Lower Skagit River Tributaries Temperature Implementation Strategy

November 26th, 2019

Morning Agenda
10:00 – 12:00

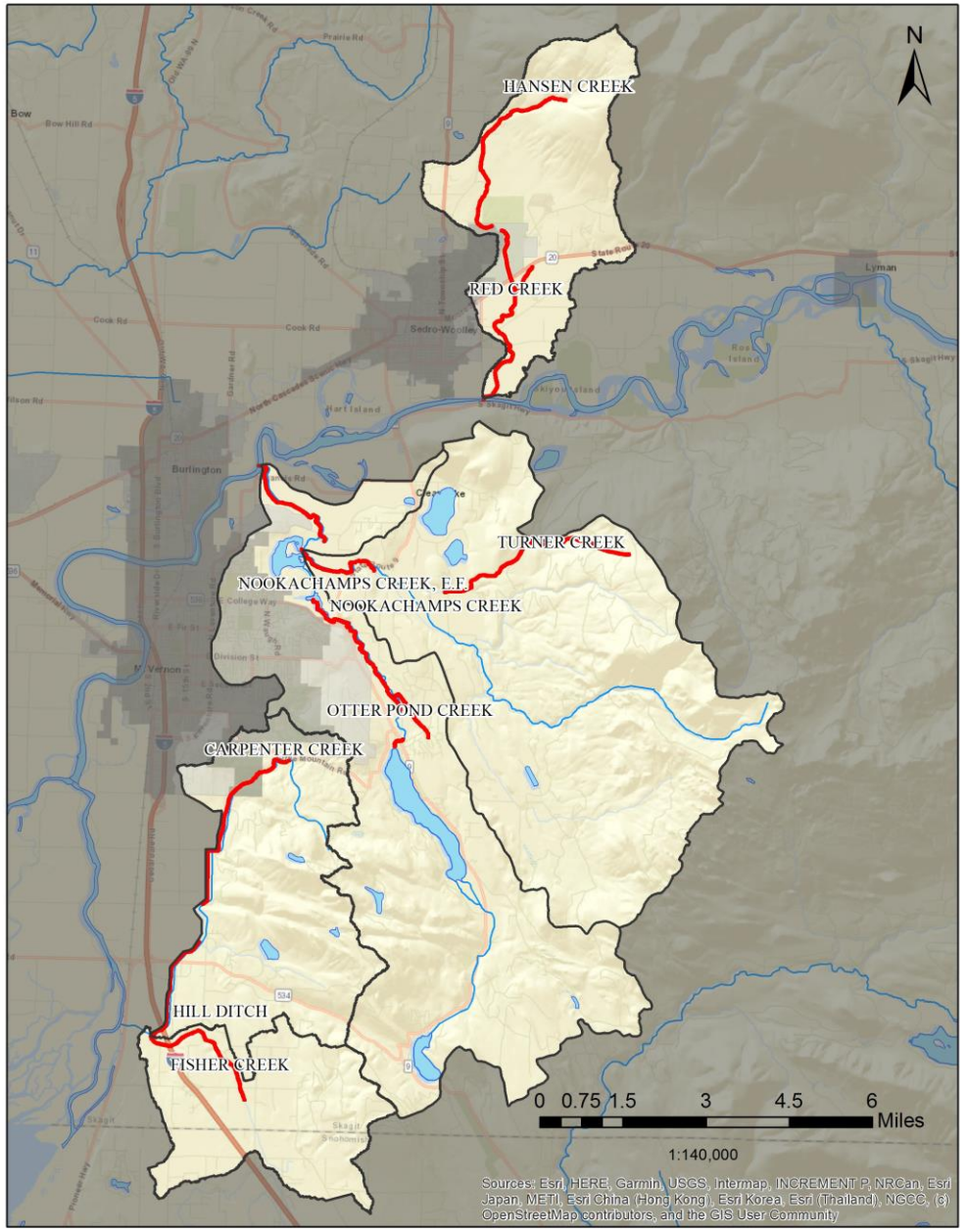
- Introductions
- Next steps
- **Individual organizational priorities**
- NTA 2018-0885
  - "Support Additional Reach-Scale Planning for Riparian Protection and Restoration in Agricultural Landscapes"

Afternoon Agenda
1:00 – 2:30

- Discussion of Ecology Regulatory Authority: GMA/CAO/VSP and 90.48
- Data, availability, and early outreach
- Advisory Group/Future Meetings

Open dialog and discussion

- Be Respectful
- Please give others the freedom to speak candidly and express ideas.
- Please don't interrupt



Introductions

- Who are you?

- Upcoming efforts or projects that your organization is excited for in the upcoming year

Strategy Timeline

- Draft of the document is undergoing the first round of the Ecology internal review process

- We hope to have it out to the group this week, or early next week.

Strategy Timeline

- Ecology will be presenting an update to the PSP Leadership Council on December 3rd
- Ecology commitment to complete the Strategy by December 31st, 2019

What will the strategy include?

