# EPA Region 10 Climate Change and TMDL Pilot

## Presentation to EPA/Nooksack Indian Tribe Cosponsored Workshop: Restoring Salmon Habitat for a Changing Climate In The South Fork Nooksack River, WA Bellingham, WA

## January 22 and 23, 2013

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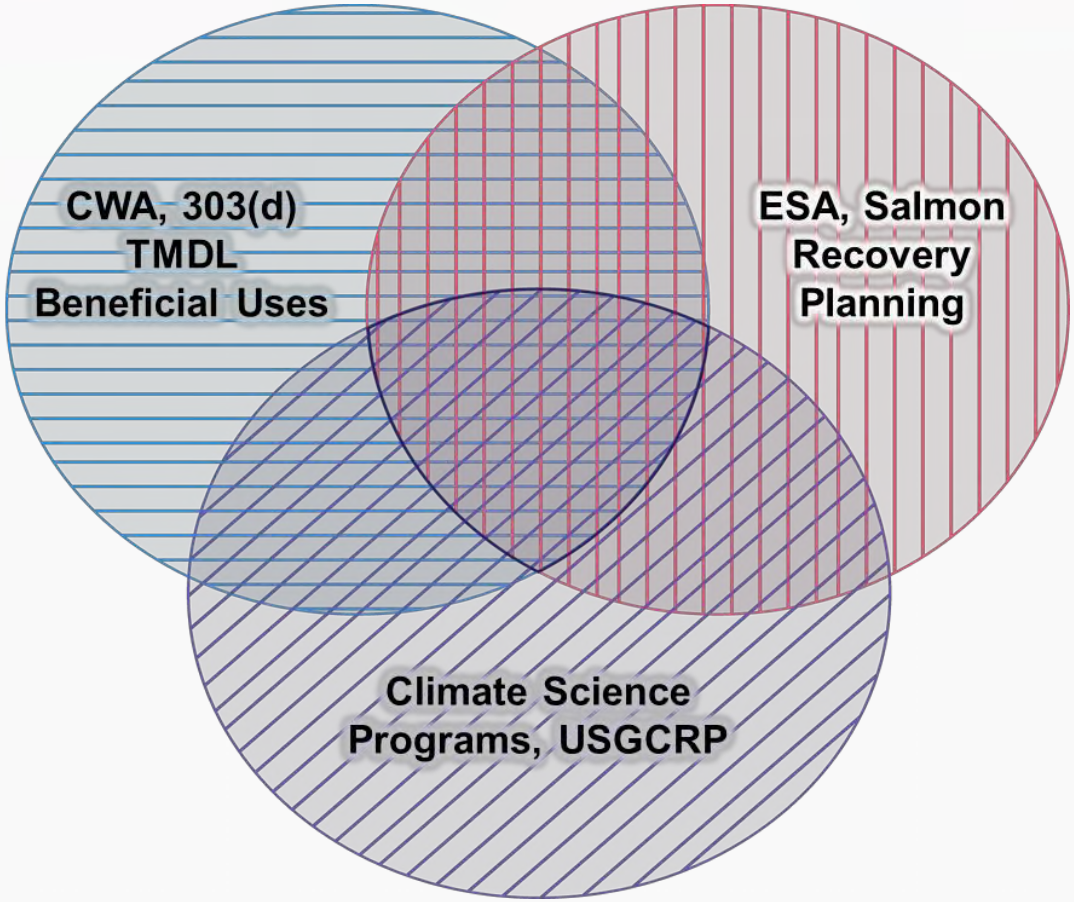
# Science/Policy Integration

