

Kitsap County Department of Community Development
Toward a Natural Resources Asset Management Plan for Kitsap County
 Workshop Agenda

Date: January 7, 2019

Location: Kitsap County Public Works, 507 Austin Avenue, Port Orchard WA 98366

Meeting Room: 3rd Floor Public Works Conference Room

Goal: Discuss potential options for developing a Natural Resources Asset Management Program for Kitsap County, including desired levels of ecosystem services.

12:30 PM	<p>Welcome, Introductions, Roles, and Agenda Review - Elizabeth McManus, Facilitator, Ross Strategic</p>
12:45 PM	<p>Overview – What do we want to achieve?</p> <ul style="list-style-type: none"> • Washington Environmental Council • Suquamish Tribe • Port Gamble S’Klallam Tribe • Kitsap County <p><i>Material: Background Document on “Toward a Natural Resources Asset Management Program for Kitsap County”</i></p>
1:00 PM	<p>Findings from Stakeholder Interviews - Elizabeth McManus, Facilitator, Ross Strategic, All</p> <ul style="list-style-type: none"> • Understanding initial stakeholder views on a potential Natural Resources Asset Management Program for Kitsap County <p><i>Material: Stakeholder Interview Synthesis</i></p>
1:20 PM	<p>Natural Resources Asset Management Program – What it is and is not – Melia Paguirigan and Max Webster, Washington Environmental Council, All</p> <ul style="list-style-type: none"> • Approaches and lessons learned from other regions <p><i>Material: Case studies</i></p>
1:40 PM	<p>Kitsap County’s Program Vision - Dave Ward, Kitsap County, Department of Community Development</p> <ul style="list-style-type: none"> • Framing the role of the Natural Resources Asset Management Program in assisting Kitsap County’s fiscal and management decisions and improving business processes such as permitting and compliance. What decision frameworks could Kitsap County use? <p><i>Material: Kitsap County Presentation</i></p>
2:00 PM	<p>Break</p>

2:20 PM	<p>Discussion and Feedback on Initial Levels of Ecosystem Services and Other Potential Program Elements – Washington Environmental Council, All</p> <ul style="list-style-type: none"> • Establishing a shared understanding of ecosystem services • Defining levels of ecosystem services for streams and freshwater systems, forests, and marine shorelines • Leveraging available data to enable mapping of ecosystem services to measurable attributes • Integrating Tribal cultural values into the program <p><i>Material: Draft Level of Service Briefing Memo</i></p>
4:00 PM	<p>Next Steps - All</p> <ul style="list-style-type: none"> • Proposed program development phases • Next workshop – schedule and content • How to stay updated between workshops – regular calls? • Options to involve Kitsap County jurisdictions on program development, as needed • Options to ensure stakeholder communication across the development phases
4:30 PM	<p>Adjourn</p>

Toward a Natural Resources Asset Management Program for Kitsap County

Protecting Ecosystem Services While Growing for the Future

The streams, forests, and marine shorelines of Puget Sound support the vitality and livelihood of Kitsap County and our region. As the population continues to grow and climate change progresses, damage outpaces recovery, threatening salmon runs and degrading the benefits that natural resources provide. While the Growth Management Act requires counties to make land use decisions that have “no net loss” of ecosystem value, Kitsap County aims to go beyond and regain services overtime. To achieve this, Kitsap County and other local governments need a clear mechanism for inventorying and managing ecosystem services.



Creating Resilient Water Practices

Kitsap County is home to dozens of small forested watersheds that drain into Puget Sound, which support clean drinking water and maintain longstanding cultural practices for surrounding communities. Innovative ways for considering ecosystem services will be critical for protecting essential natural resources while keeping up with growing development pressures.

Natural resources provide ecosystem services. A Natural Resources Asset Management program would give the county a tool to define the importance of water as a resource. Under this program, the county would assess the current and preferred levels of service that ecosystem services provide, similar to Capital Facilities Plans. This information would enable the county to balance the impacts of land use decisions with protecting the function of natural assets and their ability to:

- Regulate water
- Mitigate against climate impacts
- Reduce natural hazards
- Provide cultural and recreation benefits
- Support community well-being



An Innovative Approach

Through this forward-thinking approach for managing water, institutions can recognize specific services of natural resources and provide incentives to protect them as critical infrastructure. It will serve as a crucial step for incorporating high-functioning green infrastructure with traditional public works planning and management. Overall, more sustainable water practices will safeguard healthy salmon runs and maintain treaty rights. With time, the framework produced through the Natural Resources Asset Management program could be modified and implemented in other jurisdictions to further strengthen local resiliency.

Developing this program will require several years. The goal of this initial phase is to explore options for framing ecosystem services provided by natural resources based on scientific information available for Kitsap County streams, forests, and marine shorelines. Manageable and durable programs that the county can implement and sustain are critical to long-term success. Any program must address the values provided by these natural resources, including cultural values for tribal members.

Project Timeline

In fall 2018, WEC will interview local governments, tribes, and others to identify institutional barriers, challenges, and opportunities for creating a Natural Resources Asset Management program. The goal is to develop a shared understanding of what the program can provide and to identify issues that must be addressed for the effort to succeed in the future. In spring 2019, WEC will begin developing a framework and options for accounting for the ecosystem services provided by streams, forests, and marine shorelines, in strong consultation with all project partners. By June 2019, WEC will develop policy and funding options for the County to consider in subsequent phases of program development.

Project Team

Washington Environmental Council is facilitating this project in partnership with the Suquamish Tribe, Port Gamble S'Klallam Tribe and Kitsap County.

For further information on this project, please contact Mindy Roberts at Washington Environmental Council, mindy@wecprotects.org.

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Toward a Natural Resources Asset Management Plan for Kitsap County

Stakeholder Interview Synthesis

Background

Natural resources such as streams, forests, and marine shorelines provide services which people depend on for a high-quality of life and economic vitality in Kitsap County. As the County continues to grow, there is an increasing focus on protecting the services that natural resources provide.

Under the State's Growth Management Act, Kitsap County and other local governments are required to implement comprehensive plans that achieve "No Net Loss" of ecosystem services, meaning that the services provided today should not be degraded in the future. Kitsap County aims to go beyond that and instead is working toward a process of continuous improvement that restores and enhances ecosystem services over time. To achieve this, Kitsap County and local governments need a clear mechanism for monitoring and managing ecosystem services.

With this aim, the Washington Environmental Council (WEC), in partnership with Kitsap County, the Suquamish Tribe, and Port Gamble S'Klallam Tribe, is assessing options to develop a Natural Resources Asset Management Program. As part of this effort, in Fall 2018, WEC, with support from Ross Strategic, conducted 14 stakeholder interviews to identify potential challenges and opportunities for creating such a program in Kitsap County. Stakeholders interviewed represented different perspectives, from local governments and tribes to non-governmental organizations. The one-hour interviews were held via phone. A list of the organizations and individuals interviewed is included in Appendix 1 and interview guides that were used for each stakeholder group can be found in Appendix 2.

The highlights below are organized under key themes identified through interviews and reflect the discussion and input shared by interviewees. Specific input was gathered on desired levels of ecosystem services that should be provided by streams, forests, and marine shorelines across the County. Responses are aggregated and are not attributed to specific individuals.

Main Messages

There is genuine interest in and openness to developing a Natural Resources Asset Management Plan in Kitsap County. Interviewees observed that, in order to look at natural resources and ecosystems in a comprehensive way, there is a need for an overarching framework to enable more informed decision-making and priority setting with a longer planning horizon. Such a program also would help the County incorporate ecosystem services more effectively into planning and budget processes and support its statutory environmental requirements.

Interviewees highlighted that it will be crucial to develop a feasible, sustainable, and measurable program that could be scalable and replicated at the City/Tribal level. There was general acknowledgment that developing an asset management plan for natural resources is a complex process given the diversity of natural resources, challenges with defining discrete services and measuring them, and the many factors which influence natural resource health. Interviewees called for a clearly defined scope, regular and clear communication with stakeholders, and close collaboration across all the Kitsap County jurisdictions.

Numerous interviewees talked about a natural resources asset management program as a way to communicate more clearly and effectively with the public about natural assets and why investment in them is needed. There was the sense that bringing about a shift in the way people think about natural resources – from “nice to have” (or even from “barriers to development”) to critical assets vital to human and economic wellbeing would be helpful.

Overall, a Natural Resources Asset Management Plan is seen as an opportunity to improve human wellbeing, create more visibility and support for natural resource protection and restoration, and incorporate more rigorous approaches into the County’s policies to respond to current and future environmental needs.

Opportunities associated with development of a Natural Resources Asset Management Plan in Kitsap County

Interviewees identified specific opportunities and provided recommendations to addressing potential opportunities and risks associated with developing a Natural Resources Asset Management Plan in Kitsap County. Key themes included:

Raising awareness and visibility about the value of ecosystems

A Natural Resources Asset Management Plan would offer more visibility about the need to maintain ecosystems for all stakeholders by:

- Presenting policy-makers with tangible data on current ecosystems and making them aware of ecosystems’ value, their overall impact on Kitsap County, and restoration needs. One interviewee noted that *“Attaching projects to avoided costs and costs savings makes it more politically viable”*.
- Educating people and encouraging more sustainable behaviors, including creating better understanding about the impact of their actions and how they could impact natural resources and public services downstream (for example, communicating that people’s actions on their lands could affect their drinking water).