- 4 Chapters
  - 1- Intro/problem statement
  - 2 – Strategy development discussion
    - Group discussion synthesis
    - Action Matrix for each topic
  - 3 - Implementation sequencing
  - 4 - Policy discussion, comments, and recommendations

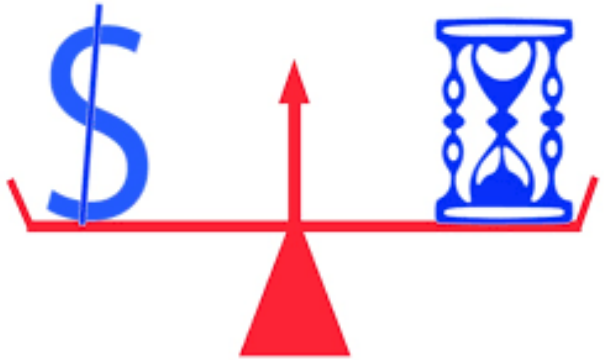
Funding Phase I – Near Term Actions

- 319/Combined Funds grants
- Reach scale planning
  NTA # is 2018-0885 –
  "Support Additional Reach-Scale Planning for Riparian Protection and Restoration in Agricultural Landscapes"
- Direct Implementation Funding
- Conservation Commission Pilot Program
- Ecology support – 1 FTE dedicated to Skagit County

Begin long term goal funding

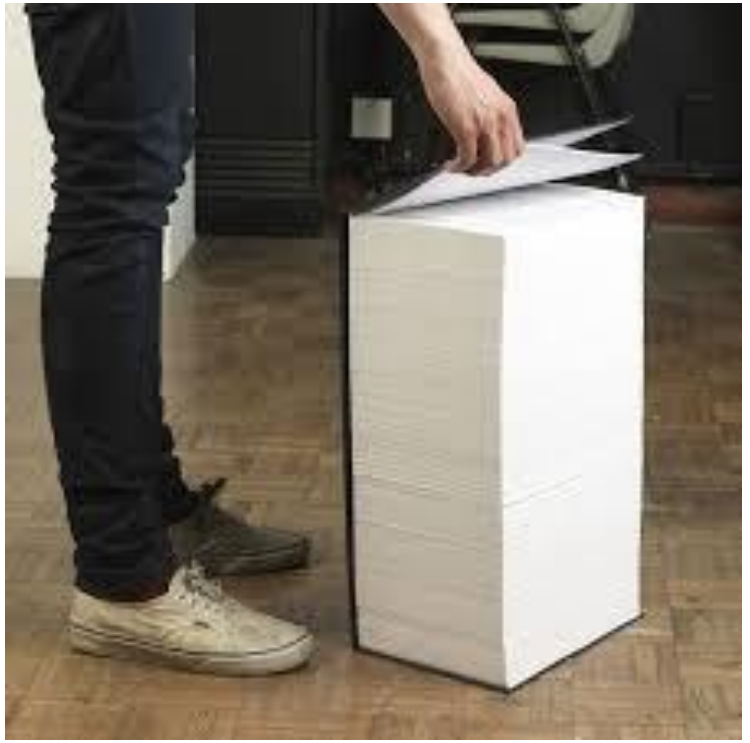
- Per resolution 2019-02
  - *"This strategy should be developed by December 31, 2019, and should identify targeted near term actions to attain measurable progress as well as longer-term area-wide strategies."*

- Realistically, what is necessary to reduce temperatures?
  - Increased capacity?
  - Increased project funding?



Document Review

- Does the group have a preferred review method?
  - Elements of the document?
  - Full version?
- Timeline concerns



Individual Organization Priorities

- If you received funding, what would be the top priority of your organization?

- What elements could your organization bring to support the effort.
  - Does not need to be specifically for the temperature TMDL work.

Individual Organization Priorities

- What would that work look like?
  - Who would be your partners?
  - Do other funds or programs support your efforts?

- Would you be implementing an existing plan?
  - How can we incorporate lessons learned in our group discussions?

NTA 2018 - 0885

- "Support Additional Reach-Scale Planning for Riparian Protection and Restoration in Agricultural Landscapes"
  - Good fit for the strategy?
  - Who would apply for the funding?

Story Map

- Interactive text, maps, and other content
- Useful as an education and outreach tool, potential as an tracking tool and demonstration tool.
- Newaukum Story Map example

Introduction | Monitoring and Restoration Map | Water Quality | Turbidity | B-IBI Scores | Stream Habitat Metrics | Restoration Case Study: Culvert Removal

This map displays our five core ambient monitoring sites as black stars. The colored areas represent the six subwatersheds of the Newaukum River.

Click the underlined links below to add restoration project locations or other monitoring sites to the map. Select an individual point to get more information about that location.

