Appendix 3 - Complete Set of Comment Submittals

The following comments were submitted to the consultant team. Comments from all respondents who asked to participate either in the survey, by commenting on the paper or through phone conversation were collected even after the stated closing date of March 19th, 2010 until April 9, 2010. Where respondents requested anonymity it has been honored. Text is included as it was sent and not corrected for typos or errors. Respondent email addresses and other private information has been removed for privacy. Submissions are listed in order received. A table of submissions and page numbers is included below.

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Submission 1:
From: Jon Simpson
Date: Mon, 8 Mar 2010 15:45:47 -0800
To: <jkramer.consulting@gmail.com>, <cmacilroy@gmail.com>, <mclancy@esassoc.com>
Cc: <carrie.byron@ecy.wa.gov>, 'Jon Simpson' Subject: Shoreline Master Program Feedback by March 19th

Hello Jim, Carol and Margaret,

I was forwarded the email on the Shoreline Master Program Feedback and looked at the survey but do not find where there is any place for public or other professionals input...so, I am offering some of my experience with soft armoring along shorelines as well as other minor commentary.

My first question is regarding what professional credentials and background do each of you possess? I am used to reading reports with the credentials of the authors presented along with a list of any other publications, citations or recognitions. Could you please send me resumes or something that lists your experience and credentials?

Second, as is stated in the email cover letter, the "...paper reflects the views and experience of the three consultants..." as well as it being funded by what appears to be a private foundation and guided by the DOE and that you are working with various governmental agencies "and other partners" in protecting Puget Sound. Can you provide me with more information on your involvement with the foundation and the "other partners" so that I can better understand the arrangement of relationship with each of you and these entities?

Now, onto my comment on soft armoring of shorelines. Having worked as a consultant with property owners all around Washington State who are interested in maintaining both personal investment on their developed property as well as good stewardship for the surrounding habitat, we have attempted to design and install soft armoring along shorelines only to have it fail in part of fully in a seasonal storm event and require the property owners to take on emergency hard armoring at great expense and which has caused greater harm to the environment and surrounding habitat as a result.

Also, I have been involved with shoreline sites that are themselves naturally hard armored by rock outcroppings, bluffs or exposed bedrock. In one case, we have a fourty foot bluff that is naturally sluffing off into Puget Sound with registered ground/slope movement across the shoreline exposed bedrock of approximately 1-3 inches per year...again by seasonal storm activity and could be considered at odds to securing and stabilizing the natural environment and habitat.

In order to keep this brief, I am not convinced that an vieled mandate for soft armor is either the best approach or the most habitat beneficial and, it takes a path of indifference to the property owners right to protect the portions of their property that have been

legally developed in the past. It is critical that in presenting "views" and basing them on "experience" that all sides of the appropriate methods of shoreline protection be considered otherwise, a good but single sided plan can and will be perceived as a mandate with severe bias and prejudice for those views it supports.

I doubt that the intention of the study is to intentionally create an adversarial position with property owners and tax payers of the jurisdictions who have to implement and regulate the SMP but, that may be the very thing that is created and overshadows the entire SMP and DOE process without proper, fair and equal access to the process by all sides.

thank you for this opportunity to offer input and I look forward to your response,

Jon W.Simpson., CPBD
JWS Design, Inc
(425) 503-6796
Specializing in Residential Design
Board Member: MBAKS, Design Professionals Council

Submission 2:

From: Elliott Menashe <elliott@greenbeltconsulting.com>
Organization: Greenbelt Consulting
Reply-To: <elliott@greenbeltconsulting.com>
Date: Tue, 9 Mar 2010 09:44:20 -0800
To: <cmacilroy@gmail.com>
Subject: FW: ::: Beach Walking :::

This letter from a friend, to the Island County Commissioners is VERY worthwhile reading! This is a microcosm of an issue of state-wide significance.

Elliott Menashe
www.greenbeltconsulting.com <http://www.greenbeltconsulting.com/>

A letter to the Board of Island County Commissioners from Lynae Slinden

4 March 2010

Dear Commissioners:

Walking on the beaches on Whidbey Island and in Washington State as a whole is a right protected by the Public Trust Doctrine. Since the state sold some of its beaches for shell fishing rights, the interpretation of their ownership by property rights advocates has been all inclusive which they believe allows them to ignore this public right of access. In Greenbank and now in Clinton the boldness of two

of these private property owners have escalated to violations of the rights of citizens of our county, first by blocking access from a well established road end and most recently on January 24th when two individuals [ladies] were maced and beaten south of Clinton. This is inexcusable and to have them [the victims] given a warning for trespassing was definitely salting the wounds.

* I question the authority of a deputy to interpret walking on the beach as an act of "trespassing" on a right of way (equivalent of an easement) guaranteed by a doctrine adopted by the country's founding fathers. The Sheriff and his deputies are supposed to protect all citizens and their property, not interpret the law. This is obviously a legal matter and the county must not have a clear legal guideline for them to follow if they are acting without consideration of the public's rights.

* I question why the man who maced these people was not arrested. He is a down-the-beach neighbor of mine and has thrown people off "his" beach for years, including me and my neighbors. Rumor has it that he has even threatened people with a gun. This man is dangerous!

* I challenge Island County to step up to the plate and take on this statewide issue in defense of its citizens. It is one of the biggest controversies of private versus public rights in the state and even contributes to undermining the welfare of the Salish Sea (Puget Sound). I believe people would become more involved in protecting it if they had ownership to its access without threat from violent property rights advocates who will stop at nothing to protect something that probably isn't even theirs. I have participated in Sound Waters workshops, served on the Marine Resources Committee and am a Shore Steward, sat on the board for the 2009 Lyceum Series, and as a citizen/port commissioner I contributed to and attended the Puget Sound Partnership's celebration of completing its master plan at the Seattle Aquarium. There is strong support for the Sound at the public service level but minimal buy-in from the general public because their access is limited and vague. The courts need to resolve this issue.

The fact that we are in an unrivaled economic slump does not diminish the need to address this problem immediately! People cannot travel like they have in the past and many are unemployed. A walk on the beach with family or friends is one of the simple pleasures that should be free to the public, particulary if you live on an island. The shoreline belongs to more than those rich enough to own waterfront property and the taxes they pay on their tidelands hardly equals the loss of its accessibility to all nor does it pay the cost of defending them by gun-toting sheriffs and their deputies. Maybe that's the answer, tax the tidelands at a rate that is equal to the public loss or offer to reclaim ownership by the public.

Thank you for your attention to this important matter.

Best Regards,

Lynae Slinden
Lynae@Whidbey.com

Submission 3:

From: Ken Sethney <ken@sethney.com>
Date: Thu, 11 Mar 2010 09:27:12 -0800 (PST)
To: Jim Kramer <jkramer.consulting@gmail.com>
Cc: <cmacilroy@gmail.com>, Margaret Clancy <MClancy@esassoc.com>, "Clingman, Tom (ECY)" <TCLI461@ECY.WA.GOV>, "White, Gordon (ECY)" <gwhi461@ECY.WA.GOV>, "Lynn, Brian (ECY)" <blyn461@ECY.WA.GOV>
Subject: Re: Shoreline Master Program Feedback by March 19th

Jim,

Thank you for the clarification. I have made two changes to the introductory paragraphs of our blog post <http://bainbridgeshorelinehomeowners.wordpress.com/2010/03/09/smp-input-requested-by-march-19th/?preview=true&preview_id=3660&preview_nonce=b5bca72f6b> , but I am curious. If you are not preparing your white paper for DOE, then who? You are consultants and are surely paid. I notice that all of your cc's are your associates or folks at DOE and the only reference to a state agency is DOE.

DOE promotes many of its beliefs in public. One, given in public testimony by Erik Stockdale, is that property owners aren't concerned about having their legally built properties declared non-conforming. On the contrary, this is the paramount issue to property owners on Bainbridge Island and in each of the dozens of groups that have formed around the state. Mr. Stockdale may have believed that his statement was "true", but he was incredibly wrong.

You are correct to state in your draft that, "Private property owners on non-conforming lands are often a critical constituency to achieving no net loss. More effort needs to be made to help them understand the ecological impact of their actions while acknowledging and respecting the voluntary nature of their decisions to take less detrimental actions where possible." This is a reasonable and correct interpretation of the language of the SMA.

Ken Sethneyy, Chair
Bainbridge Shoreline Homeowners

Submission 4:

From: <MPaine@bellevuewa.gov>
Date: Thu, 11 Mar 2010 14:19:50 -0800

To: <cmacilroy@gmail.com>
Cc: <HBedwell@bellevuewa.gov>, <CDrews@bellevuewa.gov>, <KLeClair@bellevuewa.gov>, <SPNichols@bellevuewa.gov>, <DPyle@bellevuewa.gov>
Conversation: Protecting Puget Sound Through Shoreline Master Programs--White Paper
Subject: Protecting Puget Sound Through Shoreline Master Programs--White Paper

Carol:

I found your SMP white paper very stimulating and on point with many of the issues I see as critical in making the SMP update process a success. I have a couple of comments that I have included below.

1) No net loss: As a concept on which to hang an entire regulatory program, the notion of no net loss is a poor candidate. That is because it is very difficult to define and almost impossible to measure in any real world permitting situation. It is one thing to argue that the basic concept is that any loss of ecological function caused by an action must be offset by an equivalent gain in ecological function, but what if it is the prior action (e.g. prior installation of bulkheads that remove or disrupt an ecological process like sediment movement) that is causing the problem. The argument that the damage is ongoing is self-evident but for the property owner, there is no "action"—the bulkhead has been there for years and he is proposing no change—and therefore no foul. To ask him to rectify the impact absence some movement on his part to significantly repair or replace their bulkhead is met with legal arguments and hostility. The reality is that no net loss is a loser from a regulatory perspective absence some significant action on the part of a property owner with a clearly identifiable and measurable outcome.

2) Shoreline Armoring: Ecology's rules are very specific on this point; hardened stabilization is allowed only if there is a demonstrated and imminent threat to an existing residence. However, property owners are inclined to defend every bit of dirt they "own" irrespective of whether or not it should have been placed there in the first place. (Much of what they defend is fill placed below OHWM, often many years previously.) This difference between what is allow and what is desired sets up significant conflict for the future. Local politicians, especially, are not inclined to support rules which do not guarantee the sanctity of all property possessed by the property owner. The permanence of bulkheads, especially in the freshwater environment, is significant and the replacement interval may be 50 years or more. Consequently, the decision to allow replacement of an existing bulkhead with one of the same sort guarantees continued loss of function for the next 50 years. While I agree that governments should explore every option for technical assistance, incentives and permitting support, local governments could best ensure a gradual conversion to more ecological friendly stabilization choices by setting thresholds for allowed minor maintenance at a relatively low level. When this threshold is crossed the property owner most meet the standards for new shoreline stabilization unless they can demonstrate hardened stabilization is the only technically feasible option.

3) Restoration Planning: In an urban community, restoration planning is plagued by many constraints, not the least of which is the cost of acquiring property on which to conduct restoration. When the property costs are calculated, it may cost as much as 2-3 million to remove and restore a 100 linear feet of bulkhead shoreline on Lake Washington or Lake Sammamish. Moreover, I am concerned that we are over promising the impact of restoration since there is little detailed study of potential sites and not enough work conducted to identify and prioritize restoration actions. The danger of double-counting is also a concern given the high demand for restoration receiving sites from multiple sending sites.

4) Nonconformities: In my experience, the focus on nonconformity is legitimate and local governments need to tread carefully, especially where the primary residence is concern. In Bellevue, we have attempted to remedy this issue for primary residences by drawing expanded buffers around the foundation of an existing residence thereby ensuring a property owner that their residence is not rendered nonconforming by expanded buffers or setbacks. Such protection is not as important for accessory structures since many, if not most, can be moved to other conforming locations. That said, options to allow a fix percentage of a shoreline buffer or setback to be occupied by a nonconforming structure or other use, provided the rest of the buffer is vegetated, may offer the best solution since the owner gets to decide how to use his allocation within the buffer.

5) Public process: Recent efforts by a coalition of groups to derail the SMP planning process have been aided by considerable misinformation and understanding, including outright fabrication and misrepresentation. That said, part of the problem is that practitioners have considerable difficulty communicating the reasons, and the scientific justification, for the regulatory changes they propose. Ecology has helped somewhat but most of what they have provided is coming too late to be of much help for many of us. Moreover, their direction, especially on no net loss, has been little or no help in translating a difficult concept into a useful set of principles and rules. The lack of high quality scientific deliverables from Ecology has hampered this effort and led to considerable confusion on the part of decisionmakers regarding the robustness of the science supporting the regulatory edifice.

6) Implementation Issues: The process of building an expensive inventory and characterization, while well-meaning, is needlessly complicated and obscure. Building the SMP on a detailed inventory and characterization is supportable if the methodology were rigorous and the level of investigation was up to the task. The problem, of course, is that most jurisdiction cannot afford nor staff should highly technical efforts. As a consequence, the work is completed by consultants using readily available information and the result is generally not comprehensive or methodologically standardized enough to answer key questions at the site or reach level. The SMP would be better served by simply adopted the BAS standard that applies to critical areas. A review of the available literature would lead you to an appropriately designed regulatory scheme and cumulative

impacts could be estimated using standard land use planning techniques.

Parcel-by-parcel mitigation is generally unsuccessful and leads to ridiculous results; e.g. a pier in the near shore triggers native plantings in the buffer etc. For the likelihood of creating successful offsite mitigation on developed urban lakes see discuss under # 3.

7) Enforcement: My jurisdiction typically enforces SMP rules on a complaint basis which means, on balance, that we are privy to only a portion of the potential infractions that occur. We need strategies to help create other methods of compliance while ensuring that our permitting and enforcement program does not create the perverse incentive to violate; e.g. for example making permits so difficult or costly to obtain that there is an incentive to take a chance by violating.

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Submission 5:

From: Janice Peterson
Date: Sun, 14 Mar 2010 12:59:23 -0700
To: <cmacilroy@gmail.com>
Cc: <peter@ >, <ingridg@ >
Subject: richp@

Dear Ms. MacIlroy:
Apologies if this message repeats one sent earlier, I am having some trouble with the email server. I am attaching my comments on the Shoreline Master Programs draft white paper.
Thanks.
Rich Peterson,
San Juan County Council,
District 2

Attachment 1/1 to Submission 5:

PROTECTING PUGET SOUND THROUGH SHORELINE MASTER PROGRAMS

OPPORTUNITIES TO IMPROVE PROTECTION

Draft White Paper

In blue within the text of the draft…
Comments from Rich Peterson, Second District County Council member, writing as an individual, not on behalf of the San Juan County Council

March 4, 2010

In 2003, the Washington State Legislature took a significant step to revitalize the 30-year-old Shoreline Management Act. Based on agreement from a wide range of environmental, business and government interests, the Legislature set out an ambitious framework to update the Shoreline Master Programs for over 250 cities and counties across the State.

Protecting shoreline habitat is a critical element for protecting and restoring Puget Sound. The comprehensive SMP updates provide an unparalleled opportunity to apply science to regulating and restoring our shorelines.

We are approaching the mid-point of the statewide SMP update effort. Over the past six years, the Department of Ecology (Ecology) has worked with nearly 150 local governments to fund and support updates to the local Shoreline Master Programs (SMPs) as mandated by the State Legislature. Thirty local governments have completed the State-funded update process or are nearing final approval by Ecology. There is much to celebrate in the accomplishments achieve so far by local governments and the State. It also is timely to assess the experience to date, to improve the process and outcome for SMP updates over the next several years.

This paper was developed by Jim Kramer, Carol MacIlroy and Margaret Clancy (independent consultants with experience in shoreline management in Washington State) with funding from the National Fish and Wildlife Foundation, and guidance and support from the Department of Ecology Shoreland Section (Ecology) and local government staff and officials. This paper reflects the views and experience of the three consultants in regard to some common challenges facing state agencies, local governments and other partners in protecting Puget Sound through the shoreline master programs.

The purpose of the paper and the related questionnaire is to solicit feedback from various parties involved with shoreline management in Puget Sound at the local, state, public and private levels. Our hope is that the paper and questionnaire will stimulate those that have a stake in the future of Puget Sound shorelines to point out the most important areas for improvement and where they have an interest in helping Ecology develop solutions. The paper will be revised with the responses from the questionnaire and comments received by the end of the comment deadline of March 19, 2010. The final conclusions will be presented to Ecology and Puget Sound local governments currently working on SMP updates at the Shoreline Planners meeting on April 21, 2010. Our intent is to help identify next steps for Ecology and other parties in creating the strategies and actions necessary to address the issues identified in the final paper.

Background

The Background Statement gives no explanation of the problem (what is wrong with Puget Sound, what needs to be recovered). It would also be good to provide support for this explanation and detail why San Juan County should be considered part of Puget Sound when it

is geographically separated by two major straits and might be considered isolated from Puget Sound proper.
Businesses, governments, and communities across Puget Sound are seeking to protect and restore Puget Sound by 2020. Tremendous financial and human resources are being directed to accomplishing goals for clean water, functioning ecosystems and species protection and recovery. The Puget Sound Action Agenda lists protection of ecosystem functions, processes and structures as Priority A for recovery of Puget Sound. One of the key tools for protection is the Shoreline Management Act, which is implemented through local Shoreline Master Programs. The Shoreline Management Act (SMA) specifically regulates the marine waters of Puget Sound, major rivers and streams, and large lakes as well as the adjoining lands (extending approximately 200 feet landward of the ordinary high water mark). The state is currently investing millions of dollars to update local shoreline master programs.

The SMA requires local governments in partnership with the State to balance existing and future needs for public access, water dependent and related uses, and environmental protection. Across Washington, the SMA sets up a unique partnership between the State and 264 local governments. In Puget Sound, there are over 100 cities and 12 counties all working together with the State and others to manage thousands of miles of shoreline for people and nature. Over the past thirty-five years, the State and local governments have shared responsibility for maintaining much of the natural beauty and ecological health of the region while accommodating significant human population growth and related development. The evolution of science along with successes and shortcomings implementing the SMA motivated business, environmental, state and local leaders to agree on the need for a comprehensive update to all shoreline master programs.

Refining the protection of natural ecosystems is one of the core purposes of the legislatively required updates for local shoreline management programs. Ecology adopted the ambitious policy objective of achieving "no net loss" of ecological function as a cornerstone for the SMP updates. An explanation of the force of law of this "policy" would be useful here. Is this a mandate supported by state law? Is it a choice determined by appointed Ecology employees? What is it? How much force of law does it have? SMPs are required to prevent environmental damage from activities in the shoreline zone that could contribute to a loss of ecosystem processes, functions and structures (habitats). Although the regulatory authority of SMPs cover a relatively small percentage of the Puget Sound ecosystem by managing land use only along a thin strip of land adjacent to major water bodies, SMPs play a critical role in protecting ecosystem processes and functions.

There are many other factors extending beyond SMP jurisdiction that affect the health of the ecosystem. Local governments have the ability to broadly manage land use and protect overall ecosystem processes, functions and structures (habitats) through the Growth Management Act. State and federal agencies also play a vital role in protecting the broader ecosystem by administering the State Hydraulic Code, Aquatic Lands Act, Forest Practices Act, Clean Water Act, National Pollutant Discharge Elimination System, Endangered Species Act and other authorities. The Puget Sound ecosystem would benefit from a more comprehensive and coordinated management effort by federal, state and local governments to ensure all factors

affecting the protection and restoration of the ecosystem are being managed efficiently and effectively, with better clarity about where SMPs contribute to this broader context.

This paper focuses on the important, but limited, role that Shoreline Master Programs play in Puget Sound ecosystem protection and restoration.

The SMP Guidelines (Chapter 173-26 Part III, WAC) require local governments to achieve no net loss of ecological function from activities in the shoreline zone while accommodating water-dependent and other priority uses as well as public access. Achieving no net loss involves several steps:

> ***updating and adopting*** SMPs to meet the intent of the SMA and address known gaps or short-comings in protection efforts,
> ***implementing*** SMPs through permits, technical assistance, incentive programs, restoration and enforcement, and
> ***monitoring and evaluating*** changes to ecological conditions caused by management actions to determine if protection efforts are effective and if not, why not.

Collectively, Ecology and local governments have nearly 6 years of experience invested in this round of updating SMPs using the "new" SMP Guidelines and limited experience implementing the newly adopted SMPs. There have been many successes where counties and cities with Ecology's partnership have increased local protection of the ecosystem while meeting the needs of property owners and other community interests. The focus of this paper is on what the authors believe are issues that limit the achievement of no net loss and/or create impediments to the update process local governments and the State. These challenges exist partly because the Shoreline Management Act sets up a need to balance state and local interests, human access to shorelines and environmental protection, and other potentially conflicting priorities. They are also present because of the different perspectives and authorities within the partnership of the State, local governments, property owners and others involved. **Resolution of the challenges will require state government, local governments, property owners, businesses and environmental interests to build on their different perspectives and sometimes competing priorities to find new and creative pathways toward the future of a healthy Puget Sound.** I believe the final sentence (emphasis mine) in the preceding paragraph is the critical statement in this entire paper, and is well-stated. Subsequent comments will show how this fundamental concept is not always followed in other segments of this paper.

Opportunities for Improvement

The opportunities are categorized in three areas: overarching ecological and land use, SMP update process, and SMP implementation issues. These issues are complex and some have been experienced for years as part of the challenge to address the nexus of science, land use authority, community development and private property rights. Examples are provides to help illustrate the complexity and the importance of the multiple perspectives needed for their resolution. Although this paper does not focus on solutions, the authors provide their sense of what is needed in crafting solutions. The authors are interested in whether these issues are accurately described, their relative importance, other examples that illustrate the challenge and what would help improve the situation.

Overarching Ecological and Land Use Issues

1. No Net Loss

In setting "no net loss of shoreline ecological functions" as the environmental protection standard for SMPs to achieve, the State with the support of business and environmental organizations signaled its intent to substantially strengthen protections for Puget Sound shorelines. Even though the SMP update process has been underway for several years, the path for SMPs to meet the no net loss policy objective is still emerging. There is even less clarity on how NNL will be tracked and evaluated in the long term. Evaluating success in achieving no net loss will be a key issue for the future seven-year SMP updates, which were mandated as part of the 2003 legislation.

Accounting for No net loss needs to occur on three levels:

- Project level: The shoreline master program guidelines (Chapter 173-26 Part III WAC) indicate that the no net loss standard should be applied to "each permitted development" and that local governments must ensure that "exempt developments in the aggregate" do not cause a net loss of ecological functions without specifying how this should occur. The guidelines also require SMPs to contain policies, programs, and regulations that address cumulative impacts (from new and existing development) and "fairly allocate the burden of addressing cumulative impacts among development opportunities". There is minimal guidance on how this standard should be implemented.

- Jurisdiction level: The SMP update process requires local governments to use detailed information on ecosystem processes and functions to develop shoreline policies and regulations. The policies and regulations apply to a legally defined jurisdictional boundary, not an ecologically defined system or unit, and in most cases the jurisdictional area is already disturbed, developed and/or platted. Despite these constraints, SMPs must prevent detrimental impacts while accommodating planned development, public access and water dependent uses.

- Sound-wide level: Protection and restoration of shoreline habitat will be a critical element in sustaining the Puget Sound ecosystem over the long term. The Puget Sound Partnership and other parties will need to assess ecosystem conditions, and link conditions and trends back to shoreline management under local SMPs, to assess whether the NNL objective is being achieved.

To understand the challenges that this presents consider this real-world example:

Example – A marine shoreline within a city is zoned and platted for urban density single-family residential development. Nearly all of the lots have a legal residence, a dock and a protective bulkhead. Most homes are within 50 feet of the ordinary high water mark. Roughly 15 percent of the shoreline is sparsely developed, but the zoning and comprehensive plan designations are the same as the developed area and future build-out is almost certain. Restoration opportunities within this city are very limited

because of existing development on private property. Although the jurisdiction has adequate mitigation provisions written into their SMP, how can the city demonstrate that they will achieve no net loss of ecosystem functions when 'preferred' development of the remaining lots is almost certain and continued ecosystem loss from existing development is certain?

This "real-world example" presumes that homes within 50' of water, docks, etc. result in ecosystem loss. Is this a fair presumption and just a given? Is the science so complete that these examples stand alone without benefit of any substantiation that they are detrimental?

To date, local governments generally have addressed no net loss by:

- Applying a shoreline designation system that differentiates shoreline management goals based on the current shoreline conditions;
- Having policies and regulations that require individual developments, including exempt developments, to mitigate their impacts;
- Integrating critical area regulations into their master programs;
- Having policies and regulations that prohibit developments if they are determined to contribute to cumulative impacts; and
-

Have local governments actually done this? How can this occur without this being considered a "taking" under the 5th amendment?

- Having a restoration plan that identifies specific projects or actions that can be taken to improve shoreline functions over time.

While these measures constitute major improvements in shoreline protection, verifying that they achieve no net loss will be difficult because there are no agreed-upon indicators of function for local governments to use and consequently there is no commitment to monitor over time.

Also, there is no funding source to accomplish this.

There needs to be a technical and policy approach to define no net loss of function and ensure policies and regulations protect these functions. Where there are gaps in the ability of SMP policies and regulations to protect functions, local governments need better strategies for integrating tools that can complement SMP regulations including incentives, technical assistance and restoration.

2. Protection of Private Property/Shoreline Armoring

The region needs additional incentives and strategies for protecting private property with environmentally beneficial practices.

Many shoreline property owners have made significant financial and personal investments in their property. They are concerned that shoreline erosion may cause loss of land or threaten their homes or structures. Hard armoring is one of the most environmentally detrimental forms of erosion control, This is an assertion that many property owners do not believe and need evidence to substantiate. The fact that it is set forth here as if factual without any support appears to bias this discussion. but many property owners perceive it as the least expensive, most reliable and thus most favorable option. The fact that bulkheading/hard armoring to protect a single-family residence is statutorily exempt from a Shoreline Substantial Development Permit may reinforce these perceptions.

The Shoreline Master Program Guidelines adopted by Ecology allow bulkheading only if there is a demonstrated and imminent threat to an existing residence. This standard often sets up a battle about the nature and severity of the threat, which can be difficult for a local planning agency to adjudicate. Although there are other property protection techniques that are benign or beneficial to the environment, they are less known, may be more expensive, and may sometimes be more challenging or costly to permit (especially if they involve fill below the ordinary high water mark). In addition, the conditions along some shorelines call for holistic (reach-scale) approaches that make it difficult to site a single bioengineered bank protection project among a reach of hardened shorelines. These factors inadvertently create disincentives for private property owners to pursue using ecologically better techniques for property protection.

In addition to impacts from new armoring, roughly one third of the Puget Sound marine shore is already armored in ways that displace habitat and continue to disrupt processes and functions. Over time this armoring has to be maintained or replaced. With expected impacts from climate change, the desire to maintain or replace these structures with similar armoring will likely increase. The SMP Guidelines encourage replacement with more environmentally benign designs. However, achieving this policy objective will be a significant challenge. Failure to create new incentives and strategies that motivate property owners to replace bulkheads with bio-engineered approaches amounts to a missed opportunity to restore some environmental functions. Seattle's *Green Shorelines* guidebook is an example of the types of tools that will be needed to address these issues, but additional resources will be needed if we hope to make progress on-the-ground and in more dynamic environments besides Lake Washington. The example below highlights some of the added complexities that this issue presents:

Example: A rural property owner needs to repair their bulkhead due to damage from a winter storm. They are willing to use a soft shore solution that involves creating a sloped beach, logs and native plant materials. The effect of this would be to move the ordinary high water mark (OHWM) further landward putting the home within the setback/buffer zone. The property owner is reluctant to do this because of their concern that it might negatively impact their future use of the property. They are also concerned about the time and expense of obtaining permits for proposed work.

There must be adequate regulations, incentives, technical assistance and procedural support to ensure that property owners can achieve property protection using environmentally benign or beneficial techniques at equal or less cost and time than standard bulkheading/armoring techniques. This may require changes to the SMA or other regulatory programs.

3. Restoration

We need a stronger quantifiable and transparent linkage between restoration planning, projects and potential ecosystem losses projected through the SMP update process.

Local governments are required to develop a restoration plan as part of the update process. It would be useful to provide the language that requires this. Again, is this state law? Is this just policy from Ecology? What is the basis? It is expected restoration will help compensate for ecosystem losses from on-going degradation caused by past development, new activities not controlled by local government and cumulative impacts. The restoration plans that have been prepared so far in the update process contain descriptions of the best ideas in the city or county for restoration (in some cases based on scientifically vetted prioritization efforts). However, the expected functional gains represented by these projects are not directly correlated with potential losses from new and on-going development. Since restoration projects are voluntary and depend on the ability of a restoration entity to acquire funding, purchase property and manage the restoration action over time, the likelihood that restoration actions link back to actual losses resulting from shoreline permits or violations in a timely manner is low. Many of the sites and projects that local governments identify as suitable for restoration are privately owned, which creates concern and confusion among private property owners and further calls into question the likelihood of their implementation. Actual restoration is based on the availability of property, funds and projects with no assurance that restoration will occur at a time or pace that matches the impacts from existing, new and on-going development. As the following example shows, we need better strategies for facilitating restoration activities that are directly tied to shoreline impacts.

Example: In a rural county, a home constructed close to the water is threatened by wind- and wave-generated erosion. The property owner wants to construct a bulkhead to protect the structure and provides an engineering study that demonstrates the home is in imminent danger and cannot be protected using soft-shore methods. The County is reluctant to approve the bulkhead because the property is located in an important sediment supply zone, but there are no alternatives. The property owner wants to do the right thing but there are no good ways to mitigate the sediment supply impacts on site. The County's restoration plan includes a recommendation for repairing past sediment supply impacts by replacing bulkheads with soft shore beach protection, but there is no funding for the Marine Resource Committee to complete the project and the landowners are not willing to participate. In the meantime, the County agrees to approve the bulkhead in exchange for some

vegetation enhancement elsewhere on the property, but the sediment supply impacts are not directly addressed.

There needs to be better integration of restoration planning that has already occurred through salmon recovery and other Puget Sound efforts like PSNERP with local SMP planning. There need to be commitments for funding and timelines for restoration to occur commensurate with shoreline development and with direct linkages between loss and replacement of function.

4. Nonconforming Uses and Structures
When regulations change and previously legal structures and uses are deemed "nonconforming", some property owners are concerned and feel their investments and current uses are at risk.