Enabling better planning and providing predictability for stakeholders

A Natural Resources Asset Management Plan would make the County’s environmental objectives and planned investments more visible within the county planning and budgeting processes and offer more predictability for stakeholders. Another interviewee mentioned that this initiative could help local governments better incorporate protection of ecosystems into their fiscal and accounting processes.

Making a shift in paradigm: From natural resources to public services

Interviewees highlighted that a natural resources management plan might help cause a shift in paradigm toward natural resources being perceived as public assets that require investments in regular maintenance, especially as population is growing. One interviewee noted that *“Historically, natural resources have not been seen as assets, and, in some situations, they were even perceived as liability, so there is a mentality shift that needs to happen in terms of capital improvement.”* Another interviewee mentioned that *“When thinking about public infrastructure like roads, pipes, lands, the public generally sees them as public assets that are maintained by our local government and, as communities grow, they expect authorities to invest in that type of infrastructure to accommodate the growing population. People should think about natural resources in a similar way, that natural resources should be taken care of by authorities as public services.”*

Facilitating further implementation of current environmental regulations

Ensuring full implementation of current environmental regulations plays a key role in protecting natural resources. Specifically, interviewees highlighted that a Natural Resources Asset Management Plan could be instrumental in helping city and tribal governments to more effectively implement current regulations, including critical areas ordinances, and further improve related business processes such as permitting and compliance.

Key elements of a successful Natural Resources Asset Management Plan

Interviewees were asked what they would like to see in a Natural Resources Asset Management Plan and the process to explore development of the plan. Their input is reflected below, including several suggestions and strategies to address potential challenges.

- **Feasibility and sustainability:** Interviewees emphasized that, to be successful, a program must be feasible to implement and sustainable in the long-term. Data availability will be crucial to ensure the County can perform regular monitoring and establish measurable standards, as well as the ability to run the program in the context of existing services and departments. Under current structures and funding, it is unlikely that significant new data gathering could be undertaken.
- **Affordability:** Resource constraints could be a barrier to developing and implementing the program. It was stressed that the Program should be designed in a way that the County can afford to maintain it. One interviewee indicated that using this Program as a basis to develop a capital facilities plan focused on natural resources infrastructure and linked with land use could be beneficial for Kitsap County.
- **Moving beyond “no net loss” goals to restoration and resiliency.** Interviewees recommended to focus on the “net ecological benefit” when defining levels of ecosystem services. One interviewee mentioned that *“as the region and population grows, “no net loss” will not be enough and policy-makers should be thinking about a “net gain” approach in the future”*.
- **Considering the unique characteristics and needs of the County.** Interviewees indicated that recognizing the unique characteristics of the Kitsap County will be important. For example, producing water for use in Kitsap County requires a unique process compared to other regions in the state: since the County does not have significant water underground storage, clean water needs to be generated daily by the Kitsap Public Utilities District. One aspect to potentially incorporate in the Plan is to consider expanding water recycling and reuse, including for wastewater and stormwater. As Kitsap County relies on rainfall for its drinking water supply, water recycling and reuse for non-drinking uses can help reduce its dependency on groundwater supply. One metric could also be to look at how many days a year the County gets rainfall. One interviewee also suggested that it would be beneficial to have a standard at the County level on water quality.
- **Protection of Tribal cultural values.** All the Tribal interviewees stressed that it is highly important to acknowledge tribal cultural values in the Natural Resources Asset Management Plan, though everyone cautioned that it is difficult to assign particular “values” to the Tribal cultural framework. One interviewee indicated that Tribal cultural values could fall under two main categories, i.e.:
 - a. Physical natural resources areas used for food harvesting and hunting such as trail trees and medicinal plants, and
 - b. Identity-attached areas used for spiritual gatherings and recreation.

Conservation of such areas is a central aspect for Tribes as it relates to their economic, health, and spiritual wellbeing. One suggested potential level of service is to measure the health of the ecosystems that are important to Tribes (e.g., Hood Canal), including to what extent Tribal members still have access to those areas and are able to conduct their traditional activities, and how many natural resources areas in Kitsap County have been closed to the public in the last years due to degradation and/or contamination. It was noted that Tribes have seen many of these areas reduced in the last years. Suquamish's Tribe Shellfish Program is an example of how Tribal jurisdictions are working to assess some of the historical harvest locations and recertify shellfish that is fit for human consumption.

- **Conservation of natural resources in rural areas.** Some interviewees highlighted that the County's rural ecosystems tend to be richer than in urban areas and therefore they require higher levels of conservation. It was also noted that levels of ecosystem services considered for rural VS urban areas might need to be different. To protect natural resources in rural areas, several suggestions were advanced:
 - Consider introducing rural transportation impact fees.
 - Propose measures to fully utilize cities and ensure they hold the largest concentrations of population, to avoid hampering areas rich in natural resources such as rural areas.
 - Propose designated urban areas where building development should happen, as this supports a small footprint on the areas that might host a vast array of natural resources

On the other hand, it was also highlighted that urban areas have been impacted by development over the last years and an opportunity with the Natural Resources Asset Management Plan could be to apply some standards for urban growth and protection of natural resources in urban areas.

- **Ensuring there are no inadvertent impacts.** Interviewees recommended to consider carefully the levels of ecosystem services proposed to ensure they will not be detrimental to other natural resources not addressed in the Program. To prevent this, it was suggested that the program should be based on scientific evidence currently available to justify any measures and standards proposed.

It was also noted that some fiscal policies may inadvertently cause degradation of natural resources and that the measures proposed in the Program should not sacrifice quality of natural resource protection over more growth. One interviewee noted that a potential challenge for the Program will be to make sure it is consistent with current regulations in place and provided as an example the Growth Management Act. Other interviewees indicated that potential risks to success with this Program could also be political pressure for other competing priorities or regulation as an outcome from this initiative.

Suggested steps to explore for the development of the Natural Resources Asset Management Plan

- **Defining a clear scope of the Natural Resources Asset Management Plan.** Interviewees highlighted that due to the diversity and complexity of natural resources, it will be important to define a clear scope of the Natural Resources Asset Management Plan. The Plan should acknowledge that natural resources are needed not only for the services they provide, but also because of their esthetic, health, and recreational values. Interviewees mentioned that "*natural resources define communities and are used as recreation and spiritual places*" and that the "*quality of life in Kitsap County is driven by the result of healthy natural resources*". One interviewee recommended that, in the initial phase, the County could conduct a pilot at a small scale to determine the

feasibility and impact of the Plan. It was also suggested that gathering data about human wellbeing in the County by asking the population about the current level of ecosystem services desired (e.g., what do they like about marine areas) could help inform the scope of the program.

- **Looking at the state of play and mapping current ecosystem services.** Interviewees mentioned that a first step in determining the current status and restoration needs of the Kitsap County ecosystems will be to define the discrete services of interest, identify ways to measure them, and conduct some initial mapping and baseline data collection. A step forward will be to establish a process to monitor ecosystem services on a regular basis. This will entail close collaboration and information sharing with the County and Puget Sound's jurisdictions to leverage already existing data, which would also help reduce some of the costs for maintaining the Natural Resources Asset Management Program. Kitsap County Public Works collects water quality data for water streams, lakes, and marine shorelines which could be used. It was also recognized that performing remote monitoring of natural resources likely is not a viable option for the County at this point due to the expensive technology required.
- **Stakeholder communication across all the development phases.** Almost all the interviewees indicated that communication with stakeholders will be key to successfully developing a program and gaining support. Early and clear communication can help prevent misunderstandings and barriers down the road. Specific recommendations were made for how to communicate to the general public and policy-makers.
 - a) *Communicating with policy-makers:* Having the support of policy-makers and senior management across jurisdictions in Kitsap County will be necessary to develop and implement the Program. One interviewee noted that it will be necessary to highlight, especially for policy-makers, that the Program will enable a good resource management: for example, having healthy watersheds can reduce capital investments in stormwater facilities downstream.
 - b) *Communicating to the public:* Interviewees highlighted that a central aspect will be to manage public perceptions and expectations. Interviewees recommended that it will be important to highlight from the beginning the benefits of this initiative and ensure that it is not being perceived as a one-sided environmental advocacy program. Interviewees indicated that the following questions might need to be addressed with the public:
 - What are the objectives and expected outcomes from this program
 - How this initiative will benefit them
 - Why the County invests in this effort
 - How the public will be impacted. This will entail addressing concerns about any potential changes to current public fees, but also questions about how natural resources situated on private lands will be dealt with.
- **Carefully communicating the notion of “assigning value” to natural resources,** which might not resonate well with some people. Also, communities and jurisdictions might have different values and priority areas. For most interviewees the concept of a level of service was more comfortable than the concept of assigning a monetary value to natural resources.
- **Addressing any private property rights concerns upfront to mitigate future risks.** Many natural resources are situated both on public and private lands, or in the vicinity of communities that might rely on those ecosystems

for economic, recreational, and spiritual activities. As a result, some jurisdictions, communities, and landowners might be concerned that they might be losing land space or access to certain land or water areas. Interviewees indicated that the County should identify and address upfront this type of concerns. It was also recommended that the County could look at its Transfer of Developments Rights Program and consider establishing conservation easements with landowners, where needed.