See project locations

See historic monitoring stations

See all current monitoring stations

See continuous turbidity monitoring stations

Core Ambient Monitoring

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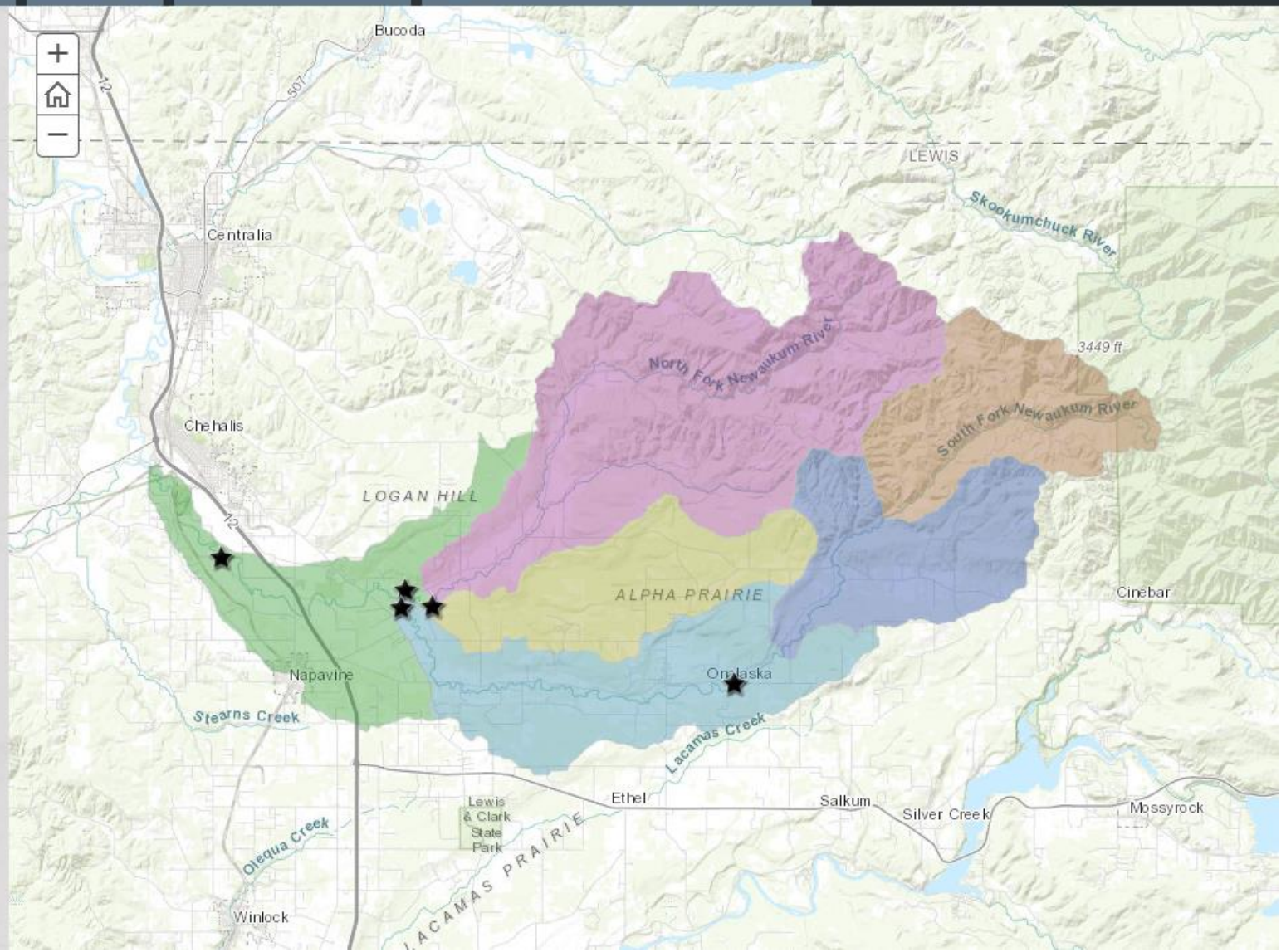
Newaukum River Subwatersheds

- City of Newaukum-Newaukum River
- Lower South Fork Newaukum River
- Middle Fork Newaukum River
- Middle South Fork Newaukum River



Mapping project locations and progress

See project locations

See historic monitoring stations

See all current monitoring stations

See continuous turbidity monitoring stations

Projects

- Fish Passage
- Protection
- Agricultural
- Sewer Upgrade
- Watertype Assessment
- Planning