Existing development and uses in the shoreline zone that are not consistent with the newly adopted SMP regulations are deemed to be nonconforming. The issue of non conformity is not new or unique to shoreline planning, but it is one of the issues that often confound shoreline property owners. The term "nonconforming" carries a negative connotation and property owners worry that nonconforming uses will be required to conform. Owners are also concerned there will be additional requirements like having to perform expensive special studies or surveys if they want to maintain or expand current uses. **Some property rights interests have taken advantage of these concerns to generate opposition to shoreline regulations such as buffer standards.**

The statement above (emphasis mine) shows bias and a negative perspective toward property rights interests. What if they have valid points?

Most jurisdictions have policies for nonconforming use intended to protect legally established uses and structures. However, local governments are required to address impacts that cause a continued loss of ecosystem functions so there is pressure to minimize continued degradation from existing developments while balancing the interest of property owners to maintain and in some cases expand their existing structures and uses. .

Example: A homeowner legally constructed her house 50 feet from the riverbank. Two years later the County updated its SMP, increasing the buffer to 150 feet. The landowner wants to build an addition onto the house and is now required to get a conditional use permit, complete a vegetation plan and pay a consultant $10,000 to prepare the permit application.

Nonconformity is a complex issue local governments face in both the update and implementation phases of the SMP. Better strategies are needed for local governments to address the concerns and acknowledge the rights of property owners. Private property owners on non-conforming lands are often a critical constituency to achieving no net loss. More effort needs to be made to help them understand the

ecological impact of their actions while acknowledging and respecting the voluntary nature of their decisions to take less detrimental actions where possible.

5. Agriculture and Forestry Exemption from Local Control
   The exemption of most agriculture and forestry activities from local SMPs creates an impression that these activities are held to a lesser standard than residential development. Given that the overall goal for local government is to achieve no net loss of function**,**

Let's be clear on whose goal this is. The only reason that it's a goal for local government may be because it is imposed by the state. While it may be a goal that local governments might adopt, certainly ours has not debated this issue nor reached a conclusion that this is one of our goals.

if these uses are held to a lower standard than no net loss they may ultimately create impacts that in the end are viewed as a failure of the local government SMP.

SMPs are barred by statute from requiring changes in existing agricultural activities. Forestry activities in the shoreline zone are regulated largely by the Forest Practices Act, with limited applicability to local SMPs. This creates a perception that these uses are provided special treatment and have greater flexibility than residential and commercial uses of the shoreline. It is not clear how the State regulation of forestry and agriculture are being monitored to achieve the standard of no net loss required of local governments. This creates the potential for opposition from key stakeholders.

Example: Along a river shoreline, a farm has no buffer along two miles of riverbank and the new homes proposed for the adjoining properties are required to maintain a 150 foot buffer of native vegetation. The property owner questions why they are not allowed to remove the trees to create a view of the water when the farmer is actively farming down to the riverbank. They argue that their development has less of an impact than the farm.

Local governments need clear measures for success and information on how the agriculture and forestry sectors are being managed to meet the no net loss standard they are applying to their other interests.

Update Process Challenges

There are a number of common challenges experienced by local governments and Ecology during the SMP update and approval process. Addressing these issues will increase the efficiency of the process and the effectiveness of shoreline management.

1. Common Solutions for Common Challenges
   Local governments face a number of common technical challenges that would benefit from a more unified or comprehensive approach. Although inter-jurisdictional

planning is encouraged, it occurs infrequently. Opportunities for improved inter-governmental collaboration include but are not limited to:

identification and mapping channel migration zones, especially since the SMP grants do not specifically fund this work;
Identification and clarification of approaches for addressing impacts from climate change. ;
strategies for integrating SMPs and Critical Areas Ordinances, given this issue has been confounded by recent legislation and court findings; and
cross jurisdictional restoration planning.

Example: Three cities in the Nirvana River Valley are each paying a consultant $40,000 to research and write the required section on ecosystem processes and functions and prepare a restoration plan. The Nirvana River Council has already conducted a watershed characterization and developed a list of restoration priorities. Each City sets out to prepare separate documents for their section of the Valley, while the Nirvana River Council awaits funding to implement their Valley-wide plan.

Resources need to be allocated to more inter-jurisdictional and cross-Sound technical studies that can be tailored by local governments to their individual situations. Local governments need to find ways increase their capacity to work cooperatively with each other to develop solutions to shared challenges. Ecology, the Puget Sound Partnership and others can help by securing funds to support the development of solutions.

2. Public Involvement

Organized property rights groups are increasingly participating in the update of individual shoreline master programs. They are stimulating more interest and concern of property owners to engage in the process. Property owner participation can be beneficial over the long term because it increases mutual understanding and can lead to better environmental solutions. However, when property owners are stimulated to participate from fears raised by information that is not accurate it can derail the update effort and thwart efforts to make improvements to shoreline management. Ecology's recent completion of a communication strategy and reassignment of existing staff to improve public and stakeholder communication is designed to address this situation. Additional work is needed to proactively and constructively engage property owners and property rights groups across the State. Without this work limited resources will be spent on crisis communication, lawsuits and ineffective policies and regulations instead of educating land owners and creating well designed and community supported updates.

The discussion in the preceding paragraph sets the basis for why this paper and all other communications involving shoreline master programs need to be transparent, objective, and free of bias The reason that organized property rights groups are increasingly participating, in my mind, is that they find it easy to conclude that individuals and organizations involved in environmental regulation already have a

predetermined preferred outcome and that the majority of regulation is coming from the state or federal government and being imposed on local government. There is a sense that the public participation process is there simply to meet a requirement and that no serious consideration will be given to opposing views of these preferred outcomes.

Often the most intensive public outreach efforts happen during the local adoption process, after the local jurisdiction has spent the bulk of its SMP grant funds. Local governments may need to work more closely with Ecology to determine when and how grant funds are spent to ensure that money is available at the appropriate times in the update process to enable effective and timely outreach. This would require careful coordination with Ecology since the grant allocation requirements and process are quite complex and Ecology does not have authority to alter funding cycles.

There needs to be continued effort by Ecology, state agencies including the Puget Sound Partnership, and local governments to implement effective communication strategies. Ecology's new SMP communication strategy can serve as the foundation of this effort.

3. Ecology Support, Review and Approval

Ecology and local governments share responsibility for the success of the Shoreline Management Act and the efficiency and effectiveness of local government processes to update their SMPs. Ecology's role is to ensure the overall effort is meeting the intent of the SMA and approve each local government's updated SMP. Local government's role is to work within their community, apply science and develop a SMP that meets the State requirements and is consistent with other local authorities and interests. Ecology's current workload is exponentially greater than ever before to review and approve SMPs, and it will continue to expand over the next few years. Even though their staffing has not increased at the same rate as the work, Ecology has made significant efforts and advancements to facilitate and improve the overall process. As with any new effort of this size and magnitude, there are several areas that could be improved.

a) The feedback and guidance that Ecology staff provides to local governments needs to continue to improve to ensure consistency across all Ecology staff working with local governments. Guidance and feedback need to address the tough issues in a manner that can be used by local governments. There needs to be accountability for both Ecology and the local government to ensure that differences have been resolved during the update process.
b) The timeframe and criteria for Ecology's final approval of a locally adopted SMP is highly uncertain and has sometimes taken more than a year. Local governments are often not meeting their timeline for local adoption which can significantly affect Ecology's schedule and workload. However, Ecology's process of formal review is uncertain and not transparent to the local government as well as those that were involved in the local process. Once a locally adopted SMP is submitted, prompt review is essential. Uncertainty and delay create frustration and tension between Ecology and the

local governments about when the new policies and regulations will take effect locally and whether there will be a need for substantial revisions, public process and staff work. This delay also has created a window for confusion and unrest about the SMP because after approximately 5 years of work and agreement there is not decisive endorsement or support to move forward from the state.

There needs to be continued emphasis on providing consistent feedback to local government and continued dedication to increasing predictability in the final review process.

Implementation Issues

1. Staff resources to implement updated SMPs
   After final adoption of the local SMP, effective implementation will be a significant challenge. Generally, the newly updated SMP's are more complex and resource-intensive than previous regulations.

   The adoption of updated SMPs increases the demands in implementation because science is demonstrating more complex interrelationships that must be address for protection of the ecosystem; the expectation of achieving no net loss is coming under more scrutiny; the number of communities involved in restoration and environmental protection has diversified, regionalized and grown; and private property owners, businesses and environmental interests are increasingly involved and sophisticated in their expectations and needs. This increase in local effort and expectation is occurring in a time when local governments are severely limited financially and are cutting programs and staff.

   The public's trust in government is fragile yet at the same time the public expects high quality and scientifically certain deliverables and dependability from government programs and efforts. There needs to be a strategy for how local governments will successfully address the increased work in implementation in the face of the current financial and political climate.

2. No Net Loss at the Parcel Level
   The requirement to achieve no net loss from development activity on an individual parcel will be a challenge for local governments and the property owner to address and successfully manage.

   Generally, the approach to minimize impacts includes attention to how the property is developed, used and where activities are located. Practices are required and implemented such as setbacks from the ordinary high water mark and stormwater control to reduce environmental effects. However, there are often unavoidable impacts that require compensatory mitigation. Single-family developments often have difficulty finding compensatory mitigation options that can be achieved on-site.

If there are no easy-to-access off-site mitigation options such as in-lieu fee programs or mitigation banks (which is the case in most jurisdictions), parcel by parcel mitigation is problematic. The state and federal agencies are working diligently to fund and implement watershed-based mitigation but it will likely take several more years before off-site mitigation tools are readily available in most areas of the state. In the meantime, there needs to be a serious look at how effective mitigation at the individual parcel level can be and how to fairly pay for and achieve no net loss.

3. Technical Assistance and Incentives

   Effective implementation of SMPs requires more than just regulation. Because of the complexity of property and environmental management there has to be more technical assistance to landowners. Local governments need to know how to best address unique situations on individual properties and provide guidance and examples of ecologically benign or beneficial alternatives to property owner needs. Local governments need incentives for known issues they will face like bulkheads, non-conforming structures and vegetation management coupled with an active effort to inform people of these incentives. These best practices need to be made available in an easy and effective manner for property owners.

   Without an equal or greater emphasis on assistance and incentives compared to regulation, property owners and the public may become more resistant to shoreline management and suspicious that the only tool governments are using to achieve no net loss is regulation.

   The preceding sentence is a very important perspective that will make these efforts either accepted by the public or rejected. To date, I believe there has been very little evidence of any efforts other than regulation.

   There needs to be a clear identification of the key regional issues local government faces and the development of tools, incentive programs and examples of best practices. In addition, sufficient resources for implementation of technical assistance and incentives at the local level are necessary to achieve no net loss of function. Partnerships with organizations like land trusts, conservation districts, foundations and others will be critical to success. These partnerships may need to be formed through regional organizing bodies like the Puget Sound Partnership or others with the staff resources and expertise to establish and manage such programs instead of relying on each local government to independently create and maintain these relationships.

   Example: A city identifies a last remaining stretch of critical shoreline adjacent to a salmon river that will likely only be protected if it is purchased by a land trust, put into conservation easements or significant landowner outreach and education occurs. Who is making the connection between lands that are unable to be protected through regulations and those with the tools to achieve protection?

4. Enforcement

In the face of budget reductions many local governments and the State are cutting staff to monitor and enforce environmental programs. Many never had enforcement staff to begin with. Without the consequence of enforcement and subsequent penalties, many landowners and people involved in development will not see the **benefit** of adhering to increasingly complicated and expensive land use restrictions. There needs to be a combined strategy between the State and local governments for effective enforcement.

People will see the "benefit" (emphasis mine) only because there is an obvious "cause and effect" relationship established that is broadly accepted, not because government will come down on them if they don't do what it demands.

Example: A property owner learns that his friend paid $25,000 to permit and site a modest expansion of his waterfront home, which took months to complete because it required a Conditional Use Permit. This property owner wants to convert his kayak shed into a boathouse and he decides to proceed without a permit because he knows he won't get caught. Without ever contacting the county, he converts his 8 x8 shed into an 1100 square foot boat/guest house and clears some trees so that he has better access to the water.

I assume this is a hypothetical example and, if so, it gives the impression that anarchy is only preventable by government presence and enforcement.

Are the examples presented throughout this paper actual or simply offered hypothetically? If they are real, they should be footnoted.

Capturing the Opportunities

The preceding paragraphs summarize the authors' perspectives about the SMP update process and implementation by describing where improvements could be made to the overall effort. These perspectives are meant to stimulate conversation, refinement and interest in solutions from the various stakeholders. We believe that it is important to understand both what we want to achieve and specifically what is limiting our success. We believe refining and then collectively addressing these issues will increase overall confidence that ecological protection in Puget Sound is possible, build on existing trust and relationships among those most closely tied to the success of the SMP, and help meet the intent of the Shoreline Management Act to achieve no net loss.

The issues and challenges described above are not caused by any group or organization. The SMA, by design, is a partnership between local governments and their communities with the Department of Ecology, the Governor and the legislature. This sentence gives the impression that we are all willingly involved in this process,

This "partnership" is probably technically correctly described given that local government is seen as a subdivision of the state. However, I doubt that most local governments experiencing the current challenges presented by lack of funding for basic

government services would be voluntarily engaged in this process if it were not for the requirements imposed by the state.

Effectively overcoming the obstacles described above requires a combination of all parties working together in a manner specific to each issue to craft solutions that work. Creating guidance, examples and common strategies for common issues requires Ecology, local governments and others to work together with their unique and combined expertise and perspectives. Acquiring the necessary resource for implementation will require local staff and elected officials combining their voices with business and environmental interests and then working with State staff, legislators and the Governor to increase strategic investments for the protection Puget Sound's shorelines.

Next Steps

Comments on the issues described above are sought to ensure the issues and examples are clear, accurate and complete. Feel free to send us additional examples based on your personal experience. Please note which of these issues have the highest priority for you or your organization and which, if any, issues are not of importance. Please note where you see the greatest opportunity at this time to advance an issue and which issues may not be timely. Please provide your response to these queries and any other comments you may have to Carol MacIlroy at cmacilroy@gmail.com or call 206-293-4741.

Following the end of the comment period, March 19, 2010, the authors and Ecology will develop a revised draft and provide a sense of the priority of the issues and the sequence for addressing them. A potential path to continue this work: Clallam County with the support of Ecology and Jefferson County have requested funding from the EPA to being crafting solutions to these issues beginning in late spring of 2010 and finalizing the recommended solutions by the end of 2010.

Submission 6:

From: Steven Sundin
Sent: Tuesday, March 16, 2010 3:25 PM
To: Margaret Clancy
Subject: RE: FW: Shoreline Master Program Feedback by March 19th
margaret - here are my comments - we can follow up if need be.

Steven Sundin
Planner - City of Bellingham
360-778-8359

Attachment 1/1 Submission 6:

"PROTECTING PUGET SOUND THROUGH SHORELINE MASTER PROGRAMS"
CITY OF BELLINGHAM RESPONSE TO MARCH 4, 2010 DRAFT WHITE PAPER

ECOLGOICAL AND LAND USE ISSUES

1. NO NET LOSS

A noble and worthwhile objective or, mantra.
Difficult to prove on an individual project level via review and permitting and **especially** programmatically.
Many other inputs affect no net loss of shoreline ecological function.

Possible solution: Inventories and Characterizations should be standardized (templates) to include all the elements that comprise shoreline ecological function even if there is no known data to fill in certain data fields.
We acknowledge the information provided in the Guidelines.

Inventories are completed with the data 'gaps' identified. (Bellingham's inventory includes 'no data' in certain topic fields.)

No net loss of shoreline ecological function elements continue to be addressed at the project level, in body of SMP texts and reviewed for adequacy by DOE as is done presently. The specific no net loss of shoreline ecological function should not be the point at which an SMP is determined approvable or not.

Rather, the no net loss of shoreline ecological function requirement should be demonstrated / proven via a **re-**inventory / **re-**characterization as a timetable requirement – like the current SMP update timetable. Furthermore, the 'gap' elements within an inventory can be filled in at any time - administratively – resulting in a more robust complete data set over time as money and people become available to do so. (Bellingham's inventory was set up with known data fields that we *knew* we we're *going* to acquire over time.)

In this manner – a local government could identify *which* programmatic changes to the full range of its environmental protection documents might be needed to improve no net loss of shoreline ecological function. (Stormwater Management and Critical Area Ordinances, most notably as well as SMP Restoration Plans.)

The burden of proving no net loss of shoreline ecological function should not hinge entirely upon goals, policies and regulations within an SMP's.

I will be lobbying for funding of this "re-inventory" concept as opposed to receive funding for another update / amendment which I believe for Bellingham is required in 2012. We fully expect to make individual amendments to our updated SMP after it has been test driven for a two-three years.

2. SHORELINE ARMORING

Incentives for bio-armoring instead of bulk-heading are tricky because shoreline property owners – especially SFR's on lakes – have maxed out their development footprints and tend to be non-conforming. These same property owners should be more "steward-minded" than "property-rights" minded never-the-less, how-to-address remains just about the largest challenge for all involved.

In our experience – technical assistance for implementation of bio-techniques for shoreline armoring (which are almost entirely located on Lake Whatcom SFR shorelines) has been made easily available and about 50% of the time we see a shift from hard to soft when folks wish to replace / repair.

Our new SMP has been approved locally with a 100-foot buffer around Lake Whatcom. This puts approximately 65-70% of the SFR lots into non-conformity. (There are about 145 SFR lots and only about 5 are undeveloped.) Approximately 50% of the NFG'ing lots on Lake Whatcom have hardened shoreline armoring.

Possible solution: When SFR property owners shift from hardened armoring to either bio-armored or relocate their existing bulkhead x amount of feet above the OHWM – their nonconforming status could be removed, a basic instrument specifying same could be recorded against the title and SMP regulations would limit further development in some manner. (No further encroachment or no further development in buffer or…?)

If a (SFR) site is BUILT OUT and all the proximate properties are also BUILT OUT I'd be more interested in re-establishing the natural processes within the near-shore area by removing bulkheads and introducing bio-techniques than establishing a buffer line and putting vast numbers of property owner's into nonconformity and then deal with all that goes with THAT. Seems like that would be an easy 'bone to toss' for lack of more appropriate terminology.

3. RESTORATION PLANS / LINKAGES

Below, I have cut-and-pasted an excerpt from our Cumulative Impact Analysis describing a potential solution to the implementation / linkage problem. This excerpt explains how we set up our RESTORATION PLAN and SMP linkage. The concept has not yet been approved by DOE but it has been approved here at the local level. I believe the concept will be an effective method to implement RESTORATION PLANS as well as link them to updated SMP's.

From section 4.0 on page 14 of the CIA:

"… non-water-oriented uses are required to provide habitat restoration – this being the regulatory requirement. The requirement goes further by pointing to implementing a minimum of three objectives from the Restoration Priority Goals and Objectives section of the RESTORATION PLAN in APPENDIX B of the SMP. The applicant may choose from among the 12 objectives in section 4 of the Restoration Plan and incorporate that into their development proposal or it may be conditioned upon permit approval.

By stating the REQUIREMENT in the SMP and only DIRECTING applicants to the Restoration Plan for guidance on habitat restoration, the Restoration Plan maintains its non-regulatory status and indeed is utilized as it was intended. A one-stop-shop habitat restoration reference document. Nowhere in the Restoration Plan is there a requirement to do anything contained within the Plan itself.

Over time, as non-water-oriented uses are developed and objectives within the Restoration Plan are implemented, the City expects its Restoration Priority Goals to be realized and potentially some improvement to shoreline ecological function as well. "

We have NOT solved the funding and timeline requirement for RP's. However, with the concept outlined above, that requirement could be perhaps eliminated. Local governments could more reasonably and even accurately forecast restoration based upon vacant / underutilized / re-developable parcels along shorelines.

4. Nonconformity

Addressed above in regards to SFR's that are nonconforming as to a *dimensional OR buffer* standard. NCF'ity pertaining to *uses* is sufficiently addressed in the WAC and /or local SMP's

5. Agriculture / Forestry NO COMMENT

UPDATE PROCESSES

1. UNIFIED / COMPREHENSIVE / INTER-JURISDICTIONAL APPROACHES

Potential Solutions: Inventory by WRIA and sub-basins could be incorporated into individual inventories. Pre-designate UGA shorelines. RESTORATION PLANs could be developed via individual WRIA's.

2. PUBLIC INVOLVEMENT

A "Comment Tracker" is immensely helpful during the review / work-session / public process. Most agencies use these now. No additional comments.

IMPLEMENTATION ISSUES

1. STAFF RESOURCES NO COMMENT

2. NO NET LOSS OF SHORELINE ECOLOGICAL FUNCTION AT THE PARCEL LEVEL NO COMMENT

3. TECHNICAL ASSISTANCE AND INCENTIVES SEE #1 -2 UNDER ECO AND LAND USE ISSUES

4. ENFORCEMENT NO COMMENT

Submission 7:

From: Carl Shipley

Sent: Tuesday, March 16, 2010 2:52 PM

To: jkramer.consulting@gmail.com

Subject: Feedback on Protecting Puget Sound draft paper

Jim,

I am a shoreline property owner in Kitsap County. I recently received a copy of your "Protecting Puget Sound ...." draft with a request for comments. I am attaching feedback in a Word document. If you think I've got any of this wrong, I'd love to hear your thoughts.

Sincerely,

Carl Shipley

Attachment 1/1 of Submission 7:

Feedback on "Protecting Puget Sound Through Shoreline Master Programs"
Carl Shipley

The main problem with the "Protecting Puget Sound Through Shoreline Master Programs: Opportunities to Improve Protection" draft paper is that it does not address the issue of whether policy makers have clear, detailed, scientifically-founded models of how shoreline activity affects environmental function. The paper refers to the need for science – using some form of the word "science" seven times in its analysis - but fails to discuss, in any specific terms, the status of scientific work that could be used to guide policy decisions. In general, it ignores the fact that in most cases we do not even have detailed measurements of shoreline ecological functioning, let alone clear models of how human activities affect this functioning. It asserts that shoreline planning must be crafted so as to enlist the support of property owners while completely ignoring the fact that many of the scientific assumptions planners are using to develop shoreline policy are disputed by these property owners.

For example, the paper is highly critical of the use of bulkheads, stating that "hard armoring is one of the most environmentally detrimental forms of erosion control" (p. 5) and that much

of Puget Sound is armored in ways that disrupt environmental "processes and functions" (p. 6). The paper provides no scientific justification for these assertions – it simply presents a categorical criticism of armoring. However, the most reasonable interpretation of existing literature on armoring is that the effect of a bulkhead on shoreline ecology is highly dependent on a wide variety of factors including composition of the beach, the area directly above the bulkhead, local wave action, exposure to storms, type of bulkhead, existing shoreline vegetation, and what kinds of natural environmental activities are occurring on the beach. Given this complexity, property owners have a right to ask how changing a bulkhead fits into some realistic plan that takes into account the specific features of their parcel and is designed to achieve realistic environmental results. Developing regulatory systems that apply clear scientific models to achieve clear environmental goals needs to be a major focus of successful shoreline administration. At present, it is not.

The "Protecting Puget Sound Through Shoreline Master Programs" draft paper never focuses on the need for specific ecological goals that local stakeholders can understand. Instead it constantly speaks in generalities, referring to improving or protecting "ecosystem functions, processes and structures" - goals that are so vague as to seem almost functionally meaningless to stakeholders who have to spend money on specific projects. It also provides an extensive discussion of the vague goal of "no net loss," eventually concluding that local governments have "no agreed-upon indicators of function" for achieving this goal (p. 5).

Lack of clear scientific justification and clear environmental goals will, inevitably, undermine support for shoreline regulation. The draft paper presents several illustrative examples of problems facing SMP regulators. It would be useful for it to include examples of problems facing property owners who must deal with these regulators. Consider this example, a shoreline property owner would like to construct a small, inexpensive dock to be used in launching the family's recreational kayaks. Shoreline administrators object to the creation of new docks in general, requiring an expensive permitting process with an uncertain outcome. In the unlikely event that a dock is approved, regulators insist on an expensive design involving an elevated structure (which the property owner does not want), expensive specialized materials, expensive specialized contractors, and repeated expensive inspections. The property owner argues that the project has become so costly as to be impractical. The regulators argue that they are taking this approach because a small, inexpensive dock like the (grandfathered) structures owned by the property owner's neighbors will harm the environment.

The shoreline owner asks to know exactly how this harm would occur. The administrators answer in generalities. They say studies have shown docks can shade out eelgrass. The homeowner says there is no eelgrass at the site. The regulators reply that only an expensive report from a certified specialist can ensure this is true. They also argue that even if eelgrass is not an issue, shade from the dock may be harmful to other plant species. The owner responds that shoreline regulators have encouraged the use of overhanging plants on his or her property, partially because these plants provide shade over the intertidal zone. The owner asks, "Why is some shade good and some bad?" Regulators ignore this question and state that a dock may also have the harmful effect of providing a place where some kinds of aggressive fish can hide and then feed on other, more desirable species. The property owner

responds that the regulators have encouraged the importation of downed trees and other kinds of woody debris onto his or her beach precisely because this kind of structure provides places for fish to hide. In the end, the regulators resort to citing concepts like "cumulative impact" and "no net loss," adding that they are too busy to argue these issues and that it isn't their job anyway. In one way or another, the regulators end up by saying, "If you don't like what we're doing, sue." The message the property owner comes away with is that regulators are basically hostile to human shoreline use, that they have no desire to balance the clear benefit of recreational use against poorly understood possible environmental harm, and that they actually don't appear to have a clear scientific basis for what they are doing.

In order to obtain the support of property owners for environmental regulations, government planners need to be able to clearly explain the benefits of regulations to those who are being forced to bear costs. This is not currently being done. To give another example, probably the most commonly cited environmental goal for Puget Sound ecology is to restore the health of native salmon populations. In reading proposed shoreline regulation, one would assume that the use of armoring must be an important factor harming salmon. However, it is entirely reasonable to suspect that one could soften all the residential bulkheads in Puget Sound without materially affecting native salmon populations at all. This is the case because native salmon stocks are powerfully influenced by a multitude of factors that have nothing to do with management of residential bulkheads. These factors include commercial over-fishing in the ocean and in Puget Sound itself, misguided management of sport fishing in Puget Sound which has led to the loss of the largest and most fertile members of Sound fish populations – causing severe depletion of those populations, competition between native salmon and very large and successful populations of hatchery salmon, zealous protection of species (especially seals) that feed on salmon, agricultural uses (in many cases protected by law) that deplete and pollute streams in which salmon historically spawn, and extensive polluted runoff from stormwater systems that drain areas which are often miles away from the shoreline.

Rather than categorically condemning the use of bulkheads, shoreline planners need to discuss and explain the rationale for achieving real world goals, such as improving salmon stocks, through regulation of these structures. Currently, this is not being done in any effective manner. In general, shoreline property owners can be expected to be very concerned with the health of shoreline ecosystems and, therefore, should be natural supporters of rational shoreline management. After all, they paid extra to live on the shoreline and are directly affected if the quality of the shoreline ecosystem degrades. However, current shoreline management processes are based on such incomplete science and are so poorly explained to the community that they are often viewed as just another example of governmental intrusiveness and inefficiency.

Shoreline planners might argue that developing complete, detailed models of how human activity affects shoreline ecology is a process that will take decades and that, in any event, it is not in the scope of current planning work. The first point is perfectly reasonable, the second is not. Planners need to acknowledge the limitations of current scientific models and to act in a way that recognizes and explains these limitations. To take another example, property owners have a right to ask why a shoreline plan would require a 200 foot buffer (a figure mentioned in the "Protecting Puget Sound …" draft). A shoreline buffer of this size

would make tens of thousands (perhaps more) perfectly legal and well-designed buildings "non-conforming" and, presumably, less valuable Is there clear scientific evidence supporting the benefits of this kind of draconian zoning? Why not simply use existing permitting processes to control land use? If a buffer is needed, would a 25 foot or a 50 foot buffer not be sufficient? What is the evidence on the relative benefits of larger and smaller buffers. Does good evidence on this issue even exist? If clear evidence exists the SMP process should make it explicit. If it does not, then property owners will, rightfully, be angered if they are forced to accept that the value of their property has been diminished by imposition of an arbitrarily designed buffer.

The "Protecting Puget Sound Through Shoreline Master Programs" draft paper rightfully points out that it is important to craft the SMP in a way that will help promote support within the community. The only way to do this is to convince affected stakeholders that the plan will have meaningful positive effects on the health of the environment – benefits that justify the costs. The only way to argue convincingly that these benefits exist is to have detailed scientifically based models of how shoreline activity affects shoreline ecology. Planners such as the consulting firm that wrote the "Protecting Puget Sound …" draft appear to believe these kinds of models already exist but place little value on explaining these models to major stakeholders such as property owners. If shoreline planners have good science to support restrictions they wish to impose then a top priority of the planning process needs to be explaining that science to the community. If the science does not exist, then recognizing this fact and acting accordingly needs to be a top priority of planning efforts.

Submission 8:

From: Janice Peterson
Date: Thu, 18 Mar 2010 16:33:14 -0700
To: <cmacilroy@gmail.com>
Subject: Comments on Shoreline Management White Paper Draft

Dear Ms. Macilroy:
I am attaching my comments on your draft.
Thank you.
Janice Peterson

Attachment 1/1 Submission 8:

Janice Peterson

March 17, 2010

Carol MacIlroy
cmacilroy@gmail.com

Subject: Draft White Paper, Protecting Puget Sound through Shoreline Master Programs: Opportunities to improve protection

Dear Ms Macilroy:

Before I comment on the Draft White Paper, I would like to suggest that it would be helpful if there are future drafts to have a street address for interested respondents who do not use email (and there are quite a few who do not). My apologies if I missed it. It would also be good to know the name of the consulting organization you represent and your title and/or position.

I would like to offer some overview responses and then make several serial comments with references to specific pages.

In my opinion, the most significant weakness in the draft is that it offers no evidence of any problems. Occasionally, conclusions are drawn (such as on the assumed harms associated with shoreline "armoring") but no supporting data is presented and no harms are explained. The paper is composed of assertions, not claims backed up by evidence and reasoning. It contains not a single footnote, expert opinion, or piece of statistical data to explain and/or support an argument that shows the reader what is wrong and what merits an expense of millions of dollars in Puget Sound repair and restoration. To repair what? To restore what?