- **Close collaboration across jurisdictions as a prerequisite to ensure full implementation of the Program:** Interviewees noted that natural resources do not have boundaries and different communities and jurisdictions may have different measures in place regarding ecosystem protection. Ensuring coordination across jurisdictions on measures and levels of ecosystems considered, taking into account that there are different jurisdictions and community goals across Kitsap County will be important. One interviewee recommended to define what levels of ecosystem services could be called the "*optimal amount*", while another one recommended to potentially develop appraisal evaluations for ecosystem services.

Additionally, asset management plans might require changes in processes. Interviewees noted that institutions "*are not necessarily nimble and agile*" and that they can be "*slow bodies to respond to change*". One way to address this potential barrier would be to communicate regularly with the institutions who would be involved in this initiative, with an emphasis on the end goal, and provide an expected timeline for development and/or implementation of the Program.

Suggested levels of ecosystem services for the Natural Resources Asset Management Plan

Interviewees were asked to share specific suggestions about the levels of ecosystem services provided by streams, forests, and marine shorelines. Most interviewees discussed attributes of these ecosystems, ways to conceptualize and potentially measure the health of these ecosystem. A few interviewees also discussed types of services these natural assets provide. Input is included in the table below.

Suggested levels of ecosystem services to be provided by streams, forests, and marine shorelines	
Streams & freshwater systems	<ul style="list-style-type: none"> • Water quality, including availability of clean water, presence of litter, and water contamination (e.g., using bacteria as a proxy for human influence on streams) • Water temperature • Sediment quality, including excess sediment • Man-made barriers or damages • Instream flow • Level of water infiltration • Filtering/treatment capacity of riparian areas and wetlands • Buffering/storage capacity of wetlands and floodplains (e.g., in high rainfall events) • Water for human consumption and enjoyment (flows) • Water for fish production (flows) • Quality and quantity of water habitat, including ensuring habitat streams are classified correctly • Type of biodiversity supported (e.g., presence/absence of fish), including salmon recovery • Food returns, including areas fit for fishing • Stormwater impact, including ensuring appropriate stormwater treatment to limit impact on streams • Vegetation around the streams, including removing invasive species • Watershed health

	<ul style="list-style-type: none"> • Number of days a year the County gets rainfall • Rainfall impact on streams
Forests	<ul style="list-style-type: none"> • Forest maintenance • Forest diversity (e.g., number of seed trees, availability of medicinal plants) and categories (e.g., mountain forests, etc.) • Flora and fauna/species diversity, lifecycle, and conservation efforts (e.g., salmon recovery planning) • Soil maintenance as part of the forests ecosystems services in order to manage waterflows effectively • The ability of the forest to capture carbon • The ability of a forest to provide a good level of air quality, including ensuring nitrogen dioxide emissions are limited and that the nitrogen dioxide air quality standard is met. • Number of parks and recreation areas in urban environments • Health of green infrastructure and rain gardens • Current areas with ecological restoration work • Areas closed to the public in the last years • Hunt control • Hydrologic maturity of forests • Forest attributes that are resilient to climate change and carbon reduction • Potential for aquifer recharge
Marine shorelines	<ul style="list-style-type: none"> • Type of biodiversity supported, including availability of fish • Accessibility to marine shorelines for harvest and recreational activities • Food returns • Level of contamination and pollution, including number of areas closed for shellfish harvest due to marine shoreline contamination • Sediment quality, including excess sediment • Shoreline changes in the last years, including level of degradation • Man-made barriers or damages • Presence of forage fish

Perceptions on how Kitsap County protects natural assets and recommendations for improvement

Interviewees were asked how Kitsap County is currently protecting natural assets and in what areas they would like to see improvements. Most interviewees felt the County was doing a relatively good job on natural resources; although some interviewees expressed concerns about permit and land use exceptions.

The following initiatives currently conducted by the County were appreciated by stakeholders:

- The Shore Friendly Kitsap Program working with property owners to take certain conservation measures on their shoreline, which includes grants to landowners for shoreline restoration and brings experts to talk with them to make informed decisions.
- The Shoreline Master Program (SMP) has delivered good results.
- Critical Areas Ordinances.
- The Stormwater Fee is necessary to support services that reduce the impact of water pollution.

- The Pollution Identification and Correction (PIC) Program, is a valuable tool to restore shellfish growing areas and reverse declining water quality trends.
- The Kitsap Nearshore Habitat Assessments aiming to develop a science-based protocol for determining priorities and strategies for improving nearshore ecosystem functions.
- The ongoing outreach and education conducted by the County to promote protection of natural resources is very much appreciated by stakeholders.

Suggested areas that might need further consideration from Kitsap County to better protect natural resources:

- There might be old requirements and standards related to building development that could be updated in Kitsap County to better protect natural resources and encourage sustainable growth in urban areas. Examples include:
 - Single family developments not exempt from certain taxes in some cities.
 - WA's statutory vesting interests that allows investors to lock in regulations at the time they submit a proposal than at the time they start the actual construction. This may be a loophole in the WA regulatory framework.
- Some urban areas that fall under Kitsap County's management could be managed by cities that may be better connected to those areas.
- Overall, interviewees noted that tracking compliance of current County regulations is important. One interviewee suggested that the Critical Areas Ordinance could be better enforced and that the 20% buffer areas stipulated in the ordinance may not incentivize the landowner to protect natural resources.
- Pollution was highlighted as one of the central issues of the Puget Sound Region, hence further focusing on water quality, PCBs clean-up, and gathering toxicity data would be valuable. It was also suggested that setting guidelines for quality standards in shellfish would be helpful in performing assessment and determining contamination.

Engagement going forward

In Spring 2019, WEC will develop a framework and options for identifying levels of ecosystem services provided by streams, forests, and marine shorelines. In parallel, up to four consultation workshops will be held with stakeholders to further scope Kitsap County's jurisdictions' needs. All the stakeholders interviewed indicated their interest in being involved in the development of the Natural Resources Asset Management Program through consultation, information sharing, and reviews of any preliminary products. By June 2019, WEC will develop policy and funding options for the County to consider in subsequent phases of program development.

Suggested resources and examples to consider going forward

- Puget Sound Regional Council's Regional Growth Strategy
- The current initiative to assess the benefits of restoration in the Stillaguamish Estuary
- British Columbia's report on [Municipal Natural Assets Initiative](#): Results from The First National Cohort

- Counting on Nature's Benefits, [ValuES: Methods for integrating ecosystem services into policy, planning, and practice](#). A short article on ValuES can be found [here](#).
- [Ecosystem Services: A Guide for Decision Makers](#)
- [Earth Economics](#)' activity on Ecosystem Services Valuation
- Canadian Parks Council's report on [Valuing the Quality of Freshwater, Salmon Habitat – A Pilot Project](#)
- The Economics of Ecosystems and Biodiversity (TEEB) [report for Local and Regional Policy Makers](#)
- The Suquamish Tribe's [Blackjack Creek Restoration Plan](#)
- Skagit County's protection of natural resources and low-density residential use in some areas
- The City of Bainbridge Island's updates to the critical areas ordinances and current case with the Kitsap County Association of Realtors
- The "Hirst decision" about protection of Washington State's water resources
- Interviewees also recommended to connect with the Snohomish County and the City of Bellevue, as they might have related initiatives to look at when developing the Natural Resources Asset Management Plan.

APPENDIX 1 – List of organizations and individuals interviewed

Name	Organization
Karla Boughton, Planning and Economic Development Director	City of Poulsbo
Allison Satter, Senior Planner	City of Bremerton
Dave Greetham, Senior Planner Christy Carr, Manager for the City's Shoreline Master Program update	City of Bainbridge Island
Nick Bond, Community Development Director	City of Port Orchard
Chris May, Stormwater Manager	Kitsap County Public Works
Hansi Hals, Natural Resources Department Director	Jamestown S'Klallam Tribe
Scott Brewer, Executive Director	Hood Canal Coordinating Council
Cynthia Rossi, Habitat Protection Program Manager	Point No Point Treaty Council
Bob Hunter, General Manager	Kitsap Public Utilities District
Alison O'Sullivan, Biologist Tom Ostrom, Salmon Recovery Coordinator	Suquamish Tribe
Paul McCollum, Natural Resources Director Roma Call, Environmental Program Manager	Port Gamble S'Klallam Tribe
Dave Ward, Planning and Environmental Programs Manager David Nash, GIS Analyst	Kitsap County Department of Community Development
Jonathan Decker, Conservation Director	Great Peninsula Conservancy
Randy Middaugh, Principal Planner	Planning and Development Services, Snohomish County

APPENDIX 2 – INTERVIEW GUIDES

A. GOVERNMENT

Kitsap County Natural Resources Asset Management Program Initial Interviews

The purpose of the interview is to understand your views and ideas about framing a Natural Resources Asset Management program in Kitsap County. Information from the interviews will be used to help guide our research into potential program models and elements and to help us scope and plan for the first joint workshop on this effort. More information on the Natural Resources Asset Management Project is in the attached one-pager.