Core Ambient Monitoring

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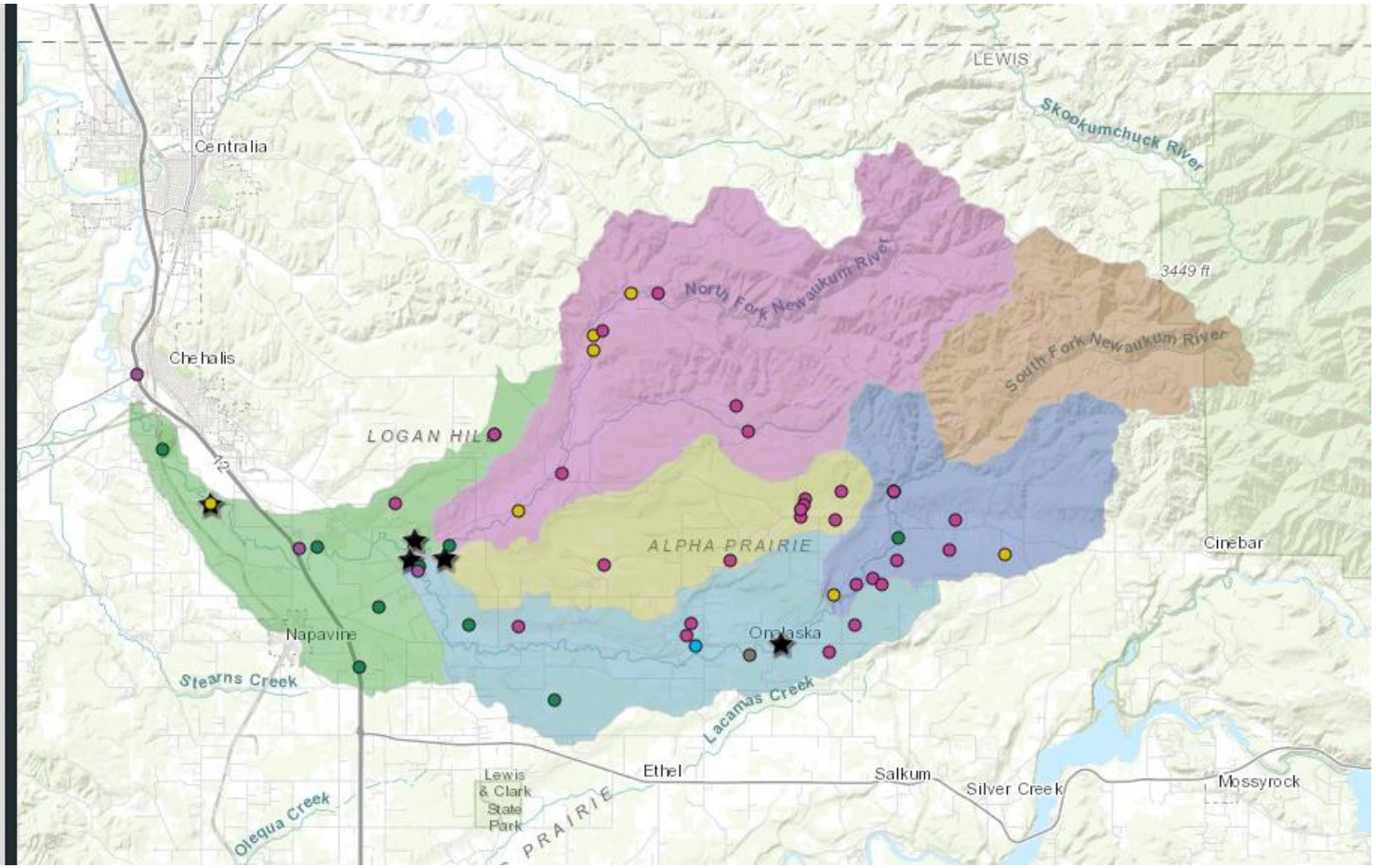
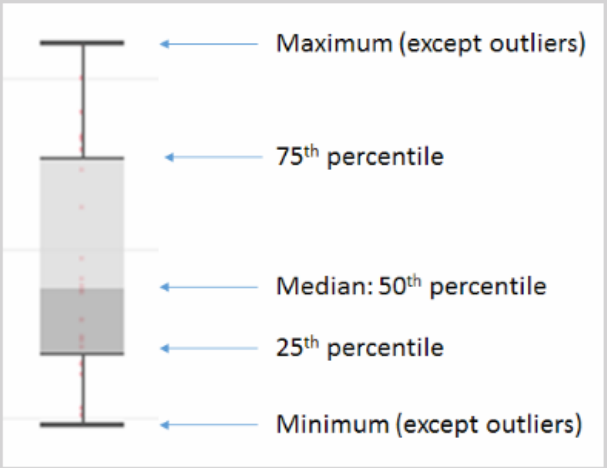


Select a parameter from the list on the right to view water quality data from our five core sampling locations.

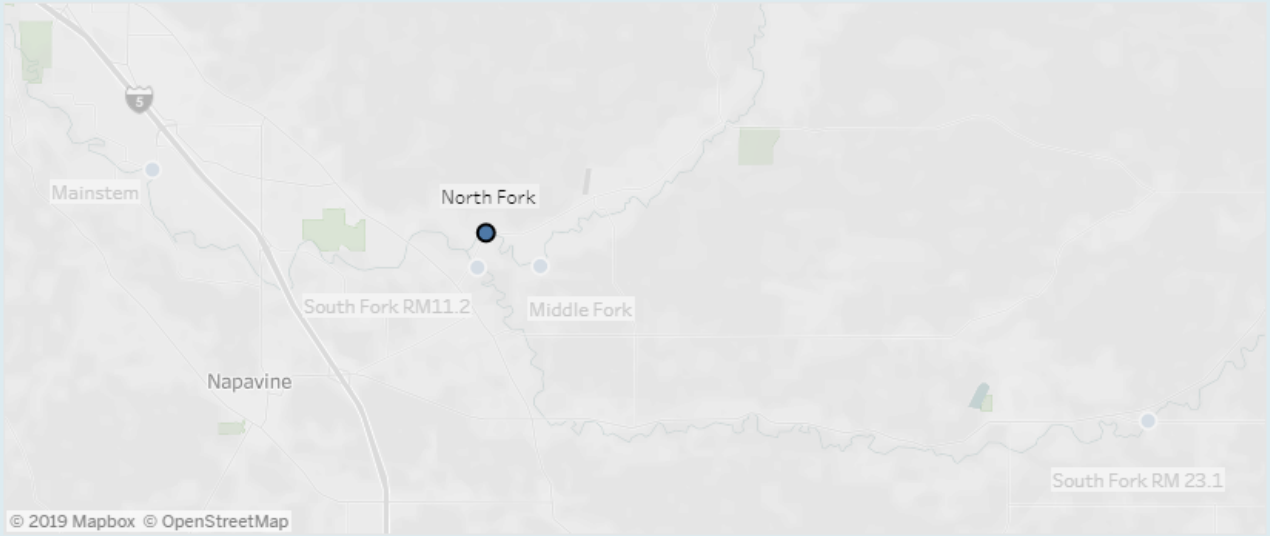
To highlight the results from one location, click that location either in the map or at the bottom of the box plot.