Perhaps I should amend the above to note that the draft does include many "examples." Unfortunately, the reader does not know if they are real or made up as illustration. One is described as "real world" but we don't know where or when in the real world it came from. Sometimes it is unclear what the examples are intended to illustrate.

What the draft does contain in abundance is a bewildering array of governmental programs, policies, guidelines, and regulations (often overlapping) along with new mandates the authors themselves identify as thus far impossible to define, apply, and monitor.

The draft is overtly congratulatory on the formation of bureaus, commissions, departments, and other governmental structures but makes very little mention of the contributions individuals and groups acting as good stewards on behalf of the environment have made. In a few instances it seems that the authors have gone out of their way to slam property owners. For example, on page 7, the authors allege, "Some property rights interests have taken advantage of these concerns" (about expensive special studies) "to generate opposition to shoreline regulations such as buffer standards." How is this "taking advantage?"

In my view, the paper is frequently biased. This is an important consideration, particularly since the authors introduce themselves as "independent consultants" and set forth a goal of "finding what is needed in crafting solutions"

Notes on the text:

The first few paragraphs suggest strong approval for the State. The legislature took "significant" steps to "revitalize" the SMA with an "ambitious" framework and we now have "much to celebrate." In reading the entire paper, it is hard to see that we have

"much to celebrate." Listing dozens of agencies invested with power and supported by tax dollars does not attest to efficiencies, effectiveness, or progress. These elements may exist but the Draft doesn't enumerate them.

Page 2: The language contained within the SMA may be the same as the language as interpreted by the authors but I'm not sure about this. What is required and what is recommended, what the counties *should* do and what they *shall* do is unclear, I looked at the original documents and I see a lot of "shoulds" and very few "shalls." ("Should" is advisory; "shall" is mandatory." Experience with regulatory *guidelines* that were presented to us locally as rigid dictates has made many of us wary.

Page 2: "No net loss." As the authors note, this is ambitious. It is also, in my opinion, an impossibility in terms of establishing a workable definition that would apply reasonably to the thousands of miles of Washington shoreline, deliver equitable regulations, and enforce them with any amount of fairness. I am happy to see that the authors recognize some of the challenges. "No net loss" (NNL) means different things to different regions. Does it mean that a loss in one place has to be mitigated by a gain in the same place? Or can a loss in one area be made up by a gain in another? Are we just talking about environmental habitats, functions, and structures or something bigger? Louisiana has established policies on NNL for 'cultures." The cultures involve people who contribute to the economic health of the region with critical items like farming and tourism. People are, after all, significant inhabitants of San Juan County.

I very much hope that if we must continue with this, NNL credits or gains should be applied to the thousands of acres in our county under the jurisdiction of the Land Bank and other entities. This is <u>all</u> net gain.

Page 5: Evidence should be offered to support the authors' view that "hard armoring is one of the most environmentally detrimental forms of erosion control." On page 6, it is noted that 'one third of the Puget Sound marine shore is already armored in ways that displace habitat and continue to disrupt processes and functions." No evidence or explanation is provided.

Page 7: What is PSNERP?

Page 8: "Given that the overall goal for local government is to achieve no net loss of function…" This is <u>no</u>t a given. This may be a state government goal but it is not a local goal.

I don't believe it would be helpful to detail every problem I see in this draft. What I've said so far is sufficient to make the point that if the document is intended as a step towards conciliation, compromise, and good will, it falls short. Most importantly, it is woefully bereft of substantiation.

I would like to suggest one avenue of in-depth discussion I mentioned earlier. There should be analysis given to the positive role of non-regulatory human activity in maintaining the beauty and purity of our environment. A directly associated approach, and equally important in my judgment, is to eliminate from our dialogue the artificial

division between environmental preservation and the preservation of property rights. The two are not mutually exclusive. Both are tremendously important elements of civilized societies and democratic institutions.

I appreciate your consideration of my views and thank you in advance for reading this letter.

Submission 9:

From: Jim Hagen
Date: Fri, 19 Mar 2010 08:12:57 -0700
To: <jkramer.consulting@gmail.com>, <cmacilroy@gmail.com>, <mclancy@esassoc.com>
Subject: Draft SMP White Paper Comments

Jim Kramer
Carol MacIlroy
Margaret Clancy

This draft white paper appears to strongly hint that the ambitious scope of the post 2003 SMP update is exceeding the resources local jurisdictions and the Department of Ecology are able to provide. The conclusion reached in the final section - Capturing the Opportunities - suggests that acquiring the necessary resources to successfully implement SMPs involves expanding local oversight to bring in "business and environmental interests and then working with State staff, legislators and the governor to increase strategic investments for the protection of Puget Sound's shorelines." This indicates that the DOE has first of all underestimated the complexity and expense of updated SMP requirements and second, that the model SMP update remains in the prototype phase and despite being in a continual state of fluidity, jurisdictions such as Jefferson County are very shortly going to have to live with the very certain consequences of this costly experiment.

If private property is going to be regulated for the general benefit of the environment, it is the responsibility of the public interest to first have developed an accountable system it is prepared to administer, implement, and monitor. What this white paper is admitting is the state is approaching the half-way of state-wide updates and there are still many unanswered questions. That is an unacceptable when landowners are being asked to make very certain sacrifices.

An important element of land-use planning in Washington state is a locally-driven, bottom up approach. The GMA grants deference to local decision making as long it it is in compliance with the intended purpose and goals. Continuous and ongoing public participation is also a critical element in ensuring that those directly effected by regulations have a key voice. RCW 90.58.050 describes a collaborative effort between the DOE and local jurisdictions. It mentions nothing about outside agencies and non-governmental environment interests assuming prominent roles in overseeing adminstration of local regualtions.

Several statements in the white paper appear to hint that to increase funding and resources, local SMP update processes need to be brought under a wider umbrella. On page four the white paper states that accounting for no net loss needs to occur on three levels, including a "Sound-wide level." That is currently beyond the legal requirement of meeting no net loss on a jurisdictional level, not to mention the injustice of asking a County like Jefferson to offset the degradation that has occurred in the Seattle basin.

The white paper describes the SMA as a partnership between local governments and their communities with the DOE, the governor, and the legislature. In reality, the SMA is implemented through SMPs, which are a direct collaboration between local governments and the DOE. The governor and legislature only becomes involved when ***changes*** to the law are enacted. Is that what this white paper is in part proposing, that oversight of local SMPs fall under a broader umbrella to ease the funding and administrative burdens?

It would be more prudent for DOE to call a time-out on the SMP update process and figure how it can streamline, not expand, what has become another regulatory behemoth. We have spent millions of dollars on GMA, stormwater control, clearing and grading standards, septic standards, new limit son water use and on and on and it continues to fall short. Is anyone anyone paying attention to the budget crisis?

In response to your survey, I am a member of two property rights groups and am a former chairman of the Jefferson County Planning Commission. You ask what can be done to improve relations with property rights groups. Cooperation begins with mutual respect. It has been my experience that advocates of property rights are continually characterized as misinformed and greedy. There also exists the distinct impression that environmental interests and their allies in local planning departments pay only a grudging reluctance, if not downright antagonism, toward the constitutional rights of people to live on their property. In fact, the entire aim of environment-based regulation appears based on a complete distrust of people who make up the heart of our local communities.

One of the perpetual myths is that property rights activists wish to do "whatever they want" with their land. On the contrary most landowners are quite responsible, are quite aware of the limits the courts have already placed on land use through nuisance and zoning conditions, and most pointedly are among those most interested in maintaining the natural resources we all cherish here. If environmental protection is going to truly succeed there will need to be established an adult-to adult relationship between the presently competing interests. The key partnership in the equation of protection of our shorelines and natural resources is that between the private landowner and the public regulator.

The present mistrust is also interfering with implementing voluntary alternatives to prescriptive regulation. A good example is the Jefferson County Critical Area Stewardship Plan, which was authored by local citizens who would be labeled as property rights activists. Unfortunately, many landowners are suspicious of it simply because it is associated with government regulation in general and won't even consider it.

This white paper makes it evident that the old environmental paradigm of strict regulation is costly and ineffective. The true path to environmental protection involves a genuine partnership between people and the and.

Jim Hagen
Jefferson County

Submission 10:
From: Laura Hendricks
Date: Fri, 19 Mar 2010 14:08:54 -0700
To: Jim Kramer, Carol MacIlroy, Margaret Clancy
Cc: Dave Peeler, <pspartnership-envcauc@lists.groundwire.org>, kvan461 <Kvan461@ecy.wa.gov>, Ted Sturdevant
Subject: Shoreline Master Program Update-Sierra Club Response

March 19, 2010

James Kramer
Carol Macllroy
Margaret Clancy

Dear Jim, Carol and Margaret,

Per your request, The Sierra Club is providing the following comments on your Shoreline Master Program updates white paper. Upon review of your attached white paper, we find it remarkable there was no mention of aquaculture impacts that should have been included with all of the other impacts. These well documented aquaculture impacts have been presented to Ecology and the Puget Sound Partnership, documented in numerous science studies and reported by many citizens for years. In addition, provisions of HB2220 have been ignored that were intended to provide Ecology guidance on geoduck aquaculture along with the SeaGrant preliminary findings on geoduck aquaculture which should have re-enforced the precautionary approach.

We have been actively following the Shoreline Master Program updates in Jefferson, Pierce and Thurston Counties since mid 2009. During that time, we have supported measures to tighten upland regulations on the uplands to minimize "no net loss." At the same time, we have witnessed the intense political lobbying and legal threats aimed at the Counties by the Pacific Coast Shellfish Growers Association and Taylor Shellfish as they have paved the way for unprecedented aquaculture expansion in the very areas of the Nearshore/tidelands/shorelines that the SMP update was designed to protect.

Jefferson County Shoreline Master Program Update

In the Jefferson County SMP update submitted to Ecology, there is no way to monitor or enforce "net loss' as a result of industrial aquaculture operations as most of their operations are not even required to obtain a permit. Attached you will find the letter to Jefferson County from People for Puget Sound addressing their concerns regarding aquaculture. The aquaculture protections that were recommended by previous committees and organizations were basically eliminated from the SMP update at the hand of Peter Downey, the Chairman of the Planning Commission, who is a shellfish grower and actively represents the Pacific Coast Shellfish Growers Association.

Pierce County Shoreline Master Program Update
The Pierce County SMP update is still in process with draft regulations being finalized by county staff. Pierce County did increase their natural designated shorelines from approximately 20% to 40% of total shorelines as part of their SMP update. While Pierce County citizens should be celebrating their success in protecting the natural character of their beaches, they are now facing fighting unprecedented industrial aquaculture expansion as industry has demanded operations in **all shorelines in Pierce County.** Diane Cooper, representing Taylor Shellfish, presented a Department of Health map showing the majority of Pierce County shorelines/waters are open for shellfish harvesting and stated that they are potential sites for the various types of industrial aquaculture.

Attached you will find just a few of the emails from concerned citizens and SMP committee members describing their concerns with the SMP update process and lack of protections in the draft regulations regarding the known adverse impacts of aquaculture. In order to streamline the attachments, some email addresses were omitted, but the information is the same as the original documents that are being saved for future court hearings.

Thurston and Mason County Shoreline Master Program Updates
These updates are still in process and draft regulations have not been provided to date. Thurston County and Mason County have been provided documentation from numerous concerned citizens regarding the unregulated industrial aquaculture expansion that has been allowed to degrade forage fish areas, destroy aquatic life and marine vegetation.

Since industrial aquaculture practices in these counties have included dredging, filling and liquefying our Nearshore, even the beach organisms are being eliminated for a period of time. There can be no doubt that the elimination of our beach organisms coupled with the "industry pest/predator control" of aquatic life has been a major "net loss" to Puget Sound and our coastlines. At the recent Pest Management Strategic Plan on Bivalves for Washington and Oregon, the attached list of "pests/predators" includes basically all of our animal and plant aquatic life except for salmon and whales. Removing/destroying the majority of our aquatic life and applying chemicals will continue to have a serious cascading effect on the natural ecological functions in Washington until adequate protections are required.

According to the attached 2009 study, "Willapa Bay and Humboldt Bay might therefore

be considered "production" estuaries with greater than 10% of the area occupied by shellfish aquaculture, while numerous other smaller estuaries with little aquaculture could be classified as other types (though the proportion of total estuarine area leased for aquaculture in some of these systems is also greater than 10%, leased does not necessarily mean actively used, Table 3)." Included on Table 3 is Totten Inlet which already has 31 out of 33 miles shoreline miles consumed by aquaculture with pending applications for mussel barges in the deeper waters. No permits have been required for other Thurston and Mason County estuaries as they have been filling up with industrial aquaculture without oversight. The aquaculture industry intention to convert our shorelines and estuaries to "Production estuaries" is not consistent with the Shoreline Management Act "no net loss" goals or with other stakeholders.

The Sierra Club does not feel that Puget Sound is being protected through the shoreline master programs and that this process has not met the transparency or technical requirements necessary to adopt these changes. What we have seen is the SMP update process is being used to open up our shorelines/Nearshore for industrial aquaculture operations at the expense of our habitat, native species and citizens.

We hope that our concerns will be seriously considered even though one of the consultants that issued this SMP white paper and is working on this SMP update review is a board member of the Puget Sound Restoration Fund which includes the major shellfish industry principals and is also involved in commercial aquaculture.

Please contact us at your earliest convenience to discuss our concerns as well as any questions you may have on the documentation we have provided to the counties and Ecology on the SMP update.

Sincerely,
Laura Hendricks, Chair
Shorelines and Aquaculture Sub-committee
Sierra Club, Cascade Chapter

Attachment 1-11/11 Submission 10:
Attachments begin on next page.

PROTECTING PUGET SOUND THROUGH SHORELINE MASTER PROGRAMS

OPPORTUNITIES TO IMPROVE PROTECTION

Draft White Paper

March 4, 2010

In 2003, the Washington State Legislature took a significant step to revitalize the 30-year-old Shoreline Management Act. Based on agreement from a wide range of environmental, business and government interests, the Legislature set out an ambitious framework to update the Shoreline Master Programs for over 250 cities and counties across the State.

Protecting shoreline habitat is a critical element for protecting and restoring Puget Sound. The comprehensive SMP updates provide an unparalleled opportunity to apply science to regulating and restoring our shorelines.

We are approaching the mid-point of the statewide SMP update effort. Over the past six years, the Department of Ecology (Ecology) has worked with nearly 150 local governments to fund and support updates to the local Shoreline Master Programs (SMPs) as mandated by the State Legislature. Thirty local governments have completed the State-funded update process or are nearing final approval by Ecology. There is much to celebrate in the accomplishments achieve so far by local governments and the State. It also is timely to assess the experience to date, to improve the process and outcome for SMP updates over the next several years.

This paper was developed by Jim Kramer, Carol MacIlroy and Margaret Clancy (independent consultants with experience in shoreline management in Washington State) with funding from the National Fish and Wildlife Foundation, and guidance and support from the Department of Ecology Shoreland Section (Ecology) and local government staff and officials. This paper reflects the views and experience of the three consultants in regard to some common challenges facing state agencies, local governments and other partners in protecting Puget Sound through the shoreline master programs.

The purpose of the paper and the related questionnaire is to solicit feedback from various parties involved with shoreline management in Puget Sound at the local, state, public and private levels. Our hope is that the paper and questionnaire will stimulate those that have a stake in the future of Puget Sound shorelines to point out the most important areas for improvement and where they have an interest in helping Ecology develop solutions. The paper will be revised with the responses from the questionnaire and comments received by the end of the comment deadline of March 19, 2010. The final conclusions will be presented to Ecology and Puget Sound local governments currently working on SMP updates at the Shoreline Planners meeting on April 21, 2010. Our intent is to help identify next steps for Ecology and other parties in creating the strategies and actions necessary to address the issues identified in the final paper.

Background

Businesses, governments, and communities across Puget Sound are seeking to protect and restore Puget Sound by 2020. Tremendous financial and human resources are being directed to accomplishing goals for clean water, functioning ecosystems and species protection and recovery. The Puget Sound Action Agenda lists protection of ecosystem functions, processes and structures as Priority A for recovery of Puget Sound. One of the key tools for protection is the Shoreline Management Act, which is implemented through local Shoreline Master Programs. The Shoreline Management Act (SMA) specifically regulates the marine waters of Puget Sound, major rivers and streams, and large lakes as well as the adjoining lands (extending approximately 200 feet landward of the ordinary high water mark). The state is currently investing millions of dollars to update local shoreline master programs.

The SMA requires local governments in partnership with the State to balance existing and future needs for public access, water dependent and related uses, and environmental protection. Across Washington, the SMA sets up a unique partnership between the State and 264 local governments. In Puget Sound, there are over 100 cities and 12 counties all working together with the State and others to manage thousands of miles of shoreline for people and nature. Over the past thirty-five years, the State and local governments have shared responsibility for maintaining much of the natural beauty and ecological health of the region while accommodating significant human population growth and related development. The evolution of science along with successes and shortcomings implementing the SMA motivated business, environmental, state and local leaders to agree on the need for a comprehensive update to all shoreline master programs.

Refining the protection of natural ecosystems is one of the core purposes of the legislatively required updates for local shoreline management programs. Ecology adopted the ambitious policy objective of achieving "no net loss" of ecological function as a cornerstone for the SMP updates. SMPs are required to prevent environmental damage from activities in the shoreline zone that could contribute to a loss of ecosystem processes, functions and structures (habitats). Although the regulatory authority of SMPs cover a relatively small percentage of the Puget Sound ecosystem by managing land use only along a thin strip of land adjacent to major water bodies, SMPs play a critical role in protecting ecosystem processes and functions.

There are many other factors extending beyond SMP jurisdiction that affect the health of the ecosystem. Local governments have the ability to broadly manage land use and protect overall ecosystem processes, functions and structures (habitats) through the Growth Management Act. State and federal agencies also play a vital role in protecting the broader ecosystem by administering the State Hydraulic Code, Aquatic Lands Act, Forest Practices Act, Clean Water Act, National Pollutant Discharge Elimination System, Endangered Species Act and other authorities. The Puget Sound ecosystem would benefit from a more comprehensive and coordinated management effort by federal, state and local governments to ensure all factors affecting the protection and restoration of the ecosystem are being managed efficiently and effectively, with better clarity about where SMPs contribute to this broader context.

This paper focuses on the important, but limited, role that Shoreline Master Programs play in Puget Sound ecosystem protection and restoration.

The SMP Guidelines (Chapter 173-26 Part III, WAC) require local governments to achieve no net loss of ecological function from activities in the shoreline zone while accommodating water-dependent and other priority uses as well as public access. Achieving no net loss involves several steps:

- ***updating and adopting*** SMPs to meet the intent of the SMA and address known gaps or short-comings in protection efforts,
- ***implementing*** SMPs through permits, technical assistance, incentive programs, restoration and enforcement, and
- ***monitoring and evaluating*** changes to ecological conditions caused by management actions to determine if protection efforts are effective and if not, why not.

Collectively, Ecology and local governments have nearly 6 years of experience invested in this round of updating SMPs using the "new" SMP Guidelines and limited experience implementing the newly adopted SMPs. There have been many successes where counties and cities with Ecology's partnership have increased local protection of the ecosystem while meeting the needs of property owners and other community interests. The focus of this paper is on what the authors believe are issues that limit the achievement of no net loss and/or create impediments to the update process local governments and the State. These challenges exist partly because the Shoreline Management Act sets up a need to balance state and local interests, human access to shorelines and environmental protection, and other potentially conflicting priorities. They are also present because of the different perspectives and authorities within the partnership of the State, local governments, property owners and others involved. Resolution of the challenges will require state government, local governments, property owners, businesses and environmental interests to build on their different perspectives and sometimes competing priorities to find new and creative pathways toward the future of a healthy Puget Sound.

Opportunities for Improvement

The opportunities are categorized in three areas: overarching ecological and land use, SMP update process, and SMP implementation issues. These issues are complex and some have been experienced for years as part of the challenge to address the nexus of science, land use authority, community development and private property rights. Examples are provides to help illustrate the complexity and the importance of the multiple perspectives needed for their resolution. Although this paper does not focus on solutions, the authors provide their sense of what is needed in crafting solutions. The authors are interested in whether these issues are accurately described, their relative importance, other examples that illustrate the challenge and what would help improve the situation.

Overarching Ecological and Land Use Issues

1. No Net Loss

   In setting "no net loss of shoreline ecological functions" as the environmental protection standard for SMPs to achieve, the State with the support of business and environmental organizations signaled its intent to substantially strengthen protections

for Puget Sound shorelines. Even though the SMP update process has been underway for several years, the path for SMPs to meet the no net loss policy objective is still emerging. There is even less clarity on how NNL will be tracked and evaluated in the long term. Evaluating success in achieving no net loss will be a key issue for the future seven-year SMP updates, which were mandated as part of the 2003 legislation.

Accounting for No net loss needs to occur on three levels:

- Project level: The shoreline master program guidelines (Chapter 173-26 Part III WAC) indicate that the no net loss standard should be applied to "each permitted development" and that local governments must ensure that "exempt developments in the aggregate" do not cause a net loss of ecological functions without specifying how this should occur. The guidelines also require SMPs to contain policies, programs, and regulations that address cumulative impacts (from new and existing development) and "fairly allocate the burden of addressing cumulative impacts among development opportunities". There is minimal guidance on how this standard should be implemented.

- Jurisdiction level: The SMP update process requires local governments to use detailed information on ecosystem processes and functions to develop shoreline policies and regulations. The policies and regulations apply to a legally defined jurisdictional boundary, not an ecologically defined system or unit, and in most cases the jurisdictional area is already disturbed, developed and/or platted. Despite these constraints, SMPs must prevent detrimental impacts while accommodating planned development, public access and water dependent uses.

- Sound-wide level: Protection and restoration of shoreline habitat will be a critical element in sustaining the Puget Sound ecosystem over the long term. The Puget Sound Partnership and other parties will need to assess ecosystem conditions, and link conditions and trends back to shoreline management under local SMPs, to assess whether the NNL objective is being achieved.

To understand the challenges that this presents consider this real-world example:

Example – A marine shoreline within a city is zoned and platted for urban density single-family residential development. Nearly all of the lots have a legal residence, a dock and a protective bulkhead. Most homes are within 50 feet of the ordinary high water mark. Roughly 15 percent of the shoreline is sparsely developed, but the zoning and comprehensive plan designations are the same as the developed area and future build-out is almost certain. Restoration opportunities within this city are very limited because of existing development on private property. Although the jurisdiction has adequate mitigation provisions written into their SMP, how can the city demonstrate that they will achieve no net loss of ecosystem functions when 'preferred' development of the remaining lots is almost certain and continued ecosystem loss from existing development is certain?

To date, local governments generally have addressed no net loss by:

- Applying a shoreline designation system that differentiates shoreline management goals based on the current shoreline conditions;
- Having policies and regulations that require individual developments, including exempt developments, to mitigate their impacts;
- Integrating critical area regulations into their master programs;
- Having policies and regulations that prohibit developments if they are determined to contribute to cumulative impacts; and
- Having a restoration plan that identifies specific projects or actions that can be taken to improve shoreline functions over time.

While these measures constitute major improvements in shoreline protection, verifying that they achieve no net loss will be difficult because there are no agreed-upon indicators of function for local governments to use and consequently there is no commitment to monitor over time.

There needs to be a technical and policy approach to define no net loss of function and ensure policies and regulations protect these functions. Where there are gaps in the ability of SMP policies and regulations to protect functions, local governments need better strategies for integrating tools that can complement SMP regulations including incentives, technical assistance and restoration.

2. Protection of Private Property/Shoreline Armoring

The region needs additional incentives and strategies for protecting private property with environmentally beneficial practices.

Many shoreline property owners have made significant financial and personal investments in their property. They are concerned that shoreline erosion may cause loss of land or threaten their homes or structures. Hard armoring is one of the most environmentally detrimental forms of erosion control, but many property owners perceive it as the least expensive, most reliable and thus most favorable option. The fact that bulkheading/hard armoring to protect a single-family residence is statutorily exempt from a Shoreline Substantial Development Permit may reinforce these perceptions.

The Shoreline Master Program Guidelines adopted by Ecology allow bulkheading only if there is a demonstrated and imminent threat to an existing residence. This standard often sets up a battle about the nature and severity of the threat, which can be difficult for a local planning agency to adjudicate. Although there are other property protection techniques that are benign or beneficial to the environment, they are less known, may be more expensive, and may sometimes be more challenging or costly to permit (especially if they involve fill below the ordinary high water mark). In addition, the conditions along some shorelines call for holistic (reach-scale) approaches that make it difficult to site a single bioengineered bank protection project

among a reach of hardened shorelines. These factors inadvertently create disincentives for private property owners to pursue using ecologically better techniques for property protection.

In addition to impacts from new armoring, roughly one third of the Puget Sound marine shore is already armored in ways that displace habitat and continue to disrupt processes and functions. Over time this armoring has to be maintained or replaced. With expected impacts from climate change, the desire to maintain or replace these structures with similar armoring will likely increase. The SMP Guidelines encourage replacement with more environmentally benign designs. However, achieving this policy objective will be a significant challenge. Failure to create new incentives and strategies that motivate property owners to replace bulkheads with bio-engineered approaches amounts to a missed opportunity to restore some environmental functions. Seattle's *Green Shorelines* guidebook is an example of the types of tools that will be needed to address these issues, but additional resources will be needed if we hope to make progress on-the-ground and in more dynamic environments besides Lake Washington. The example below highlights some of the added complexities that this issue presents:

Example: A rural property owner needs to repair their bulkhead due to damage from a winter storm. They are willing to use a soft shore solution that involves creating a sloped beach, logs and native plant materials. The effect of this would be to move the ordinary high water mark (OHWM) further landward putting the home within the setback/buffer zone. The property owner is reluctant to do this because of their concern that it might negatively impact their future use of the property. They are also concerned about the time and expense of obtaining permits for proposed work.

There must be adequate regulations, incentives, technical assistance and procedural support to ensure that property owners can achieve property protection using environmentally benign or beneficial techniques at equal or less cost and time than standard bulkheading/armoring techniques. This may require changes to the SMA or other regulatory programs.

3. Restoration

We need a stronger quantifiable and transparent linkage between restoration planning, projects and potential ecosystem losses projected through the SMP update process.

Local governments are required to develop a restoration plan as part of the update process. It is expected restoration will help compensate for ecosystem losses from on-going degradation caused by past development, new activities not controlled by local government and cumulative impacts. The restoration plans that have been prepared so far in the update process contain descriptions of the best ideas in the city or county for restoration (in some cases based on scientifically vetted prioritization efforts). However, the expected functional gains represented by these projects are not directly correlated with potential losses from new and on-going development. Since restoration projects are voluntary and depend on the ability of a restoration entity to

acquire funding, purchase property and manage the restoration action over time, the likelihood that restoration actions link back to actual losses resulting from shoreline permits or violations in a timely manner is low. Many of the sites and projects that local governments identify as suitable for restoration are privately owned, which creates concern and confusion among private property owners and further calls into question the likelihood of their implementation. Actual restoration is based on the availability of property, funds and projects with no assurance that restoration will occur at a time or pace that matches the impacts from existing, new and on-going development. As the following example shows, we need better strategies for facilitating restoration activities that are directly tied to shoreline impacts.

Example: In a rural county, a home constructed close to the water is threatened by wind- and wave-generated erosion. The property owner wants to construct a bulkhead to protect the structure and provides an engineering study that demonstrates the home is in imminent danger and cannot be protected using soft-shore methods. The County is reluctant to approve the bulkhead because the property is located in an important sediment supply zone, but there are no alternatives. The property owner wants to do the right thing but there are no good ways to mitigate the sediment supply impacts on site. The County's restoration plan includes a recommendation for repairing past sediment supply impacts by replacing bulkheads with soft shore beach protection, but there is no funding for the Marine Resource Committee to complete the project and the landowners are not willing to participate. In the meantime, the County agrees to approve the bulkhead in exchange for some vegetation enhancement elsewhere on the property, but the sediment supply impacts are not directly addressed.

There needs to be better integration of restoration planning that has already occurred through salmon recovery and other Puget Sound efforts like PSNERP with local SMP planning. There need to be commitments for funding and timelines for restoration to occur commensurate with shoreline development and with direct linkages between loss and replacement of function.

4. Nonconforming Uses and Structures
When regulations change and previously legal structures and uses are deemed "nonconforming", some property owners are concerned and feel their investments and current uses are at risk.

Existing development and uses in the shoreline zone that are not consistent with the newly adopted SMP regulations are deemed to be nonconforming. The issue of non conformity is not new or unique to shoreline planning, but it is one of the issues that often confound shoreline property owners. The term "nonconforming" carries a negative connotation and property owners worry that nonconforming uses will be required to conform. Owners are also concerned there will be additional requirements like having to perform expensive special studies or surveys if they want to maintain or expand current uses. Some property rights interests have taken

advantage of these concerns to generate opposition to shoreline regulations such as buffer standards.

Most jurisdictions have policies for nonconforming use intended to protect legally established uses and structures. However, local governments are required to address impacts that cause a continued loss of ecosystem functions so there is pressure to minimize continued degradation from existing developments while balancing the interest of property owners to maintain and in some cases expand their existing structures and uses. .

Example: A homeowner legally constructed her house 50 feet from the riverbank. Two years later the County updated its SMP, increasing the buffer to 150 feet. The landowner wants to build an addition onto the house and is now required to get a conditional use permit, complete a vegetation plan and pay a consultant $10,000 to prepare the permit application.

Nonconformity is a complex issue local governments face in both the update and implementation phases of the SMP. Better strategies are needed for local governments to address the concerns and acknowledge the rights of property owners. Private property owners on non-conforming lands are often a critical constituency to achieving no net loss. More effort needs to be made to help them understand the ecological impact of their actions while acknowledging and respecting the voluntary nature of their decisions to take less detrimental actions where possible.

5. Agriculture and Forestry Exemption from Local Control
   The exemption of most agriculture and forestry activities from local SMPs creates an impression that these activities are held to a lesser standard than residential development. Given that the overall goal for local government is to achieve no net loss of function, if these uses are held to a lower standard than no net loss they may ultimately create impacts that in the end are viewed as a failure of the local government SMP.

   SMPs are barred by statute from requiring changes in existing agricultural activities. Forestry activities in the shoreline zone are regulated largely by the Forest Practices Act, with limited applicability to local SMPs. This creates a perception that these uses are provided special treatment and have greater flexibility than residential and commercial uses of the shoreline. It is not clear how the State regulation of forestry and agriculture are being monitored to achieve the standard of no net loss required of local governments. This creates the potential for opposition from key stakeholders.

