2.5 5 Miles

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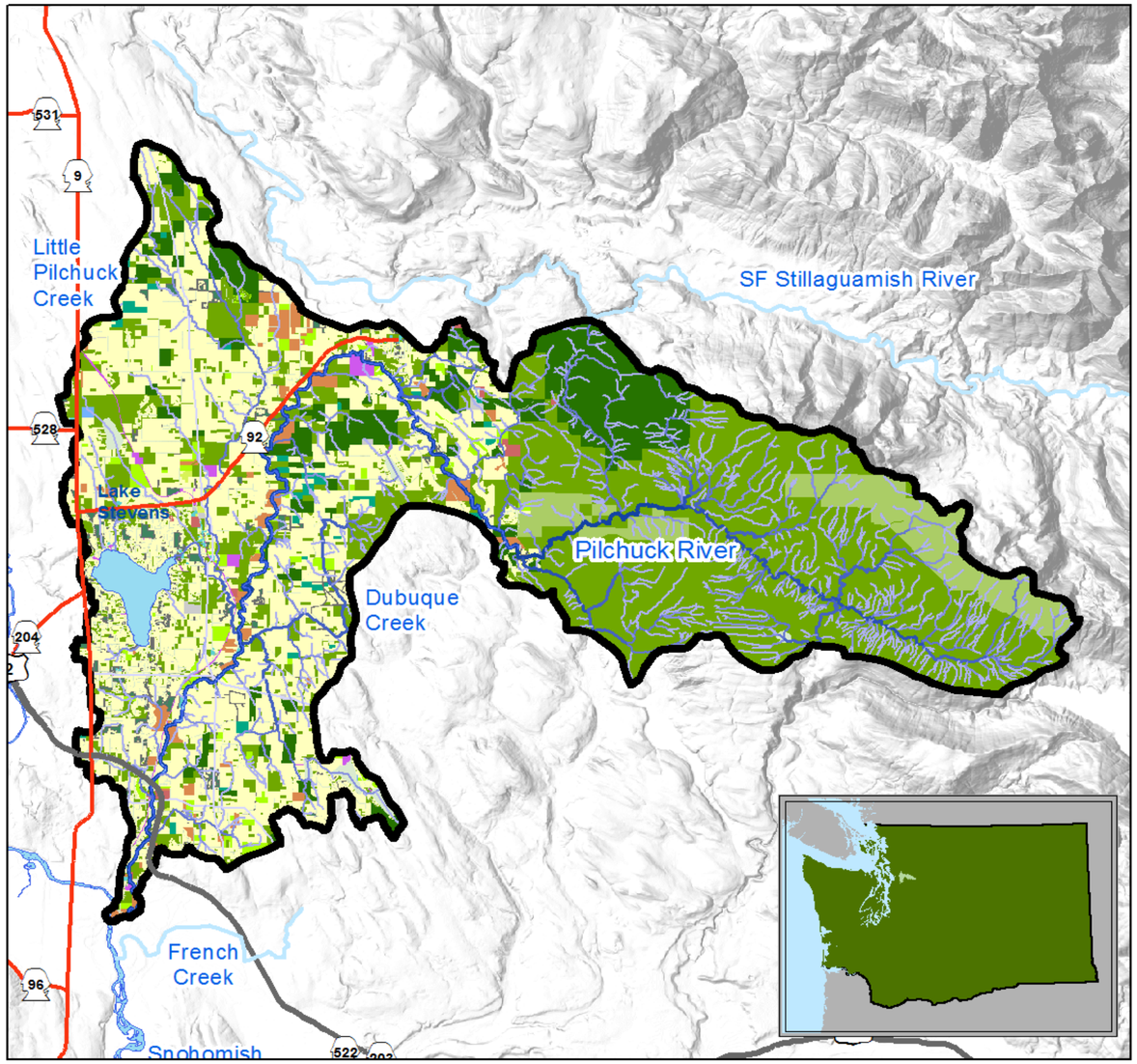
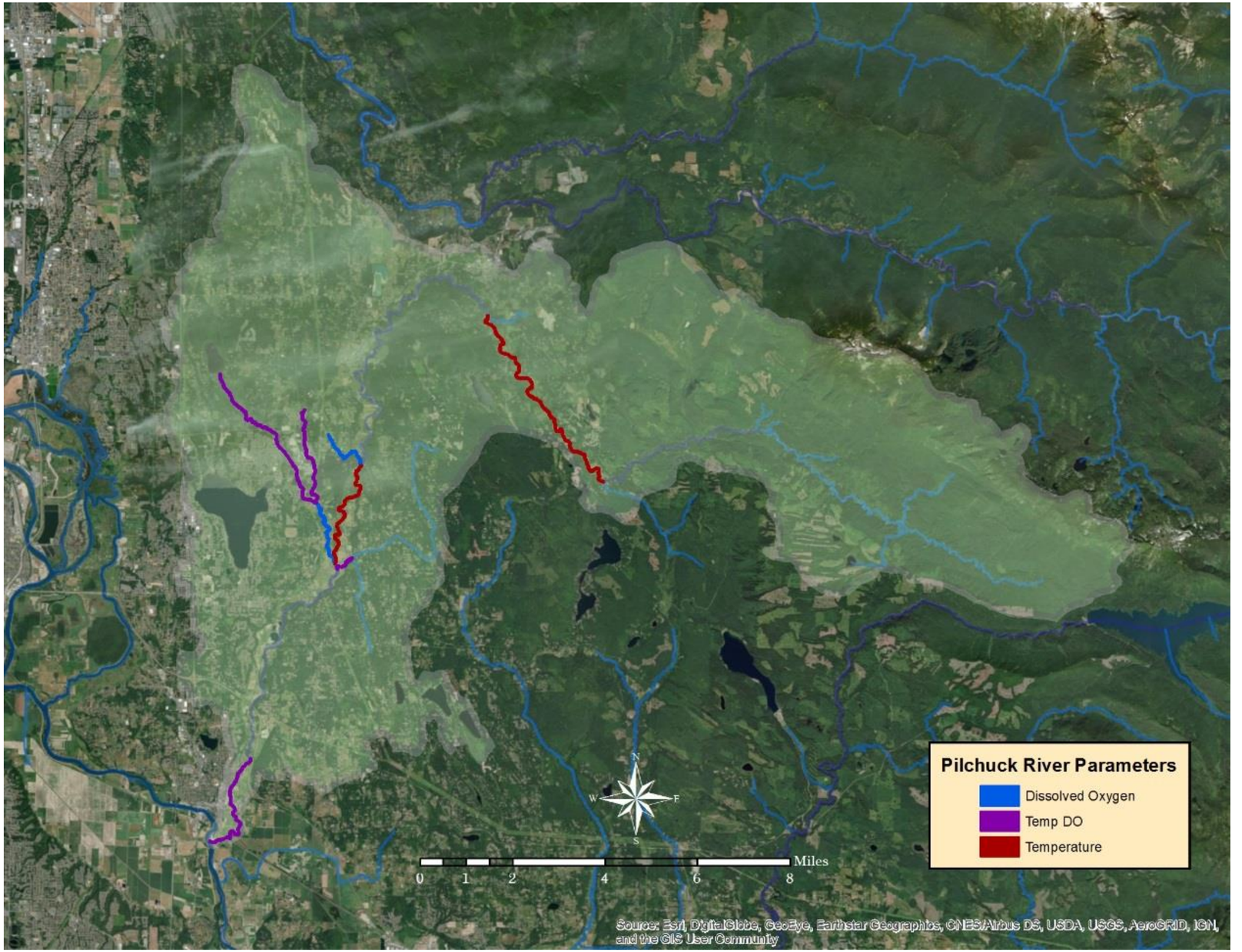
- Pilchuck River Miles
- Interstate
- State Route
- US Highway
- City and Urban Growth Area
- MenzelWS
- Granite Falls
- Lochsloy
- Machias
- Little Pilchuck
- Dubuque
- Three Lakes
- Snohomish