Hovering over data points or box plots will show you more details. Red points indicate a water quality violation.

How to interpret a box plot:

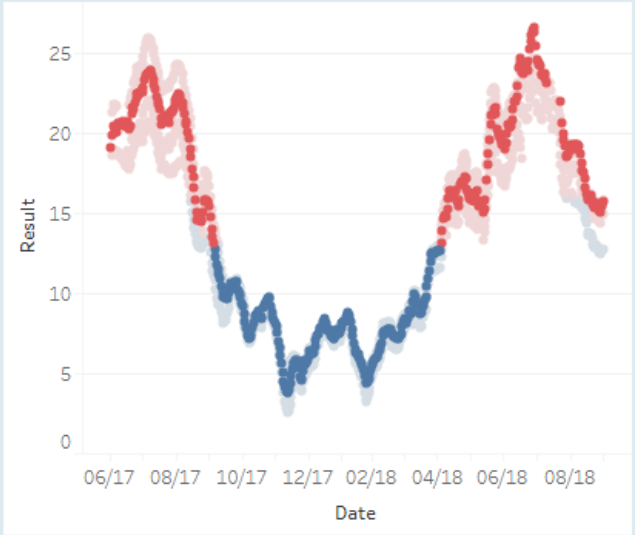


Newaukum River Water Quality Sampling Locations

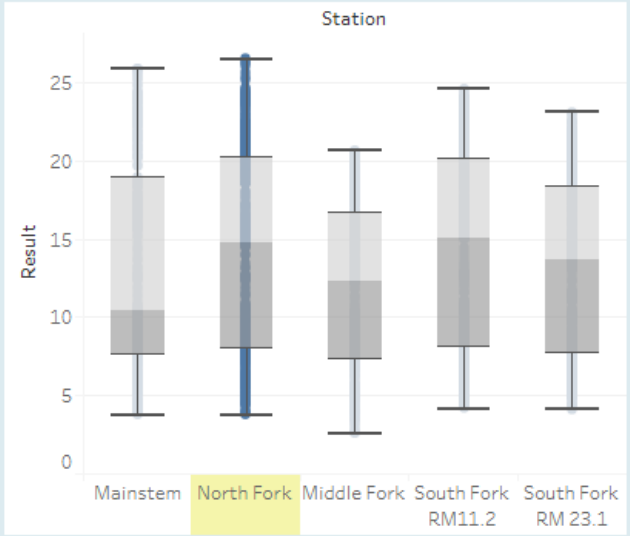


Parameter
- Ammonia
- Conductivity
- Dissolved Organic Car...
- Dissolved Oxygen
- E. coli
- Fecal Coliform
- Nitrate-Nitrite as N
- Ortho-Phosphate
- pH
- Suspended Sediment
- Temperature
- Total Nitrogen
- Total Organic Carbon
- Total Phosphorus
- Total Suspended Solids
- Turbidity

Temperature (7-DAD Max (°C))



Average Temperature (7-DAD Max (°C))



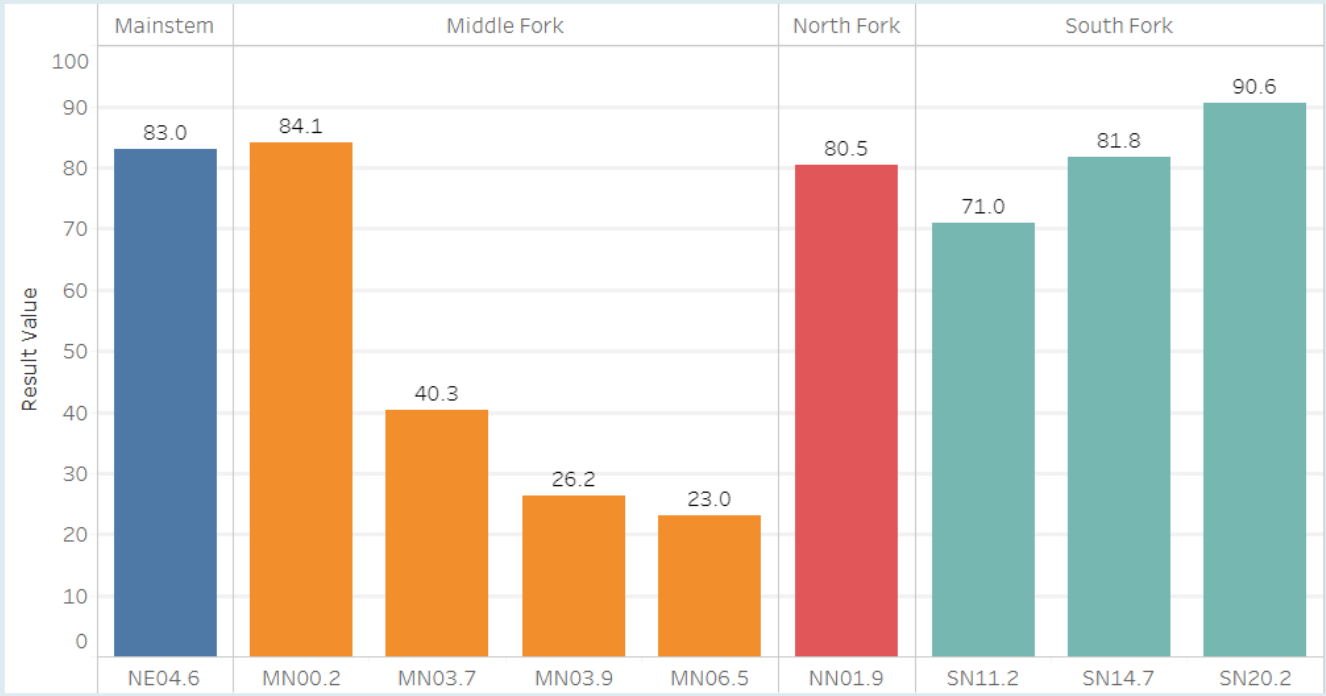
Water Quality Violation, ...
- No, Null
- Yes, Null