   Example: Along a river shoreline, a farm has no buffer along two miles of riverbank and the new homes proposed for the adjoining properties are required to maintain a 150 foot buffer of native vegetation. The property owner questions why they are not allowed to remove the trees to create a view of the water when the farmer is actively farming down to the riverbank. They argue that their development has less of an impact than the farm.

Local governments need clear measures for success and information on how the agriculture and forestry sectors are being managed to meet the no net loss standard they are applying to their other interests.

Update Process Challenges

There are a number of common challenges experienced by local governments and Ecology during the SMP update and approval process. Addressing these issues will increase the efficiency of the process and the effectiveness of shoreline management.

1. Common Solutions for Common Challenges

   Local governments face a number of common technical challenges that would benefit from a more unified or comprehensive approach. Although inter-jurisdictional planning is encouraged, it occurs infrequently. Opportunities for improved inter-governmental collaboration include but are not limited to:

   - identification and mapping channel migration zones, especially since the SMP grants do not specifically fund this work;
   - Identification and clarification of approaches for addressing impacts from climate change. ;
   - strategies for integrating SMPs and Critical Areas Ordinances, given this issue has been confounded by recent legislation and court findings; and
   - cross jurisdictional restoration planning.

Example: Three cities in the Nirvana River Valley are each paying a consultant $40,000 to research and write the required section on ecosystem processes and functions and prepare a restoration plan. The Nirvana River Council has already conducted a watershed characterization and developed a list of restoration priorities. Each City sets out to prepare separate documents for their section of the Valley, while the Nirvana River Council awaits funding to implement their Valley-wide plan.

Resources need to be allocated to more inter-jurisdictional and cross-Sound technical studies that can be tailored by local governments to their individual situations. Local governments need to find ways increase their capacity to work cooperatively with each other to develop solutions to shared challenges. Ecology, the Puget Sound Partnership and others can help by securing funds to support the development of solutions.

2. Public Involvement

   Organized property rights groups are increasingly participating in the update of individual shoreline master programs. They are stimulating more interest and concern of property owners to engage in the process. Property owner participation can be beneficial over the long term because it increases mutual understanding and can lead to better environmental solutions. However, when property owners are stimulated to participate from fears raised by information that is not accurate it can

derail the update effort and thwart efforts to make improvements to shoreline management. Ecology's recent completion of a communication strategy and reassignment of existing staff to improve public and stakeholder communication is designed to address this situation. Additional work is needed to proactively and constructively engage property owners and property rights groups across the State. Without this work limited resources will be spent on crisis communication, lawsuits and ineffective policies and regulations instead of educating land owners and creating well designed and community supported updates.

Often the most intensive public outreach efforts happen during the local adoption process, after the local jurisdiction has spent the bulk of its SMP grant funds. Local governments may need to work more closely with Ecology to determine when and how grant funds are spent to ensure that money is available at the appropriate times in the update process to enable effective and timely outreach. This would require careful coordination with Ecology since the grant allocation requirements and process are quite complex and Ecology does not have authority to alter funding cycles.

There needs to be continued effort by Ecology, state agencies including the Puget Sound Partnership, and local governments to implement effective communication strategies. Ecology's new SMP communication strategy can serve as the foundation of this effort.

3. Ecology Support, Review and Approval

Ecology and local governments share responsibility for the success of the Shoreline Management Act and the efficiency and effectiveness of local government processes to update their SMPs. Ecology's role is to ensure the overall effort is meeting the intent of the SMA and approve each local government's updated SMP. Local government's role is to work within their community, apply science and develop a SMP that meets the State requirements and is consistent with other local authorities and interests. Ecology's current workload is exponentially greater than ever before to review and approve SMPs, and it will continue to expand over the next few years. Even though their staffing has not increased at the same rate as the work, Ecology has made significant efforts and advancements to facilitate and improve the overall process. As with any new effort of this size and magnitude, there are several areas that could be improved.

a) The feedback and guidance that Ecology staff provides to local governments needs to continue to improve to ensure consistency across all Ecology staff working with local governments. Guidance and feedback need to address the tough issues in a manner that can be used by local governments. There needs to be accountability for both Ecology and the local government to ensure that differences have been resolved during the update process.
b) The timeframe and criteria for Ecology's final approval of a locally adopted SMP is highly uncertain and has sometimes taken more than a year. Local governments are often not meeting their timeline for local adoption which can significantly affect Ecology's schedule and workload. However, Ecology's process of formal review is uncertain and not transparent to the

local government as well as those that were involved in the local process. Once a locally adopted SMP is submitted, prompt review is essential. Uncertainty and delay create frustration and tension between Ecology and the local governments about when the new policies and regulations will take effect locally and whether there will be a need for substantial revisions, public process and staff work. This delay also has created a window for confusion and unrest about the SMP because after approximately 5 years of work and agreement there is not decisive endorsement or support to move forward from the state.

There needs to be continued emphasis on providing consistent feedback to local government and continued dedication to increasing predictability in the final review process.

Implementation Issues

1. Staff resources to implement updated SMPs
   After final adoption of the local SMP, effective implementation will be a significant challenge. Generally, the newly updated SMP's are more complex and resource-intensive than previous regulations.

   The adoption of updated SMPs increases the demands in implementation because science is demonstrating more complex interrelationships that must be address for protection of the ecosystem; the expectation of achieving no net loss is coming under more scrutiny; the number of communities involved in restoration and environmental protection has diversified, regionalized and grown; and private property owners, businesses and environmental interests are increasingly involved and sophisticated in their expectations and needs. This increase in local effort and expectation is occurring in a time when local governments are severely limited financially and are cutting programs and staff.

   The public's trust in government is fragile yet at the same time the public expects high quality and scientifically certain deliverables and dependability from government programs and efforts. There needs to be a strategy for how local governments will successfully address the increased work in implementation in the face of the current financial and political climate.

2. No Net Loss at the Parcel Level
   The requirement to achieve no net loss from development activity on an individual parcel will be a challenge for local governments and the property owner to address and successfully manage.

   Generally, the approach to minimize impacts includes attention to how the property is developed, used and where activities are located. Practices are required and implemented such as setbacks from the ordinary high water mark and stormwater control to reduce environmental effects. However, there are often unavoidable

impacts that require compensatory mitigation. Single-family developments often have difficulty finding compensatory mitigation options that can be achieved on-site.

If there are no easy-to-access off-site mitigation options such as in-lieu fee programs or mitigation banks (which is the case in most jurisdictions), parcel by parcel mitigation is problematic. The state and federal agencies are working diligently to fund and implement watershed-based mitigation but it will likely take several more years before off-site mitigation tools are readily available in most areas of the state. In the meantime, there needs to be a serious look at how effective mitigation at the individual parcel level can be and how to fairly pay for and achieve no net loss.

3. Technical Assistance and Incentives
   Effective implementation of SMPs requires more than just regulation. Because of the complexity of property and environmental management there has to be more technical assistance to landowners. Local governments need to know how to best address unique situations on individual properties and provide guidance and examples of ecologically benign or beneficial alternatives to property owner needs. Local governments need incentives for known issues they will face like bulkheads, non-conforming structures and vegetation management coupled with an active effort to inform people of these incentives. These best practices need to be made available in an easy and effective manner for property owners.

   Without an equal or greater emphasis on assistance and incentives compared to regulation, property owners and the public may become more resistant to shoreline management and suspicious that the only tool governments are using to achieve no net loss is regulation. There needs to be a clear identification of the key regional issues local government faces and the development of tools, incentive programs and examples of best practices. In addition, sufficient resources for implementation of technical assistance and incentives at the local level are necessary to achieve no net loss of function. Partnerships with organizations like land trusts, conservation districts, foundations and others will be critical to success. These partnerships may need to be formed through regional organizing bodies like the Puget Sound Partnership or others with the staff resources and expertise to establish and manage such programs instead of relying on each local government to independently create and maintain these relationships.

   Example: A city identifies a last remaining stretch of critical shoreline adjacent to a salmon river that will likely only be protected if it is purchased by a land trust, put into conservation easements or significant landowner outreach and education occurs. Who is making the connection between lands that are unable to be protected through regulations and those with the tools to achieve protection?

4. Enforcement
   In the face of budget reductions many local governments and the State are cutting staff to monitor and enforce environmental programs. Many never had enforcement staff to begin with. Without the consequence of enforcement and subsequent

penalties, many landowners and people involved in development will not see the benefit of adhering to increasingly complicated and expensive land use restrictions. There needs to be a combined strategy between the State and local governments for effective enforcement.

Example: A property owner learns that his friend paid $25,000 to permit and site a modest expansion of his waterfront home, which took months to complete because it required a Conditional Use Permit. This property owner wants to convert his kayak shed into a boathouse and he decides to proceed without a permit because he knows he won't get caught. Without ever contacting the county, he converts his 8 x8 shed into an 1100 square foot boat/guest house and clears some trees so that he has better access to the water.

Capturing the Opportunities

The preceding paragraphs summarize the authors' perspectives about the SMP update process and implementation by describing where improvements could be made to the overall effort. These perspectives are meant to stimulate conversation, refinement and interest in solutions from the various stakeholders. We believe that it is important to understand both what we want to achieve and specifically what is limiting our success. We believe refining and then collectively addressing these issues will increase overall confidence that ecological protection in Puget Sound is possible, build on existing trust and relationships among those most closely tied to the success of the SMP, and help meet the intent of the Shoreline Management Act to achieve no net loss.

The issues and challenges described above are not caused by any group or organization. The SMA, by design, is a partnership between local governments and their communities with the Department of Ecology, the Governor and the legislature. Effectively overcoming the obstacles described above requires a combination of all parties working together in a manner specific to each issue to craft solutions that work. Creating guidance, examples and common strategies for common issues requires Ecology, local governments and others to work together with their unique and combined expertise and perspectives. Acquiring the necessary resource for implementation will require local staff and elected officials combining their voices with business and environmental interests and then working with State staff, legislators and the Governor to increase strategic investments for the protection Puget Sound's shorelines.

Next Steps

Comments on the issues described above are sought to ensure the issues and examples are clear, accurate and complete. Feel free to send us additional examples based on your personal experience. Please note which of these issues have the highest priority for you or your organization and which, if any, issues are not of importance. Please note where you see the greatest opportunity at this time to advance an issue and which issues may not be timely. Please provide your response to these queries and any other comments you may have to Carol MacIlroy at cmacilroy@gmail.com or call 206-2934141.

Following the end of the comment period, March 19, 2010, the authors and Ecology will develop a revised draft and provide a sense of the priority of the issues and the sequence for addressing them. A potential path to continue this work: Clallam County with the support of Ecology and Jefferson County have requested funding from the EPA to being crafting solutions to these issues beginning in late spring of 2010 and finalizing the recommended solutions by the end of 2010.

August 29, 2008

Michelle McConnell, Associate Planner
Jefferson County Shoreline Program
621 Sheridan Street
Port Townsend, WA 98368

SENT BY EMAIL TO: mmcconnell@co.jefferson.wa.us

Dear Michelle:

Re: 8-21-08 Chapter 8 Excerpt – Aquaculture Revision

Thank you for the opportunity for the Shoreline Policy and Technical Advisory Committees to review the latest draft of Chapter 8 prior to its submittal to the Planning Commission. We appreciate the hard work and dedication of Jefferson County staff and consultants over the last year towards developing this draft.

Changes We Support – Aquaculture Section

- Policy A.4, which states that aquaculture use and development should be designed, located, and operated in a manner that avoids significant adverse impacts on ecological functions and natural shoreline formation processes such as net-shore drift.
- Policy A.5, which recommends that aquaculture "developments" which provide locational criteria for siting of aquaculture to avoid significant adverse cumulative impacts. However, since there is much confusion and debate as to when aquaculture is considered development, we recommend you change the word "developments" to "uses", since that is the term used in the WAC guidelines and because all types of aquaculture have potential for adverse impacts if not properly sited.
- Policy A.10, which states aquaculture uses and developments should not degrade critical habitat areas.
- Policy B. 1., which prohibits net pens and finfish aquaculture that uses herbicides, pesticides, antibiotics, fertilizers, genetically modified organisms, or feed. Research shows that these types of aquaculture are associated with adverse

impacts to water quality and to increase risks of wild fish to diseases and parasites.

- Regulation D.1.c and d, which define aquaculture that involves dredging using mechanical equipment such as clamshell, dipper, or scraper, or filling of tidelands or bedlands as development, therefore requiring a substantial development permit. We agree the potential impacts of these activities to Puget Sound nearshore environments warrant a substantial development permit.

Issues of Concern –Aquaculture Section

The September 21, 2008 text changes to the Shoreline Master Program draft regarding aquaculture are inconsistent with the Shoreline Management Act with respect to protection of shoreline critical areas. The changes have also created internal inconsistencies, especially with respect to the proposed purpose and goals of the priority aquatic environmental designation. Our primary concern is that the latest revisions, specifically Section D.1., appears to exempt certain types of new or expanded aquaculture from county review for compliance with the goals and policies of the SMP, including protection of shoreline critical areas. Section D. 1. provides that only certain new aquaculture operations will be subject to the SMP program, specifically those interfering with normal public use of waters, placement of structures, dredging using mechanical equipment, or filling. This implies that the policies for protecting critical areas, as well as policies in Section 2.A., don't apply to certain types of aquaculture activities, such as those that do not involve placement of structures (geoducks). The SMP needs to clearly state that all new or expanded aquaculture activities must comply with the policies to protect critical saltwater habitat and mitigate unavoidable impacts located in Chapter 6, as well as the specific policies in Chapter 8, particularly those listed in Sections 2.A. and 3.g, and D.3.a., b., c., h., i., and l. (Note: Section D.4. and 5. provide standards for issuing new permits for aquaculture uses and development, but it is unclear if these apply to the aquaculture uses and nonstructural aquaculture activities that aren't defined as development in D.1.)

At the August 5, 2008 joint meeting of the shoreline policy and technical advisory committees, county staff stated that the aquaculture section was being revised to conform to the AGO's January 4, 2007 opinion regarding geoduck aquaculture. That opinion states that the substantial development permit requirement is not necessarily required for intertidal geoduck farming. However, the opinion also clearly states: " our conclusion does not imply that the SMA lacks authority for local government to manage geoduck aquaculture use of the shoreline. The SMA authorizes conditional use permits to manage shoreline uses" (AGO2007 No. 1, page 11). And page 12 states:

> "…It is likely that shoreline master programs have not considered using conditional use permits to regulate geoduck operations, and therefore, that option is not immediately applicable in all jurisdictions. However, all master programs are being reviewed and updated during the coming decade. Ecology's guidelines for updating master programs provide that aquaculture of this type is a favored use of the shoreline environment that should be accommodated by shoreline master program. Therefore, this option is prospectively available as a means for managing existing and future operations."

We do not believe the AGO opinion authorizes the county to forego management of aquaculture uses in the shoreline. Indeed, the AGO opinion offers the condition use permit as an option. To be consistent with the SMA, the county needs to establish an appropriate review process that provides clear documentation that the county has reviewed and approved the proposed use or expansion for consistency with the SMP and critical areas ordinance. WAC administrative rules 173-27-040 states: "an exemption from the substantial development permit process is not an exemption from compliance with the act or the local master program, nor from any other regulatory requirements. To be authorized, all uses and developments must be consistent with the policies and provisions of the applicable master program and the Shoreline Management Act." Further, WAC 173-26-191 states that the SMP policies and regulations "apply to all uses and development within shoreline jurisdiction, whether or not a shoreline permit is required." Lastly, WAC 173-26-241(3)(b) states: " aquaculture should not be permitted in areas where it would result in a net loss of ecological functions, adversely impact eelgrass and macroalgae". How is the county to ensure aquaculture uses meet the goals of the SMA if there is no review of aquaculture activities? We believe it is the county's obligation under the SMA to ensure that all uses within shorelines, including aquaculture, are managed to assure no net loss of ecological functions and to avoid adverse effects on shoreline resources and values.

The lack of clear provisions for critical areas and SMP regulatory review for new aquaculture also conflicts with the priority aquatic designation. The purpose of the priority aquatic designation is supposed to be to "protect to the highest degree possible, and where feasible, restore waters and their underlying bedlands deemed vital for salmon and shellfish." It is assigned to the most vital salmon streams and nearshore areas as well as marine shellfish habitats whose qualities include: documented endangered species and their estuarine and freshwater habitat, intact drift cell processes, documented forage fish spawning habitat, and important intertidal and subtidal shellfish areas. Why then would the county not require critical area review for a use that will be located primarily in an environmental designation whose purpose is to protect endangered species habitat and other shoreline critical areas? If the county is going to exempt new aquaculture from critical areas review then the areas that are priority for aquaculture should be those shorelines which do not contain shoreline critical areas.

Section D.1 also conflicts with Section C.1. priority aquatic, which states that bottom and floating/hanging aquaculture may be allowed subject to policies and regulations of this program and the abutting shoreline area designation.

Section D.4. This section makes it clear when a new shoreline permit is not required, but Section D. 4 and 5 are confusing as to whether this applies to the activities that D.1. say are not subject to this program. Section 5 says permits may be issued for bottom culture, which would appear to conflict with D.1. We support requirements for new or expansion of all types of aquaculture, regardless of whether they meet the definition of development or involve placement of structures. We support the requirements for Section D.5 and recommend they be applicable to all aquaculture. We recommend adding an additional standard: "aquaculture use and development shall be sited to avoid impacts to forage fish

and salmon rearing and migratory habitats".

Concluding Comments

People For Puget Sound understands that filter feeders like clams, mussels and oysters can contribute to ecosystem health. Restoration of shellfish populations is part of the overall strategy of returning Puget Sound to health. In poorly flushed areas such as Hood Canal, shellfish may in fact be crucial consumers of nutrients. We also recognize there are issues, like those raised about geoduck aquaculture, that need to be addressed to ensure a cautious approach is taken regarding practices where the potential impacts to Puget Sound ecosystem health are unknown. Scientific studies and monitoring need to be funded in order to provide the best information possible about potential impacts, and to provide a basis for determining on a factual basis the appropriate scale and best practices for sustainable geoduck aquaculture in the intertidal zone.

We believe that the Jefferson County SMP needs to ensure that all new or expanded uses, activities or developments within shoreline jurisdiction with the potential to adversely impact critical areas receive appropriate county review to ensure they meet the goals and policies of the SMP. This is consistent with the SMA and the AGO opinion. We also believe this will be helpful to the shoreline community as a whole. At this time, there is much controversy over geoduck farming in Puget Sound. A fair and transparent review process for aquaculture will ensure the county is managing all shoreline uses for consistency with the shoreline master program, as well as increase certainty for both shellfish farmers and adjacent property owners, which can go along way towards reducing future appeals and complaints overall.

We are participating with a diverse group of stakeholders in the Shellfish Aquaculture Regulatory Committee being facilitated by the Department of Ecology (DOE). The committee is assisting DOE in developing guidelines that would assist local government updates of their SMPs with respect to geoduck aquaculture. These guidelines are to be adopted by rule into Ecology's Shoreline Master Program Guidelines, occurring roughly mid-2008 to mid-2009. DOE is working on an environmental impact statement for these guidelines due in December 2008. The EIS, as well as the guidelines, may be informative to Jefferson County as it refines its draft SMP. The committee also identified scientific research towards reducing uncertainty regarding potential adverse impacts of geoduck aquaculture practices on Puget Sound nearshore environments. Results of that research will likely not be available until 2013. However, in the meantime, it is important that local governments and agencies take a precautionary approach to avoid adverse impacts to nearshore species and habitats. Please do not hesitate to call me should you have questions at (206) 382-7007 or ccook@pugetsound.org.

Sincerely,

Cyrilla Cook, AICP
People For Puget Sound

Al Bergstein
People For Puget Sound

From: Daved [mailto:Daved@waterfrontconstruction.com]
Sent: Friday, February 05, 2010 7:57 AM
To: Laura Hendricks; Dave Risvold
Cc: Scott Reichard; richardv@centurytel.net; Kristin & Larry Johnson; Paula Manning; Al Schmauder; Andy Markos; Angela Butts; Bryan Flint; Carole Holmaas; Catherine Rudolph; Cryilla Cook; David Troutt; Dean Patterson; Debby Hyde; Diane Cooper; Erika Wiksten; Hugh Taylor; Iris Mohr; James Depew; Jason Walter; Jill Guernsey; Kim Van Zwalenburg; Kirk Schuler; Krystal Kyer; Laurie Brauneis; Leslie Ann Rose; Marian Berejikian; Michael Murphy; Mike Kruger; Pete Philley; Ray Mohr; Rick Kuss; Russ Ladley; Tara Froode; Teresa Vanderburg; Tiffany Speir; Ty Booth;

Subject: RE:

To All,

In looking at your attached photo and recalling an entire slide show from Coalition to Protect Puget Sound about 16 months ago it is all too clear that the impacts and destruction of shorelines from commercial aquaculture practices cause far more damage than any private residential bulkheads or piers. Unfortunately, when the economics and politics find their way to Olympia we all know that private property owners will continue to be overly regulated and restricted on using their waterfronts while these companies continue to profit from destroying many thousands of acres of natural resources.

The Pierce County SMP Update Committee received these same pictures and I have not followed your process close enough to know if anything has changed. The limited number of photos in this presentation probably covers an area far greater in size than the entire area covered by all the private piers in the marine waters of Puget Sound. Does anyone see a problem or feel ashamed enough about this to shift the focus from powerless private property owners to the powerful commercial business industry where it rightly belongs?

I have attached the slide show so memories can be refreshed and in hopes that *private property owners may be treated more equitably.*

Have a great day,

Dave Douglas
Permit Coordinator
Waterfront Construction, Inc.

From: *Laura Hendricks [mailto:laura.l.hendricks@gmail.com]*
Sent: Thursday, February 04, 2010 10:41 AM
To: Dave Risvold
Cc: Scott Reichard; richardv@centurytel.net; Kristin & Larry Johnson; Paula Manning; Al Schmauder; Andy Markos; Angela Butts; Bryan Flint; Carole Holmaas; Catherine Rudolph; Cryilla Cook; David Troutt; Dean Patterson; Debby Hyde; Diane Cooper; Erika Wiksten; Hugh Taylor; Iris Mohr; James Depew; Jason Walter; Jill Guernsey; Kim Van Zwalenburg; Kirk Schuler; Krystal Kyer; Laurie Brauneis; Leslie Ann Rose; Marian Berejikian; Michael Murphy; Mike Kruger; Pete Philley; Ray Mohr; Rick Kuss; Russ Ladley; Tara Froode; Teresa Vanderburg; Tiffany Speir; Ty Booth; Vicki Diamond; Vicky Lampman; Wendell Stroud; Al and Sue John; Amanda Carr; Annette Pearson; Barbara Ann Smolko; Bartley Madison; Beckie Krantz; Bob Pavolka; Bonnie J. Becker; Brad and Sandy Newell; Carol NacUkrit; Carol Paschal; Cathy Phillips; Chris Fitzgerald; Cliff Johnson; Craig Olson; Curt Puddicombe; Dale Yeager; Daved; David Douglas (Business Fax); David Winfrey; Derek Jennings; Derek Jennings (Business Fax); Don Mills; Dr. Ulf Hanebutte; Erin Ewald; Frank DiBiase; Gina Piazza; Greg Clinkingbeard; Gregg May; James "Tres" Kirkebo; James Frisbie; Jeff Mann; Jerry Johannes; Jim Sykes; John Butler; Joyce Dailey; Julie Andrzejewski; Kathleen Tei; Kathryn Jerkovich; Katie Knight; Kristin Wiamer; Les Kniffen; Linda Barkas; Linda C. Miller; Lisa Lewis; Margie Schirato; Mary Lyn Kappert; Mel Rugg; Michal Sleight; Mike Rhubright; Mike Stein; mconlon@conlondart.com; Nancy and Don Pearson; Norman Webster; Peg Foley; Pete Katic; Pete Katic (Business Fax); Pete Sloan; Rich Phillips; Rick Sorrels; Ryan Karlson; Ryan Karlson (Business Fax); Shannon Stragier; Shannon Stragier (Business Fax); Sherri Luedtke; Sophe Perkins; Steve Pruitt; Steve Sizney; Theresa Mitchell; Tim McVicker; Tony Trunk; Kathleen Larrabee
Subject: Re:

Dear Dave,

The Sierra Club requests that the Pierce County Code be enforced that does not allow commercial aquaculture in the Natural Designation. This fact was discussed at the meeting last Thursday, so there should be no commercial aquaculture including bottom culture in the Natural-Uses Allowed Table. Natural densities of native species must be allowed to remain in these natural

Gmail by Google

Laura Hendricks <laura.l.hendricks@gmail.com>

Your guidelines

3 messages

Jim Sykes <famsykes@comcast.net> **Thu, Feb 4, 2010 at 9:42 PM**
To: Dave Risvold <drisvol@co.pierce.wa.us>
Cc: cheryl.sykes@na.nykline.com, david.winfrey@puyalluptribe.com

Hi Dave,

This whole thing is getting bogged down (pardon the pun) in rhetoric.
My wife and I support much of Laura Hendricks, Scott Reichard, and Curt Puddicombe approach to the text and content of these proposals.
We're talking long term effects here. We need to get it correct and proper at this stage.

Cheryl and I, get the feeling you favor one side (i.e. commercial & mechanical) over property owners. We don't own salt water shoreline property but we do own property along the Nisqually watershed. We're busting our butts to correct the neglect and apathy of property owners. Some don't even live there, they lease out the property to creeps who trash the tributaries and that screws up everything down stream to your area of concern.

I'm part of this committee because I know the Nisqually watershed is next on the radar. The Nisqually tribe are excellent neighbors and stewards. We've volunteered side by side restoring parts of the watershed in hopes once again Coho salmon will spawn in a creek near our land. Coho have not spawned here since 1970. I know you're talking shellfish etc. in your "guidelines," but Coho salmon figure into that equation.

I hope I'm wrong but I get the sense you're under pressure from some entities seeking favors. For you to write, "your comments and those of Ms. Hendricks have been noted," you might as well have continued to write ":noted and ignored." We don't appreciate your comments such as that. To me those comments do not trump us property owner concerns.

I'd like to see fairness and balance. Feel free to forward this email to everyone on the committee, I have not.

Let's be open. It might cause you more work, maybe even compromise on language, but it's the correct thing to do. You know the news media could be all over this issue and nobody wants that.

Jim & Cheryl Sykes
360 879-5722

cc: file

> ----- Original Message -----
> **From:** Dave Risvold
> **To:** 'seablues Puddicombe' ; Mike Erkkinen
> **Cc:** Paula Manning ; al_schmauder@hotmail.com ; andy.markos@pse.com ; angela@marinefloats.com ; sreichard@centurytel.net ; bryanflint@tahomaaudubon.org ; carole@isellgigharbor.com ; cat@tpcar.org ; ccook@pugetsound.org ; dtroutt@nwifc.org ; dean@futurewise.org ; Debby Hyde ; dianec@taylorshellfish.com ; minterbrookseafoods@hotmail.com ; Hugh Taylor ; irismohr@gmail.com ; jamesdepew@comcast.net ; jason.walter@weyerhaeuser.com ; Jill Guernsey ; kvan461@ecy.wa.gov ; kimco@wwdb.org ; kkyer@tahomaaudubon.org ; lkjohnson@centurytel.net ; Laurie Brauneis ; lrose@healthybay.org ; fopc@comcast.net ; mbmurphy3@dbmcm.com ; Mike Kruger ; Pete Philley ; ray@irismohr.com ; firedogs@att.net ; rladley@puyallupfisheries.org ; tarafroode@centurytel.net ; tvanderburg@adolfson.com ; tspeir@mbapierce.com ; Ty Booth ; Vicki Diamond ; richardv@centurytel.net ; johnres2@comcast.net ; Annette Pearson ; Barbara Ann Smolko ; bmadison01@aol.com ;

From: seablues Puddicombe [mailto:seablues@msn.com]
Sent: Thursday, February 04, 2010 2:18 PM
To: Dave Risvold; Mike Erkkinen
Cc: Paula Manning; al_schmauder@hotmail.com; andy.markos@pse.com; angela@marinefloats.com;

Dave,

Actually no, this doesn't clarify anything. It makes it worse.

Kim Van Zwalenberg begins her email to you with: *"Commercial uses, like Aquaculture..."*; and yet you are using this email to assert that commercial aquaculture isn't "commercial" when Van Zwalenberg calls it "commercial" herself !! This makes no sense. Plus, it takes a phenomenal stretch of the imagination to suppose that geoduck aquaculture, for example, worth millions of dollars per acre, isn't a "commercial" activity. If it isn't for recreation or restoration; it's commercial.

Again, the WAC guidelines specify only "very low intensity" uses in the Natural SED, but the guidelines also exclude any language of inclusion of aquaculture in the Natural, **which is not the case in other designations**. **The WAC management policies also explicitly exclude commercial or industrial uses in the Natural**. It is clear from the WAC that commercial aquaculture should not be permitted in the Natural SED. Adherence to the SMA and the guidelines means this is not negotiable.

It shouldn't have to take a hearings board or a judge to determine what the word "commercial" means.

Also, Pierce County Code, Title 20, Shoreline Management Use Regulations: the Natural Environment, Chapter 20.16, page 20-18, 20.16.010 states:

"The Natural Environment classification is intended to preserve those dynamic natural systems in a manner relatively free of human influence and to discourage or prohibit those activities which might alter the natural characteristics..."

And 20.06.020 (B):

"The main emphasis of regulation in these areas should be on the preservation of natural systems and resources which will not allow man to consider any type of development which will effect the natural condition of the area."

And 20.16.10 (E):

"The shoreline area, which by virtue of strongly expressed local and/or statewide need, should be preserved in its original condition."

http://www.piercecountywa.org/xml/abtus/ourorg/council/2005-80s%20ord.pdf

So again, based on the WAC and Pierce County Code, anything other than "very low intensity" should not be allowed in the Natural SED, and all "commercial" uses should not be allowed. Please remove all commercial activities from the Natural SED in your intensity chart to comply with the SMA guidelines, the WAC and Pierce Couny Code.