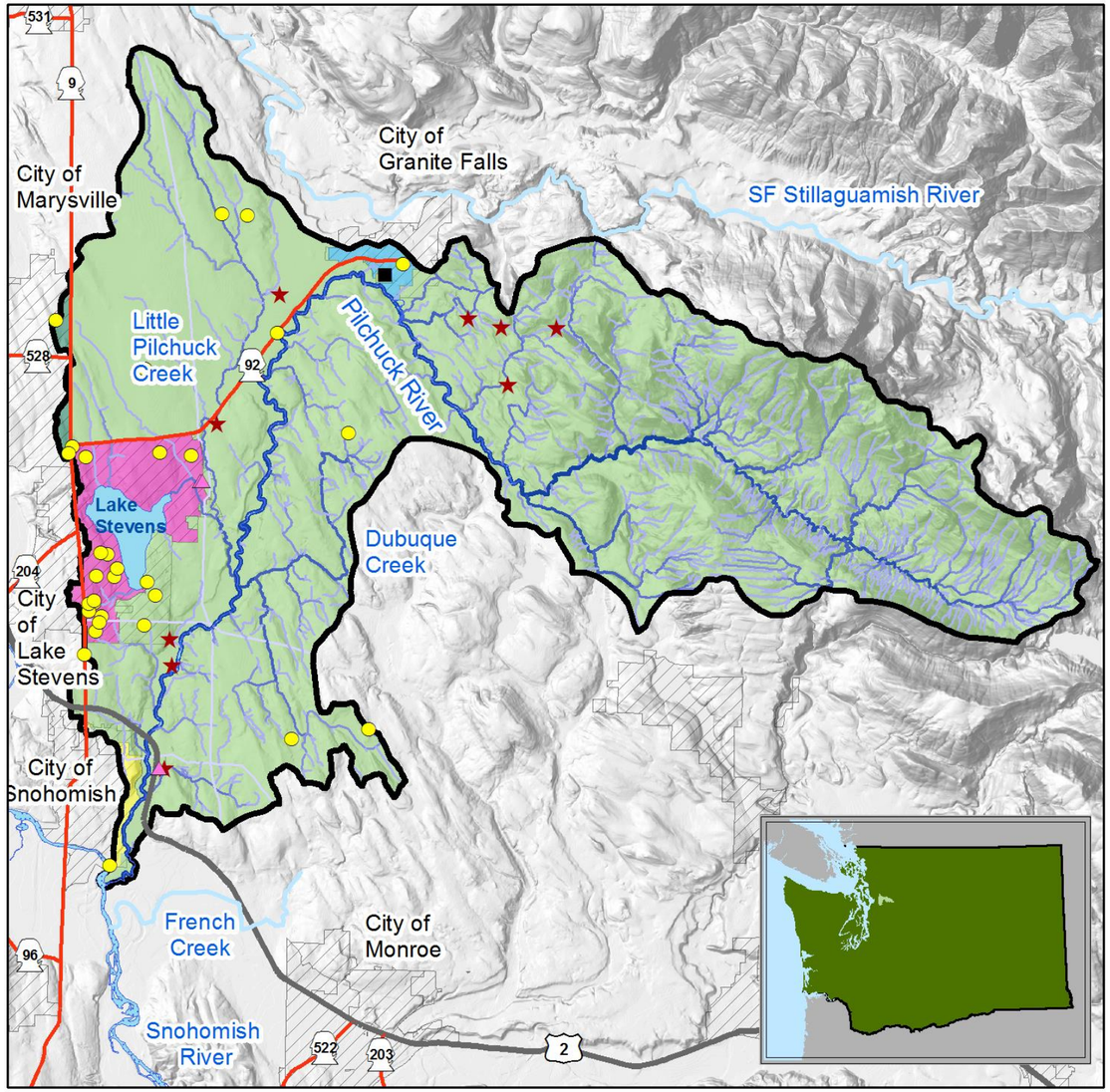
Land Use


531
9
528
92
204
96
522
Little Pilchuck Creek
SF Stillaguamish River
Lake Stevens
Pilchuck River
Dubuque Creek
French Creek
Snohomish
Environmental Assessment Program
N
W
E
S
0
1.75
3.5
7 Miles
DEPARTMENT OF ECOLOGY
State of Washington
TMDL_Footprint
Interstate
State Route
US Highway
Land Use from Parcels
Other
Agriculture
Commercial
Managed Forest
Manufacturing
Mining
Noncommercial forest
Open space land
Recreation
Residential
Timberland
Transportation
Undeveloped
Water areas

303-d Listings (Category 5)



Permitted Point Sources



Environmental Assessment Program

N W E S

0 1.75 3.5 7 Miles

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Interstate
State Route
US Highway
TMDL Footprint

Permit Type
Construction SW GP
Industrial SW GP
Municipal IP
Sand & Gravel GP

Phase I, Snohomish County
Phase II, City of Granite Falls
Phase II, City of Lake Stevens
Phase II, City of Marysville
Phase II, City of Snohomish

SW= Stormwater; GP= General Permit; IP = Individual Permit

Studies and Major Findings

2012, 2014, 2016 studies and results

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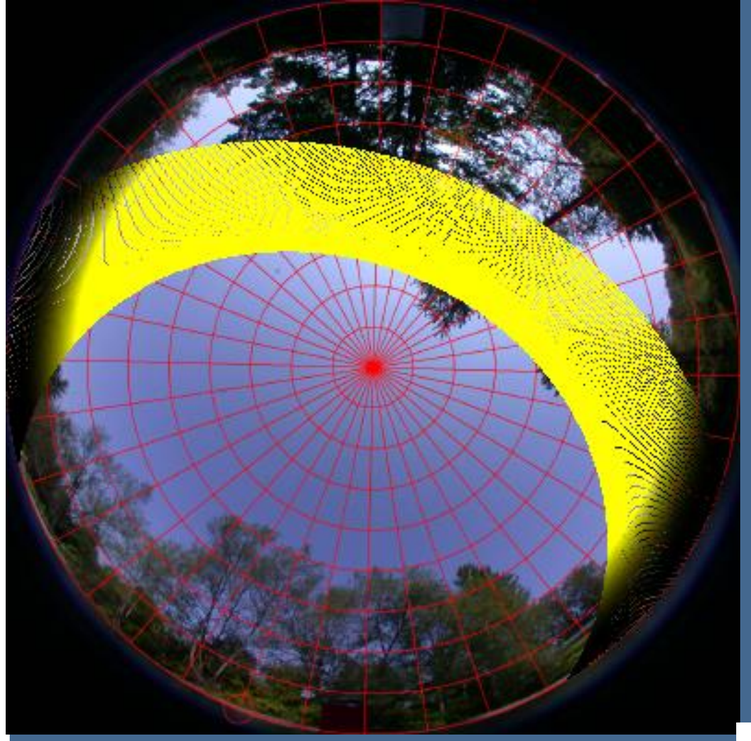
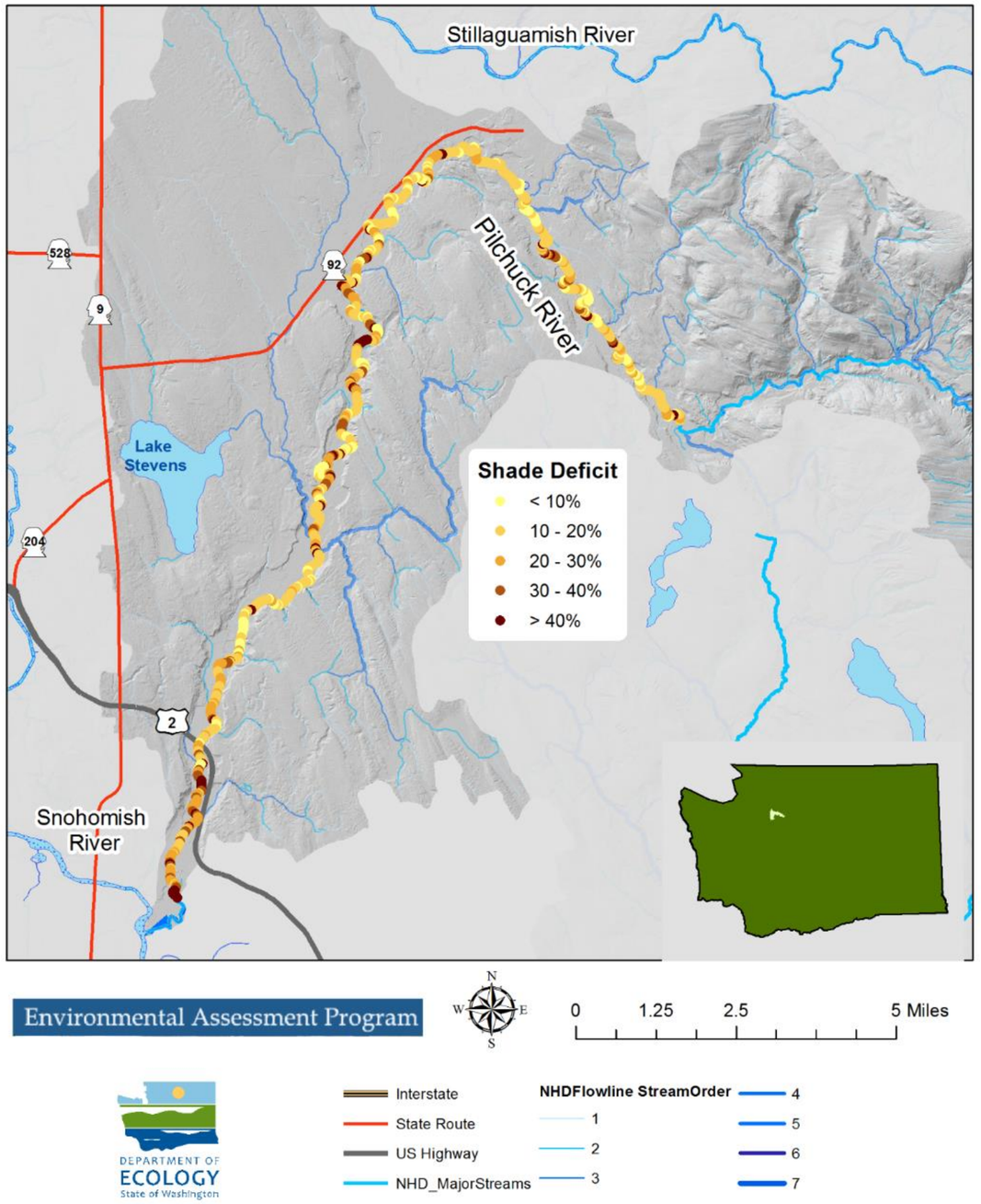
2012 Study