Select stream habitat metrics from the menu on the right to see results from each of the Newaukum River sites we sampled in 2017.

Hover over the word "Mainstem" in the chart and click the small "-" or "+" buttons that appear to switch the view between individual site values and rolled-up average values by subwatershed.

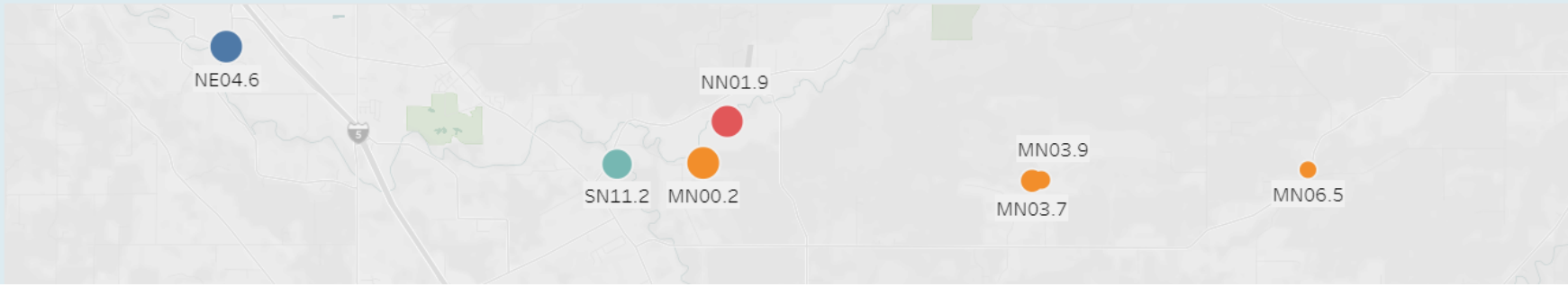
For more details, you can search and download biological and habitat data from the Newaukum using our Watershed Health Monitoring database.

Habitat metrics by subwatershed, 2017



Habitat Metrics

- Bankfull cross-sectional area, ave. (m2)
- Canopy cover, average (%)
- Embeddedness, average (%)
- Large woody debris volume (m3/100m)
- Pool area, total residual (m2)
- (•) Pool depth, average (cm)
- Relative bed stability (ratio)
- Sinuosity (ratio)
- Slope (%)
- Substrate diameter, geo. mean (mm)



Newaukum River Effectiveness Monitoring

Introduction | Monitoring and Restoration Map | Water Quality | Turbidity | B-IBI Scores | Stream Habitat Metrics | Restoration Case Study: Culvert Removal

A steep, undersized culvert was restricting fish passage in the Middle Fork Newaukum River. Lewis Conservation District replaced this culvert with a new bridge in fall 2016. We sampled above and below the culvert to study project effectiveness.

Sampling results before and after culvert removal:

Fish

Macroinvertebrates

(B-IBI: Benthic Index of Biotic Integrity)