We anticipate interviews will be by telephone and will take about an hour. We will summarize key themes and ideas from interviews, but we will not attribute individual comments to any individual interviewee. We would like to discuss the following questions:

1. The concept of ecosystem services has been around for many years, but no one in our region has successfully incorporated them into County planning processes. What can we gain by approaching natural resources asset management in Kitsap County? What are the biggest opportunities with this initiative, how could it be helpful to your organization?
2. What are the biggest risks to success with this initiative?
3. What ideas do you have for defining the level of ecosystem services provided by:
 - a. Streams?
 - b. Forests?
 - c. Marine shorelines?
4. What are the biggest institutional barriers we might encounter as we pursue options for a Natural Assets Management Program?
5. What do you suggest we do to address those barriers?
6. How would you like to be involved in the development of a potential Natural Resources Asset Management program?
7. What would you like to see in a Natural Resources Asset Management program?
8. How does your organization currently make decisions around what it would consider natural assets? What natural resource asset management systems do you use?
9. From your perspective, how is Kitsap County successfully protecting natural assets? In what areas would you like to see improvement?
10. How do you see your organization interacting with other partners around natural areas protection?
11. What if any 'levels of ecosystem services' are being considered by your organization for natural resources?
12. Are you familiar with any other models or examples?

B. TRIBES

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2. What are the biggest risks to success with this initiative?
3. What ideas do you have for defining the level of ecosystem services provided by:
 - a. Streams?
 - b. Forests?
 - c. Marine shorelines?
4. What are the biggest institutional barriers we might encounter as we pursue options for a Natural Assets Management Program?
5. What do you suggest we do to address those barriers?
6. How would you like to be involved in the development of a potential Natural Resources Asset Management program?
7. What would you like to see in a Natural Resources Asset Management program?
8. Are you familiar with any other models or examples?
9. Cultural values must be incorporated into the framework for ecosystem services. Do you have examples that would guide us from your natural resource planning and tribal policies? Would you be willing to share your natural resource planning examples with the county?
10. How would you describe the county's efforts to protect natural assets? What values, places, resources, etc. would you like to see the county prioritize when protecting forests, streams and shorelines?
11. Can you tell us about projects or examples of culturally significant protection of natural resources that you've focused on?
12. What does a positive working relationship with the county look like to you?

C. NON-GOVERNMENT

Kitsap County Natural Resources Asset Management Program Initial Interviews

The purpose of the interview is to understand your views and ideas about framing a Natural Resources Asset Management program in Kitsap County. Information from the interviews will be used to help guide our research into potential program models and elements and to help us scope and plan for the first joint workshop on this effort. More information on the Natural Resources Asset Management project is in the attached one-pager.

We anticipate interviews will be by telephone and will take about an hour. We will summarize key themes and ideas from interviews, but we will not attribute individual comments to any individual interviewee. We would like to discuss the following questions.

1. The concept of ecosystem services has been around for many years, but no one in our region has successfully incorporated them into County planning processes. What can we gain by approaching natural resources asset management in Kitsap County? What are the biggest opportunities with this initiative, how could it be helpful to your organization?
2. What are the biggest risks to success with this initiative?
3. What ideas do you have for defining the level of ecosystem services provided by
 - a. Streams?
 - b. Forests?
 - c. Marine shorelines?
4. What are the biggest institutional barriers we might encounter as we pursue options for a Natural Assets Management Program?
5. What do you suggest we do to address those barriers?
6. How would you like to be involved in the development of a potential Natural Resources Asset Management program?
7. What would you like to see in a natural asset management program?
8. What opportunities do you see in the county creating and implementing a natural resources asset management system?
9. would you prioritize as the most significant local needs for this type of system?
10. What do you think are the necessary components of such a system?
11. Are you familiar with any other models or examples?
12. Does the Great Peninsula Conservancy use a model when it looks at or evaluates new projects?
13. How do you currently work with the county and tribes on planning and development concerns?



**RESILIENT WATER PRACTICES SUPPORT
ECOSYSTEM SERVICES AND COMMUNITY HEALTH.**





Natural Resources Asset Management Program – *must have across organizations:*

- Must be durable (long-term commitment)
- Must be manageable and sustainable with existing County resources and mapable information
- Must incorporate tribal interests and cultural values
- Must increase ecosystem resilience anchored by resilient water systems
- Must account for ecosystem services provided by natural resources to protect them, including climate change
- Must use existing/ongoing data (GIS, monitoring)