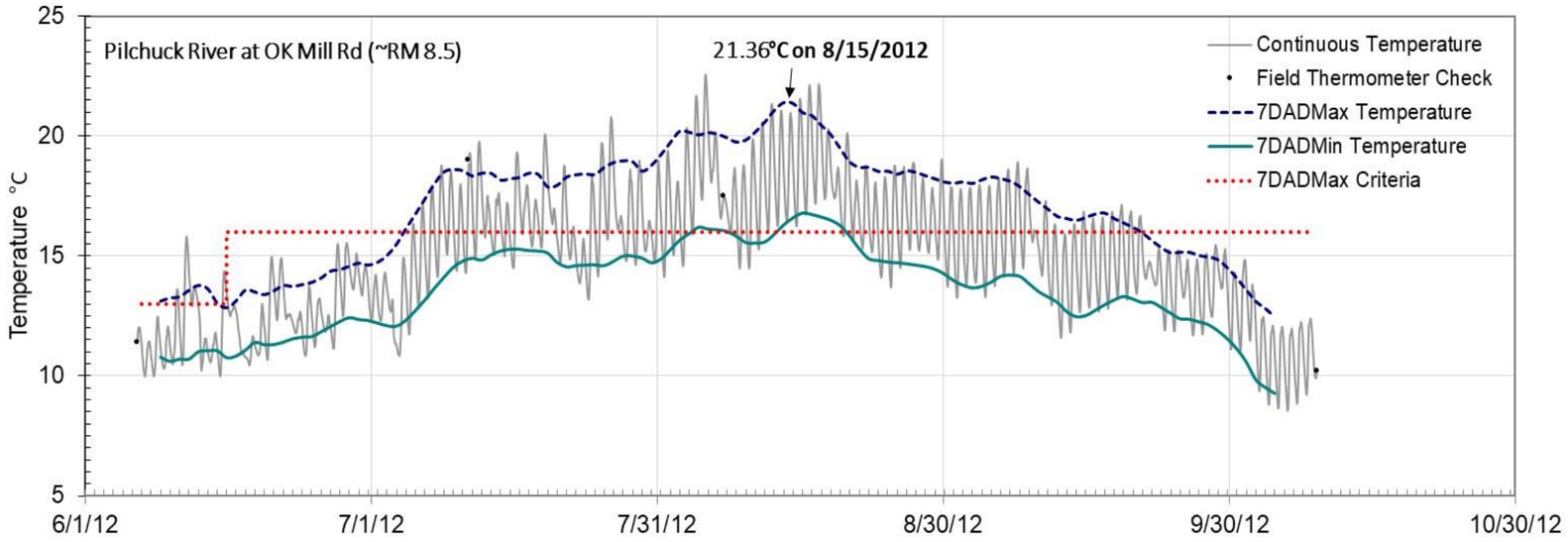
How shaded is the river?

What is the height and density of the current vegetation?