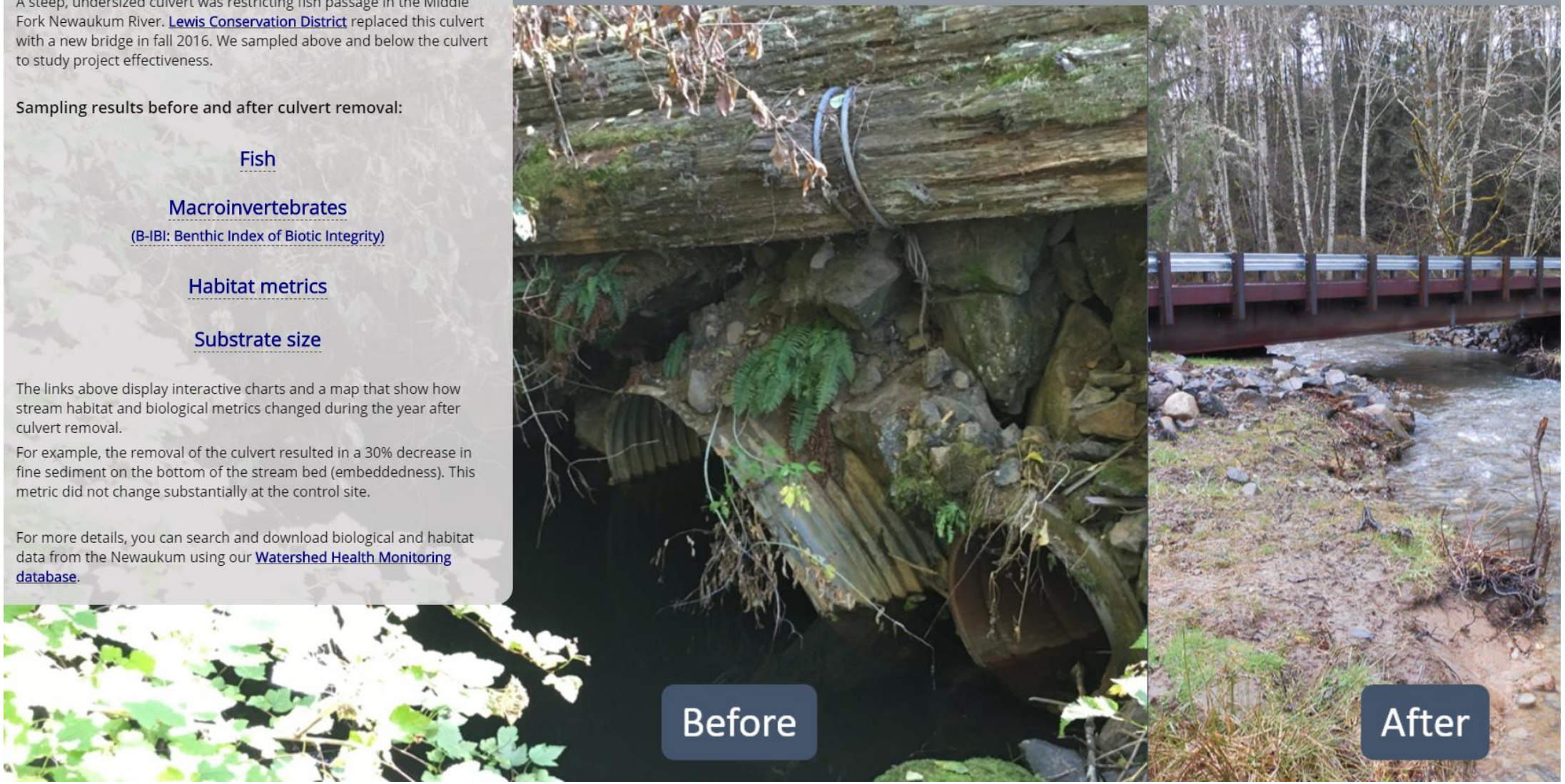
Habitat metrics

Substrate size

The links above display interactive charts and a map that show how stream habitat and biological metrics changed during the year after culvert removal.

For example, the removal of the culvert resulted in a 30% decrease in fine sediment on the bottom of the stream bed (embeddedness). This metric did not change substantially at the control site.

For more details, you can search and download biological and habitat data from the Newaukum using our Watershed Health Monitoring database.



Data Availability

- Existing analysis data sets
- Implementation tracking data
  - Privacy concerns
  - What already exists?
- Sharing data
- Hosting data

Next meetings

Does the group want to meet for future discussion and updates?

What is the best way to continue this effort?

One last item…

Education/Outreach

- Who is the face of the program?
- New messages, aimed at local benefit
- What sort of message or approach?
- Who has the capacity for the work?

Riparian plantings/BMPs

- Riparian plantings – In water work
- Combinations or "suites" of BMPs
- Incentives for buffers or multiple BMPs
- Easements
  - Easement availability/programs
  - Are higher payments to key to increasing implementation?

Data and Research

- Do we have enough monitoring?
  - Effectiveness monitoring
  - Adaptive management

- In channel work
  - Cold water refuge
  - Water retention/Restoration potential

- Data gaps?

Strategic Planning

- Setting milestones
- Near term actions/Larger policy Issues
- Program flexibility

What is the goal of the strategy?

- Lowering water temperatures, using the most beneficial and cost effective methods.