Kristin & Larry Johnson <lkjohnson@centurytel.net> **Thu, Nov 12, 2009 at 3:05 Al**
To: Mike Erkkinen <merkkin@co.pierce.wa.us>, Mike Kruger <mkruger@co.pierce.wa.us>, terry.lee@co.pierce.wa.us
Cc: Marian Berejikian <FOPC@comcast.net>, Michael Murphy <michaelm@dbmcm.com>, Laurie Brauneis <lbrauneis@centurytel.net>, Dean Patterson <Dean@futurewise.org>, Debby Hyde <dhyde@co.pierce.wa.us>, Tara Froode <tarafroode@centurytel.net>, Dave Risvold <drisvol@co.pierce.wa.us>

In *addition* to what has been said below, I too am very frustrated. Good, creative ideas have been brought forth, only to be dismissed with the phrase "I just can't see how this will fit here", delivered by the county official in charge of that discussion / subcommittee. Much debate has been offered on how to quantify impacts and ascertain the *impacts a proposed project will have on* the environment, so objective decisions can be made to either allow or deny the project. Mr. Murphy has articulated a very objective method of not only quantifying what is naturally / currently at a site, but also then shows the alteration being proposed in terms of % change (loss), something desperately needed! To date, this has not been given any time in committee. We have suggested regs to support the state's directive of no net loss to habitat function, only to hear that is covered in the permitting process by the CUP or SDP... My overriding concern continues to be the lack of specificity and soft language in the regs, coupled with the apparent notion that the hoops in the permitting process will miraculously take care of the environment. It does not work, and Hearing Examiners and Judges have been proving it to the County & public since 1974. One repeatedly reads in their decisions the permissive language of 'it's only a guideline, not a regulation', 'there is no regulatory language that specifically says this cannot be done in this environment', and so on...

Proliferation of in– and over-water structures is far greater now (last 15 years) than it was ever imagined 35 years ago. If all we end up doing is expanding the 'softness' of our PC codes (regs), it will be business as usual – unstoppable proliferation, be it aquaculture, docks, whatever.

No permit can create what is not in the regs to begin with!

In aquaculture, the 'beach prep' activities for the most part are a serious contradiction to the state's mandate of preserving what natural ecological functions remain. Case in point is the removal of existing flora, fauna and natural objects (driftwood, rocks, etc) because they get in the way of aqua culture operations – this wipes out the natural environment. So sanctioning removal activity is in direct contradiction to *preserving* the natural habitat. The aqua culture industry's focus needs to shift to how to be compatible *wit* the natural environment, rather than focusing on how to significantly destroy the natural environment in order to maximize their profits. I'd prefer to see regs that pertain / focus on being *compatible* with the natural environment – all of it! Currently, the regs focus on how much can be altered...again totally bypassing the state's "preservation" tenant. The toxic chemicals used on the beaches to kill the boring organisms are, at a minimum, spread throughout that area's drift cell (tidal and long shore currents are relentless). One might *unscientifically* argue that by then the toxins are too diluted to have negative impacts, bypassing the real issue of how many life forms were wiped out before the toxins became too diluted. Remember, these toxins effect more than just the 'target organisms'; the whole web is effected – fish, birds, etc. If any beach alteration is to be allowed, then removal of natural items or the killing / removal of existing flora and/or fauna from a site should constitute "High Intensity" and not be allowed in the Natural or even the Conservancy designations.

As long as we *continue* to write regs that allow our shorelines and their natural functions to be degraded, we guarantee their degradation...

Sincerely,

Larry Johnson

From: Laurie Brauneis [lbrauneis@centurytel.net]

Sent: Sunday, November 08, 2009 1:47 PM

To: 'Michael Murphy'; 'Dean Patterson'; 'Tara Froode'; 'Al Schmauder'; Larry Johnson; 'James Depew'

Cc: Terry Lee; 'Mike Erkkinen'; 'Debby Hyde'; 'Dave Risvold'

Subject: Suggested aquaculture ideas from SCAC members not presented

Agreed. I can mark the beginning of September when I started presenting concrete ideas of regulations dealing with visual, *navigational, public safety, and access to the staff to have every effort refused. It was well before that when suggestions that these* "should be addressed" were raised. The committee agreed they should be addressed. Most recently Dean Patterson and I put out yet another set of proposed language within timelines set by the staff with the promise they would be forwarded to the main committee, which they were not. The staff asks for suggestions, then defaults to passing the buck through the processes that haven't been working (SSD, SEPA) or having citizens do the job through the expense and time of lawsuits.

The Key Peninsula Community Plan had language to mitigate the effects of aquaculture to have it ripped out at the last minute in hopes this process would take care of it. The interim regulations were created with some good ideas that haven't made the cut here. They seem to have dissolved away and deferred to SCAC. SCAC seems to be heading to passing the buck to Pierce County citizens to work this out through lawsuits.

From: Michael Murphy
Sent: Saturday, 07 November, 2009 9:45 AM
To: 'Mike Erkkinen'
Cc: 'Terry Lee'; Mike Kruger
Subject: RE: November 12th SCAC meeting

Mike-

I am deeply disturbed that after working for many hours and preparing alternative language and concepts that was requested at the last meeting, timely providing those to staff, that you send out this series of documents that do not even note the effort or the fact that reasonable alternatives have been proposed. This has happened repeatedly throughout this process. This is not the first time that my efforts and the efforts of others on the committee and subcommittees passed without even a footnote. If the County is not serious about some reasonable limitations to the industrialization of the shorelines, why have we wasted the past several months. If it is to give credence to "public process" I assure you I have documented carefully the events and that documentation will not support a position that alternative points of view have been given any serious consideration. I assure you there are powerful forces lining up to take you to task and it is not the industry. You should not be withholding the suggestions that are contrary to what the industry wants. The County will get hammered in court and frankly you deserve it. The document that came out of the subcommittee did not include the document that I prepared in advance of final meeting which I could not attend. After calling Debbie Hyde prior to the meeting I was assured that my views would be reflected in what came to the full committee if by nothing else attaching the critique I prepared as a footnote. My thoughts were not reflected nor was the document even acknowledged as to the full committee. The final meeting was poorly attended and to suggest that there was some kind of consensus or agreement is disingenuous if not downright deceptive.

The public has taken to videotaping the CAC meetings in advance of the coming lawsuit. If you guys do not get it by now, you had better start.

Why did not include the material that I prepared and sent earlier this week?

Why were my comments prepared for the last AC Subcommittee meeting not passed to the full committee?

Why were the materials prepared by Dean and Laurie not reflected in the most recent distribution?

From the meeting summary and I quote: **"Comment from Dave Risvold: Staff is asking SCAC members to provide specific language to make these regulations better. Dave will then do an update based on the comments."**

Taking that comment to heart I have spent better than 30 hours of my personal time since the last meeting working on such language and concepts. I have spent many hours talking to other committee members, incorporating suggestions, creating graphics to explain the concepts, reviewing technical reports, trying to build consensus to save the taxpayers the expense of an lawsuit from the environmental community and it was all a colossal waste of time. Let me make this perfectly clear Dave will NOT and DID NOT "... do an update based on the comments."

I am thoroughly disgusted.

Michael B. Murphy – Witness for the Plaintiff

From: Mike Erkkinen [mailto:merkkin@co.pierce.wa.us]
Sent: Friday, 06 November, 2009 2:13 PM
To: Paula Manning; Al Schmauder; Andy Markos; Angela Butts; Barbara Schoos; Bryan Flint; Carole Holmaas; Catherine Rudolph; Cryilla Cook; Dave Risvold; David Troutt; Dean Patterson; Diane Cooper; Erika Wiksten; Hugh Taylor; Iris Mohr (irismohr@gmail.com); James Depew; Jason Walter; Jill Guernsey; Kim Van Zwalenburg; Kirk Schuler; Krystal Kyer; Larry Johnson; Laurie Brauneis; Leslie Ann Rose; Marian Berejikian; Michael Murphy; Mike Kruger; Pete Philley; Ray Mohr; Richard Van Cise; Rick Kuss; Russ Ladley; Tara Froode; Teresa Vanderburg; Tiffany Speir; Ty Booth; Vicki Diamond; Vicky Lampman; Wanda Coats; Wendell Stroud; Aaron Petersen; Bill Cleland; Bob Burkle; Carla Vincent; Chad Williams; Dan Guy; Dave Molenaar; Dave Risvold; Debby Hyde; Debra May; Derrick Toba; Diana Ranes; Grant Griffin; Greg Griffith; Hugh Taylor; Hugo Flores; Janine Redmond; Jeff Davis; Jeff Sharp; Jeffrey Thomas; Jennifer Hayes; Jennifer Hayes (Business Fax); Karen Walter; Katie Knight; Katie Knight (Business Fax); Kent Hale; Kim Van Zwalenburg; Martin Fox; Mike Kruger; Mike Middleton; Patrick Reynolds; Ray Hanowell; Ron Bridgman; Scott Williams; Steve Taylor; Teresa Vanderburg; Tim R. Rymer; Tim R. Rymer (Business Fax); Tom Kantz; Travis Nelson; Ty Booth; Vicki Diamond; Wynnae Wright
Cc: Al and Sue John; Amanda Carr; Annette Pearson; Barbara Ann Smolko; Bartley Madison; Beckie Krantz; Bill Rehe; Bob Pavolka; Bonnie J. Becker

tara <tarafroode@centurytel.net> **Tue, Oct 20, 2009 at 2:01 PM**
To: lkjohnson@centurytel.net, Michael Murphy <michaelm@dbmcm.com>, Catherine Rudolph <cat@tpcar.org>, Dave Risvold <drisvol@co.pierce.wa.us>, Dean Patterson <Dean@futurewise.org>, Andy Markos <andy.markos@pse.com>, Barbara Schoos <sreichard@centurytel.net>, Cryilla Cook <ccook@pugetsound.org>, Debby Hyde <dhyde@co.pierce.wa.us>, Laurie Brauneis <lbrauneis@centurytel.net>, Diane Cooper <DianeC@taylorshellfish.com>, Iris Mohr <iris@irismohr.com>, James Depew <jamesdepew@comcast.net>, Kim Van Zwalenburg <kvan461@ecy.wa.gov>, Leslie Ann Rose <lrose@healthybay.org>, Mike Erkkinen <merkkin@co.pierce.wa.us>, Mike Kruger <mkruger@co.pierce.wa.us>, Tiffany Speir <TSpeir@mbapierce.com>, Ty Booth <tbooth@co.pierce.wa.us>, Marian Berejikian <FOPC@comcast.net>
Cc: david.winfrey@puyalluptribe.com, WYNNAE.WRIGHT@dnr.wa.gov, Laura Hendricks <laura.l.hendricks@gmail.com>, seablues Puddicombe <seablues@msn.com>, jerry johannes <jfjohannes4@msn.com>, gmayslc211@aol.com

I agree with both Larry and Michael's statements and feel that our aquaculture policies fall short of protecting natural ecological function.
tara

> ----- Original Message -----
> **From:** Larry Johnson
> **To:** 'Michael Murphy' ; 'Catherine Rudolph' ; 'Dave Risvold' ; 'Dean Patterson' ; 'tara' ; 'Andy Markos' ; 'Barbara Schoos' ; 'Cryilla Cook' ; 'Debby Hyde' ; 'Laurie Brauneis' ; 'Diane Cooper' ; 'Iris Mohr' ; 'James Depew' ; 'Kim Van Zwalenburg' ; 'Leslie Ann Rose' ; 'Mike Erkkinen' ; 'Mike Kruger' ; 'Tiffany Speir' ; 'Ty Booth' ; 'Marian Berejikian'
> **Cc:** david.winfrey@puyalluptribe.com ; WYNNAE.WRIGHT@dnr.wa.gov ; 'Laura Hendricks' ; 'seablues Puddicombe' ; 'jerry johannes' ; gmayslc211@aol.com
> **Sent:** Monday, October 19, 2009 11:02 PM
> **Subject:** RE: Comments on Oct 8 meeting notes
>
> My overriding concern continues to be the lack of specificity and soft language in the regs, coupled with the apparent notion that the hoops in the permitting process will miraculously take care of the environment. It does not work, and Hearing Examiners and Judges have been proving it to the County & public since 1974. One repeatedly reads in

From: **tara** <tarafroode@centurytel.net>
Date: Wed, Jul 29, 2009 at 8:31 AM
Subject: Re:
To: Dave Risvold <drisvol@co.pierce.wa.us>, Andy Markos <andy.markos@pse.com>, Barbara Schoos <sreichard@centurytel.net>, Catherine Rudolph <cat@tpcar.org>, Cryilla Cook <ccook@pugetsound.org>, Dean Patterson <dean@futurewise.org>, Debby Hyde <dhyde@co.pierce.wa.us>, Diane Cooper <DianeC@taylorshellfish.com>, Iris Mohr <iris@irismohr.com>, James Depew <jamesdepew@comcast.net>, Kim Van Zwalenburg <kvan461@ecy.wa.gov>, Larry Johnson <lkjohnson@centurytel.net>, Laurie Brauneis <lbrauneis@centurytel.net>, Leslie Ann Rose <lrose@healthybay.org>, Michael Murphy <mbmurphy3@dbmcm.com>, Mike Erkkinen <merkkin@co.pierce.wa.us>, Mike Kruger <mkruger@co.pierce.wa.us>, Tiffany Speir <TSpeir@mbapierce.com>, Ty Booth <tbooth@co.pierce.wa.us>
Cc: Laura Hendricks <laura.l.hendricks@gmail.com>, jerry johannes <jfjohannes4@msn.com>, seablues Puddicombe <seablues@msn.com>

Dave- I believe that the direction we were headed was to establish criteria for a low intensity column. Since we have changed our focus to methods which have been articulated and manipulated by the industry I do not agree that the group has a voted consensus stating that low intensity methods will be allowed in the natural environment with a Conditional Use Permit. I would like that vote /discussion to be finished not concluded. I do not agree with allowing industry to write it's own regulations.

Thanks, Tara

Bivalve Major and Sporadic Pest List

I. Major Pests

Invertebrate Pests:
Bamboo worm
Barnacle
Burrowing shrimp
Cockles
Crabs
Flatworms
Horse Clams
Moon snail
Oyster drills
Sand Dollars
Sea stars

Weeds:
Algae
Cordgrass
Japanese eelgrass
Native eelgrass

Vertebrate Pests:
Perch
Shorebirds and waterfowl

II. Diseases

Bonamiasis
Denman Island disease
Hemic neoplasia
MSX
Nocardiosis
Oyster velar virus disease (OVVD)
Vibriosis

III. Sporadic and Minor Pests

Invertebrate Pests:
Crepidula
Mussels (musculista and native blue)
Polydora
Tunicates
Other Parasites

Vertebrate Pests:
Coyote
Flatfish and Sculpins
Racoon
River Otter

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Review article

The ecological role of bivalve shellfish aquaculture in the estuarine environment: A review with application to oyster and clam culture in West Coast (USA) estuaries

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abstract

Aquaculture is viewed as a potential mechanism to meet the growing demand for seafood around the world. The future of bivalve shellfish aquaculture in the U.S. hinges on sustainable practices on the part of industry and a more consistent regulatory regime. Bivalve shellfish aquaculture is a recent practice relative to its history in other countries, beginning in the late 1800s along the U.S. West Coast where it is now well established with farm raised product utilizing land-based hatcheries and grow-out directly in numerous estuaries. Bivalve shellfish aquaculture can be viewed as a disturbance which modifies the estuarine system in three ways: 1) changes in material processes—bivalves process food and produce wastes; 2) addition of physical structure—aquaculture introduces the cultured organisms and in some cases a physical anchoring structure; and 3) pulse disturbances like harvest and bed maintenance disturb sediments, remove species in addition to the cultured organisms themselves, and change resource or habitat availability. In U.S. West Coast estuaries, water column and sediment nutrient concentrations are relatively high and influenced by large tidal exchange and proximity to deeper nearshore ocean waters where upwelling controls production during summer months. Bivalves are unlikely to influence material processes except at local bed scales in these systems, although estuary-wide effects could appear as the fraction of cultured area rises or in poorly flushed bays. Bivalve culture clearly modifies estuarine habitat at local community and at landscape scales and effects are most often evaluated against existing structured habitat in the form of submerged aquatic vegetation. Individual activities act as pulse disturbances and the recovery of eelgrass (Zostera marina) to pre-disturbance levels is variable (b2 to N5 years). The extent of disturbance depends on the aquaculture practice and the distribution of eelgrass reflects a balance of space competition, pulse disturbance and recovery, and is therefore at dynamic equilibrium on aquaculture beds. Structure provided by aquaculture appears functionally similar to eelgrass for small benthic infauna and mobile epibenthic fauna while use of aquaculture as habitat by larger more mobile invertebrates and fish depends on mobility and varies with life-history stage and taxon being evaluated. Scale seems a very important management consideration and further research at estuarine landscape scales, especially for habitat use by important invertebrates and fish, may prove useful in designing and implementing best management practices. Though local and short term effects from aquaculture are clearly evident in U.S. West Coast estuaries, bivalve aquaculture does not remove area from the estuary or degrade water quality like other anthropogenic influences, and thus has not been implicated in shifts to alternate states or reduced adaptive capacity of the larger ecological system.

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1. Introduction

Aquaculture is increasingly viewed as a potential mechanism to meet the growing demand for food from the sea (Costa-Pierce, 2002), particularly as landings from world marine capture sheries have plateaued (Brugere and Ridler, 2004; Muir, 2005). Although bivalve shell sh aquaculture represented only 10% of the world volume of shery production in 2003, it represented 26% of world aquaculture production and 18% of world economic value (Lovatelli, 2006; Subasinghe, 2006). Bivalve shell sh production (both capture and aquaculture) has increased rapidly over the last 50 years from 1 million tonnes in 1950 to 13.2 million tonnes in 2003. However, 66% of that production is from China alone, whereas the U.S. produces less than 1% of the world's shell sh and leads the world in bivalve shell sh imports. Although domestic U.S. production is rising, concerns about environmental impacts currently constrain the U.S. industry, perhaps more substantially than in places like China, Japan and Southeast Asia where aquaculture has been a dominant and culturally accepted part of the coastal aesthetic for centuries (Kurokura, 2004; Costa-Pierce et al., 2005). The future of U.S. bivalve aquaculture hinges on sustainable mariculture practices on the part of industry and a more consistent regulatory regime, both of which were recently recognized as priorities by the U.S. Commission on Ocean Policy and the National Oceanic and Atmospheric Administration (USCOP, 2004; NOAA, 2006). Accomplishing these related goals will require an enhanced federal research program, however substantial research exists to help inform best practices and improve management decisions. In this review, we present an overview of the ecological issues associated with culture of clams and oysters in estuaries along the West Coast of North America.

Bivalve shell sh aquaculture in the U.S. is a recent practice relative to its history in other countries, beginning in the late 1800s with transfers of oysters (Crassostrea virginica) among East Coast estuaries and to West Coast estuaries as native populations were over shed (Baker, 1995; Lindsay and Simons, 1997; MacKenzie and Burrell, 1997). Today, farmed bivalves derive primarily from the West Coast; for instance, Washington state contributed 69% of U.S. production in 2002 (USDA, 2002 Census of Agriculture). However, the bulk of U.S. product still comes from capture sheries along other coasts, where estuaries are larger, coastlines longer, and stocks of offshore clams newly accessible (Serchuk and Murawski, 1997). Contributions from these sheries have declined recently, due in part to disease and overharvest in Chesapeake Bay, and a series of hurricanes along the U.S. Gulf Coast, yet the outlook for bivalve aquaculture is strong along all U.S. coastlines particularly given rising domestic demand and strong export markets in Asia (Harvey, 2006).

At the same time, bivalve shell sh aquaculture is experiencing increased regulatory scrutiny in the U.S. Human population density is rising along the coast, so more people are aware of aquaculture activities. Further, the cumulative effect of human activities now threatens estuarine habitat, water quality and native species. On the East Coast, much of the concern focuses on anthropogenic nutrient inputs, eutrophication, and other industrial pollutants (Kemp et al., 2005; Paerl et al., 2006; Smith et al., 2006). West Coast estuaries have been impacted by fecal coliform contamination and eutrophication in areas of Puget Sound, but the smaller outer coast estuaries have experienced greater change from introduced species and freshwater diversion and impoundment (Emmett et al., 2000; Kareiva et al., 2000; Borde et al., 2003; Thompson, 2005). While a number of U.S. federal, state, and local regulations address aquaculture activities, the most recent nexus for federal action comes from the U.S. Army Corps of Engineers (ACOE), which asserts jurisdiction under the Clean Water Act (Section 404) and the Rivers and Harbors Act (Section 10). In March 2007, the ACOE issued a new nationwide permit for shell sh aquaculture which in turn requires consultation with the US Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration (NOAA) for their regulatory authority under the Endangered Species Act (ESA) and Essential Fish Habitat (EFH) provisions of the Magnuson Stevens Fishery Conservation and Management Act.

Because the "best available science" with which these agencies have chosen to address regulatory issues is limited, especially for aquaculture on the West Coast, the agencies have tended to be very cautious about perceived impacts to habitats and/or communities of estuarine organisms that have been studied in greater detail elsewhere. Perhaps the best example is simply not permitting or requiring mitigation for aquaculture activities in areas where submerged aquatic vegetation is present, due to its recognized importance to sh and invertebrates elsewhere and a federal goal of "no net loss of wetlands" that is generally applied to any activity in these environments. This "precautionary" approach has directly affected existing aquaculture operations in California and Oregon, where growers have been forced to abandon historic culture areas or switch to off-bottom culture, particularly in areas where seagrasses are present (Chew, 2001; Rumrill and Poulton, 2004). A federal review is currently underway by ACOE and NOAA to determine how the laws discussed above will be administered on a nationwide basis. Commercial shell sh growers have taken a pro-active role in this issue by developing their own environmental management system, codes of practice and a regional research plan (PCSGA, 2001; PSI, 2005). This scienti c review is a response to the need for establishing a baseline of relevant scienti c information to inform impending management decisions.

In this review of the role of bivalve mariculture in estuarine ecosystems, we use an ecological framework that describes aquaculture practices as a disturbance (c.f. Simenstad and Fresh, 1995). We adopt the de nition of disturbance used by Pickett and White (1985): "a disturbance is any relatively discrete event in time that disrupts ecosystem, community, or population structure and changes resources, substrate availability, or the physical environment". In this context

disturbances vary in their spatial scale, frequency, and intensity, which are relevant, respectively, to bed size, crop cycle, and type of aquaculture activity. We qualitatively distinguish "pulse" (short discrete events) from "press" disturbances (longer-lasting chronic events), despite their subjective de nitions that imply a difference in the pace of the response (Glasby and Underwood, 1996). Nevertheless, the distinction is useful in considering, for instance, the effects of the farmed organisms, which are regularly present (press disturbance), and the effects of harvest operations, which occur periodically in the crop cycle (pulse disturbance). Disturbance has been viewed as a key process in uencing marine benthic community dynamics for several decades (Sousa, 2001). Indeed, natural disturbances are essential components in the maintenance of community structure in some ecosystems (e.g. re in many terrestrial ecosystems), even though they can have immediate negative effects on the abundance of some species. Anthropogenic disturbances may mimic such natural disturbances, although multiple, novel perturbations can exceed a system's capacity to maintain its characteristic state (Sousa, 1984; Paine et al., 1998). This capacity to recover, or resilience (Holling, 1973), depends on such factors as the extent of the disturbance relative to the mobility of key species, and the frequency of disturbance relative to generation time (Paine et al., 1998; Peterson et al., 1998). Recent ecological literature suggests that the likelihood of regime shifts to alternate states can increase when anthropogenic disturbance causes reduced "ecological" resilience (Gunderson, 2000; Folke et al., 2004; Scheffer et al., 2005; Groffman et al., 2006; Walker et al., 2006; Levin and Lubchenco, 2008). Using "disturbance" as a descriptor in a management context may involve a perception that disturbances are "negative". This is true only if the species of interest has "positive" value to the manager and the disturbance causes loss. Here, we describe aquaculture disturbance effects on species and ecosystems, but leave positive or negative value judgments to readers and managers.

Bivalve shell sh aquaculture in uences the system in three primary ways: 1) material processes — bivalves process food and produce wastes; 2) physical structure — aquaculture introduces the cultured organisms themselves and in many cases a physical anchoring structure; and 3) pulse disturbances — harvest activities, in addition to some bed maintenance practices, can remove species in addition to the cultured organisms themselves, and change resource or habitat availability (Fig. 1). These in uences occur on the time scale of the crop cycle (1–6 years, depending on area, method, and species) and do not include such longer-term changes as the introduction of non-native organisms during imports for aquaculture. Introduction of non-native species is an important management issue, particularly when they become invasive, but aquaculture and other vectors for marine invasions have been reviewed elsewhere (Gruet et al., 1976; Carlton and Mann, 1996; McKindsey et al., 2007; Minchin, 2007), and regulations and practices have changed to reduce the role of aquaculture imports in homogenizing biota (e.g. ICES Code of Practice on the Introductions and Transfers of Marine Organisms, ICES, 2005).

Our focus is on the intertidal culture of bivalve mollusks in estuaries along the West Coast of North America, particularly oysters because of the great spatial extent of estuarine area devoted to their culture and relatively large amount of research conducted to date. Although a similar review was conducted by Simenstad and Fresh (1995), substantial progress has been made toward quantifying the role of bivalve aquaculture in the estuarine environment since that time. Our intent is not to repeat their earlier effort, nor provide an exhaustive bibliography, but instead to update with new results and place in context with recent ecological literature from outside the U.S. West Coast. We begin with sections highlighting why these West Coast estuaries are distinct and how bivalves have been and are currently cultured there. Material processing, physical structure, and pulse disturbance associated with some aquaculture practices represent three interrelated aspects of the ecological role of shell sh aquaculture. Each topic is considered in its own section, rst with generalizations from research worldwide, and then a summary of

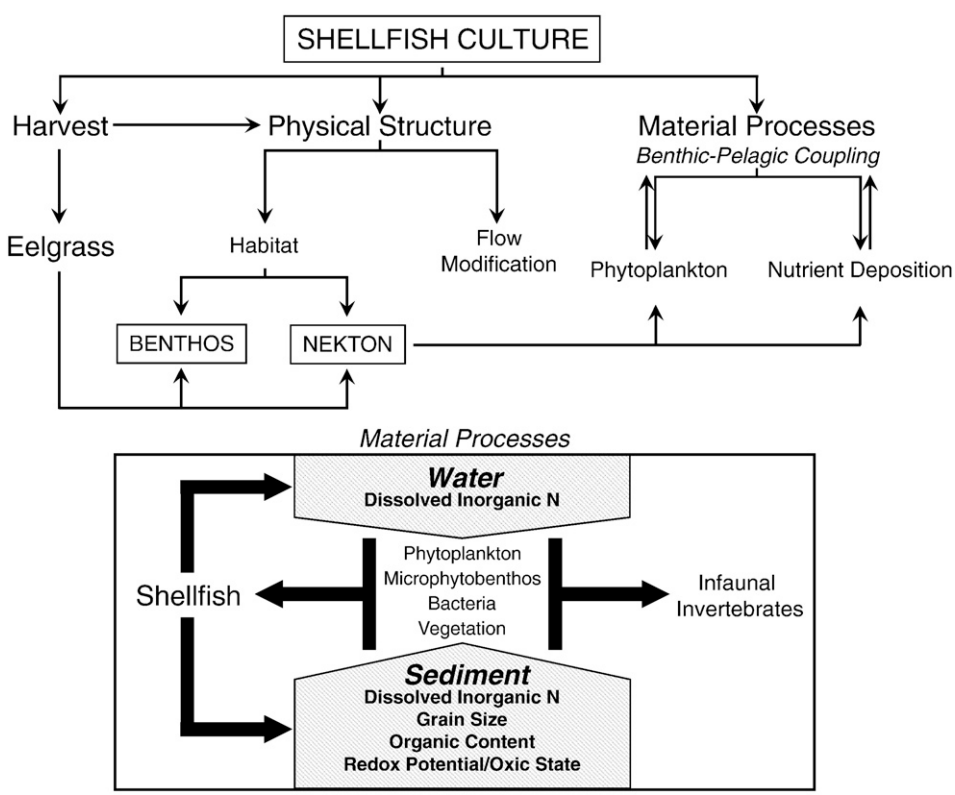

Fig. 1. Conceptual diagram of 3 pathways of shell sh aquaculture interaction with the environment. This simplistic view is of course more complex when broken down into component parts such as those for material processes including both benthic pelagic coupling and biodeposition (inset).

results from studies on the West Coast of North America in particular. In many cases, the evidence from West Coast estuaries aligns well with international perspectives; in some cases, the characteristics of West Coast estuaries lead to different ecological roles of shell sh aquaculture than have been demonstrated elsewhere; and nally, in most cases, the relatively nascent area of research on environmental impacts means that the picture for West Coast estuaries remains incomplete. In the nal section, we address important research gaps, particularly at the landscape level that remain to be lled in order to make sound management decisions, though we recognize that such decisions clearly involve social and economic criteria as well.

2. Characteristics of West Coast estuaries

The major shell sh-growing areas on the West Coast of the U.S. include small coastal estuaries in California, Oregon, and Washington, as well as Puget Sound, which is a deep fjord extending several hundred km inland. Similarly, in British Columbia, Canada, bivalve aquaculture occurs both in small sounds on the west side of Vancouver Island and within the Strait of Georgia. Alaska's shell sh aquaculture industry is in its infancy but has grown markedly and oyster culture occurs primarily in remote geographic locations within areas like Kachemak Bay and Prince William Sound (Harrington, 2005; Oliveira et al., 2006). Four bivalve species contribute 99% of production from aquaculture in this region with Paci c oysters (Crassostrea gigas) representing 89%, and Washington leads production on a per-state basis, with production split about evenly between outer coast estuaries and Puget Sound (Table 1). West Coast estuaries have three general characteristics that set the context for aquaculture: they are geologically young and small; they have substantial oceanic in uence; and they harbor distinct and relatively species-poor ecological communities. We treat each of these issues in turn.