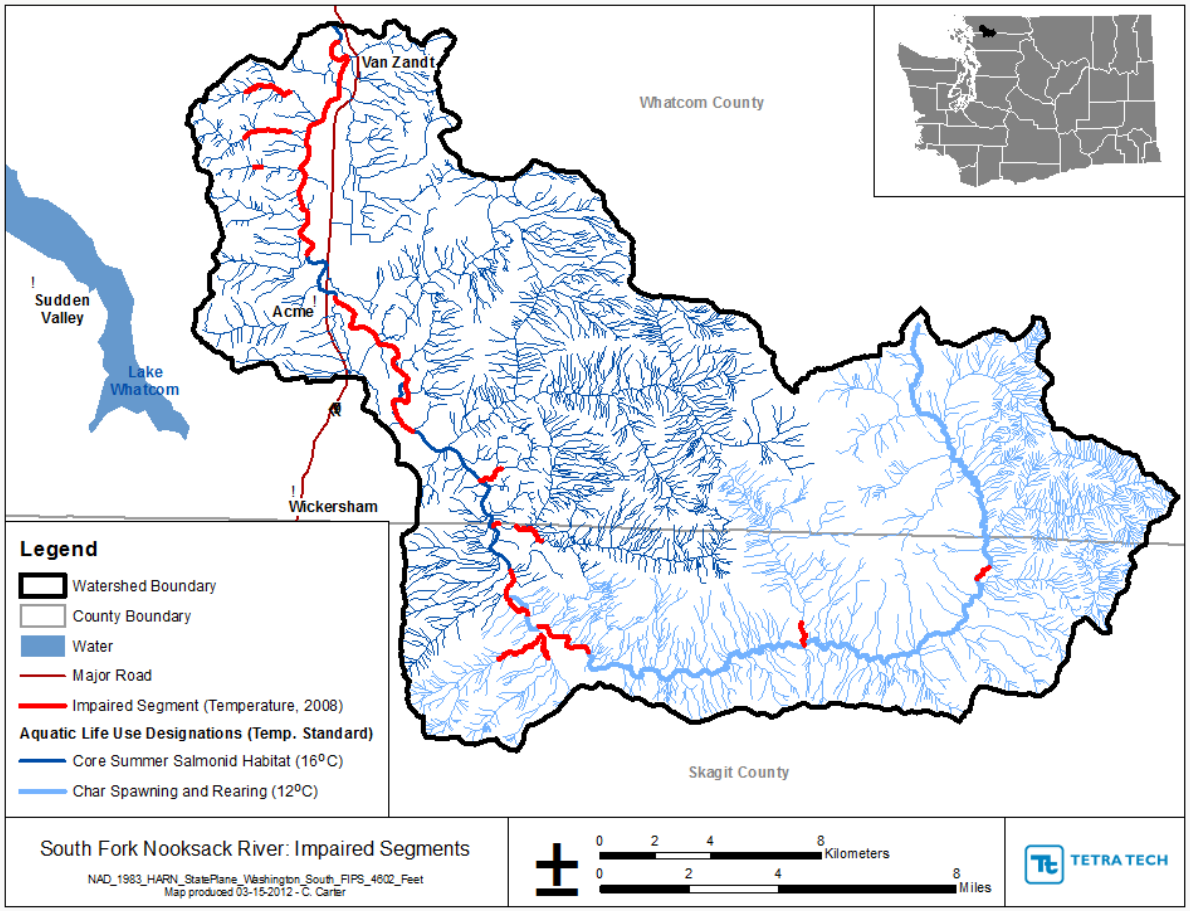


# Guiding Principles

- This project is structured as a stakeholder-centric process. That means EPA is here to support and facilitate stakeholder actions to plan and implement Climate Change Adaptation.

- EPA fully supports “Washington’s State’s Integrated Climate Change Response Strategy; Preparing for a Changing Climate – April 2012”: Strategy B-5 and Actions to: Build capacity and support for the adoption of response strategies that help protect and restore ecosystem function and services at risk from climate change (Page 78).

# South Fork Nooksack River, WA:
# Aquatic Life Use Designations and 2008 Impaired Stream Segments




*Source: South Fork Nooksack River Temperature TMDL: Technical Approach – Tetra Tech, DRAFT 4-13-12*

# Climate Change Risk Assessment

***Consists of a Quantitative and Qualitative Assessment***

Quantitative Assessment:

- Comparison of QUAL2Kw modeled stream temperatures, including riparian shading, with and without climate change for the 2020s, 2040s and 2080s.
- Responsive to the CWA TMDL Numeric Cold-Water Temperature WQS.

Qualitative Assessment:

- Comprehensive analysis of freshwater habitat for ESA salmon restoration in the SFNR under climate change.
- Will result in a prioritized list of climate change adaption strategies that supports salmon restoration in the SFNR under climate change.

**Together, the Assessments will represent robust and comprehensive actions to protect the CWA beneficial uses (salmon habitat) and ESA recovery goals under climate change.**