Case study 1: Town of Gibsons Natural Asset Management 2009-2018



**Parkland Reservoir:
Engineered Asset**



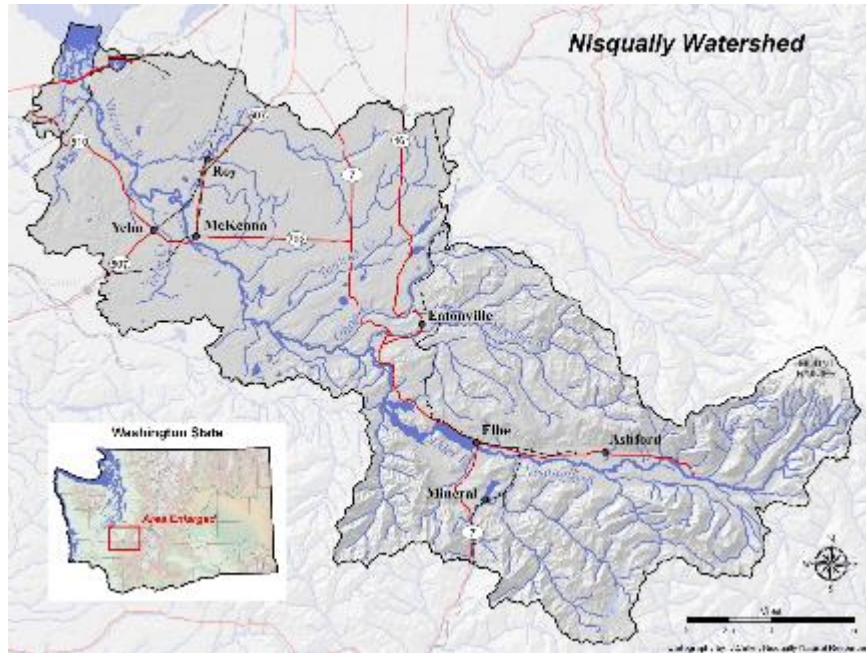
**Gibsons Aquifer:
Natural Asset**

Case study 2: Combining Flood Protection and Habitat Restoration 2014

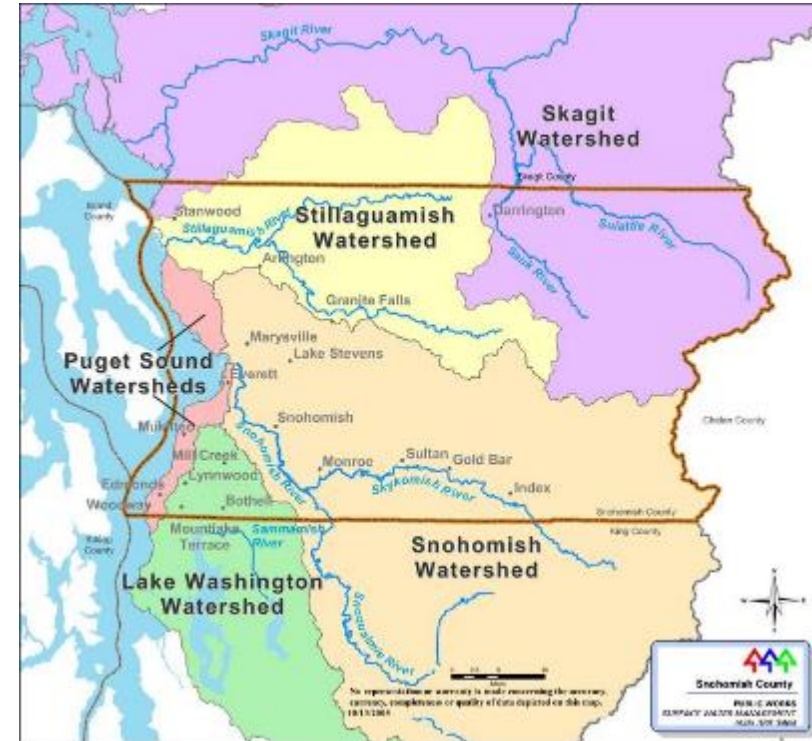
**Thornton Creek
Seattle, WA**



Case study 3: Watershed Services and Transaction Demonstration Project 2011

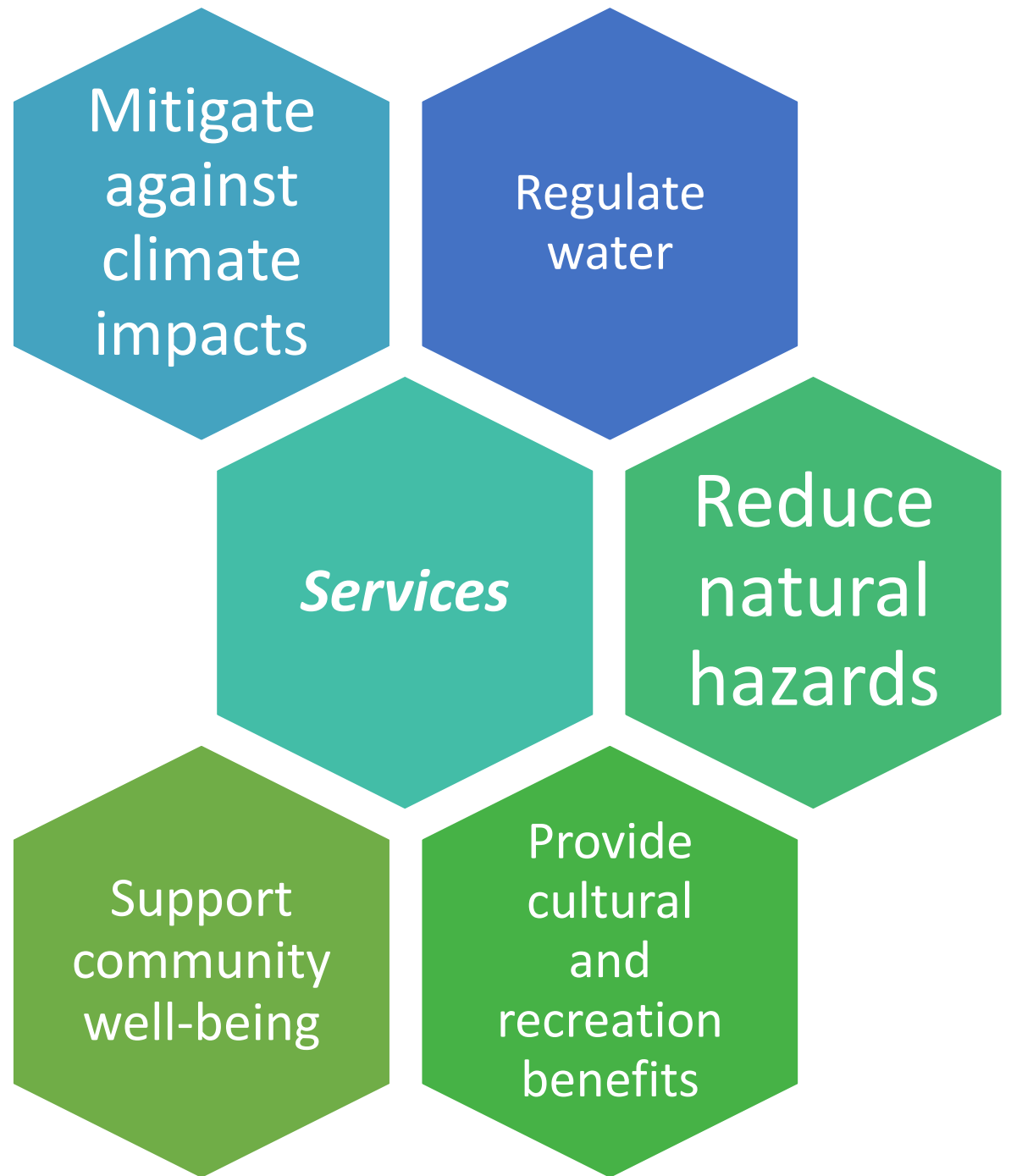


Nisqually Watershed



Snohomish Watershed

Ecosystem Services



Definitions

Level of service: A ranked metric usually used for capital facilities and grey infrastructure to define the kind and level of service that is appropriate for meeting the needs of the community

Natural asset: This project will focus on streams, forest and shorelines. The scale at which we define natural assets will need to be decided on.

Asset management: A tool for organizing and implementing strategies for extending the service and lifetime of critical infrastructure

Structure: Physical features of the ecosystem, which in this case need to be measurable using existing data sets and geographic information system (GIS) (i.e. forest cover, species composition, road density, stream connectivity, etc.). Structure can also refer to measurable attributes of an ecosystem that serves as a proxy for getting at a service.

Pressures: Activities that directly or indirectly change the condition of the ecosystem

Function: The role that structure plays in the ecosystem (i.e. flow control, shade, woody debris, etc.).

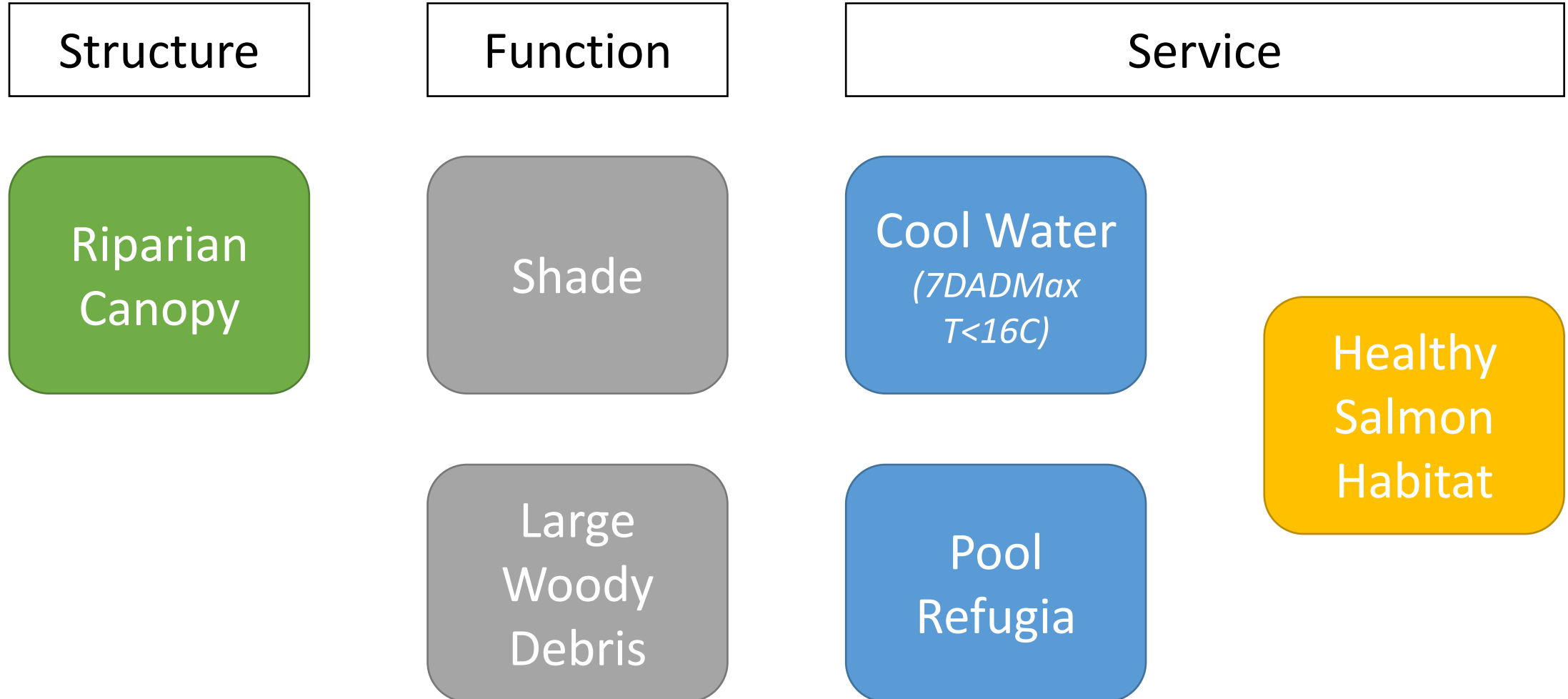
Service: The outcome of a function within the ecosystem (i.e. water quality, hydrologic control, pool refugia, erosion control etc.).

Benefit: The ecosystem service to humans, animals and the environment (i.e. clean drinking water, sense of place, recreation, etc.)