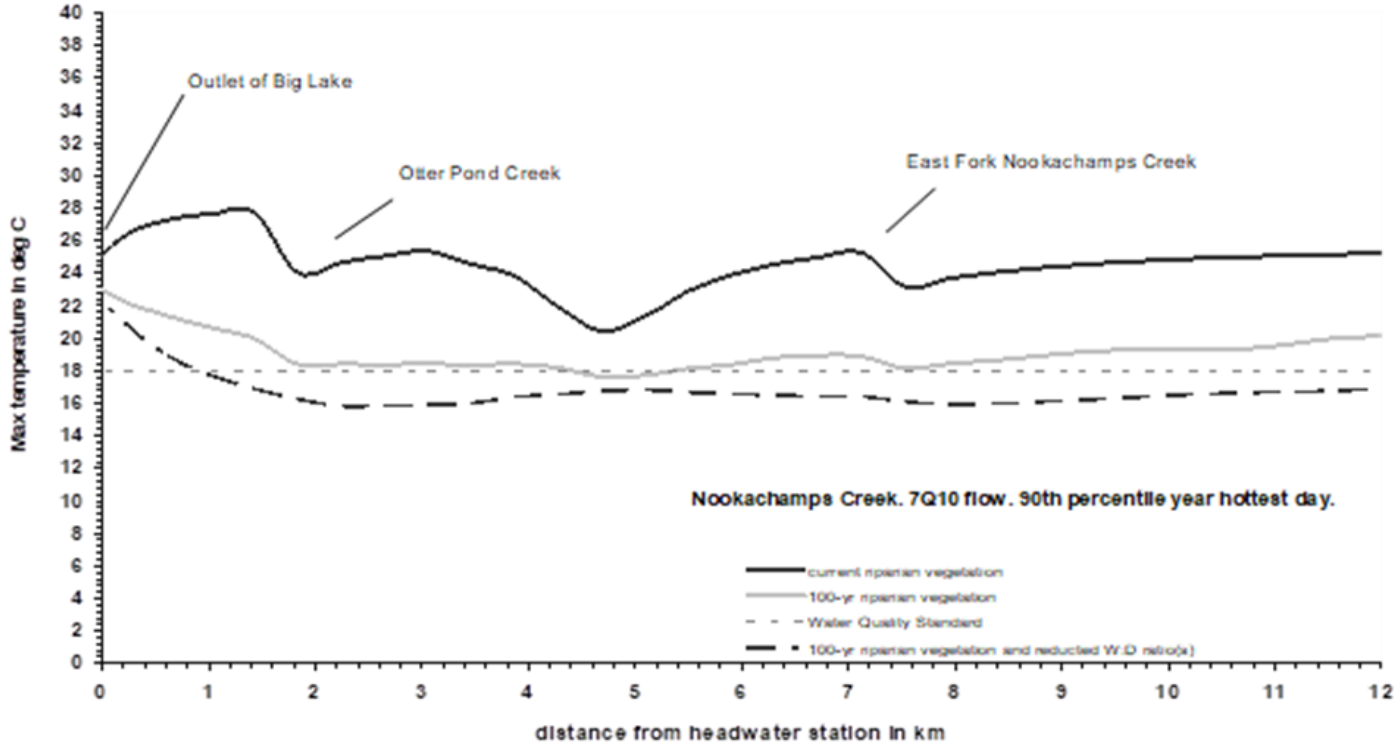
- The goals should not be less than the TMDL goals.

Buffer Width

Category	Functions	Minimum Buffer Width West of Cascades	Minimum Buffer Width East of Cascades
A. Constructed Ditches, Intermittent Streams and Ephemeral Streams that are not identified as being accessed and were historically not accessed by anadromous or Endangered Species Act (ESA) listed fish species	Water quality, shade, source control and delivery reduction.	35' minimum	35' minimum
B. Perennial waters that are not identified as being accessed and were historically not accessed by anadromous or ESA listed fish species	Water quality, shade, source control and delivery reduction.	50' minimum	50' minimum
C. Perennial, intermittent and ephemeral waters that are identified as being accessed or were historically accessed by anadromous or ESA listed fish species	Water quality, large wood debris (LWD) for cover, complexity and shade and microclimate cooling, source control and delivery reduction.	100' minimum	75' minimum
D. Intertidal and estuarine streams and channels that are identified as being accessed or were historically accessed by anadromous or ESA listed fish species	Water quality, habitat complexity	35'-75' minimum, or more as necessary to meet water quality standards	N/A

Nookachamps Creek

Based on the TMDL model, 90% effective shade is required, and may require additional W/D ratio reductions to meet standards



Distance in km from headwater station	Current condition average effective shade (%)	Daily load allocation for effective shade on August 12 (%)
0 (headwater)		
0.41	30.0	90.0
0.81	30.0	92.3
1.22	30.0	91.2
1.63	30.0	91.7
2.04	30.0	92.8
2.44	30.0	91.5
2.85	30.0	91.5
3.26	30.0	92.0
3.66	50.0	91.7
4.07	50.0	92.9
4.48	75.0	93.0
4.88	82.0	93.0
5.29	40.0	93.0
5.70	35.0	93.0
6.11	35.0	92.2
6.51	35.0	92.2
6.92	35.0	89.8
7.33	35.0	90.9
7.73	35.0	92.5
8.14	35.0	91.0
8.55	35.0	85.9
8.95	35.0	85.9
9.36	35.0	84.0
9.77	35.0	83.5
10.18	35.0	84.3
10.58	35.0	85.5
10.99	35.0	87.2
11.40	35.0	87.7
11.80	35.0	81.5
12.21	35.0	79.1

Width research

- Beschta et al. (1987) report that a 98-foot-wide (30-m) buffer provides the same level of shading as that of an old-growth stand.
- Brazier and Brown (1973) found that a 79-foot (24-m) buffer would provide maximum shade to streams.
- Steinblums et al. (1984) concluded that a 56-foot (17-m) buffer provides 90% of the maximum ACD.
- Corbett and Lynch (1985) concluded that a 39-foot (12-m) buffer should adequately protect small streams from large temperature changes following logging.
- Broderson (1973) reported that a 49-foot-wide (15-m) buffer provides 85% of the maximum shade for small streams.
- Lynch et al. (1985) found that a 98-foot-wide (30-m) buffer maintains water temperatures within 2°F (1°C) of their former average temperature.

Continued discussion

- Large range of the effective shade values in literature.
- On going effort to evaluate buffer widths and effectiveness.
- TMDL recommendations and goals – Water needs to meet standards.

Funding

- What programs are available?
- Incentives
  - What should they be?
  - Who funds them?
- What are the funding mechanisms?

- “Programs don’t match up to the goals we are setting, we need to evaluate the programs and determine what is allowable, what is useful, and what we can do.”