# Benefit of a Pilot Project

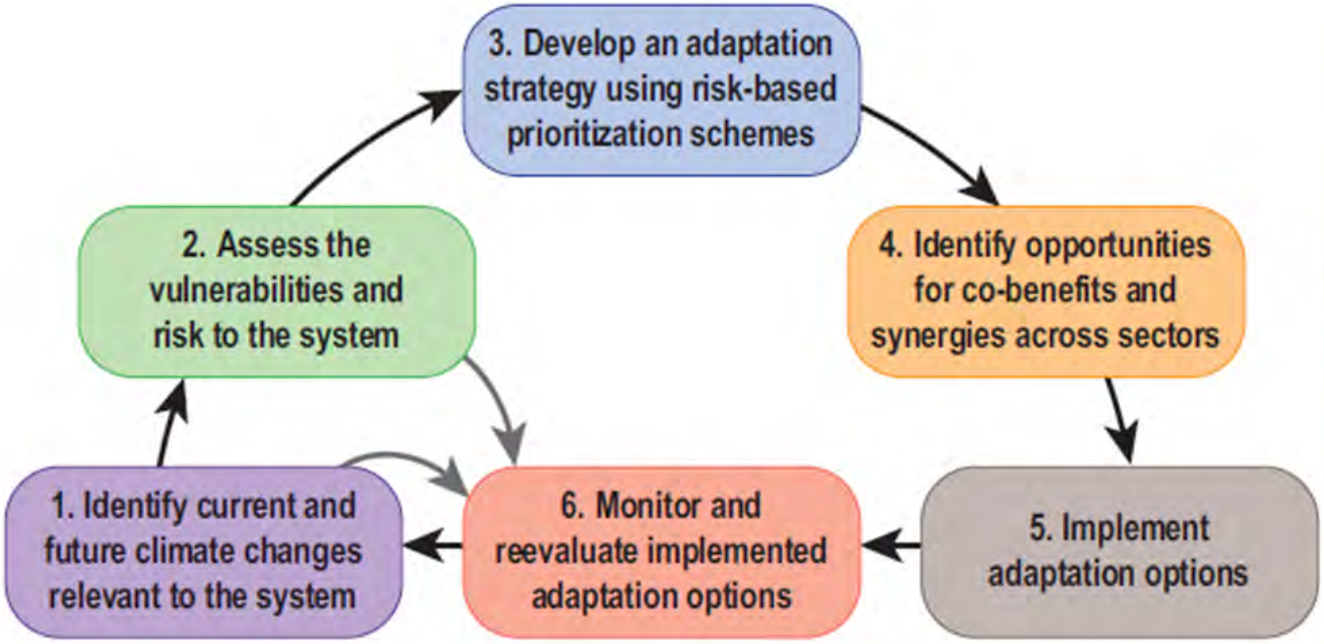
- Ecology is a science of “place” and Climate Change Adaptation is the application of ecological principals to enhance the adaptive capacity of ecosystems.
- We often talk about scale and scaling in our assessment of ecological problems. We rarely talk about scale and scaling in the operational or implementation context.
- The EPA Region 10 Climate Change TMDL Pilot is all about demonstrating how cutting-edge science can be applied in a real-word problem-solving context with the participation of scientists, environmental practitioners and stakeholders.

# What is a Rapid-Prototype?

- An engineering design method that is commonly used in the manufacturing and software development sectors. Emphasis is on minimal planning and rapid development to allow the accomplishment of a *working model* in a relatively short time frame. The *working model* is available for testing, evaluation and refinement in a much shorter time frame than would normally be required.
- The *working model* creates an opportunity for adaptive management and learning that is unavailable in a more traditional development cycle.
- In this case, the Beechie et al. 2012 method is the concept, the Qualitative Assessment is the rapid prototype development of a *working model* in the SFNR, and the engineering design refinement and scaling is the follow-on project for the entire Nooksack River Basin.

# Climate Change Adaptation

Iterative Risk Assessment




Adaptive Management Framework


*Source: Incorporating (Iterative) Risk Management into the National Climate Assessment; Gary Yohe Vice-Chair of the NCADAC, July 12, 2011 Regional Working Group Background Document; National Climate Assessment*

# Qualitative Assessment Milestone Schedule

| Qualitative Assessment Milestone Schedule | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2013 | | | | | | | | | | | 2014 | | |
| Qualitative Assessment Subtask | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Jan. | Feb. | March |
| Subtask 3.1 Stakeholder Engagement for Project Scoping | | | | | | | | | | | | | | |
| Subtask 3.2 Climate Change Methodology for ESA Salmon Recovery Actions | | | | | | | | | | | | | | |
| Subtask 3.3 Conducting the Qualitative Assessment | | | | | | | | | | | | | | |
| Subtask 3.4 Stakeholder Engagement for Risk Assessment | | | | | | | | | | | | | | |
| Subtask 3.5 Develop Final Report | | | | | | | | | | | | | | |

# Next Steps

- Develop the Workshop Report (Subtask 3.1) – 1/31/13
- Organize the Virtual Interdisciplinary Team (VID) - 2/28/13
- Develop the Methodology for Conducting the Qualitative Assessment (Subtask 3.2) – 4/30/13

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