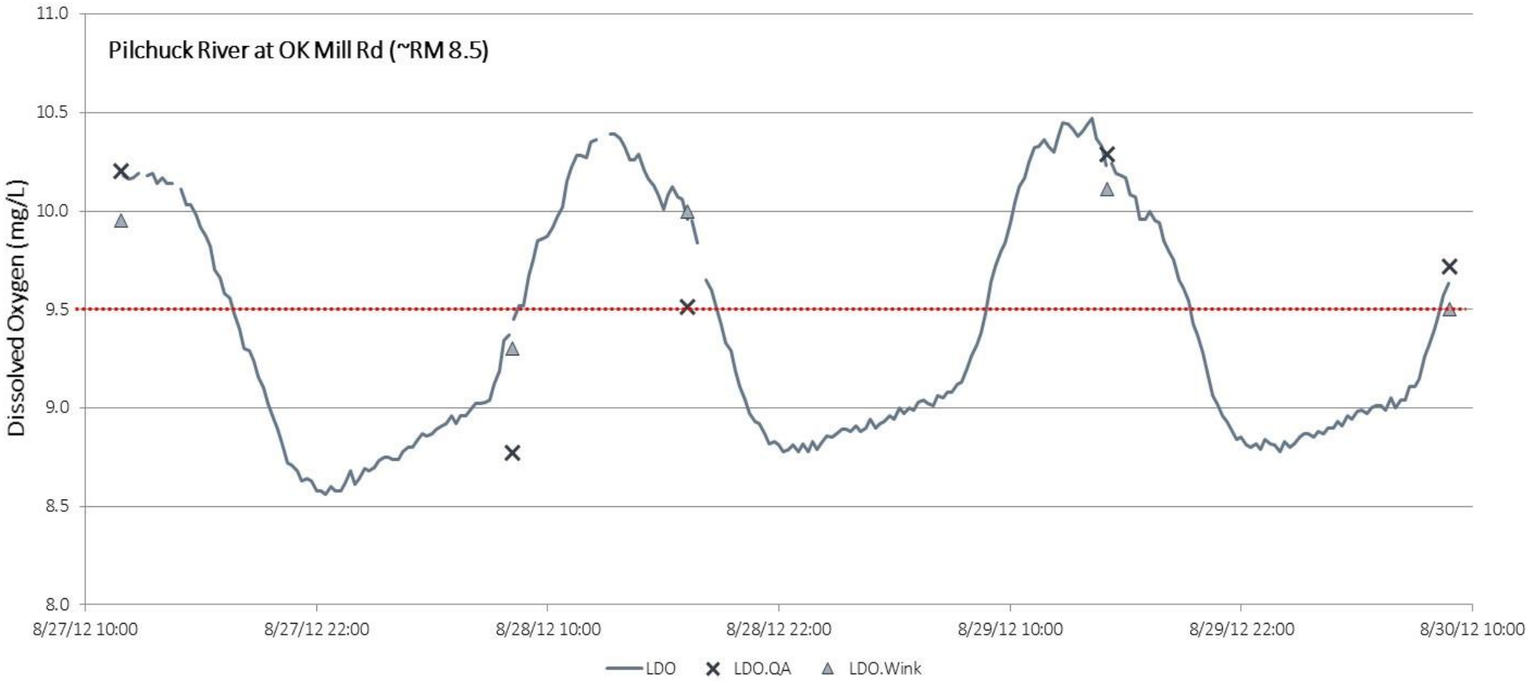
Shade Needed



Continuous Temperature Results

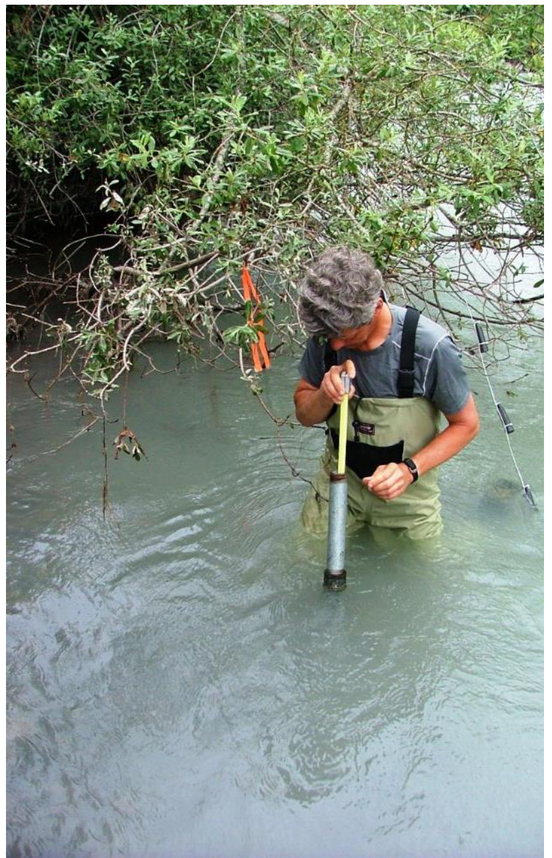


Dissolved Oxygen Results



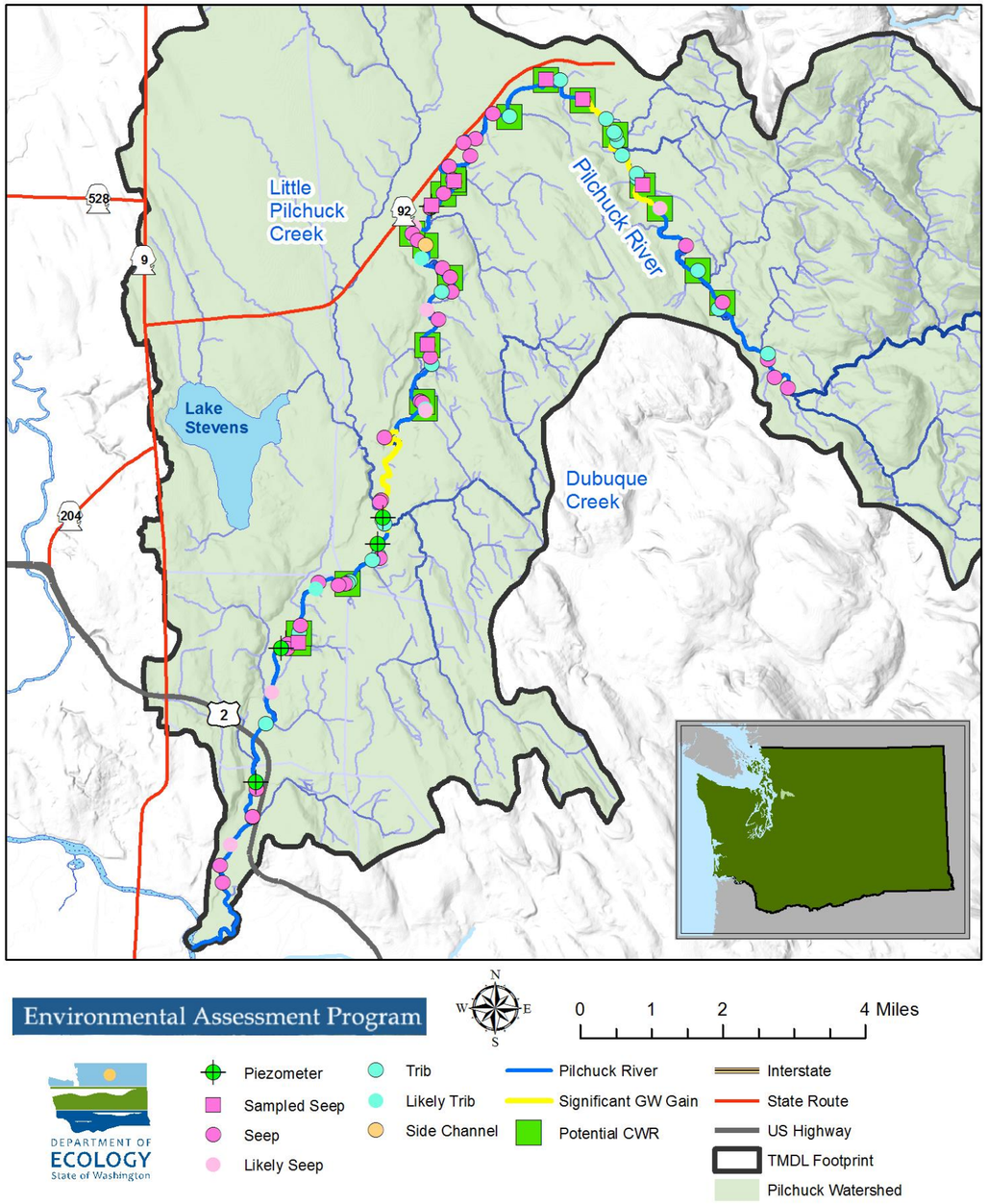
2014 and 2016 Studies

- Cold water refuge survey
- Piezometer sampling
- Continuous temp monitoring
- Channel depth and pool mapping
- Dye survey



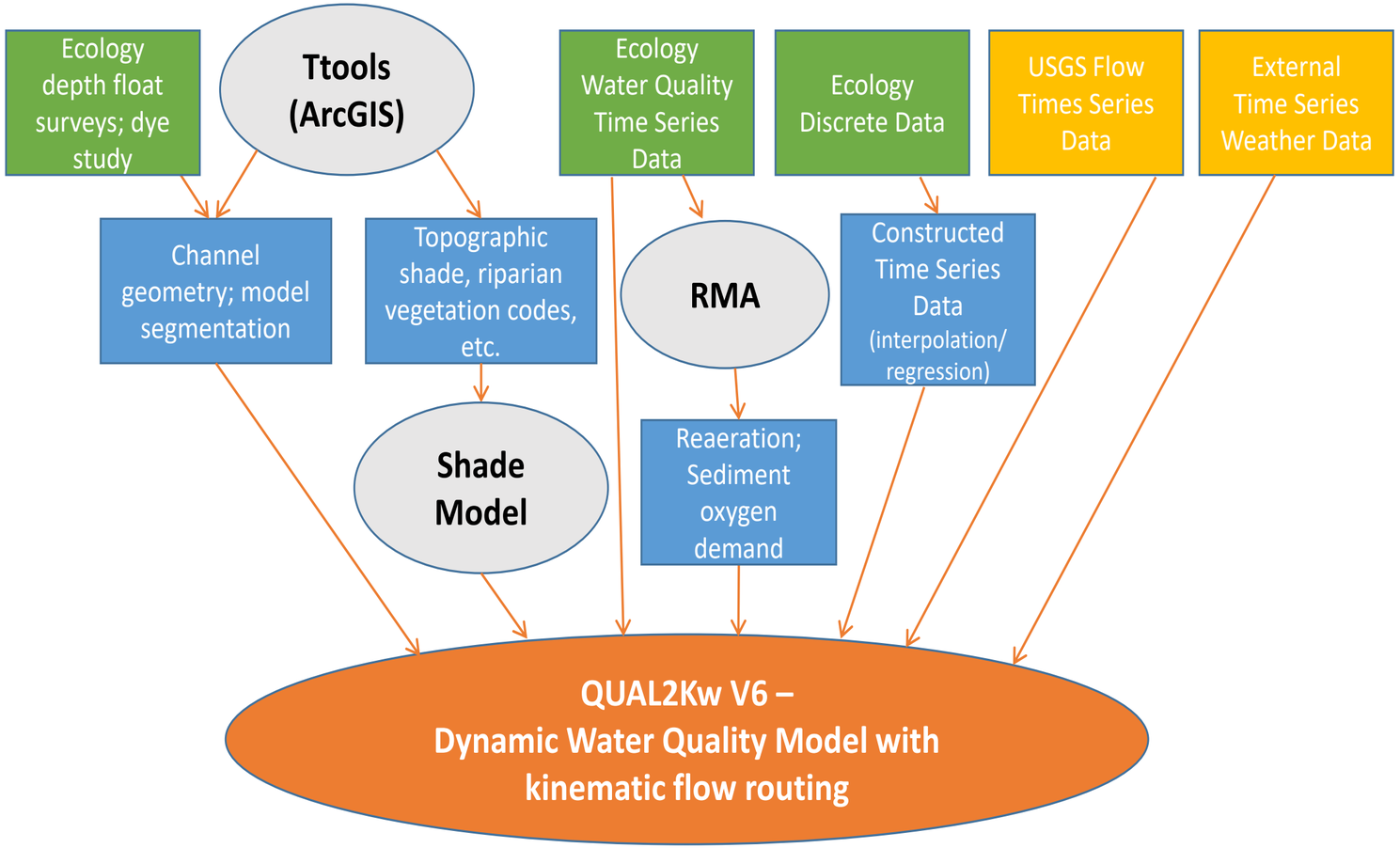
Cold Water Refuge

- 20 Potential CWR (plus one near RM 13 noted by Snohomish County)



Model/Tools for Temp/DO TMDLs

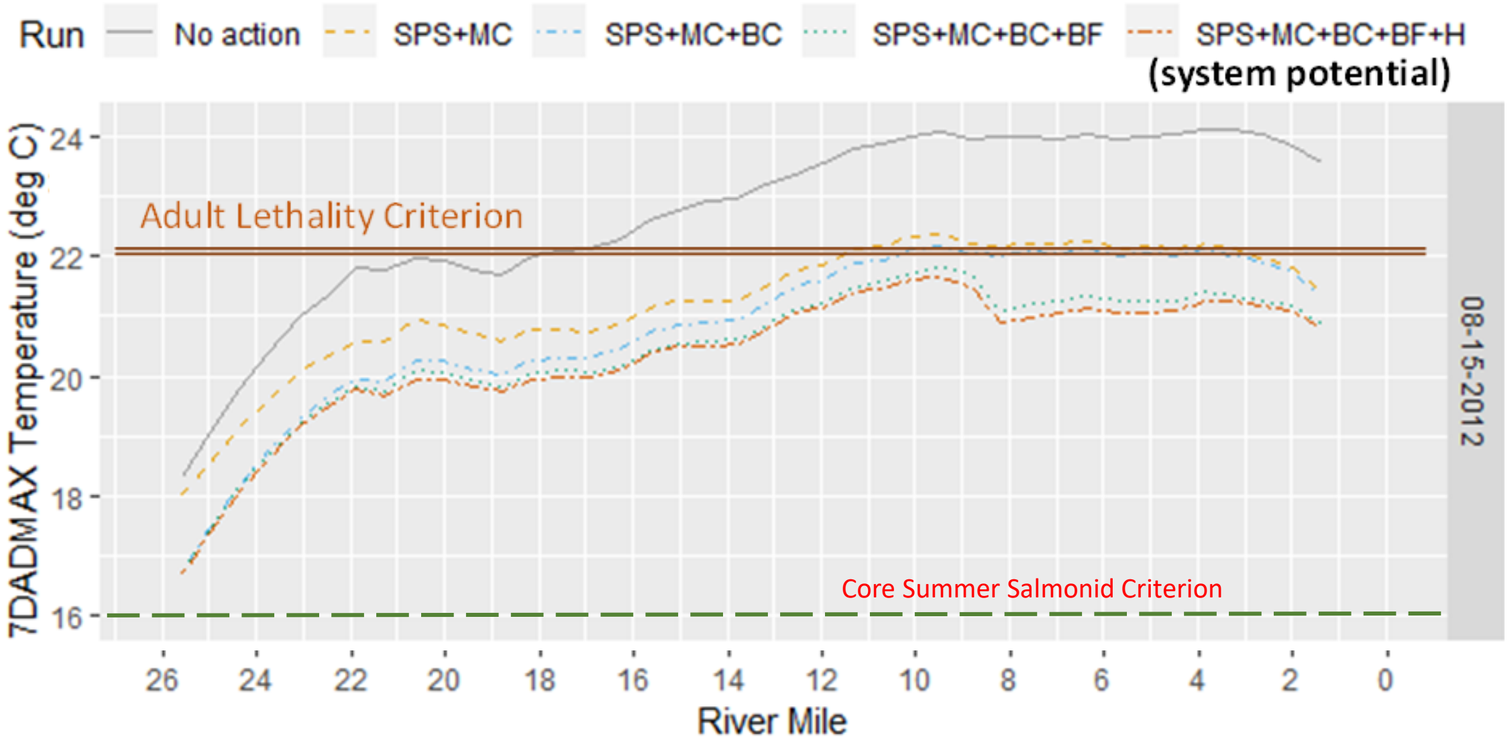
- Ttools for ArcGIS
- Shade Model
- RMA
- Kinematic flow routing