Defining Levels of Service – Gray Infrastructure

Level of Service	Description	Volume-to-Capacity Ratio
A	Highest driver comfort; free flowing	<.60
B	High degree of driver comfort; little delay	0.60-0.70
C	Acceptable level of driver comfort; some delay	0.70-0.80
D	Some driver frustration; moderate delay	0.80-0.90
E	High level of driver frustration; high levels of delay	0.90-1.00
F	Highest level of driver frustration; excessive delays	>1.00

Example



Riparian forest cover and peak summer stream temperature

Rating	Forest Cover (example: could be defined as cover within a particular distance from stream centerlines)	Level of Service (Temperature degrees C)
A	80-100%	7DADMax <16 – cool water that fully meets the needs of salmon
B	60-80%	16-17.5 – cool water that partially meets the needs of salmon
C	40-60%	17.5-22 – warm water that does not meet the needs of salmon
D	<40%	>22 – warm water that approaches lethal levels for salmon survival

Structure

Riparian Canopy

Function

Shade

Service

Cool Water
(7DADMax
T<16C)

Healthy
Salmon Habitat

Road Disturbance

Rating	Density (km of road per sq. km of land area)	Level of Service
A	<10%	Natural area is maintained
B	10% - 35%	Natural area is relatively maintained
C	35% - 65%	Natural area is impacted
D	<65%	Natural area is heavily impacted

Impervious Surface Thresholds

Rating	Impervious surfaces threshold	Level of Service
A	<5%	Land cover is forested/ has wetlands
B	5% - 10%	Land cover has light development
C	10% - 25%	Land cover is significantly developed
D	<25%	Land cover is heavily developed

Clean Water Act Section 303(d) listings for fecal coliform bacteria

Rating	Number of 303(d) Listings for fecal coliform bacteria within a Watershed	Level of Service (Clean Water)
A	<1	All waters safe for Extraordinary or primary contact
B	1-3	Majority waters safe for Extraordinary or primary contact
C	3-5	Some waters safe for Primary contact recreation
D	<5	Inadequate access to safe waters

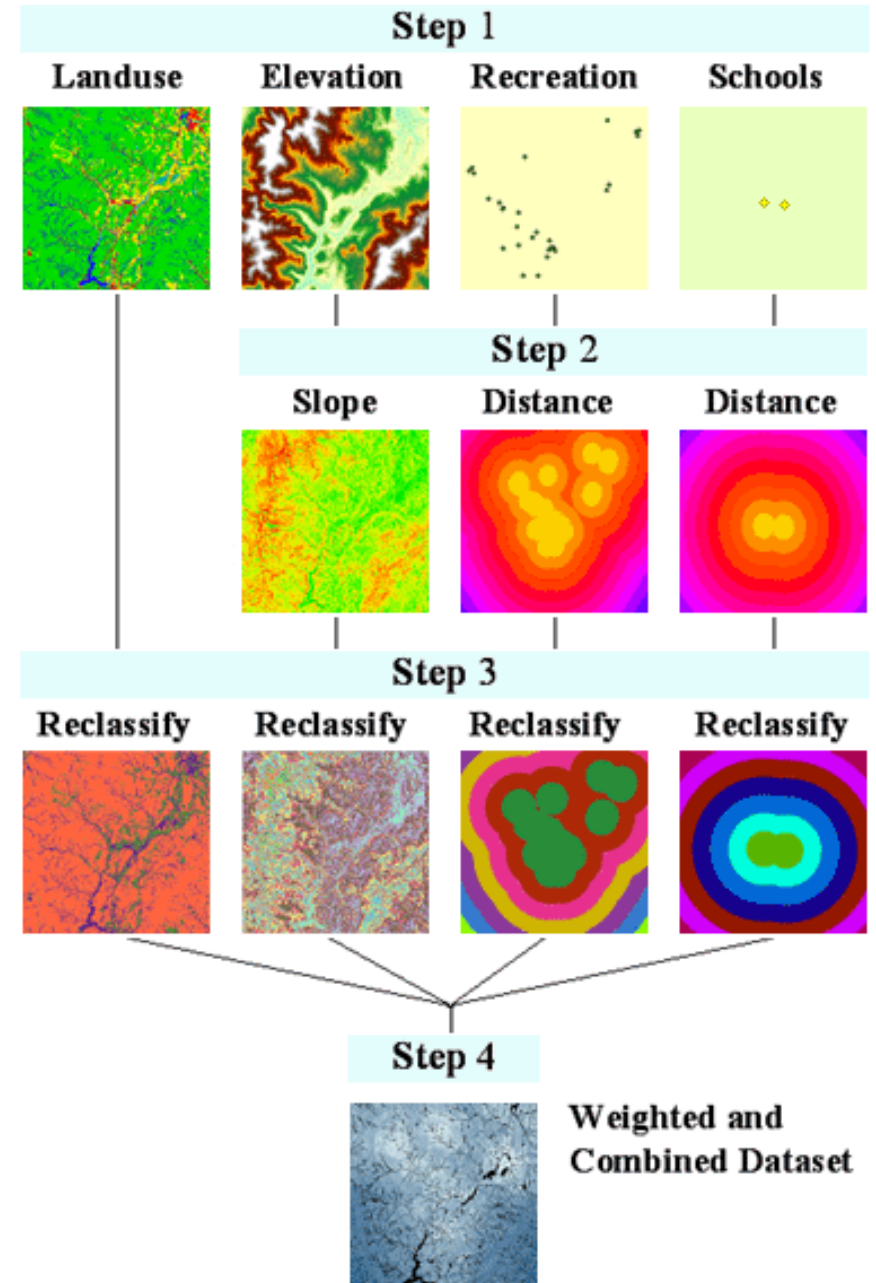
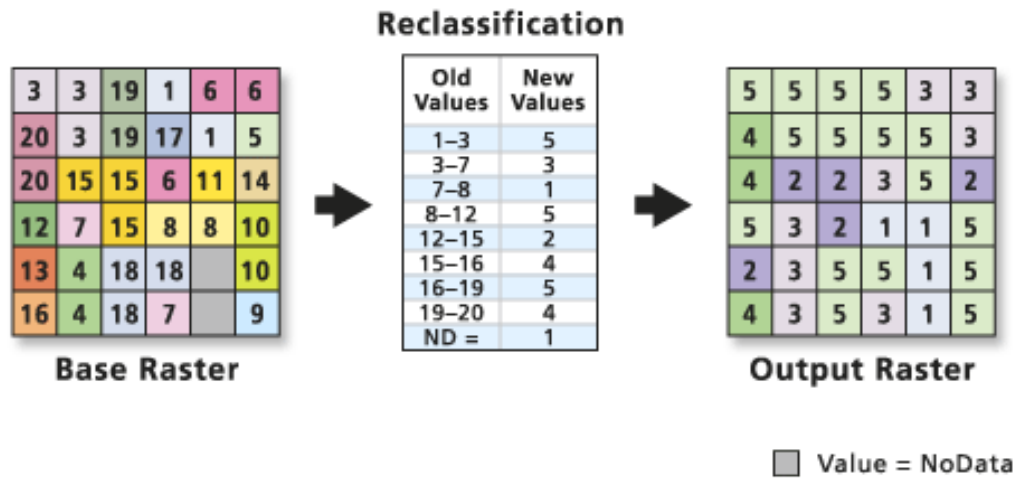
Fecal Coliform

Rating	% Urban Lands	Level of Service (Number of Organisms)
D	>32% (based on linear relationship between %urban lands and fecal coliform concentrations in Chico Creek)	>100 org/100mL and 10% samples are >200 org/100mL fecal coliform – likely does not provide safe access for primary contact recreation
C	17-23%	<60 org/100 mL and 10% samples are <100 org/100mL – may provides safe access for primary contact recreation
B	13-17%	<40 org/100 mL and 10% samples are <75 org/100mL – likely provides safe access for primary contact recreation
A	<13%	<25 org/100 mL and 10 % samples are <50 org/100mL – most likely provides safe access for primary contact recreation and a significant margin of safety below water quality standards

Total Impervious Surface

Rating	Total Impervious and Pervious Surface Area	Level of Service (Total recharge)
A	<5%	Full recharge
B	<20%	Most recharge
C	<50%	Some recharge
D	<75%	Inadequate recharge