Estuaries on the West Coast of North America are geologically young and relatively small compared to other well studied estuarine systems like Chesapeake Bay, but comparable in size to other shell sh-growing areas (Table 2). Only small remnants of the larger estuaries once present along the U.S. Paci c Coast in the Miocene and Pliocene epochs remain, due to subsequent uplift of the nearby landmass and estuarine in ll (Jacobs et al., 2004). Further disturbances and oscillations due to glaciation and sea level change have subjected these estuaries to frequent ooding and emptying due to their small size (e.g. subsidences of 0.5 to 2 m have occurred multiple times with tectonic events in the last 7000 years (Atwater, 1987; Hagstrum et al., 2004). Combined with a relatively steep elevation gradient nearby, this causes these estuaries to provide much more spatially restricted and less stable environments than their larger counterparts on the Atlantic and Gulf Coasts. On the other hand, it would be incorrect to consider all of the region's estuaries as identical in abiotic features: substantial variation occurs in climate, mesoscale oceanographic features, and bathymetry, especially along the wide latitudinal range stretching from Alaska to California. Mesoscale oceanographic features establish faunal discontinuities (e.g. Cape Mendocino, Point Conception, Columbia River plume). Bathymetry varies because estuaries have formed at drowned river valleys (small coastal estuaries) and in deep fjords (especially Puget Sound and the Straight of Georgia; Emmett et al., 2000). Human impacts also vary regionally, for instance San Francisco estuary in California experienced substantial shoreline development, urbanization, and tide at "reclamation", which caused severe water quality impairment and abandonment by the oyster industry in 1939 (Barrett, 1963) as have other smaller estuaries in Southern California (Pitman, 1995). Smaller coastal estuaries of Northern California, Washington and Oregon generally have lower human population densities than does the Puget Sound trough, where water quality problems have also been more pervasive (Glasoe and Christy, 2004).

West Coast estuaries experience pronounced effects of the nearshore coastal ocean (Hickey and Banas, 2003). Coastal estuaries lie along an upwelling coast, and mesotidal conditions, combined with small size and extensive intertidal ats, contribute to substantial tidal exchange with the ocean (Table 2). For instance, Willapa Bay, Washington can exchange nearly half its volume during a single spring tide and the tidal exchange is about 40% in Coos Bay, Oregon. Even Puget Sound, due to the in ux of ocean water at depth, shows signs (salinity, carbon) of ocean in uence throughout its length (Babson et al., 2006; Ruesink et al., in prep). In addition, freshwater input is restricted during summer due to a Mediterranean climate pattern of winter rain and summer drought to the extent that smaller estuaries in California are hypersaline lagoons (Largier et al., 1997). Thus terrestrial inputs are generally less important for food webs than in other estuaries, because winter inputs coincide with low temperatures that limit productivity. Nevertheless local effects of rivers and small streams have been demonstrated in the riverine region of both Willapa Bay and smaller coastal estuaries in summer (Ruesink et al., 2003; Rumrill and Sowers, 2008). Winter inputs have been studied in San Francisco Bay where the North Bay shows evidence of terrestrially driven production despite anthropogenic water diversion (Thompson, 2005). Overall, oceanic conditions greatly in uence both primary and secondary production within these systems (Roegner et al., 2002; Ruesink et al., 2003). Although the Mediterranean climate pattern ameliorates two types of natural disturbances with strong effects elsewhere in the U.S (winter ice in Northeast estuaries and hurricanes on the Southeast and Gulf Coasts), shallow intertidal ats in West Coast estuaries and extreme tidal exchange may nevertheless result in severe pulse disturbances from winter storms.

Although the continental shelf fauna along the West Coast is diverse, estuaries are relatively species-poor in a number of functional groups, possibly as a result of their comparatively short geologic history. We suspect that this short list of native species contributes to: 1) the availability of few native bivalves suitable for aquaculture, and therefore the adoption of primarily non-native species, 2) small numbers of estuarine-dependent shes, and 3) "empty niches" for high-impact invasions. Cultured species in West Coast estuaries are predominantly non-native and have developed self-sustaining feral populations in some areas. This dependence on non-native bivalve species makes the U.S. West Coast similar to Europe (where Paci c oysters and Manila clams are also introduced and cultured), and different from the rest

Table 1
Yields (thousand pounds) by bivalve species from the West Coast of North America aquaculture in 2005 (from PCSGA, 2006; BC Ministry of Environment, 2006).

	Alaska	British Columbia	Washington	Oregon	California
Major growing areas	Kachemak Bay, Prince William Sound, Southeast Coast	Baynes Sound, Sunshine Coast, Cortez Isl., W. Vancouver	Willapa Bay, Grays Harbor, North Puget Sound, south Puget Sound	Coos Bay, Tillamook Bay	Humboldt Bay, Tomales Bay, Drakes Estero
Crassostrea gigas (Paci c oyster)	920	17,638	77,000	6290	10,000
Ruditapes philippinarum (Manila clam)	41	4188	8500		14
Mytilus galloprovincialis (Mediterranean mussel)	3		2100		600
Panopea abrupta (geoduck clam)			850		

Table 2
Comparison of system characteristics of several estuaries in Europe where aquaculture has been studied in detail, Chesapeake Bay, and U.S. West Coast estuaries.

Estuary	Type and ave. depth	Physical conditions	Residence time	Development and anthropogenic disturbance	Bivalves	Area total/ intertidal	Biomass, aquaculture area	References
Thau Lagoon, France	Lagoon with two small openings 4.5 m	Low wind, small tidal amplitude b1 m	5 months	Two towns	Oysters on longlines (80%), mussels (20%)	75 km^2/ b1 km^2	12,000 t harvested, 14–20,000 t present, 15 km^2	De-Casabianca et al. (1997), Souchu et al. (2001), Gangnery et al. (2003), Mazouni (2004), Mesnage et al. (2007), Metzger et al. (2007)
Sacco di Gorro, Italy	Lagoon with two 900 m openings 1.5 m	FW ow regulated	1–25 days	Towns, ow highly managed with dredging	Clams, mussels	26 km^2/ 0 km	15,000 t clams 1000 t mussels harvested, 8 km^2	Viaroli et al. (2003), Melia and Gatto (2005), Nizzoli et al. (2006), Marinov et al. (2007)
Marennes Oleron, France	Bay w/ Charente and Gironde Rivers 5m	3 m tidal range, low river ow, wind important	b10 days	Town, riverine nutrient in uence	Oysters on trestles	136 km^2/ 82 km^2	30,000 t harvested 100,000 t present, 32 km^2	Raillard et al. (1993), Bacher et al. (1998), Gouleau et al. (2000), Leguerrier et al. (2004)
Chesapeake Bay, VA and MD	Drowned river valley, 8 m	Very large rivers (e.g. Susquehana) small tidal amplitude (0.7 m)	22 days	Large cities and towns, dredging	Clams, native oyster shery	9900 km^2	940,000 t oysters in their heyday	Newell (1988), Gerritsen et al. (1994), Cerco and Noel, 2007
Totten Inlet, Puget Sound, WA	Portion of fjord 10 to N100 m	6 m tidal range, limited FW input	10 to 11 days	Rural, many waterfront residences	Clams, oysters, mussels and geoducks	24.7 km^2/ 0.85 km^2	1136 t oysters, clams and mussels	Brooks (2000)
Willapa Bay, WA	Bay w/ relatively small rivers, 3.2 m	Low river ow, tides and wind most important, 1.9 m tidal range, Columbia River in uence	6–54 days at upper end	Towns, diked tidelands	Oysters on bottom and longlines	358/ 227 km^2	1468 t harvest, 46 km^2	Hedgepeth and Obrebski (1981), Hickey and Banas (2003), Ruesink et al. (2006), Banas et al. (2007)
Coos Bay, OR	Bay w/ relatively small rivers, 4 m	Low river ow, tides and wind important, 1.7 m tidal range	10–40 days	Small cities, lumber mills, diked tidelands, dredging	Oysters on bottom and longlines	34 km2/ 3.8 km^2	17 t	Hickey and Banas (2003), Rumrill (2006)
Humboldt Bay, CA	Bay w/ very small creeks, almost lagoonal, 3.5 m	Very low river ow, tides and wind important,	5 months in North Bay	Small Cities, dredging	Oysters on longlines	67/21 km^2	454 t, 260 ha	Barnhart et al. (1992), Rumrill and Poulton, 2004
Baynes Sound, British Columbia	Coastal portion of fjord, w/ Courtenay River and small creeks entering small embayments	Vertical strati cation, of water column due to freshwater input and protection from wind and surface mixing	2 months for bottom water	Small towns	Oysters on bottom and deepwater rafts, clams with netting, wild clam harvest	87 km^2	850 t clams, 2510 t oysters, 458 ha	Jamieson et al. (2001), Carswell et al. (2006)

of the U.S. and Asia (Ruesink et al., 2005). West Coast estuaries contain fewer species of estuarine-dependent sh and invertebrates, particularly those that use estuaries as nurseries, than their U.S. East and Gulf Coast counterparts and display latitudinal trends in both abundance and diversity (Pearcy and Myers, 1974; Horn and Allen, 1976; Haedrich, 1983; Monaco et al., 1992; Nelson and Monaco, 2000). This could simply be due to small estuary size, but also the relatively large proportion of intertidal area, lack of signi cant freshwater input and their short geologic history. Similar latitudinal differences between estuaries and less diverse sh communities in small shallow estuaries have also been found in European, Tasmanian, South American, Australian and South African estuaries (Potter and Hyndes, 1999; Edgar et al., 2000; Araujo and de Azevedo, 2001; Pihl et al., 2002; Harrison and Whit eld, 2006). The mid- to high intertidal ats of West Coast estuaries are typically unstructured. High marsh occurs only above mean higher high water in West Coast estuaries, and seagrass (native eelgrass, Zostera marina) occurs around mean lower low water (Borde et al., 2003; Thom et al., 2003). With the exception of some relatively steep gravel and cobble beaches in fjords from Puget Sound, Washington north to Alaska, nearly all intertidal aquaculture activities take place on low gradient mud and sand ats, habitats that naturally have little structure in the region, except where aquaculture overlaps with native eelgrass. However some unwanted species have also entered this zone, forming structure in what is essentially an "empty niche". These include several species of cordgrass (Spartina spp.) which have prompted multi-million dollar control efforts and, from British Columbia to northern California, an introduced seagrass, Zostera japonica (Daehler and Strong, 1996; Feist and Simenstad, 2000; Bando, 2006; Ruesink et al., 2006; Rumrill, 2006). Although species-poor in general, West Coast estuaries harbor several species of Paci c salmon (Oncorhynchus spp.), anadromous sh that spend variable amounts of their early life history in estuaries. Due to their cultural importance and longstanding sheries, salmon drive substantial management activity and many subpopulations of salmon are extinct or listed as threatened or endangered under the US Endangered Species Act. Although the declines are likely from a variety of causes extending from freshwater to the ocean (Kareiva et al., 2000; Ruckelshaus et al., 2002; Good et al., 2007), loss and/or substantial modi cation of estuarine habitat may not be compatible with salmon recovery.

3. Historical sheries and current farming practices

The most widely cultured bivalves in the United States are oysters, clams and mussels. Because of the presence of shells in middens, it is clear that bivalves have been harvested from North American estuaries for thousands of years (Trigger, 1986; Cannon, 2000). Coincident with European colonialism, extensive harvest of native oysters (Ostrea lurida) on the West Coast began in the mid-1800s (Baker, 1995), slightly after similar activity (for eastern oysters, C. virginica) along the Atlantic and Gulf Coasts in the 17th and 18th centuries (Kirby, 2004). Initial harvest implements included sailing vessels, poled bateaux, and a variety of hand tools (e.g. tongs), followed by dredges. Natural beds were gradually depleted on both U.S. coasts, in part due to the lack of return of shell material for natural recruitment (Kirby, 2004; Ruesink et al., 2005). When the native Paci c Coast oyster declined due to overharvest in the late 1800's, eastern oysters (C. virginica) and later Paci c or Japanese oysters (C. gigas) were transplanted to estuaries along the U.S. West Coast (Collins, 1892; Townsend, 1896; Steele, 1964; Sayce, 1976; Lindsay and Simons, 1997; Robinson, 1997; Shaw, 1997). From at least 1928 until 1977 (except during WWII), "seed" oysters were shipped from Japan to the U.S. West Coast annually for transplant. Additionally, after Paci c oysters established naturally-reproducing populations, some local production was possible. Waters were warm enough for "natural" spawning and setting to take place in Pendrell Sound and Ladysmith Harbor in British Columbia, and Dabob Bay and Willapa Bay, Washington (Scholz et al., 1984; Quayle, 1988).

With the advent of hatchery technology in the early 1980's (Nosho and Chew, 1991), oyster aquaculture along the West Coast of the U.S. became a completely integrated farming operation (see Conte et al., 1994 for a detailed description). Hatcheries are now essential to oyster aquaculture in Alaska, Oregon, and California, and contribute substantially in Washington and British Columbia, although naturally-set oysters continue to be incorporated when they are available. Most production involves C. gigas, but several other oyster species are also cultivated: C. virginica, C. sikamea, C. ariakensis, Ostrea edulis, and the native oyster O. lurida. In hatcheries, adult broodstock are conditioned and induced to spawn. Larval oysters are fed cultured phytoplankton until they are competent to settle and attach to a substrate (Muller-Feuga, 2000). This substrate is either pieces of shell (cultch) or ground shell or sand (cultchless). When the oysters are moved into estuaries, they are grown utilizing a variety of methods including bottom culture, oating bags, rack and bag systems, long lines and trays. In bottom culture, cultch with attached oysters is placed directly on intertidal (generally b0.6 m MLLW) and shallow subtidal bottom where it is left until the oysters reach market size, usually in one to three years depending on location and temperature. In Willapa Bay, where oyster growth varies substantially by area, oysters may be seeded to one area, allowed to grow for a period of one to two years and then transplanted to a second area called a fattening bed for nal growth. Beds may also be harrowed with implements fashioned after the English pasture harrow (Sayce and Larson, 1966) to bring oysters back to the surface and break up clusters. Oysters are harvested (or collected for re-laying) from bottom culture by hand or with mechanical or suction dredges. In long line culture, seeded cultch is strung on lines or ropes that are suspended from stakes or rails and harvest is usually by hand. Cultchless oysters are often grown in high-density polyethylene (HDPE) or polypropylene mesh bags placed on the bottom, suspended off the bottom on racks, or placed in oating bags attached to longlines (Conte et al., 1994). Although not a focus of this review, suspended culture is typically used in areas that are relatively deep such as Puget Sound and especially British Columbia, Canada: seeded cultch is strung on lines or cultchless oysters are placed in trays or lantern nets, and these are suspended from oats. After harvest, single oysters are generally destined for the half shell market, and oyster clusters are either separated into singles, or processed at a shucking plant where the meats are packaged in containers for sale.

Oyster aquaculture contends with several pest species, most of which are predators or competitors and controlled by hand removal (Buhle et al., 2005). However, one species deserves special attention because its control involves the application of a chemical pesticide. Burrowing shrimp (Neotrypaea californiensis) are native deposit-feeders that bioturbate sediments up to 1 m in depth. At high densities, they preclude on-bottom oyster culture because the oysters are smothered or sink due to disturbance of the sediment by the shrimp. Since the 1960s, shrimp have been removed from oyster beds through the application of carbaryl (Sevin™), a general arthropocide (Feldman et al., 2000). Its use is now only legal in Willapa Bay and Grays Harbor, Washington where about 170 ha and 60 ha respectively (4% of the cultivated area and less than 1% of the tide at in Willapa Bay) are treated by aerial application from a helicopter each year. Many species in addition to shrimp are killed by the pesticide, but the longer-term changes, including appearance of eelgrass, derive from the removal of shrimp and addition of oysters (Dumbauld et al., 2001; Dumbauld and Wyllie-Echeverria, 2003; Dumbauld et al., 2004). This pesticide is scheduled to be phased out of use in these estuaries by 2012, but the most effective alternative method of shrimp control discovered to date may also be chemical.

[illegible] Saxidomus giganteus [illegible] Protothaca staminea [illegible] Tresus capax [illegible] T. nutalli [illegible] Panopea abrupta [illegible] Siliqua patula [illegible] Mya arenaria [illegible] "[illegible]" [illegible] Ruditapes philippinarum [illegible] P. abrupta [illegible] "[illegible]" [illegible]

[illegible] P. abrupta [illegible] "[illegible]" [illegible]

4. Shellfish as filter feeders and material processors

[illegible]

4.1. Alteration of water quality

[illegible]

by the grazers themselves or by anthropogenic sources (Dame, 1996; Prins et al., 1998; Chapelle et al., 2000; Souchu et al., 2001; Mazouni, 2004; Asmus and Asmus, 2005) Also, clearance rates are dif cult to estimate in the eld (Riisgard, 2001), sensitive to seasonal variation, and only relevant to the volume of water accessible to the benthos which can be modulated by structure created by the bivalves themselves (Lenihan et al., 1996). The contribution of cultured bivalves to clearance is further obscured when they represent an unknown fraction of all suspension-feeders (Heip et al., 1995; Leguerrier et al., 2004; Pomeroy et al., 2006; Dubois et al., 2007; Putland and Iverson, 2007), though this has also been measured and models developed to quantify it in some places (Sauriau et al., 1989; Leguerrier et al., 2004; Grizzle et al., 2008; Sequeira et al., 2008). Although it represents a relatively small contribution (1% of the meat weight), nitrogen is also removed from the system when actively growing shell sh are harvested (Lindahl et al. 2005). Finally, even if one is able to assess and detect alterations in water quality due to the presence of farmed bivalves, questions regarding scale and relevance such as whether they "improve water quality" or "exceed the system's carrying capacity" remain. We suggest that water clarity improvement will be more important in areas experiencing cultural eutrophication, and carrying capacity concerns will be informed by considering current relative to historic bivalve and other lter feeder densities.

Substantial work has been carried out worldwide on bivalve carrying capacity, especially via coupled biological–physical models (Dame and Prins, 1998; Gangnery et al., 2001; Sara and Mazzola, 2004; Duarte et al., 2005; McKindsey et al., 2006; Ferreira et al., 2007; Grant et al. 2008; Wang et al., 2008) because experimental work at the scale of whole estuaries is daunting. Several reports exist of bivalve growth rates declining as aquaculture densities increase over time, consistent with reduced phytoplankton densities available as food, particularly in areas such as lagoons with long water residence periods and/or shallow water column and high bivalve density often in three-dimensional culture systems (Rodhouse and Roden, 1987; Heral, 1993; Comeau et al., 2008). One recent monitoring effort documented the effects of removal of extensive oyster aquaculture from a eutrophic bay in Taiwan with mean chlorophyll levels and phytoplankton production being enhanced 4-fold in a less ushed portion of the bay (Huang et al., 2008). Invasive bivalves such as Potamocorbula amurensis in San Francisco Bay (Thompson, 2005), Corbicula uminea in the Potomac River (Cohen et al., 1984), and dreissenids in the Hudson River and Great Lakes (Strayer et al., 1999) also provide evidence of top-down control of phytoplankton. Finally, depletion has been documented at spatial scales of individual aquaculture operations, and sophisticated models have been developed to explore the effects of hydrography and bivalve con guration on seston depletion at this scale (Newell et al., 1998; Drapeau et al., 2006; Grant et al., 2007). The results of these models align well with actual measurements of particle concentrations, but they generally indicate little impact on water properties beyond the immediate "footprint" of the aquaculture operation (but see Grant et al. 2008).

Many aquaculture areas on the West Coast of North America remain relatively pristine, that is, they have experienced low levels of cultural eutrophication. Consequently, carrying capacity concerns may be more relevant than the ability of cultured organisms to ameliorate water quality in these areas, although aquaculturists themselves can clearly be bene cial as an effective lobby for continued low-impact shoreline development (Steele, 1964; Glasoe and Christy, 2004). The calculation of present relative to historic bivalve densities has not been carried out for many locations, but in Willapa Bay, Washington, C. gigas occurs at N2.5 times historic biomass of O. lurida (Ruesink et al., 2005); the difference in ltration rate is probably less because the smaller native oyster should have higher mass-speci c ltration. Willapa Bay shows a gradient in phytoplankton concentration from the mouth to upper estuary, and three competing hypotheses involve physical mixing of rich ocean and poor river water along the estuarine gradient, longer residence time of water in the upper estuary, and grazing by oysters that are farmed, especially near the mouth of the bay. Overlaying oyster ltration on a circulation model indicates that phytoplankton concentration declines into the bay more than would be expected from simple mixing, and the extra loss is consistent with the capacity of cultured oysters to lter it out (Banas et al., 2007). Interestingly, this result is achieved even though a large fraction of the bay's water (N80%) never moves over a shallow tide at and is not susceptible to ltration (Banas et al., 2007). Empirically, however, the water that moves across Willapa Bay's tide ats is measurably affected by cultured oysters growing there. Wheat et al. (in prep.) documented declines of about 10%/100 m in phytoplankton when tracking parcels of water across oyster beds on ood tides (Fig. 2), whereas water owing across newly-planted beds or other habitat types showed no

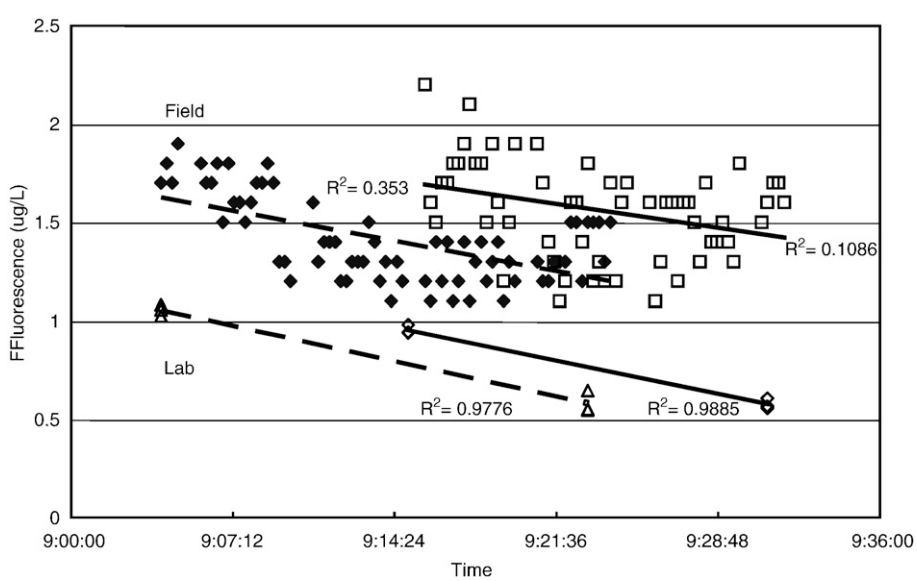

Fig. 2. Preliminary results from eld surveys in Willapa Bay, Washington using drifting sensors (YSI® instruments) which moved over long-line oyster aquaculture areas and displayed a negative slope indicating phytoplankton (measured as chlorophyll a uorescence) was being removed from the water column. Two separate drifts with instruments in the eld are shown (top) and separate instrument calibration measurements taken with water bottles at start and end of drifts and measured on laboratory uorometer (bottom).

[illegible]

4.2. Alteration of sediment properties

[illegible]

4.3. Feedbacks to primary producers

[illegible]

[illegible]

5. Press disturbance – shell sh aquaculture as structured habitat

[illegible]

[illegible]

[illegible]

[illegible] O. lurida [illegible] O. lurida [illegible] C. gigas [illegible] C. gigas [illegible] C. gigas [illegible] O. lurida [illegible] b [illegible] N [illegible] C. gigas [illegible]

[illegible]

[illegible]

5.1. Benthic infauna

[illegible]

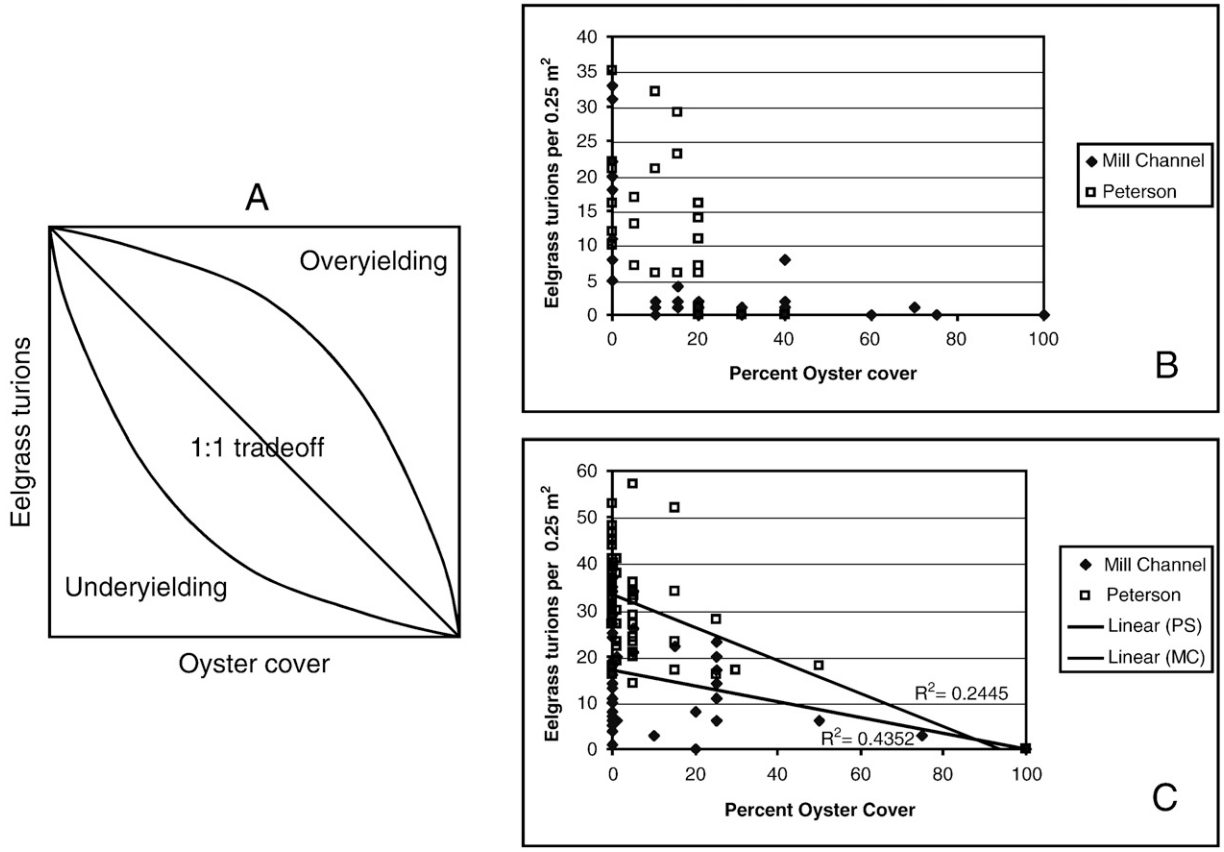

Fig. 3. [illegible]

[illegible]

[illegible] N. californiensis [illegible]

[illegible] Cancer magister [illegible]

5.2. Epibenthic meiofauna

[illegible]

experimental work with experimental additions of the much smaller native oyster (O. lurida) attached to Paci c oyster cultch shells in Puget Sound, Washington also showed increased abundance of epibenthic organisms, but not necessarily enhanced taxa richness with the pool of available species being determined by background conditions at the enhancement site (Cordell, pers. comm.).

5.3. Nekton

For larger mobile species, complex structure formed by foundation species or ecosystem engineers is likely to provide a place both to search for prey and to avoid becoming prey to larger organisms. Indeed, higher densities of estuarine sh and invertebrates have been widely found in association with structured habitats like seagrass (Orth et al., 1984; Jackson et al., 2001; Heck et al., 2003) and oyster reefs (Breitberg, 1999; Coen et al., 1999; Lenihan et al., 2001; Lehnert and Allen, 2002; Glancy et al., 2003; Peterson et al., 2003; Coen and Grizzle, 2007; Horinouchi, 2007; Taylor and Bushek, 2008) when compared to open un-structured mud at or subtidal channel bottom. However, abundance measures are not a de nitive indicator of how structured habitat contributes to nekton production, and in some cases even densities do not differ across habitat types (Heck and Thoman, 1984; Ferrell and Bell, 1991; Jenkins et al., 1997). We discuss possible explanations for these discrepancies in Section 7 below. Nekton response to aquaculture as habitat has not been extensively studied, except in the context of off-bottom culture operations. Order of magnitude higher densities of some sh and invertebrates (American eel, oyster toad sh, rock gunnel, Atlantic tomcod, and American lobster) were found in areas with rack and bag culture of C. virginica in Rhode Island, USA, compared to those in eelgrass or unstructured habitats, but eelgrass also harbored a few unique species (northern pipe sh and winter ounder; Dealteris et al., 2004). Tautog and scup were more abundant at oyster grow-out sites than natural rocky reefs in Naragansett Bay, Rhode Island and a tagging study found that though scup grew at slightly higher rates on the rocky reefs, they had greater site delity to oyster grow-out cages (Tallman and Forrester, 2007). Erbland and Ozbay (2008) found higher abundance of several reef oriented sh species (gag grouper, grey snapper, sheepshead, and tautog) and greater overall species richness in experimental oyster bags compared to a nearby oyster reef in Delaware. Juvenile sole were found to utilize areas with oyster trestle culture for protection during the day while foraging on surrounding tide ats at night (Laffargue et al., 2006). Researchers in New Zealand established a framework for the expected effect of suspended culture on sh which includes three mechanisms: attraction to structure, direct in uence on recruitment, and indirect food web effects (Gibbs, 2004). A case study which examined suspended culture of green mussels suggested few realized effects on abundance of one species (blue cod) and that the primary effect might be on pelagic sh that consume zooplankton should the footprint of farms be expanded (Jiang and Gibbs, 2005). These mussel farms have also been shown to enhance abundance and aggregation of star sh on the bottom, presumably due to drop-off of both culture species and fouling organisms (Inglis and Gust, 2003 D'Amours et al., 2008). Clynick et al. (2008) found species speci c differences in abundance when comparing areas under mussel culture lines to adjacent eelgrass and open unstructured habitat, but found no differences in integrated growth of winter ounder, sand shrimp and rock crab measured using RNA/DNA ratios.