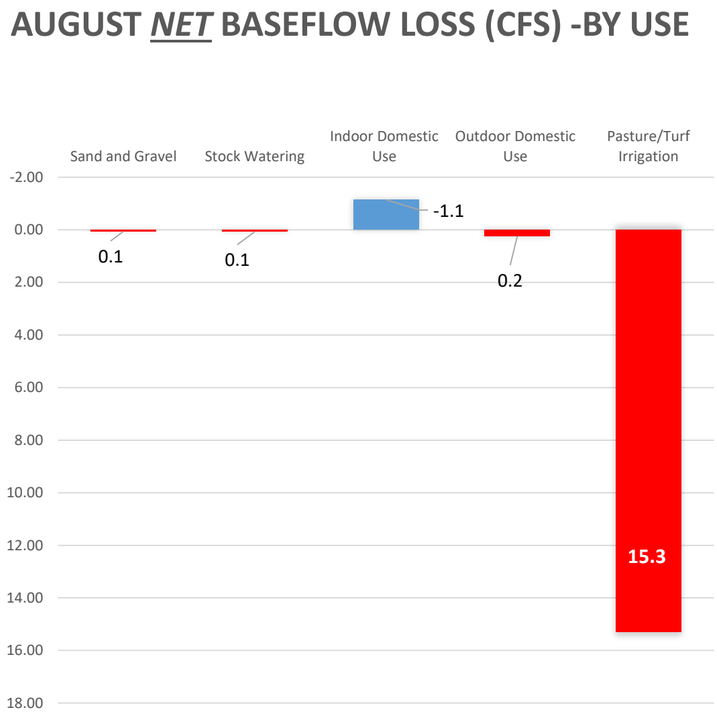
http://ecykenpub/Research-Data/Data-resources/Models-spreadsheets/Modeling-the-environment/Models-tools-for-TMDLs

Important Findings

SPS = System Potential Shade; MC = Microclimate effects;
BC= Boundary temperatures decreased; BF = Baseflow restored; H= Increased hyporheic exchange



Estimating water withdrawal impacts



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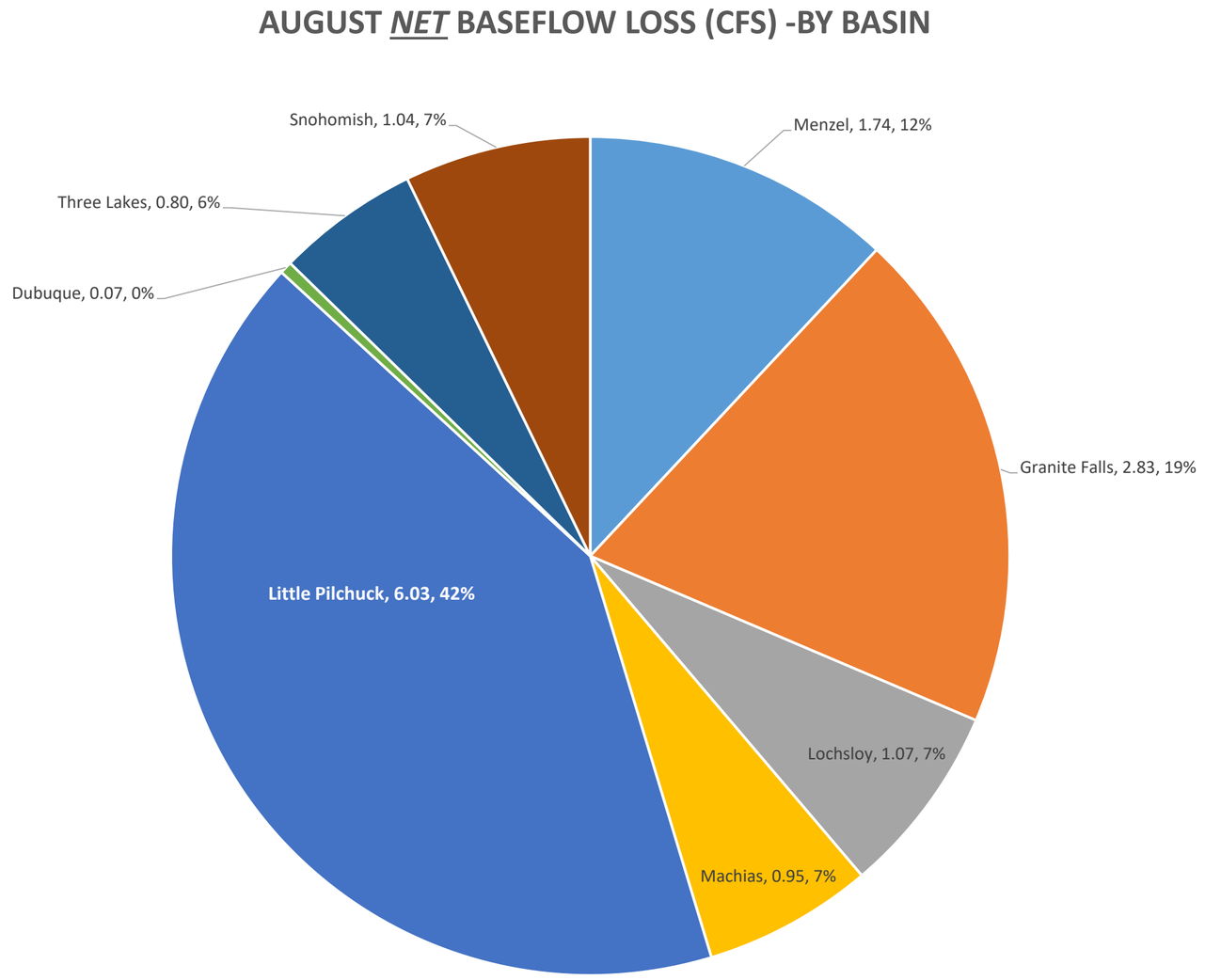
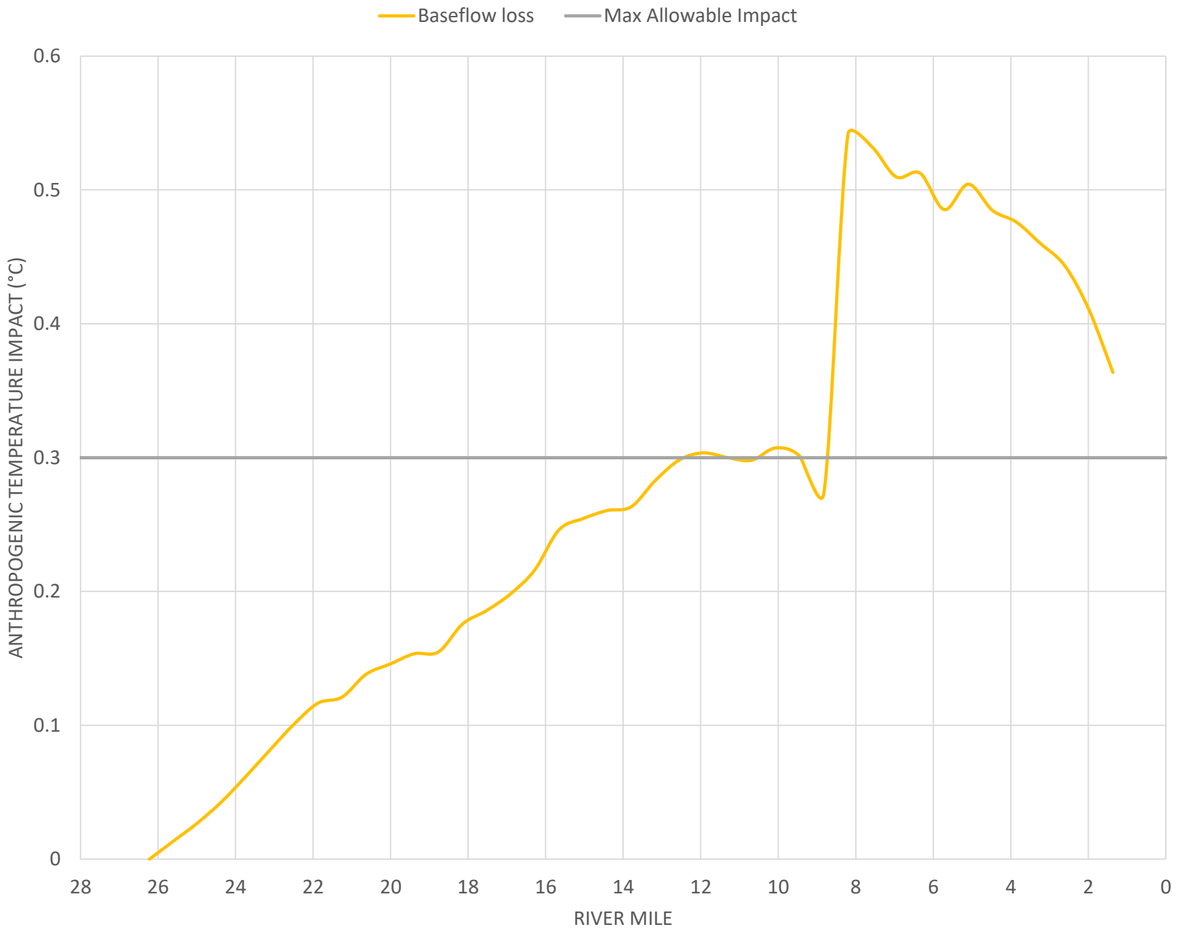