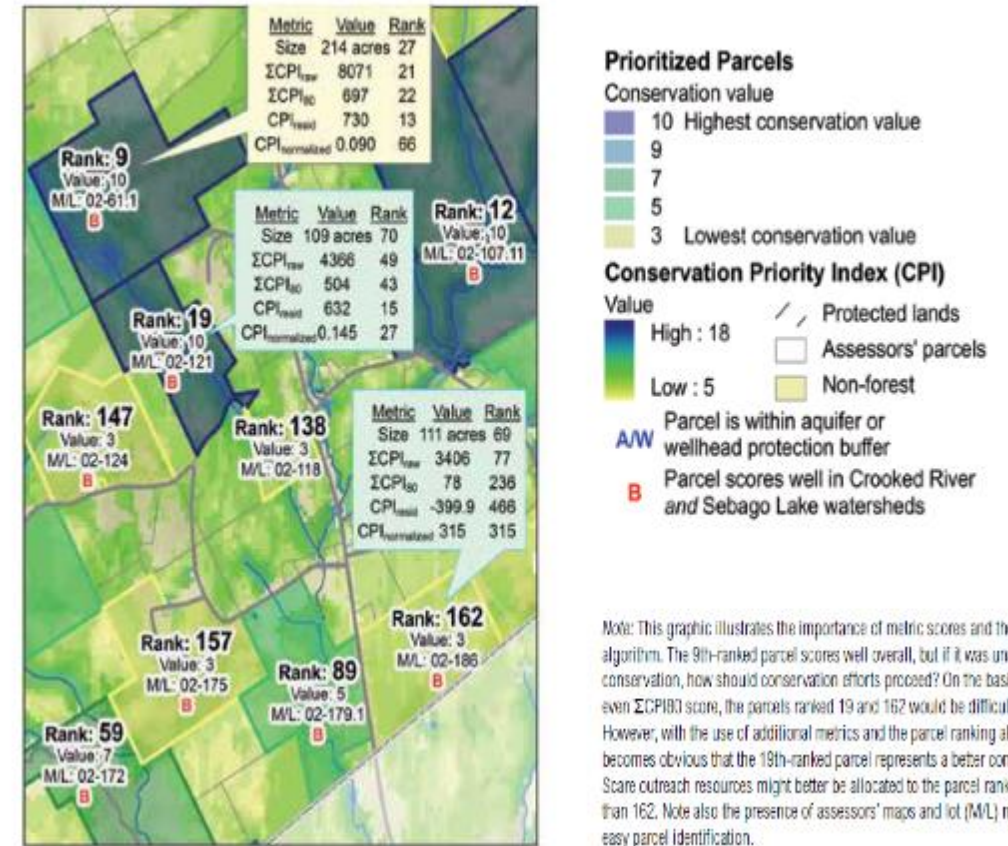
Aggregating Spatial Data



Aggregating Spatial Data: Potential Parameters for Land Use Water Quality Index

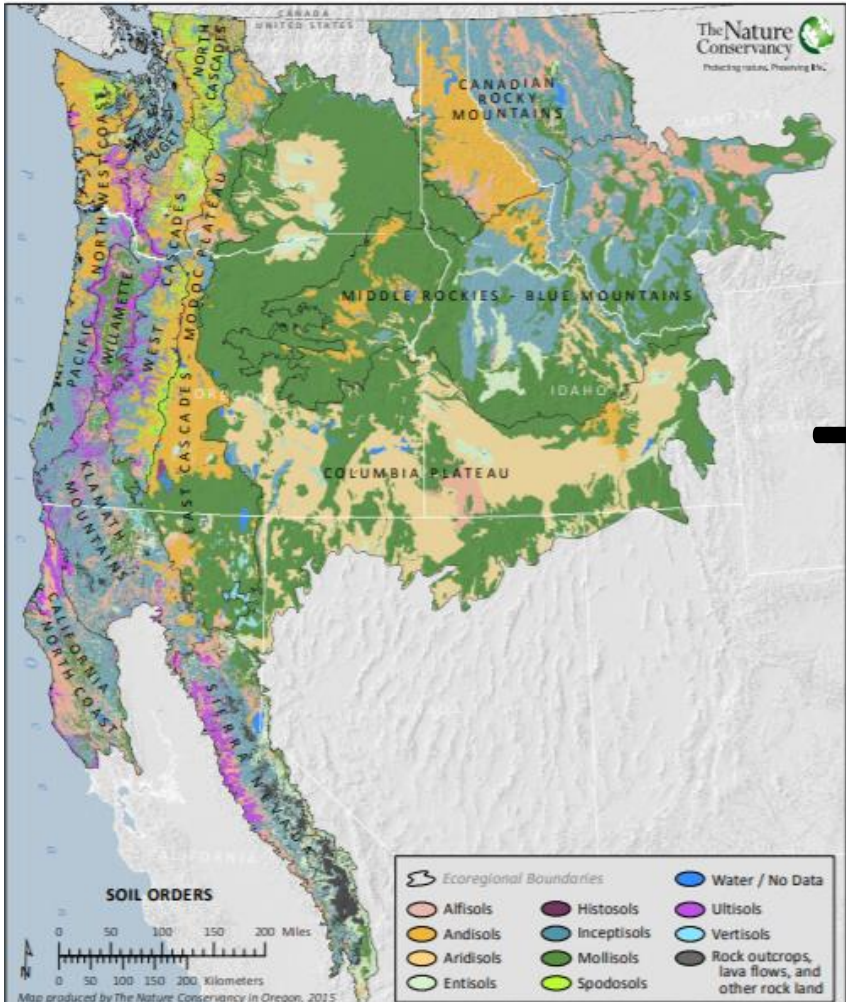
Parameter	Metric	Quality Score
Land Use	Land Cover Type (Forest 10- Developed Urban 1)	1-10
Canopy Cover	% Forest Cover (100% Cover 10- 0% Cover 1)	1-10
Roads	Road Density (>1 mile/ sq miles 10- <5 miles/square mile 1)	1-10
Soils	Permeability & Depth (<20 inches in depth 10->5 inches 1)	1-10
Slope	% Slope (>10% slope 10-<15% slope 1)	1-10

Figure 5 | Illustration of Parcel Prioritization



World Resources Institute, *Natural Infrastructure: Investing in Forested Landscapes for Source Water Protection in the United States, 2013.*

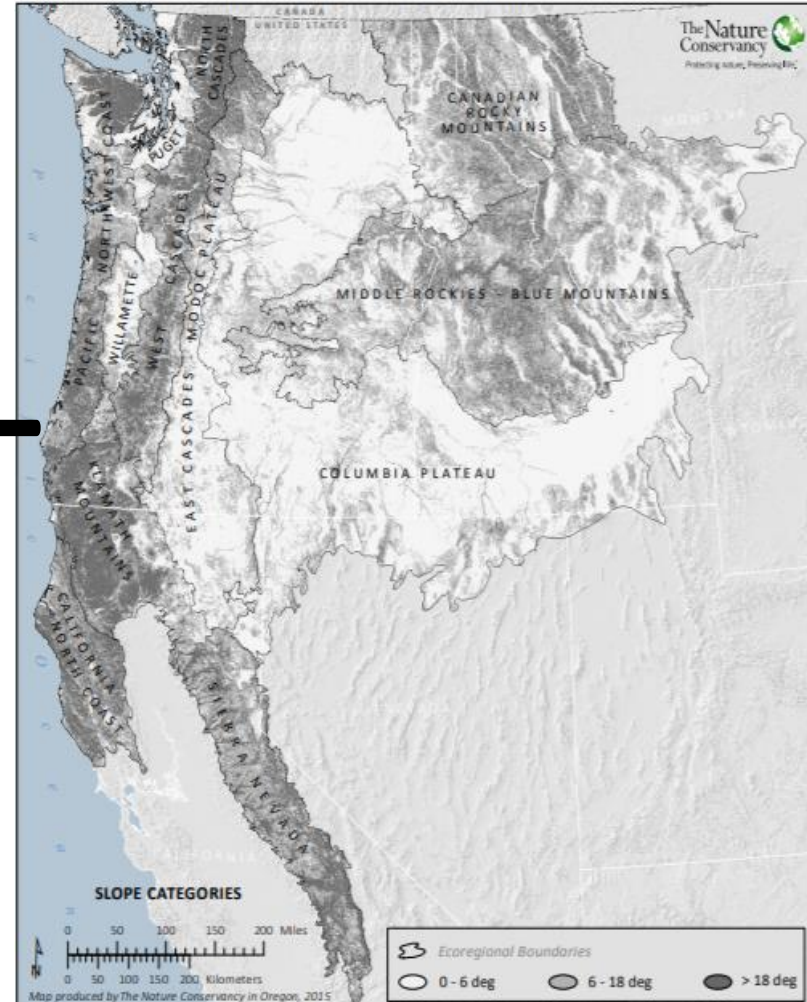
Map 5.2: Soil Orders Used for Land Facet Creation