Substantial research on nekton associated with both on-bottom and long-line oyster culture has been carried out recently along the West Coast of the U.S. In one case, diversity and abundance of sh were highest in aquaculture. Speci cally, oyster longlines in Humboldt Bay, California, harbored more sh than did eelgrass or open mud habitats (Pinnix et al. 2005). However a more common result has been that community-level indices (abundance and diversity) are equivalent across habitats with a few species speci c af liations. Few statistically signi cant differences in density were found among the N20 species of sh and crabs collected at intertidal locations in Willapa Bay, Washington where eelgrass, oyster bottom culture and open mud at habitats were surveyed (Dumbauld et al., 2005; Hosack et al., 2006, Fig. 4). In general, nekton density re ected physical location in the estuary rather than habitat type, although some species like rock crab (Cancer productus) were more abundant in oyster aquaculture and tube snouts (Aulorhyncus avidus) in eelgrass. Higher abundance of rock crab and smaller shore crabs (Hemigrapsus spp.), sculpins and blennies, occurred in small oyster stake culture plots compared with nearby eelgrass control areas in Coos Bay, Oregon (Pregnall, 1993). Staghorn sculpin (Leptocottus armatus) and caridean shrimp (Crangon franciscorum) were more abundant within high-density oyster long-line plots compared to lower-density oyster plots in Humboldt Bay, California (Rumrill and Poulton, 2004). In a study of sh associated with oyster racks, no signi cant differences in species richness or abundance were observed in sh samples collected adjacent to the racks compared to an area without culture in separate arms of Drakes Estero, California. At the same time, structure-oriented feeders like kelp surfperch (Brachyistius frenatus) and crevice-dwelling sh like gunnels and kelp sh (Pholis ornata and Gibbonsia metzi) were disproportionately associated with racks particularly during the day when refuge from predators could be most important (Weschler, 2004). Although oysters C. gigas were not included in the comparison, adjacent cobble habitats, supported lower sh diversity than eelgrass in British Columbia (Kelly et al., 2008).

On-bottom structure appears to have different implications for Dungeness crab (C. magister), depending on phase of the life cycle. These crabs represent a multi-million dollar annual shery on the U.S. West Coast and the role of estuaries as nurseries supporting these populations has been extensively studied (Armstrong et al., 2003). Ground cultured oysters and intertidal shell provide equal or better habitat than eelgrass for juvenile 0+ Dungeness crab (0–30 mm carapace width), which in turn provides better habitat than open

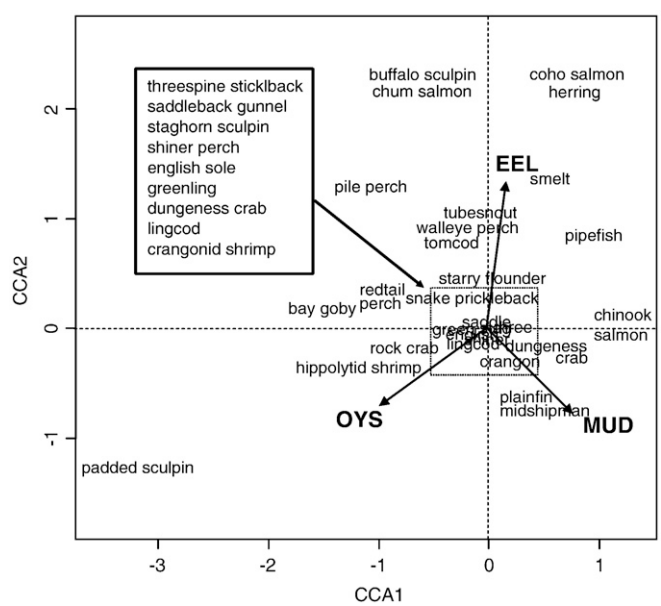

Fig. 4. Cannonical correlation biplot of catch per unit effort data from fyke nets deployed over three intertidal habitats: oyster aquaculture (OYS), eelgrass, Zostera marina (EEL), and open mud (MUD) in Willapa Bay, Washington in 2001. Species close to vectors and far from the midpoint are closely associated with that habitat. Many commonly collected species (box and circle) show no association with habitat, but some others like tubesnout and smelt in eelgrass, and rock crab and hippolytid shrimp in oyster show loose association with habitat.

unstructured mud or sand based on higher recruitment and survival rates due to protection from predators (Armstrong et al., 1994; Eggleston and Armstrong, 1995; Dumbauld et al., 2000; Feldman et al., 2000; Williamson, 2006). Shore crabs (Hemigrapsus oregonsensis) can also recruit to shell and outcompete C. magister depending on location and tidal elevation (Visser et al., 2004). Older age classes of Dungeness crab (1+ and 2+), however, favor open unstructured littoral habitats for foraging at high tide and are less likely to move across structured habitat including both eelgrass and oyster aquaculture (Holsman et al., 2003; Holsman et al., 2006).

For some Paci c salmon, on-bottom oysters appear to be lower quality habitat than eelgrass, especially for predator avoidance, based on individual behavior. However, salmon are distributed broadly across habitat types, and the amount of aquaculture in an estuary does not appear to in uence salmon returns. Paci c salmon occupy estuaries during a critical life-history stage as juveniles smoltify and transition from fresh to marine waters (Quinn, 2004). The diversity of life-history patterns among and within species of salmon in uences their use of estuaries: Chinook salmon (Oncorhyncus tschawytscha) have the longest estuarine residence, whereas pink and chum salmon (O. gorbuscha and O. keta) move through estuaries relatively rapidly on their way to sea (Groot and Margolis, 1991; Bottom et al., 2005). Juvenile coho salmon (O. mykiss) generally move directly to neritic waters as older 1+ sh that have reared in freshwater for longer periods, but recent evidence suggests that both age-0 and yearling sh utilize estuarine areas (mostly salt marsh and sloughs) relatively extensively (Healey, 1982; Miller and Simenstad, 1997; Miller and Sadro, 2003). Across West Coast estuaries, successful returns of salmon do not appear to be related to the presence or absence of aquaculture; in fact, the best estuarine predictor of pit-tag returns of Chinook salmon was the percent of land cover in natural condition (Magnusson and Hilborn, 2003). In a eld study to assess habitat preferences, salmon smolts were sampled across habitat types in Willapa Bay, Washington with a towed net, and gut lavage performed on captured individuals. No differences in abundance or diet occurred across habitat types, although seasonal and larger-scale spatial differences were evident (Dumbauld et al. 2005, Fig. 5). Laboratory studies of Chinook salmon smolt behavior indicated that eelgrass may provide a better refuge than other habitat types. Larger juveniles preferred the structure of eelgass as a refuge over oysters or open sand substrate when exposed to a mock heron predator (Dumbauld et al., 2005). In a separate eld experiment, hatchery-raised Chinook salmon smolts were released into a large intertidal enclosure (3000 m^2) containing eelgrass (Z. marina and Z. japonica), oyster clusters, unstructured sediment, and introduced cordgrass (Spartina alterni ora). They were implanted with acoustic tags that allowed their movements to be tracked in 2-dimensions at sub-meter accuracy (Radio Acoustic Positioning and Telemetry). After effects of tidal elevation and enclosure were accounted for, smolts never entered areas with Spartina and otherwise responded only to the presence of Z. marina, where they moved more slowly than in other habitat types (Semmens, 2008). Thus it seems that juvenile salmon move over the entire matrix of estuarine habitats, but eelgrass may represent a preferred habitat for refuge from predation which cannot be compensated by transformation to on-bottom oyster aquaculture. Assessing the functional value of habitats including aquaculture however, will ultimately require a larger landscape approach as suggested by Simenstad and Cordell (2000) for restoration (see further discussion in Section 7 below).

5.4. Birds

Estuarine tidelands provide foraging habitat for numerous species of shorebirds, waders and waterfowl during migration and for a few species that overwinter. Some farmed bivalves are directly consumed by birds (e.g. mussels by seaducks and oystercatchers; Caldow et al., 2004). However, other bird species appear to avoid

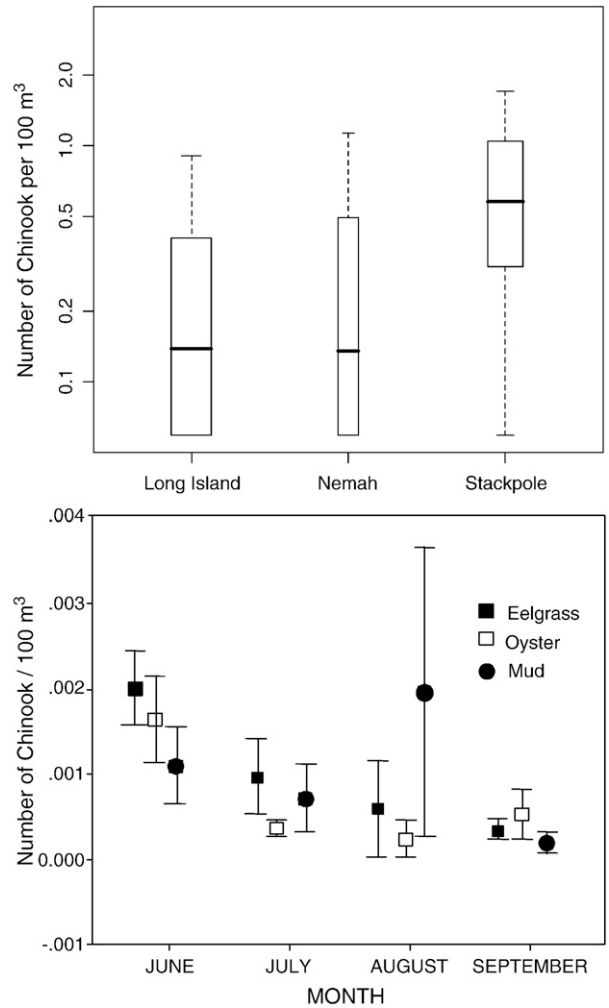

Fig. 5. Mean catch per unit water ow of juvenile Chinook salmon smolts by area shed with a modi ed two boat trawl net in Willapa Bay, Washington during 2003–2005. Catch varied by location (top), and over time (bottom), but no difference was evident between habitats.

densely-structured habitats, preferring instead to feed in open mud at areas (Luckenbach, 1984). Like nekton, the response of birds to aquaculture is likely to be species and perhaps environment speci c due to bird feeding and roosting behavior relative to the tides and the presence of other birds and predators. In Ireland, dunlin (Calidris spp.) were more frequent beneath trestle cultured oysters, whereas gulls, curlew and oystercatchers occurred in signi cantly lower numbers in culture areas (Hilgerloh et al., 2001). Experimental additions of mussels to intertidal areas in Wales resulted in increased use by curlew and redshank over time (Caldow et al., 2003), due apparently to increased diversity in benthic fauna as food provided by increased habitat complexity.

Evidence for the effects of aquaculture on birds on the West Coast suggests species speci c differences due to behavior. In Humboldt Bay, California ve of 13 species of shorebirds (whimbrel, willet, dowitchers, peeps and black turnstones) and three of four species of waders (snowy egret, great egret, and black-crowned night heron) were more abundant in long-line oyster culture areas than in nearby "control" areas (Connolly and Colwell, 2005), possibly responding to higher densities of invertebrate prey associated with long-lines. Black bellied plovers and great blue herons were more abundant in control areas and the other shorebirds displayed location speci c behavior. Kelly et al. (1996) found that peeps and dunlin avoided rack and bag oyster culture in Tomales Bay while willet were attracted. Mussels

settling on aquaculture structures were shown to enhance food resources for surf scoters and Barrow's goldeneye in British Columbia (Kirk et al., 2007). One species of waterfowl of particular concern are Brant geese (Branta bernicla), which graze heavily on eelgrass in estuaries at stopovers during their long migration to Arctic breeding grounds and in temperate over-wintering areas (Ganter, 2000). Humboldt Bay, California ranks fourth among West Coast spring staging areas for brant with peak numbers reaching 38,000 while Willapa Bay historically averaged 23,393 (1936–1960; and now 6900) and ranks sixth (Wilson and Atkinson, 1995; Moore et al., 2004). Effects of geese themselves on eelgrass tend to be low due to the seasonally brief presence of these birds during migration, but Canada geese (Branta canadensis) as well as several species of dabbling ducks have been shown to have more substantial long term effects on eelgrass in areas elsewhere in the U.S., particularly where they overwinter in some years (Nacken and Reise, 2000; Rivers and Short, 2007). Dabbling ducks have switched their foraging habits to feed primarily on the introduced species of eelgrass Z. japonica in West Coast estuaries where this species is now present (Lovvorn and Baldwin, 1996). While goose density is positively correlated with spatial eelgrass coverage in West Coast estuaries, the relationship is more complex and also in uenced by proximity to the next estuary along the coast and other factors like frequency of winter storms and within season foraging dynamics due to tides (Baldwin and Lovvorn, 1994; Wilson and Atkinson, 1995; Moore et al., 2004; Moore and Black, 2006), Thus both eelgrass and associated brant numbers could be negatively associated with aquaculture in a given area, but the long-term temporal decline in brant numbers along the West coast is not likely associated with shel sh aquaculture given the relatively stable presence of this industry in these systems for the last 100 years.

5.5. Aquaculture structures

Some bivalve aquaculture methods introduce physical structures to the intertidal at in addition to the organisms themselves (e.g. stakes, longlines, and bags for off-bottom oyster culture, and gravel, tubes and anti-predator nets for clam culture). These physical structures can modify water ow, in some cases accelerating ow and causing erosion, in other cases leading to deposition. They can also provide attachment sites and attract settlement of other invertebrates and algae. For eelgrass in particular, reduced density is a common response to the shade from overwater structures, studied most intensively for docks (Burdick and Short, 1999; Thom et al., 2005). We have already considered effects of suspended and rack culture in sections above, although the species versus method effects were not distinguishable. Distinguishing these effects requires two treatments (species + method, and either species alone, or method alone [preferably both]), in addition to a control without either. This design was employed by Spencer et al. (1997), who showed that predator netting deployed to protect clam aquaculture substantially increased sedimentation to tide ats in Great Britain, whereas biodeposits from clams alone did not (but see Jie et al., 2001 who document increased biodeposits from clams can occur in areas with current velocities below critical re-suspension rates). Further, this sedimentation resulted in slightly enhanced organic content and enhanced abundance of deposit feeding polychaetes. Clam mariculture conducted in bags on the East Coast of the U.S. has been shown to affect sediment but not water column characteristics (Mojica and Nelson, 1993) Macro-algae attached to clam culture bags in North Carolina enhanced use by mobile invertebrates and juvenile shes over that in nearby shallow subtidal sand bottom and resulted in comparable abundances with seagrass habitat (Powers et al., 2007). Both substrate modi cation (gravel addition) and predator netting effectively increase survival by protecting juvenile seed clams (Mercenaria mercenaria and M. arenaria) from various predators on the East Coast of the U.S. (Kraeuter and Castagna, 1985; Beal and Kraus, 2002) and R. philippinarum in Spain (Cigarria and Fernandez, 2000), but these studies were primarily con ned to effects on the clams themselves.

What evidence exists for ecological effects of aquaculture structures on the West Coast? For oyster culture most regional attention has focused on response by eelgrass (Z. marina) and results have been quite variable. At one extreme, oyster stake culture conducted in the middle of an intertidal eelgrass meadow in Coos Bay, Oregon reduced eelgrass cover by 75% relative to nearby controls, possibly due to increased sedimentation (5–10 cm buildup) and physical disturbance (Everett et al., 1995). Oyster racks caused 100% loss of eelgrass under the structure from both erosion of sediment (10–15 cm around structure) and shading. Macro-algal biomass was enhanced around stakes and signi cantly lower in rack plots than in eelgrass reference plots (Everett et al., 1995). At the other extreme, a broad survey of Willapa Bay showed that eelgrass density in longlines could not be distinguished from uncultured areas at the same tidal elevation, although in a subset of these beds, longlines harbored smaller plants (32%) and reduced production per unit area (70%) (Tallis et al., in press). Also, in a separate study in Willapa Bay, lower eelgrass densities were found in longlines than in nearby eelgrass reference areas (Wisehart et al. 2007). Seedlings were less abundant in longlines and reference areas compared with dredge harvest beds, possibly from seed supply or because shading and sedimentation impact these small plants (Wisehart et al. 2007). In an experimental study in which the effect of space between oyster longlines on eelgrass was examined in Humboldt Bay, California, eelgrass metrics tended to scale directly with the density of oysters (Rumrill and Poulton, 2004). Eelgrass declined in cover and density as spacing between lines decreased; spatial cover and density of eelgrass under lines spaced at 1.5 ft and 2.5 ft were signi cantly lower than those spaced at 5 and 10 feet apart. Eelgrass metrics observed within these wider spaced lower-density treatments were comparable to those observed at a nearby untreated site, a former oyster ground culture site, and a series of eelgrass reference sites located throughout the bay at the end of the 22 month study period (Fig. 6). They were also comparable to those measured within full-scale commercial long-line culture areas. Increased sedimentation and more variable light conditions (incident light levels diminished by as much as 35%) were found under narrowly spaced long-lines (b5 foot spacing), but the "shade zone" migrated with movement of the sun and irradiance was not reduced enough to limit Z. marina growth. Structures clearly have the potential to limit eelgrass, but the effects are context speci c, may not even be apparent when observed over larger spatial and longer temporal scales (e.g. see Ward et al. 1993 for lack of observed effects of rack culture), and can be ameliorated with management practices. West coast growers have also reported that eelgrass often appears in areas formerly devoid of this plant after structures are put in place. Given the lack of evidence for nutrient enhancement (Section 4.3 above), this could be due to either localized effects on water clarity or sediment stabilization, but no studies have addressed the mechanism.

For clam culture on the West Coast, two modi cations have been studied: addition of shell or gravel to the substrate and addition of anti-predator nets. Gravel and crushed oyster shell have been widely used to develop or maintain hard clam (primarily R. philippinarum) habitat in West Coast estuaries and these additions have been shown to enhance juvenile clam survival (Toba et al., 1992; Thompson, 1995). Thom et al. (1994) found that gravel addition to soft sediment signi cantly increased benthic respiration rates but had little effect on water quality parameters in south Puget Sound. They found site speci c changes in surface macroalage, chlorophyll, and benthic assemblage, likely due to local conditions and time since the areas had been graveled. Secondary effects on the infaunal and epibenthic community were also shown to be site speci c in later studies conducted in two sub-estuaries of south Puget Sound. Thompson (1995) found a general trend of enhanced abundance of gammaridean amphipods and nemerteans in modi ed substrate plots and reduced abundance of glycerid, sabellid and nereid polychaetes. Simenstad and Fresh (1995) documented site speci c responses of the epibenthic

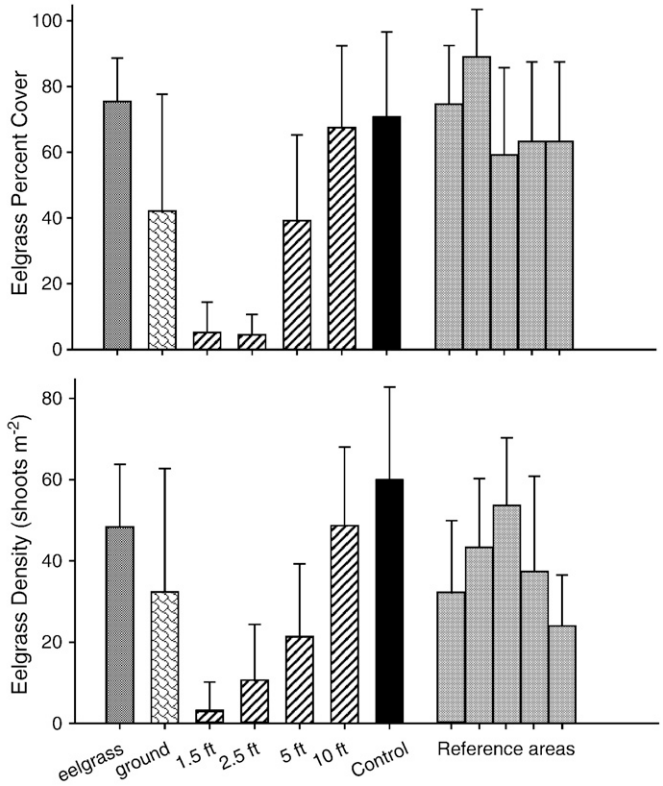

Fig. 6. Eelgrass spatial cover (top) and density of shoots (bottom) measured in experimental oyster long-line plots (1.5 to 10 ft spacing) in Humboldt Bay, California just before harvest at the end of the experiment compared to an eelgrass reference area nearby, ground culture plot (ground), a control plot with stakes but no lines (control) and 5 distant reference eelgrass beds (Mad River, Sand Island, East Bay, and Arcata Channel).

harpacticoid copepod community to the combination of gravel additions and predator exclusion netting.

Predator exclusion netting and/or bags are widely used for clam culture without substrate modi cation in West Coast estuaries and have been shown to increase the amount of organic carbon present in the sediment, likely due to biodeposition from larger age classes of R. philippinarum which were more abundant in netted plots at farmed sites in British Columbia, Canada (Munroe and McKinley, 2007a,b). Little consistent effect however was shown for sediment grain size or the abundance of other bivalves. Settlement of the cultured species R. philippinarum displayed highly signi cant interannual differences and the effect of netting was marginally signi cant (decreased settlement), but could be negative or positive depending on presence and size class of older clams (Munroe and Mckinley, 2007b; Whiteley and Bendell-Young, 2007). Finally, in Baynes Sound, British Columbia where some growers also installed beach fences around their plots, Zydelis et al. (2006) found densities and distribution of important wintering populations of surf and white-winged scoters to be primarily related to environmental factors and not shell sh aquaculture though 76 ha or 5% of the intertidal area was recorded to be covered by predator exclusion nets.

6. Harvest practices as pulse disturbances

Fisheries harvests in general can remove non-target species and re-set systems to early-succession conditions. However, the initial impact and pace of recovery clearly vary with harvest method, type of habitat present, and organism being studied (Kaiser et al., 2006). In their recent review, Kaiser et al. (2006) found just 6 examples of intertidal raking, which is perhaps most relevant to shell sh aquaculture (since intertidal dredging involved sediment removal and longer recovery times linked to in ll rates; see also Dernie et al., 2003). Their meta-analysis showed that initial impacts to biota were relatively small and harvested areas matched controls within 50 days. Recovery was slower however in muddy sand and in biogenic habitats (especially when the latter included larger, older organisms such as corals and bivalves which contributed directly to biomass removed; see also Lenihan and Peterson, 2004). This is likely to be the case after disturbance to seagrasses which are sensitive to a variety of activities with some parallels to aquaculture harvest practices: dredge and ll (Fonseca et al., 1984; Onuf, 1994; Erftemeijer and Lewis, 2006), boat propellors (Zieman, 1976; Dawes et al., 1997), and boat anchor and mooring chain scars (Walker et al., 1989; Thom et al., 1998). Repeated trampling (mimicking recreational visitors) reduced the biomass of Thalassia testudinum in Puerto Rico, especially in softer substrates (Eckrich and Holmquist, 2000), but harvest activities for shell sh are unlikely to occur this frequently. Trawling and dredging for wild shell sh also negatively affect seagrass (Fonseca et al., 1984; Peterson et al., 1987; Orth et al., 2002; Neckles et al., 2005), although an extension to aquaculture must consider gear, technique, species ecology of seagrass (e.g. Erftemeijer and Lewis, 2006), and the physical environment (e.g. Kaiser et al. 2006). Several hard clam harvest methods have been shown to reduce eelgrass, including mechanical "clam kicking" with propeller wash (Peterson et al., 1987) and hand digging when rhizomes were extensively fragmented (Cabaco et al., 2005). The scale of harvest activity has also been shown to be important for both the direct effect on seagrass and associated organisms and the secondary impact of harvest on food for shorebirds and waterfowl. Small scale harvest of clams by hand in a national park in Spain (Navedo and Masero, 2008) appeared to have low impact and be sustainable, while larger scale effects of dredge harvesting on wild stocks of mussels and cockles in intertidal areas of the Dutch Wadden Sea are highly debated (Piersma et al., 2001; Verhulst et al., 2004; Kraan et al., 2007).

Recovery time after disturbance to seagrass should vary with seagrass species, disturbance size, disturbance intensity, and sediment characteristics. Seasonal time of disturbance is also likely a factor. Seagrass can recover via lateral rhizome spread or via sexual reproduction and seed dispersal depending on location and species. In fact, both natural and human disturbances have been shown to enhance sexual reproduction in seagrass (Marba and Duarte, 1995; Peterken and Conacher, 1997; Plus et al., 2003; Olesen et al., 2004). With respect to aquaculture, intertidal clam harvest in Portugal resulted in 2 fold higher seed production and an extended reproductive season for Z. noltii which enabled it to recover from harvest within a year (Alexandre et al., 2005).

Most of the research outlined above on press disturbances due to aquaculture in West Coast estuaries has not addressed the direct response of the benthic community to the pulse effect of harvest practices because it is not generally possible to distinguish these from effects of just adding the cultured organisms themselves. Consequently, the most valuable insight into harvest practices comes from before–after comparisons, which can then be tracked over time to determine pace of recovery. Both the initial impact and time to recovery have been variable in studies of the effect of oyster harvest to eelgrass on the U.S. West Coast. Results of experimental dredging using a toothed metal dredge at relatively large scale (0.33 ha plots) in Willapa Bay, Washington provide one explanation for this variation. At a muddy site, eelgrass initially declined 42%, where shoot and rhizome removal by the dredge implement was substantial, requiring 4 years for recovery, whereas at a sandy site, initial decline was only 15% and recovery occurred in 1 year (Tallis et al., in press). The effects of multiple passes with a suction dredge were evaluated by Wadell (1964) who found up to 96% initial loss of eelgrass biomass in Humboldt Bay with recovery taking up to 2 years. Treatment frequency also varies substantially and growers suggest that suction

dredges are no longer common, each company designs their own mechanical implements, operator experience can be a factor, and mechanical harvest is rarely used in soft muddy sediments. In a comparison of eelgrass across three types of aquaculture (longlines, hand-picked, dredged), it proved possible to separate the effects of different culture practices from the effects of oysters, because oyster cover was included as a continuous variable ranging from b5% to N50% across beds. Relative shoot growth rates were 15% higher in both ground and long-line culture beds, but eelgrass production per unit area was driven by density and plant size differences and therefore lower in all aquaculture beds than in nearby eelgrass reference areas. Hand-picked beds had higher eelgrass production per unit area than did dredged beds (Tallis et al., in press), indicating higher impacts of mechanical harvest than picking up oysters by hand in eelgrass. For large areas such as aquaculture beds to regain eelgrass requires seed germination or asexual reproduction of remnant adults. In Willapa Bay, Washington seed germination can be high (N4 m ^{2}), particularly on dredged beds (Wisehart et al. 2007), although seedling survival appears universally low (1–2%; Wisehart 2006). Rhizome branching appears to be important for recovery of gaps in eelgrass (up to 16 m^{2}), but only occurs seasonally and thus gaps created experimentally in mid-summer did not begin to recover from the edges until the following spring (E.L. Wagner, unpubl. data). Clearly how much sexual versus asexual reproduction contributes to eelgrass resilience is important and may vary both temporally and spatially, but these dynamics have not been investigated on the U.S. West Coast.

For clams, effects of harvest appear related to the extent and depth to which sediment is dislodged. Effects of recreational clam harvest using rakes on Z. marina were undetectable, but digging clams with shovels reduced eelgrass cover and biomass over the short term, although recovery occurred fairly rapidly (months) in Yaquina Bay (Boese, 2002). Though the introduced seagrass, Z. japonica has expanded into areas and often now interferes with clam aquaculture on the West Coast of the U.S., clam aquaculture does not co-occur with Z. marina. Recreational clam harvest in the San Juan Islands, Washington caused short term impacts to non-target clam species abundance and polychaete species richness due to sediment displacement with shovels (Grif ths et al., 2006), but this does not typically occur for aquaculture where harvesting is typically done by hand or small rake and sediment replaced. In an experimental study of the effects of geoduck aquaculture on eelgrass density in south Puget Sound, Washington small (1 m^{2}) gaps in eelgrass beds required N1 year for recovery via regrowth from the edges, because owering and seed germination were very rare (Ruesink and Rowell, in prep.). When the geoducks were harvested, eelgrass shoot density dropped N70% and recovery was subsequently dif cult to gauge because control plots also declined in density over the 3-year study (Ruesink and Rowell, in prep.).

7. Landscape considerations

The available evidence discussed above for the U.S. West Coast indicates that some types of bivalve shell sh aquaculture can have effects on other species, and these effects may be place- and time-speci c in part due to the scale at which observations are made. The vagueness of this conclusion is to be expected from ecological studies: unfortunately, it leads to the potential for selective use of evidence to support a conclusion of strong positive, strong negative, or weak effects of aquaculture. An important avenue of future research lies in documenting and understanding the role of aquaculture at an appropriate landscape scale, where aquaculture is intermixed (literally overlapping, as with eelgrass in oysters; or distributed as meadows and patches) with other habitat types.

There is no particular scale inherent in the concept of a landscape, only that it has a spatial dimension. For the purposes of this discussion however, we use a common de nition of a spatially de ned mosaic of heterogeneous elements that differ in their qualitative or quantitative properties (Wiens, 2005). We consider the estuarine landscape on which aquaculture acts as a disturbance and therefore de ne it to be larger than the scale of an individual lease, bed, reef, or set of structures used to culture shell sh. Conceptually this differs from estuary to estuary and is in uenced by aquaculture practice and the cultural/political framework that exists in a given place. A series of questions that might then be asked regarding this landscape include (after Ahern, 2005):

- What is the proper spatial and temporal scale for understanding ecological patterns and processes in the estuarine landscape?
- How large a habitat patch (shell sh bed, eelgrass meadow) is required to support a given species or ecological process?
- Do these habitats form a "corridor" that connects larger habitat areas and if so what con guration of corridors is necessary to sustain species or ecological processes across the estuarine landscape?
- Which species or species group should be planned for? Can a particular "indicator" species represent the habitat needs of a group of species?
- Are there ecological interactions between shell sh aquaculture and other common anthropogenic disturbances at landscape scales?
- How does a particular estuary constrain or support an ecological process?
- Estuaries are open systems and connected and in uenced by the nearshore coastal ocean and the watershed — how does this affect the ecological processes?
- How should aquaculture as a disturbance be understood in the estuarine landscape?
- Within cultural and economic constraints, can aquaculture be incorporated into estuary planning to lessen or enhance the potential effects to these other habitats and therefore species that utilize them?