Stream Flow Restoration Needed

- To meet WQ standards (<0.3°C human impact)…
- Little Pilchuck Creek
  - Restore 4.5 cfs of baseflow (Aug)
  - (75% of the ~6 cfs lost)
- Mainstem Pilchuck (exclude LPC)
  - Restore 5.1 cfs of baseflow (Aug)
  - (60% of the ~8.5 cfs lost)
- Restore a total of 9.6 cfs of baseflow (Aug)



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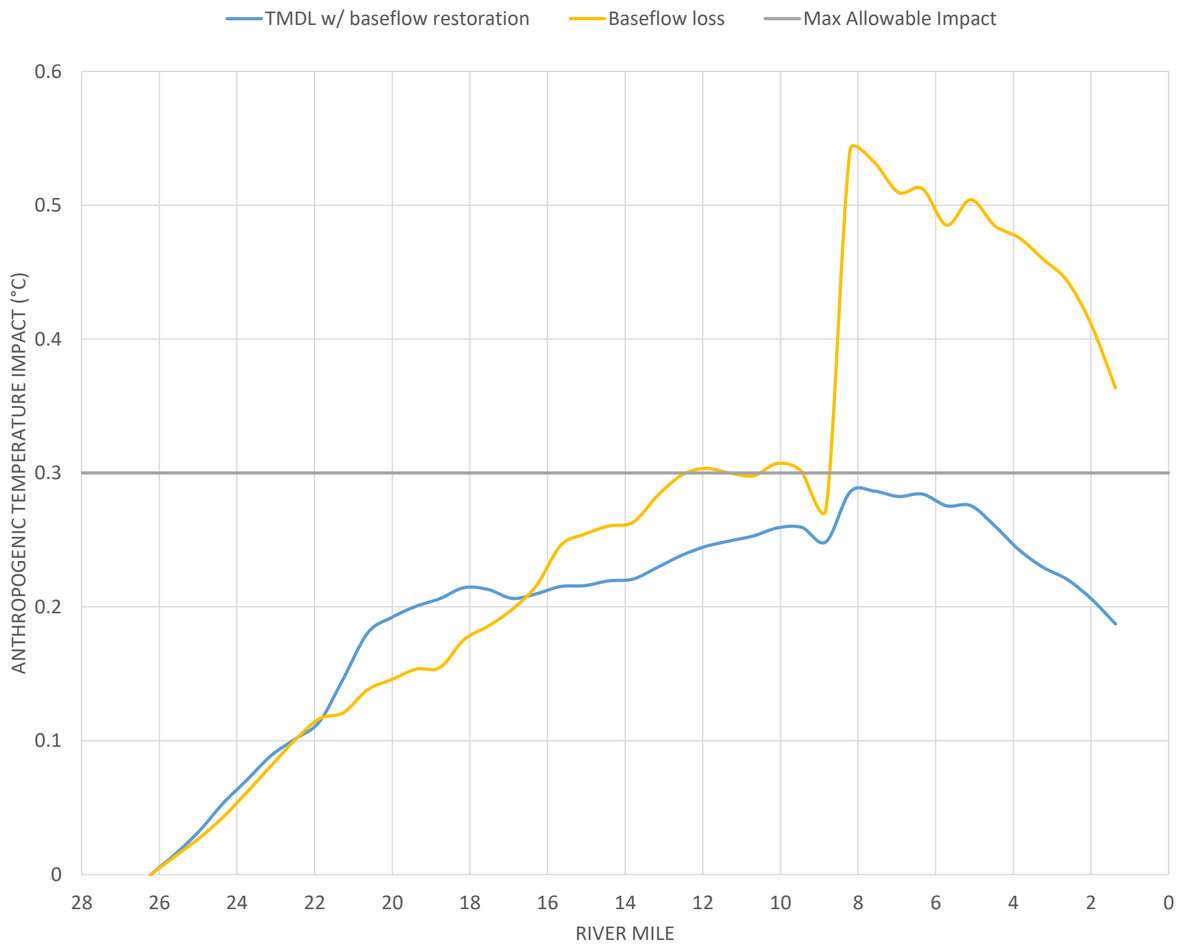

Key Strategies

Why this matters, strategies

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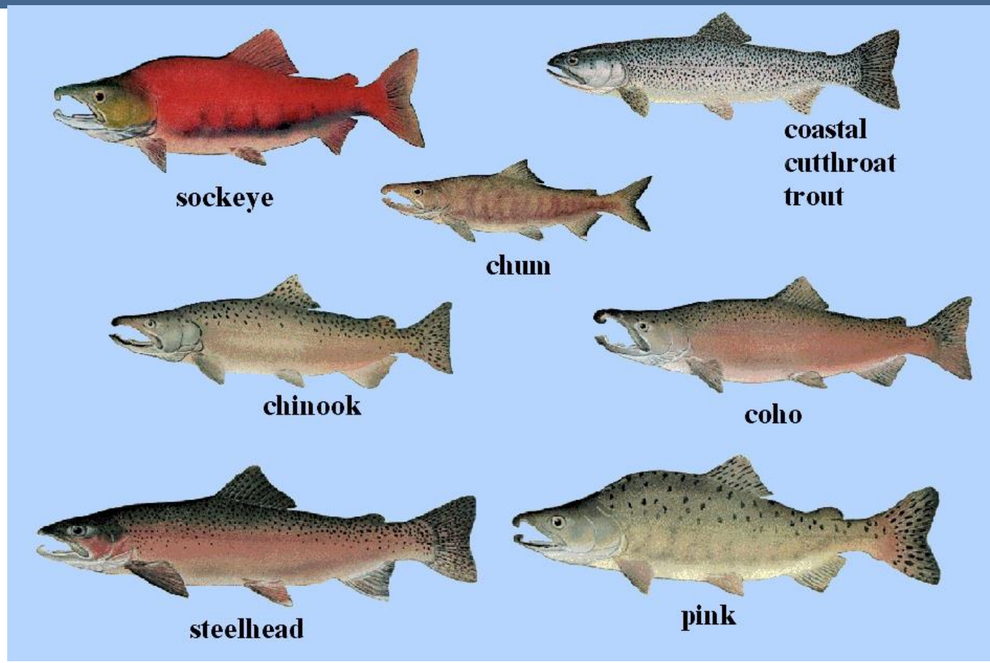
Why does Temperature and DO Matter?

- Cold water holds more oxygen.
- Salmonids have less food in warmer water.
- Warmer water affects body processes in salmonids.



Why do we care about summer flows?

- Less water available during summer months.
- Less water heats up more quickly – less area for fish to go
- Higher water temperatures = lower dissolved oxygen levels
- Fish need clean cool water to survive.

What Needs to be Done?

Plant Trees

125′ tall trees; 85% density and 180’ buffer (mainstem)