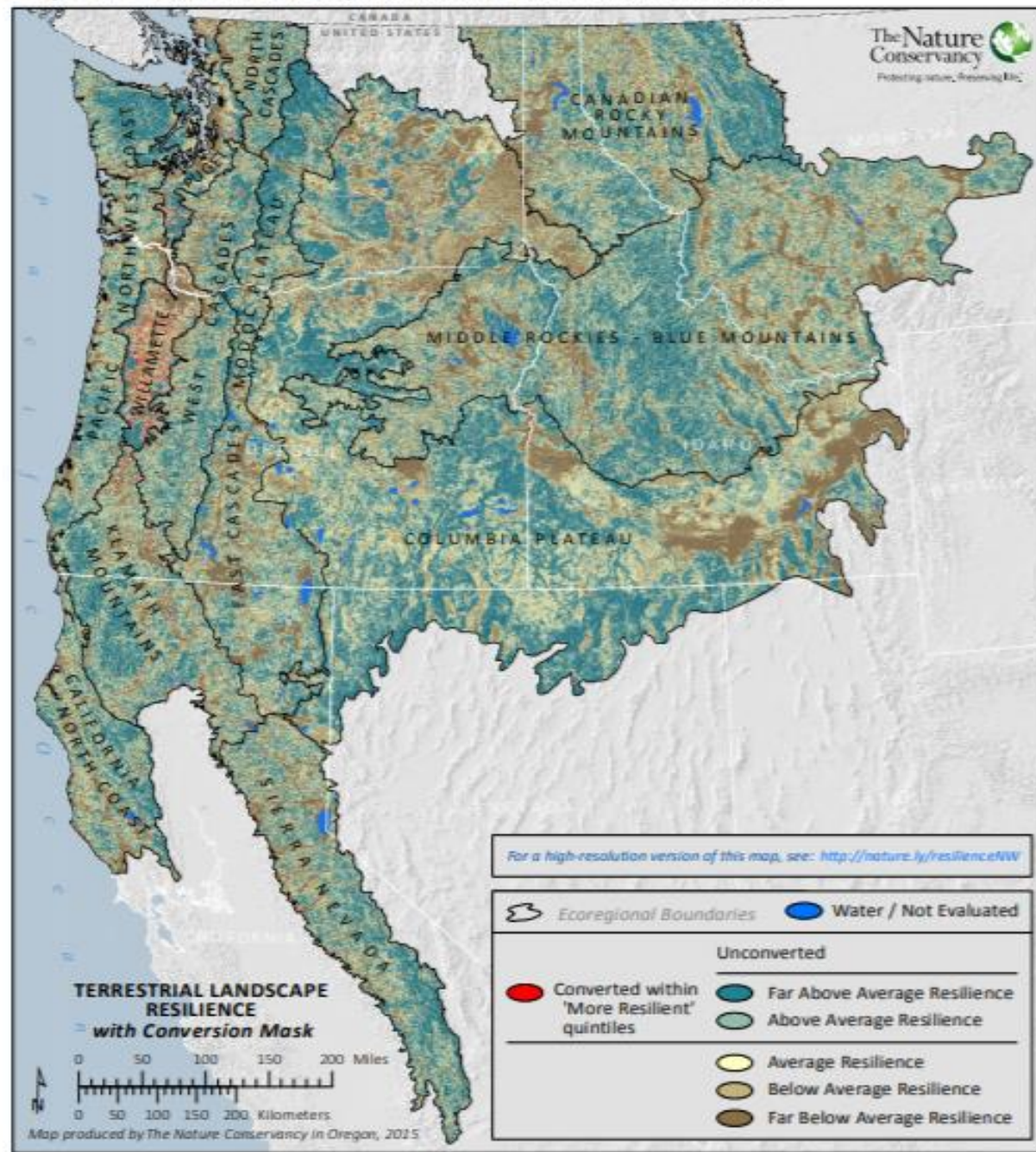
Map 5.3: Elevation Zones Used for Land Facet Creation



Map 5.4: Slope Categories Used for Land Facet Creation



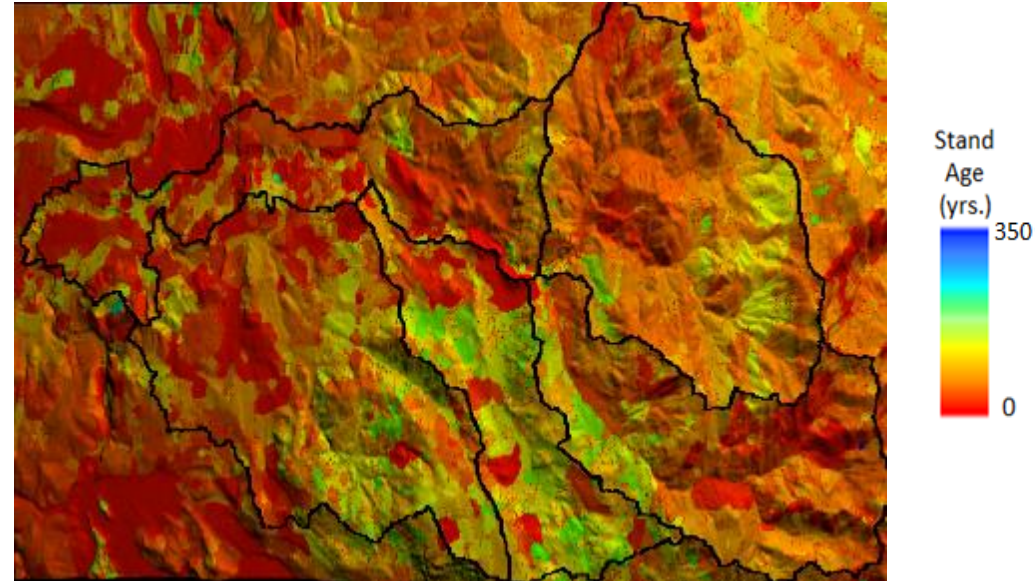
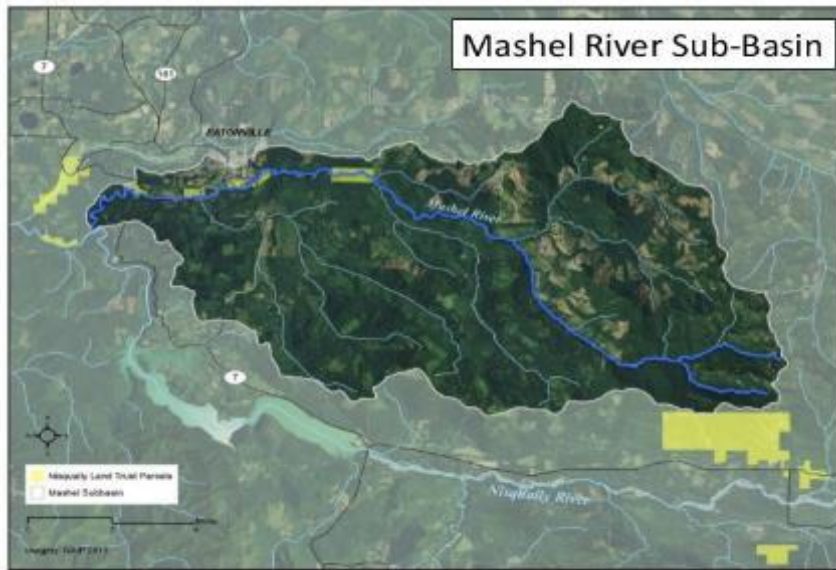
Map 8.3: Terrestrial Landscape Resilience, with Conversion Mask



A right aggregation approach for Kitsap County?

- What are the local priorities (water, wildlife, recreation, carbon storage etc.)?
- What values are we trying to protect?
- What are the best indicators of service value on the landscape?
- What is the available data?
- How is that data supported?
- What works best for operations and management over time?

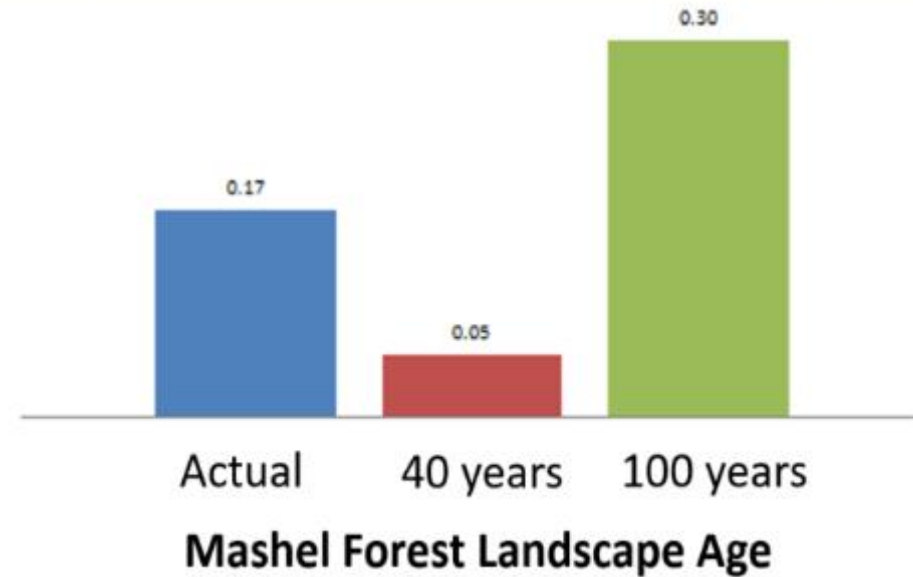
Complex Modeling: VELMA Case Study



Ecosystem Services evaluated by VELMA: water quality, water quantity, flood control, carbon storage, wildlife habitat and food and fiber production

Can longer forest harvest intervals increase summer streamflow for salmon recovery?

Yes, VELMA results indicate that establishment of older (>80 yr?) forest landscapes could significantly increase late summer streamflow compared to the present-day Mashel watershed



Using Complex Hydrological Models

- How much time or capacity can you allocate to collecting data and running a model?
- What are your goals?
- What are your thresholds for certainty?
- What scale do you want to work at?