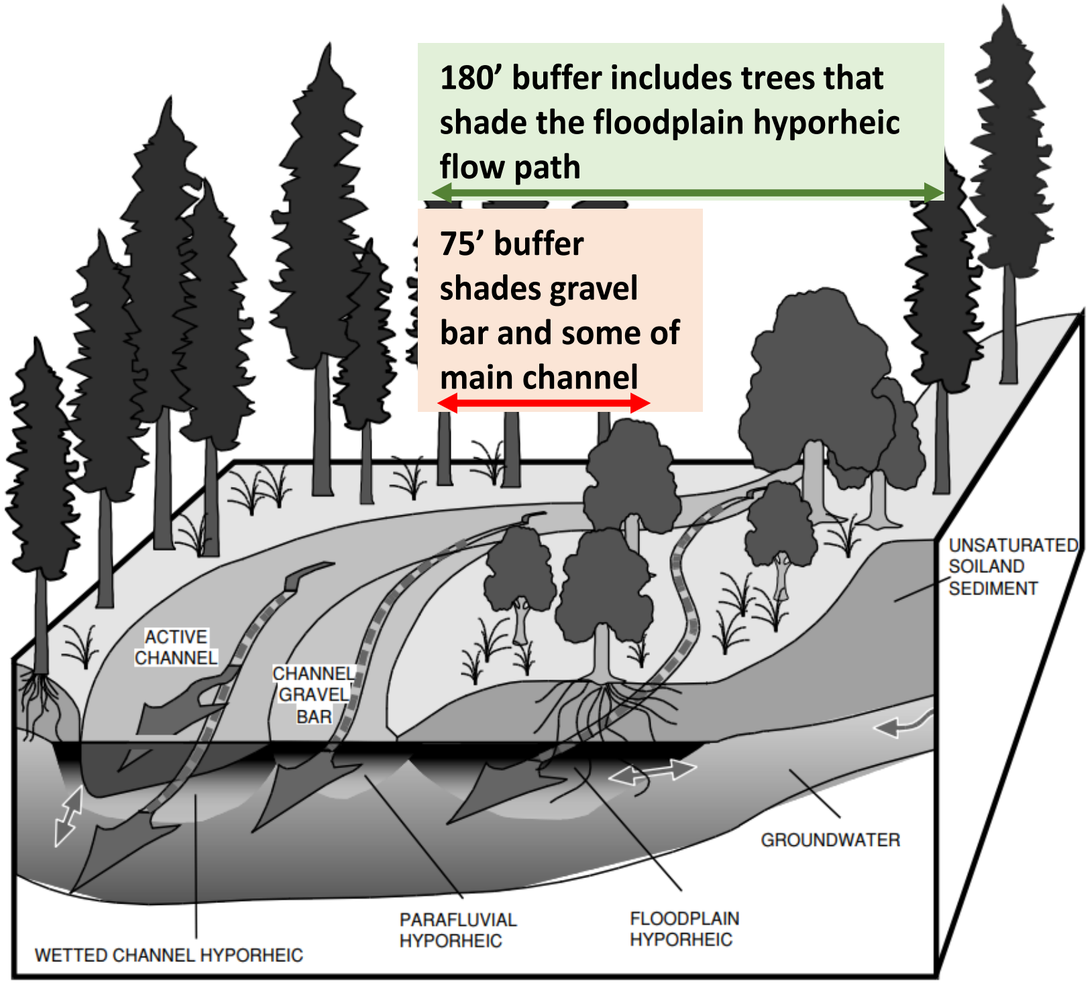
Restore/Enhance Natural River Processes

Cold water refuge, floodplain/side channel reconnection, wetland restoration

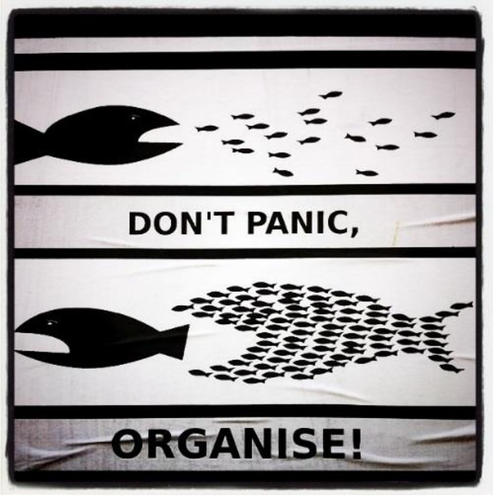
Increase Summer Flows

Water conservation, stormwater facilities, impoundments

“Pollution, Pollution, Tree in the Solution.” - Unknown

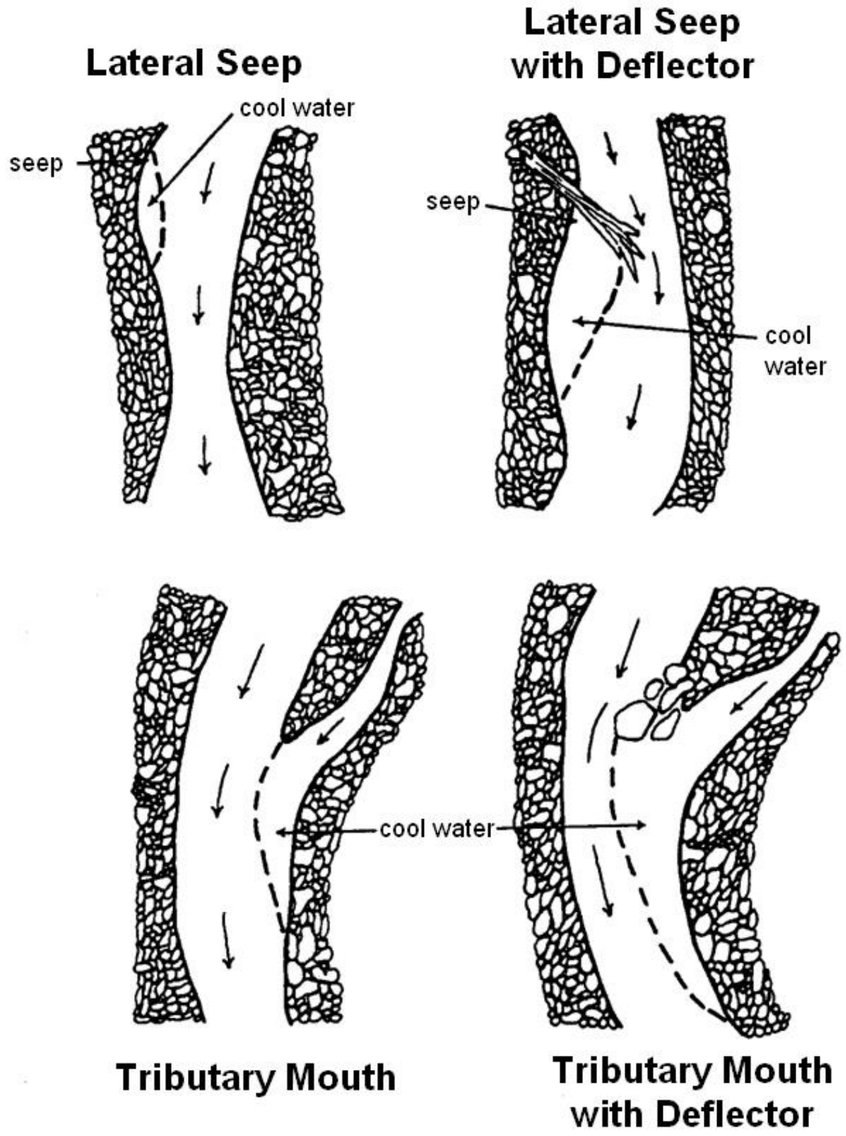


What Fish Want



What Fish Want

How do we create/expand cold water refuge?



Graphic Source: Primer for Identifying Cold-Water Refuges to Protect and Restore Thermal Diversity in Riverine Landscapes Webinar – Togersen, Ebersole and Keenan
http://www.epa.gov/region10/pdf/water/torgersen_etal_2012_cold_water_refuges.pdf

How do we add water back?

- Clean up water rights (water master)
- Avoid new exempt wells
- New development use imported water

Planning

- Opportunistic buyout of some agricultural water rights?
- Improve efficiency/timing
- Natural Yard Care

Irrigation

- Wetlands
- Stormwater retrofits
- Impoundments
- Gravel mining

Storage & Infilitration

Focus should be on Little Pilchuck Sub-basin

Imported Water vs Exempt Well Use

- If you added 10,000 new households to the Pilchuck watershed…
  - As exempt wells, up to…
    - **4.5 cfs of Aug baseflow loss**
    - Indoor use only =
    - **~1.7 cfs Aug baseflow loss**
  - As imported water connections on septic, up to
    - **~2.6 cfs Aug baseflow *gain***

Next Steps and Q&A

Schedule, how to review and submit comments, Q&A

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State of Washington

Schedule

October 15-November 15, 2020

Public Comment Period

Receive comments from public on the draft plan.

Late November 2020

Response to Comments

Compile comments and response to comments, then finalize document

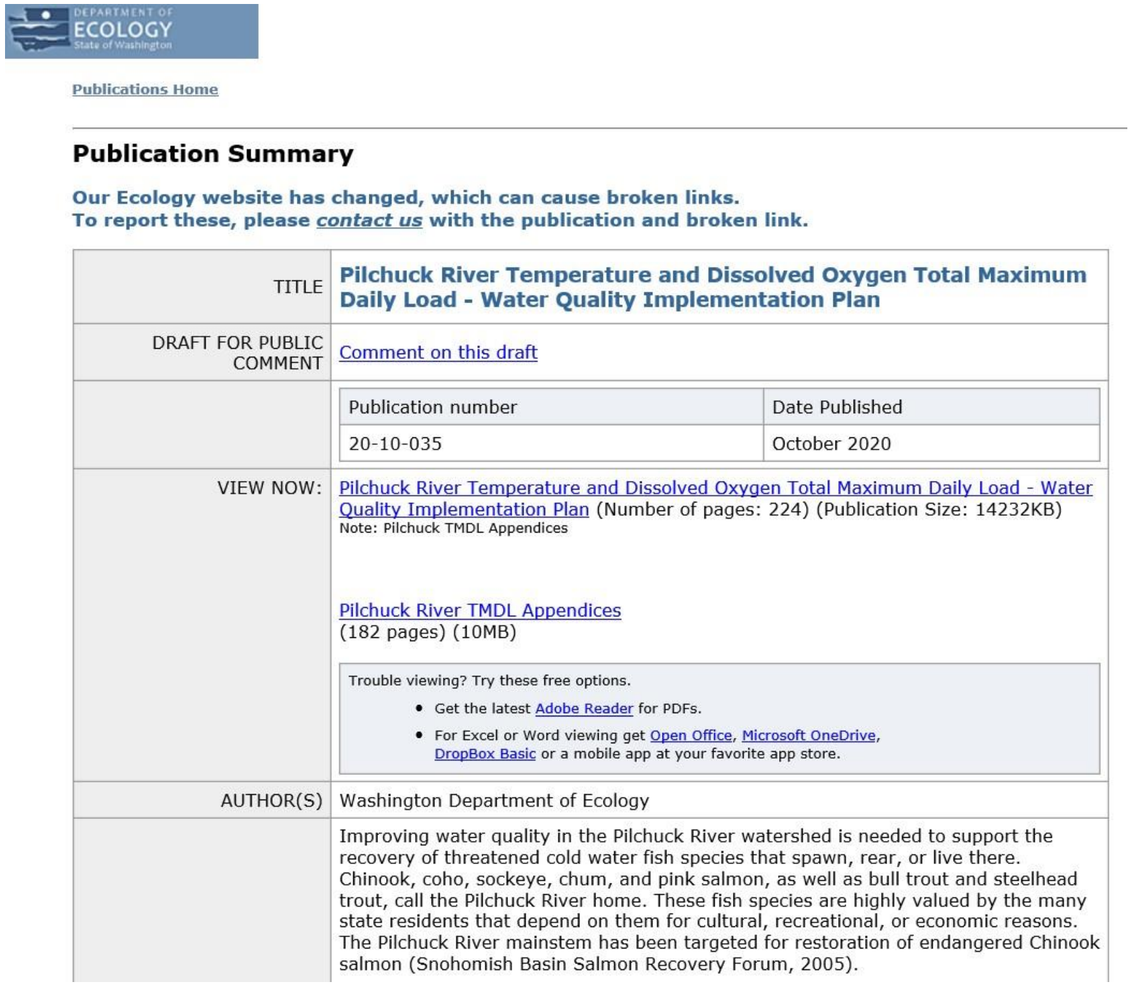
Early December 2020

EPA Submittal

Submit finalized document to EPA for approval.

How to Review the Draft Plan?

Visit the French and Pilchuck watersheds web page[1] to view plan online.



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Publication Summary

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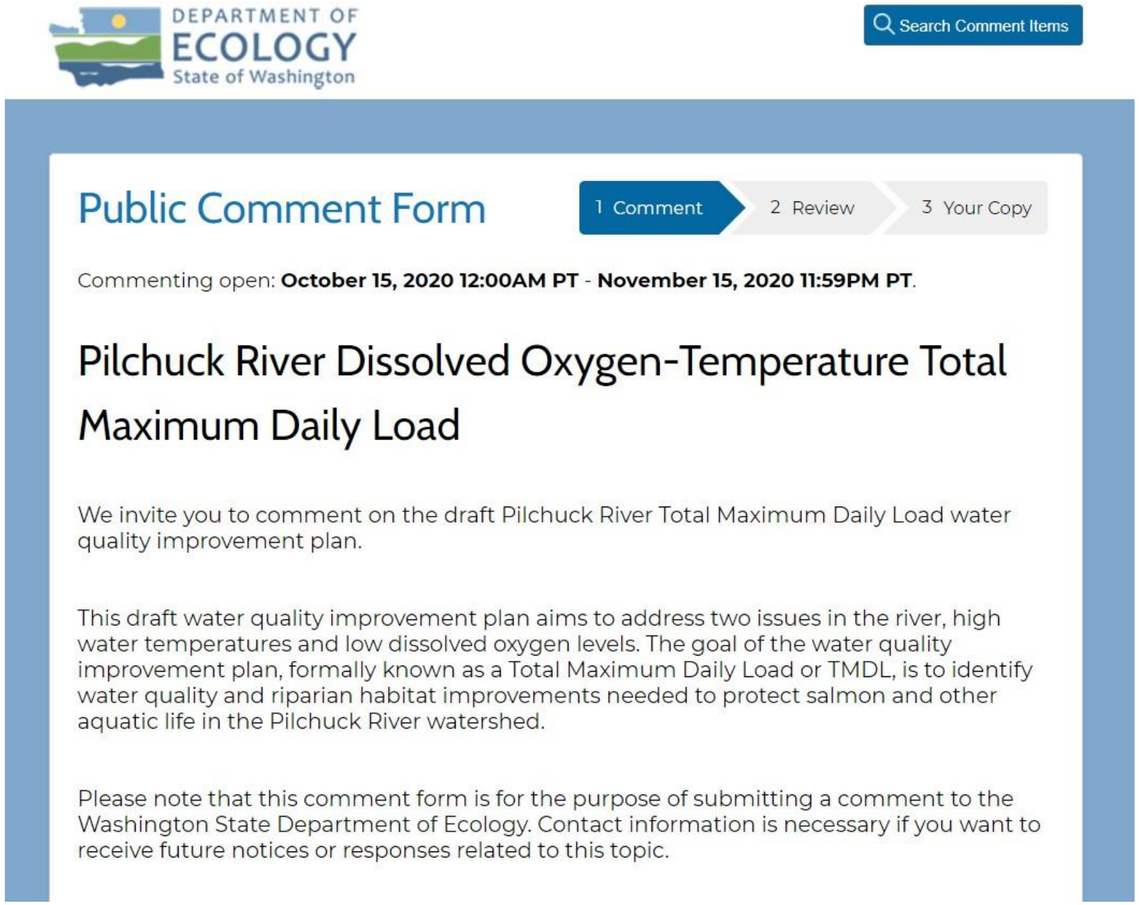
TITLE	**Pilchuck River Temperature and Dissolved Oxygen Total Maximum Daily Load - Water Quality Implementation Plan**
DRAFT FOR PUBLIC COMMENT	Comment on this draft
	Publication number: 20-10-035 / Date Published: October 2020
VIEW NOW:	Pilchuck River Temperature and Dissolved Oxygen Total Maximum Daily Load - Water Quality Implementation Plan (Number of pages: 224) (Publication Size: 14232KB) Note: Pilchuck TMDL Appendices Pilchuck River TMDL Appendices (182 pages) (10MB) Trouble viewing? Try these free options. • Get the latest Adobe Reader for PDFs. • For Excel or Word viewing get Open Office, Microsoft OneDrive, DropBox Basic or a mobile app at your favorite app store.
AUTHOR(S)	Washington Department of Ecology
	Improving water quality in the Pilchuck River watershed is needed to support the recovery of threatened cold water fish species that spawn, rear, or live there. Chinook, coho, sockeye, chum, and pink salmon, as well as bull trout and steelhead trout, call the Pilchuck River home. These fish species are highly valued by the many state residents that depend on them for cultural, recreational, or economic reasons. The Pilchuck River mainstem has been targeted for restoration of endangered Chinook salmon (Snohomish Basin Salmon Recovery Forum, 2005).

[1] https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-improvement/Total-Maximum-Daily-Load-process/Directory-of-improvement-projects/French-Creek-Pilchuck-watersheds#Here

How do I submit comments?

Use eComments

- Type comments into comment box.
- Upload up to five, 30 MB files (pdf, .jpg, .jpeg, .png, .txt, .gif,.doc, or docx).
- Where possible, please reference page numbers or specific sections of the Plan.



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Marty Jacobson

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- Andrew Sics, City of Snohomish
- Rodney Pond, Sound Salmon Solutions
- Mary Lou White, Wild Fish Conservancy
- Christopher Martin, Washington Department of Ecology

Partnership Acknowledgments

& NORTHWEST STREAM CENTER

Questions

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360-407-7359
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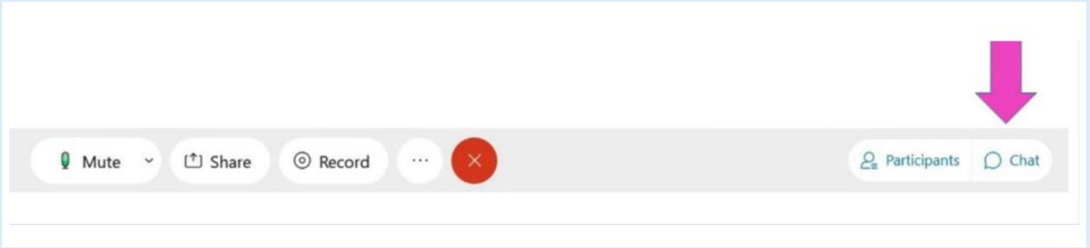
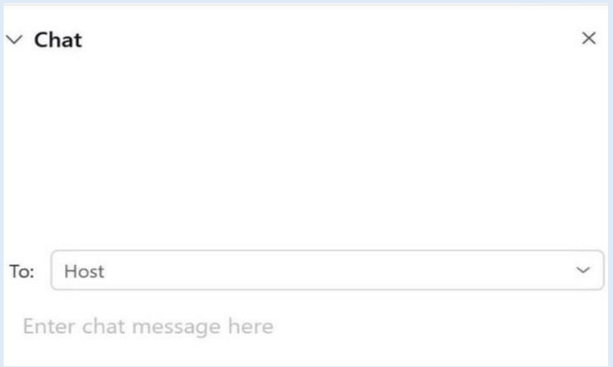
How to Participate during Q&A

You can ask questions via the chat function





You can also ask questions by raising your hand so we can unmute you to participate

We ask that you:

1. **State your name** first before speaking.
2. **Mute your audio** unless speaking.
3. **Lower your hand** when you are done speaking

Final Remarks

- Written comments accepted until 11:59 p.m. on November 15, 2020.
- Use eComments to submit comments online (preferred).
- Or mail your comments (postmarked by November 15) to:

Heather Khan
Washington State Department of Ecology
Water Quality Program
3190 160th Avenue SE
Bellevue, WA 98008-5452

- Questions or Discussion? Contact Heather Khan at 425-213-9832 or heather.khan@ecy.wa.gov.

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