These questions about the in uence of habitat con guration on organism abundance and behavior at broad spatial scales (relative to the organism being studied) have been widely examined in terrestrial systems (Kareiva, 1987; Forman, 1995; Mazerolle and Villard, 1999; Debinski and Holt, 2000; Lindenmayer and Fischer, 2006), but only recently considered for marine habitats like eelgrass beds and oyster reefs (Brooks and Bell, 2001; Fonseca et al., 2002; Salita et al., 2003; Harwell, 2004; Darcy and Eggleston, 2005; Grabowski et al., 2005; Hovel and Fonseca, 2005; Bostrom et al., 2006; Connolly and Hindell, 2006; Johnson and Heck, 2006; Tanner, 2006; Hinchey et al., 2008). Increased connectivity between marine populations due to passive dispersal of larval stages and juveniles over large areas suggests that landscape scale processes differ in marine systems though there are clearly parallel processes to be explored. Corridors and habitat fragmentation have been shown to be less important, particularly for many invertebrates with pelagic larvae, but also for more sedentary adults (e.g. bivalves and small polychaetes, Bowden et al., 2001; Tanner, 2005; Cole et al., 2007). Fragmentation, patchy seagrass beds, and increased habitat edges may actually enhance diversity and increase the density of some bottom feeding invertebrates like decapod crustaceans and sh, whereas larger seagrass meadows may harbor higher numbers of smaller cryptic species (Salita et al., 2003; Tanner, 2005; Selgrath et al., 2007). Clearly other factors are also important like water depth, water movement, predation and organism behavior and motility (Irlandi et al., 1995; Darcy and Eggleston, 2005; Jackson et al., 2006; Horinouchi, 2007). Effects at the estuarine landscape scale are potentially more important for motile organisms with increased perception of structure at this scale and a greater home range which also provides important linkages between habitats like seagrass and

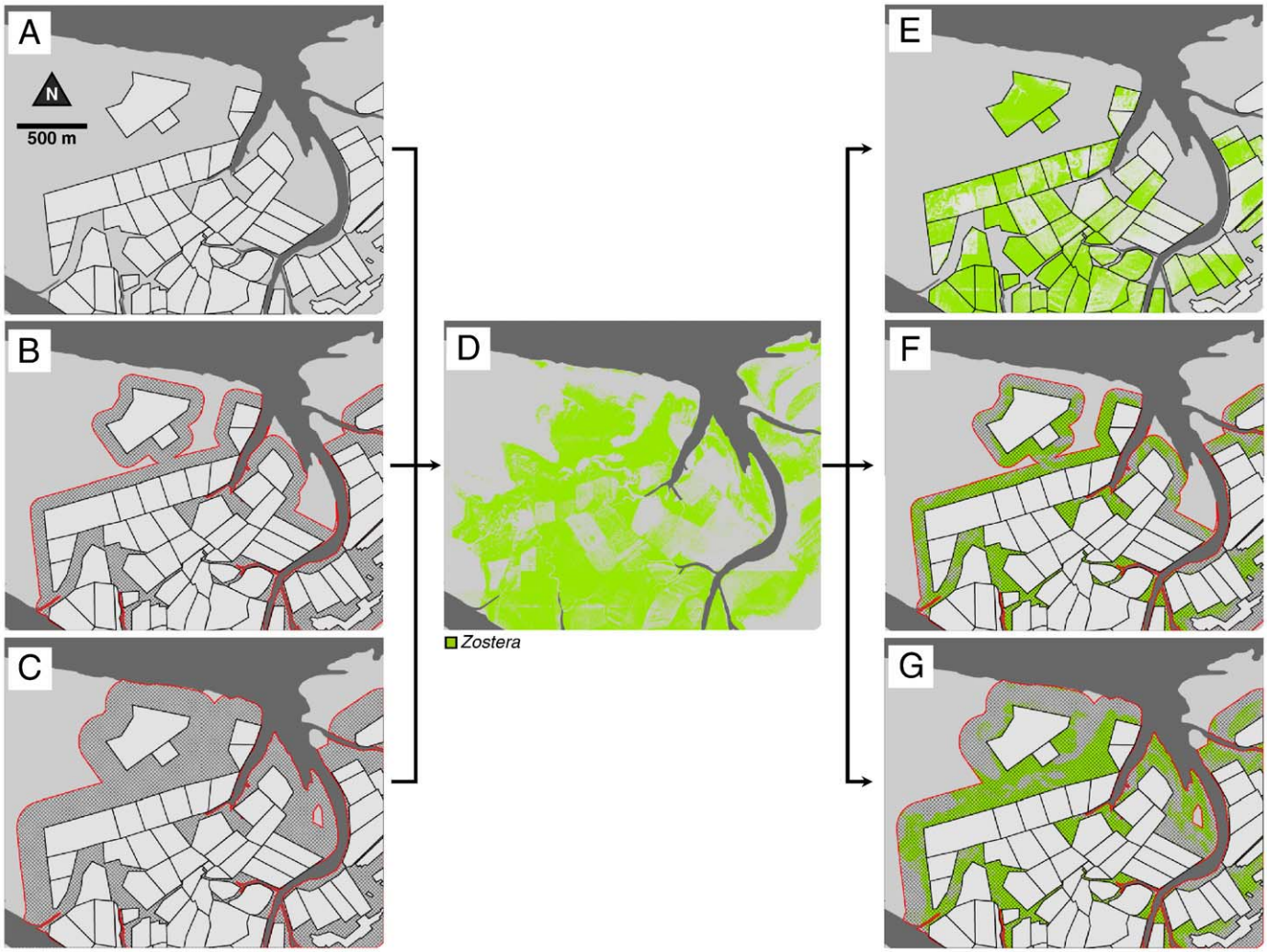

Fig. 7. Infrared aerial photography of an area near Stony Point in Willapa Bay, Washington was used to determine presence of intertidal vegetation (Zostera green shading, D). A separate layer was created which shows the distribution of active oyster aquaculture (A, top left) based on interviews with growers and both a 100 m and 200 m buffer zone around the edge of the culture areas (B and C). Estimates were then made of the proportion of the total area represented by Zostera in each of these zones (E, F, G). Although it represents a temporal snapshot (May 2005), the proportion of area covered by vegetation is comparable inside and outside aquaculture in these zones (46% inside aquaculture, 50% in 100 m buffer, and 44% in 200 m buffer).

marsh (Irlandi and Crawford, 1997; Simenstad and Cordell, 2000; Bostrom et al., 2006).

There have been few landscape-level approaches to bivalve shell sh aquaculture, although some progress has been made in Willapa Bay, Washington. Here, there are estimates of the total amount of different habitat types and how these have changed over time. In addition, the behavioral response of selected species (salmon, crab) has been studied across habitat types including bivalve shell sh aquaculture areas by these larger mobile organisms as discussed in Section 5.3 above (Pinnix et al., 2005; Holsman et al., 2006; Hosack et al., 2006; Semmens, 2008). Nonetheless, the in uence of aquaculture has not yet been examined at a landscape scale on the West Coast of the U.S. and new work will need to be done to address such landscape-level features as patch size, connectivity, and the population response of organisms. Managers and regulators rightly suggested a general "no net loss" policy for estuarine wetlands which include eelgrass. This constraint has focused their efforts to date on protecting existing eelgrass as valued structured benthic habitat without much consideration of other forms of habitat or the location and scale of eelgrass habitat. Studies to date have also mostly examined organism presence and density in a given habitat and not broad scale spatial pattern or functional roles of these habitats. It could be that some habitats are more important than others at a broader landscape scale (e.g., as protective cover near channel edges for juvenile salmon) and that the con guration of both shell sh and submerged aquatic vegetation as habitat is also important because it provides food for larger more mobile organisms at that scale (e.g., for juvenile salmon, English sole, or shorebirds and waterfowl as discussed above) and protective cover and food for others (e.g for juvenile crab). Applications might be gleaned from work in the terrestrial environment where agricultural eld margins and forest edges have been considered and managed as valuable habitat (New, 2005).

Despite the generally negative results of disturbance to eelgrass from aquaculture on small spatial and short temporal scales discussed above, eelgrass is generally present and intermingles with shell sh on all aquaculture beds at the tidal elevation where it is found naturally in Willapa Bay, Washington. Studies conducted to date have not evaluated historical records to indicate either loss or gains in eelgrass habitat over time, nor whether eelgrass would have been present regardless of subsequent aquaculture activity. Across Willapa Bay as a whole, shell sh aquaculture currently occupies about 13% of the estuary (4625 ha) and 20% of the tide at (B.R. Dumbauld, unpubl. data; Feldman et al., 2000). It has likely historically replaced at least two other habitat types: monospeci c eelgrass (Z. marina) and burrowing shrimp (N. californiensis and/or Upogebia pugettensis).

Interestingly, the application of carbaryl to remove burrowing shrimp may actually enhance eelgrass (both the native species and a non-native congener Z. japonica, Dumbauld and Wyllie-Echeverria, 2003). With the exception of changes in practices like switching from on-bottom culture to off-bottom culture in some locations, the press (oyster addition) and pulse (planting and harvest operations) disturbances of oyster culture have not changed materially for decades (Ruesink et al., 2006), so there is no reason eelgrass would necessarily be worse off now than in the recent past. Indeed, there is scienti c evidence that eelgrass uctuates with environmental conditions (Thom et al., 2003) and compelling evidence that it has been expanding its distribution in Willapa Bay (Ruesink et al., in review) and other estuaries along the open coast of the western U.S. even though it is declining elsewhere in the world (Orth et al., 2006) and in isolated locations on the U.S. West Coast (e.g. Hood Canal and San Juan Archipelago in Puget Sound, Gaeckle et al., 2007; Mumford, 2007). Based simply on tidal elevation, Willapa Bay was estimated to contain 3139 ha suitable for Z. marina (0 to 1.2 m MLLW) in the 1850 s, increasing to 4845 ha in the 1950s as the bathymetry became shallower (Borde et al. 2003). A recent estimate based on aerial photography (3424 ha) may be slightly lower than the potential area because other habitat types (e.g. aquaculture, burrowing shrimp) also occur at the same elevations (Ruesink et al. 2006). The two Zostera species together may cover 4935 ha (B.R. Dumbauld, unpubl. data) or 6162 ha (Ruesink et al. 2006). Despite their chemical control for aquaculture, burrowing shrimp currently also occupy a very large intertidal area in Willapa Bay (3060 ha = 13.5% of the intertidal; B.R. Dumbauld, unpubl. data). They have probably uctuated in abundance and would have the potential to occupy a much larger area if shrimp control had not occurred, with attendant effects on both native and non-native species of Zostera and associated benthic community. Simenstad and Fresh (1995) estimated that 12.6% of an area near Stony Point in Willapa Bay was highly disturbed due to aquaculture with little to no eelgrass present. Despite the obvious signature from oyster culture disturbance however, when we re-examined the proportion of area with eelgrass present in oyster culture beds and compared it to that area at a similar tidal elevation just outside oyster culture (where eelgrass would be expected to occur) in the same Stony Point vicinity (2005 data, Fig. 7), we found little difference in eelgrass cover (46 versus 50%). Such comparisons are merely one-time snapshots of the presence of vegetative cover and more thorough analyses of a larger area over a slightly longer temporal scale with more descriptive categorizations of bed use will re ect the importance of vegetative recovery processes and perhaps other details discussed in above sections. In contrast, historical estimates do not account for occupation by other species, for instance, based on crude maps from the late 1800's, native oyster O. lurida beds occupied 2700 ha (12% of the low intertidal and shallow subtidal) that now consists of relatively undisturbed and dense native eelgrass meadows (Collins, 1892; Townsend, 1896; Sayce, 1976). Thus shell habitat has always been present in Willapa Bay, although its current distribution is at a higher tidal elevation than would be assumed from a contemporary projection, or than is present at other important West Coast locations (Tables 2 and 3). These spatial analyses have rarely been conducted in West Coast estuaries (but see Carswell et al., 2006 for Baynes Sound, British Columbia, Canada and Ward et al., 2003 for Bahia San Quentin, Mexico).

8. Resilience — management implications and research needs

Shell sh aquaculture has been an important activity and has supported local economies along the West Coast of the U.S. for at least 100 years. At present temporal and spatial scales in West Coast estuaries, our review suggests that the practice of shell sh aquaculture viewed as an ecological disturbance seems much more sustainable than other human activities such as freshwater diversion, coastal development and pollution, which continue to degrade estuarine function. On a global scale however, aquaculture is expanding and so may pressure to increase regional use of estuaries for bivalve culture. We end this review with some conclusions, caveats, and research needs which we hope will be useful to managers and decision-makers.

Table 3
Status of aquaculture in some U.S. West Coast estuaries and a possible classi cation system (after Weinstein and Reed, 2005) which could be used as a starting point for discussing sustainability and future planning.

Estuary	Area (km^2)	Existing aquaculture (h)	Proportion	Types	Other anthropogenic disturbances in order of importance	Possible classi cation zones
Baynes Sound, British Columbia, Canada	87	458	0.053	Oyster — bottom–deepwater clams	Nutrients	Zones: Production, Conservation
Totten Inlet, Puget Sound WA	24.7	85	0.034	Clams, geoducks, oysters on bottom, racks, off-bottom	Nutrients,	Production/conservation
Grays Harbor, WA	255	364	0.014	Oyster — longline, bottom	Nutrients, dredging	Zones: Production, urban-industrial
Willapa Bay, WA	358	4626	0.129	Oyster— longline, bottom clams	Marsh ll	Production
Tillamook Bay, OR	37.3	1014.8	0.272	Oyster — bottom, long-line	Nutrients, marsh ll	Production
Netarts Bay, OR	11.1	154.2	0.139	Oyster — bottom	Nutrients	Production/conservation
Salmon River, OR	1.8	0	0	Na	Marsh ll	Conservation
Siletz Bay, OR	5.9	0	0	Na	Nutrients	Conservation
Yaquina Bay, OR	17.6	210	0.119	Oyster — raft, on bottom	Marsh ll, nutrients, dredging	Zones: Urban industrial, production/conservation
Alsea Bay, OR	10.2	0	0	Na	Nutrients	Conservation
Coos Bay, OR	53.8	97.3	0.018	Oyster — bottom, long-line	Nutrients. Marsh Fill, Dredging	Zones: Production, conservation, urban-industrial
Humboldt Bay, CA	67	121.4	0.018	Oyster — longline	Marsh Fill, Nutrients	Zones: NB = production SB = conservation
Drakes Estero, CA	9.2	12.1	0.013	Oyster — racks and bag on bottom	Nutrients	Conservation/production
Tomales Bay, CA	28.5	240	0.08	Clams	Nutrients	Production
San Francisco Bay, CA	1060	0	0	Historical oyster harvest	Diking and ll, Modi ed FW ow, nutrients	Zones: Urban industrial, conservation

Aquaculture numbers represent estimates of actual ground used for culture as determined from grower interviews for Willapa Bay and Grays Harbor, WA and actual ngerprint used for California estuaries (Tom Moore, Calif. Dept. Fish and Game).
In contrast, gures include total area leased from the state for Oregon estuaries (John Byer, Oregon Dept. of Agriculture) and total owned and/or leased ground for Totten Inlet (Dan Cheney, Paci c Shell sh Institute), and total tenures from Carswell et al. (2006) for Baynes Sound. Thus proportion of estuary occupied by culture for some estuaries is likely over-estimated. Estuarine areas for Oregon are from (Cortright et al., 1987).

From a manager or land-use planner's perspective, the rst consideration in evaluating shell sh aquaculture in a given estuary should be an answer to the question: What are we and/or should we be managing for? Estuaries have a wide range of potential functions, have been and will continue to be in uenced by many human activities, and similarly are in uenced by many natural disturbances in addition to shell sh aquaculture. While the current paradigm for most managers is whole "ecosystem based" management (Grumbine, 1997), in reality managers have only progressed to varying degrees down this path, especially for marine systems. Thus the answer to "what are we managing for?" is driven by a wide variety of stakeholders and societal values (social historical, political, moral and aesthetic as well as economic; Leslie and McLeod, 2007; Weinstein, 2007; Ruckelshaus et al., 2008). Although these values are outside the purview of our intended review, we found it instructive to at least classify West Coast estuaries by the current level of aquaculture and other anthropogenic disturbance as Weinstein (2007) propose. Willapa Bay and Humboldt Bay might therefore be considered "production" estuaries with greater than 10% of the area occupied by shell sh aquaculture, while numerous other smaller estuaries with little aquaculture could be classi ed as other types (though the proportion of total estuarine area leased for aquaculture in some of these systems is also greater than 10%, leased does not necessarily mean actively used, Table 3). Portions of estuaries might also be classi ed or zoned separately this way (e.g. the South Slough portion of Coos Bay, Oregon or South Bay portion of Humboldt Bay, California). These classi cations would then further help set goals and priorities for management and restoration, an activity which also involves social decisions about what should be "restored" (Simenstad et al., 2006). Classi cations of production and production/conservation would be compatible with sustainable aquaculture, whereas areas classed as conservation or conservation marine within estuaries might not include aquaculture depending on the level of anthropogenic in uence and goals for sustaining traditional commercial and recreational products desired. These decisions would obviously vary by jurisdiction. In Washington state for example, a critical societal decision was made in 1895 with passage of the Bush and Callow Acts which deeded 18,932 h of tidelands to private ownership speci cally for the purpose of commercial shell sh culture. This set the stage for continued industry involvement and emphasis as a priority activity. Within such a framework which simply recognizes the current status and constraints on these systems, we offer the following conclusions speci c to bivalve aquaculture as disturbance, its relevance to resilience in West Coast estuaries, and suggestions for future research:

1. Bivalves process phytoplankton and alter the forms and distribution of nitrogen in a system. In typical U.S. West Coast systems evaluated to date, water column and sediment nutrient concentrations are generally relatively high and greatly in uenced by the proximity to deeper nearshore ocean waters where upwelling controls production during summer months. The situation may be different for small systems such as coastal lagoons or portions of large fjords like Hood Canal in Puget Sound, Washington where circulation is restricted. Very little modeling of whole-system energy and nutrient budgets, including aquaculture, has been done regionally, although the methods are well worked out in Europe. We suspect, however, that terrestrial and anthropogenic nutrients will gure less prominently than in many other places where bivalves are grown. Studies that expand on work like that completed for Willapa Bay, Washington showing the potential for bivalves in one part of the estuary to limit production in another part (Banas et al., 2007), and comparisons with other systems including portions of fjords like Puget Sound, Washington would be extremely useful research avenues. Intermediate bed scale studies such as those conducted using ow models and benthic nutrient ux estimations within given estuaries (Newell et al., 1998; Porter et al., 2004) will still be necessary to calibrate the larger landscape scale estimations, particularly with new species or culture techniques (e.g. geoducks in tubes, oysters on longlines).
2. Some bivalves and culture practices modify estuarine habitat at local community and at landscape scales. The effect of aquaculture is most often evaluated against existing structured habitat in the form of submerged aquatic vegetation. While bivalve aquaculture might be viewed as a press disturbance over the long term in a given area, the individual activities act as pulse disturbances and Z. marina in U.S. West Coast estuaries can recover to pre-disturbance levels relatively rapidly (within a period of 2 years in some systems). This is usually before the next planting or harvest disturbance occurs, but depends on conditions and the aquaculture practice (e.g. oyster fattening beds might be rotated on a yearly basis and thus disturbance is frequent, while seed-harvest beds are left undisturbed for 2 to 4 years). Furthermore, the extent of the effect depends on the practice (hand harvest versus dredge harvest, longlines versus on-bottom culture). The current distribution of eelgrass re ects a balance of space competition, pulse disturbance and recovery, and is therefore at dynamic equilibrium on aquaculture beds (albeit generally lower than in undisturbed eelgrass meadows). Research is still needed on factors that cause plants to alter their reproductive strategy and enhance seedling production (Wisehart et al. 2007), whether plants respond differently to disturbance across seasons, particularly since densities vary naturally over the year (Ruesink et al., in review) and nally on the effect this has at larger spatial scales (growing areas to estuary) and over relevant temporal scales (at least the lifetime of a shell sh crop = 3 or 4 years).
3. The role of aquaculture (organisms themselves and support structures) as estuarine habitat should also be considered. For small benthic infauna and mobile epibenthic fauna, structure provided by aquaculture appears functionally similar to eelgrass, based on invertebrate abundances and composition measured to date in West Coast estuaries. For larger benthic invertebrates and sh, use of habitat depends on mobility and varies with life-history stage and taxon being evaluated, so temporal and spatial scales are important considerations. Though less is known about habitat function for these larger more mobile organisms, they can use structure for protection from even larger predators (juvenile salmon in eelgrass and 0+ Dungeness crab in oyster), but still rely on other habitats for foraging (1+ Dungeness crab in unstructured open habitat). Given the presence of mixed habitats (i.e. eelgrass within aquaculture beds), it would be valuable to determine relationships between eelgrass density and its ecosystem function, effective habitat patch sizes, and corridor use at a larger landscape scale. This may be an area where best management plans can be designed and implemented since the shell sh industry would likely be supportive of maintaining habitat corridors (e.g. eelgrass along channel edges) and timing windows (e.g. limited harvest operations in some areas during sh spawning or bird migration periods) should they prove necessary.
4. Finally, it is important to consider estuarine changes not simply in terms of departure from baseline, but as they in uence resilience, that is, capacity of the system to withstand or recover from other shocks. Aquaculture as disturbance is generally within the scope of existing "natural" disturbances to the system (e.g winter storms) and other ecosystem engineers (e.g. eelgrass and burrowing shrimp) are also inherently adapted to this scale of disturbance. Certain anthropogenic disturbances have reduced estuarine resilience, for instance habitat removal via wetland diking and lling, hardening of surfaces in the watershed, nutrient additions, invasive species such as Spartina, and possibly food web modi cations like removal (sharks, skates and sturgeon) or protection (harbor seals and sea lions) of large predators. In contrast, bivalve aquaculture does not remove area from the estuary or degrade water quality,

and thus is less likely to undermine resilience. Though local and short term effects are clearly evident in U.S. West Coast estuaries, bivalve aquaculture has not been implicated in shifts to alternate states or reduced adaptive capacity of the larger ecological system. Typical thresholds that might be involved in such catastrophic change would likely be reached rst with other human disturbances (e.g. nutrients and predator removal), although location and scale remain important management considerations (e.g. small inlets with strati ed water columns and less routine physical disturbance might exhibit lower thresholds to large scale aquaculture operations).

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Ti e Sierra Club i as o anC concerns relatine to ti e io pacts on ti e environo ent due to ti e rapid expansion of aquaculture in Puget Sound. Please see our attached policy on aquaculture. Many of these ooserf ed impacts haf e oeen documented in peereref ies ed papers as s ell as in state and federal agency documents. P e encourage you to ref ies the follos ing information as you consider hos to proceed in the restoration and protection of Puget Sound, a major issue to all of us.

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ehis snterim Progress r eport s as mandated oy the 2007 HB2220 initiated oy r ep. Lantz in response to citizen1concerns regarding aquaculture impacts. P hile the research s as limited due to oudget constraints to a fes of the geoduck aquaculture effects, this snterim Progress r eport contains preliminary ooserf ations of these impacts that many citizens haf e oeen ooserf ing and reporting to state and federal agencies for years.

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ehe e ros th Management Hearings Board decision of *Seattle Shellfish et al v. Pierce County/WA S eat of Ecolof y* clearly states that county officials haf e the right to restrict aquaculture actif ities and protect their natural resources. ehis decision s as a result of the shellfish industry challenging the right of citizens to require regulations that s ould restrict its1expansion actif ities. ehe decision affirms that counties haf e the responsioility to protect their shoreline natural resources from direct impacts as they update their Shoreline Master Programs.

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ehe British i olumoia Prof incial e of ernment announced in a press release dated January 28, 20p0, that f it s ill no longer oe accepting nes applications for shellfish aquaculture licenses and s ill only process those applications receif ed prior to January 26, 20p0y and has also put a moratorium on finfish licensing.[e] P e share the same f Salish Seay as our neighoors to the north so s e must ask s hat they knos that s e do not knos .

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[e] B.i . puts moratorium on finfish aquaculture licenses, Hancouf er Sun, January 28, 20p0. http rsss s s .f ancouf ersun.comsputs+moratorium+finfish+aquaculture+licencess2476p68sstory.html

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Ti e Sierra Club fullC supports ti e scientists' position for rieorous science based on a ti orouei and unbiased review of available information and also advises ti at "societC si ould take a precautionarC approaci to si oreline manaeement." S i ile ti ese scientists did not address ti e issue of abuacultureSpolicC makers si ould not continue to endorse a double standard wi ici rebuires upland standards for si oreline modification but does not limit ti e direct impacts of abuaculture expansion in ti e Nearsi ore. Ti e oti er double standard issue is ti at decision makers i ave allowed ti e si ellfisi industrC to selectivelC use preliminarC data to justifC abuaculture expansion.

S s si own belowSabuaculture is clearlC a si oreline modification:

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Sn conclusionSwe would like to make it clear ti at we support ti e independent si ellfisi erowers' sustainable operations wi ici do not include ti e use of pesticides and avoid ti e use of netsSerow baes and ubC tubes. S e also understand ti at ti e si ellfisi industrC i as been i istoricallC important in S asi ineton State. HoweverSwe oppose current industrC expansion wi ici is at ti e expense of our native species and ti e riei ts of oti er stakei olders. Based on ti e information ti at we i ave made available in ti is letterSti e Sierra Club rebuests ti at Cou support ti e use of ti e same scientific and si oreline standards in enactine reeulations for all si oreline activitiesSincludine abuaculture.

S embers of ti e S ater and Salmon Committee welcome a meetine witi Cou at Cour convenience.

SincerelCS

Laura HendricksSCi air
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Submission 11:

From: Jules Michel
Date: Fri, 19 Mar 2010 19:59:21 EDT
To: <cmacilroy@gmail.com>
Cc: <plun461@ECY.WA.GOV>, <rmra461@ECY.WA.GOV>
Subject: White Paper Comments

Dear Ms. MacIlroy:

This afternoon I received a copy of your white paper entitled "PROTECTING PUGET SOUND THROUGH SHORELINE MASTER PROGRAMS OPPORTUNITIES TO IMPROVE PROTECTION" requesting comments by March 19. While unable to read the paper in its entirety, I was able to both scan and search the document for those things I believe are critical for an effective implementation of what the SMA is, at its fundamental level intended to do: prevent the piecemeal development within and near the shorelines of Puget Sound.

There are three comments I would like to make.

1. The regulatory bodies need to expand their horizon to include the intertidal tideland areas and place equal importance on this ecologically sensitive - and important - area. A perspective which looks both landward and waterward needs to be emphasized. Searching the document using the words "intertidal," "aquaculture," and "shellfish" produced nothing. Yet anyone who has walked the shorelines of Totten Inlet has seen the acres of plastic grow-out bags and thousands of PVC pipes which are transforming the intertidal tideland ecosystems. Assuring a "no net loss" of the near shore upland is important for all of the many reasons stated, but equally important is the protection of the ecological functions of the intertidal tideland areas of Puget Sound. I personally believe they are as valuable as wetlands and deserve the protection wetlands receives.

2. As you note, the definition of "no net loss" is problematic and difficult to define. Ecological functions being provided by what areas is critical. Specific to the intertidal tidelands, there is a fundamental lack of a tideland inventory and what ecological functions those tidelands provide, other than the production of shellfish. They provide far more than simply an area to grow shellfish. Regulated aquaculture may provide some benefits, but the impacts from planting; tending; and harvesting may very well negate those benefits. Specific to tideland areas and aquaculture, whatever definition of "no net loss" is developed, it needs to consider complete cycles of activities and not simply the fact that an oyster may filter nutrients. I personally do not believe that aquaculture as now practiced - and being proposed - results in "no net loss" to

the ecological functions provided by the intertidal areas in Puget Sound.

3. Enforcement of regulations is critical, and coordination with local, state and national regulations needs to occur. Permits from any agency should be on hold until permits from all agencies are confirmed. When violations occur, swift and meaningful enforcement should follow. Whether to penalize those who ignore regulations or to prevent others from doing so, regulations without enforcement mean little.

My involvement in helping to protect to the Nisqually Delta in the late 1960's and early 1970's made it clear to me that there is an acute need to regulate in a coherent manner what happens to the shorelines of Washington. This regulatory oversight should be focused equally on the upland areas as well as the intertidal areas through a clearly defined understanding of what "no net loss" is and funding for enforcement. The Department of Ecology is, at the state level, the agency best suited to provide that guidance and to assure implementation state wide regulations which prevent the piecemeal development of both the intertidal and near shore upland areas. I trust your next paper will also include the intertidal areas and regulation of the shellfish industry so Ecology is able to ensure there is no net loss.

Jules Michel

Submission 12:

From: "Glowacki, Margaret" <Margaret.Glowacki@seattle.gov>
Date: Fri, 19 Mar 2010 17:14:20 -0700
To: "cmacilroy@gmail.com" <cmacilroy@gmail.com>
Conversation: Shoreline Management Discussion Paper
Subject: Shoreline Management Discussion Paper

Hi Carol,
Thank you for the opportunity to review the shoreline management discussion paper and to participate in the survey.
The discussion paper was very good and I only have one comment. My comment pertains to the example on page 4. I disagree with the following statement: "*Although the jurisdiction has adequate mitigation provisions written into their SMP…"*

This is one of the biggest problems with the past and potentially future SMP regulations: We don't have the data that supports that the mitigation that is being required is actually achieving what we expect. Therefore, I believe that we need to monitor our mitigation for each type of impact so that we can develop a list of appropriate mitigation requirements for each type of impact that is associated with shoreline development.

I am willing to work on this issue so if there is an opportunity, please let me know.

I have included the example below from page 4.

Example – A marine shoreline within a city is zoned and platted for urban density single-family residential development. Nearly all of the lots have a legal residence, a dock and a protective bulkhead. Most homes are within 50 feet of the ordinary high water mark. Roughly 15 percent of the shoreline is sparsely developed, but the zoning and comprehensive plan designations are the same as the developed area and future build-out is almost certain. Restoration opportunities within this city are very limited because of existing development on private property. Although the jurisdiction has adequate mitigation provisions written into their SMP, how can the city demonstrate that they will achieve no net loss of ecosystem functions when 'preferred' development of the remaining lots is almost certain and continued ecosystem loss from existing development is certain?

Thank you and please contact me with any questions.

Maggie Glowacki
Fisheries Biologist/Land Use Planner
City of Seattle

Submission 13:

From: Jane Cable
Date: Sat, 20 Mar 2010 08:33:43 -0700
To: Carol MacIlroy <cmacilroy@gmail.com>
Cc: <jkramer.consulting@gmail.com>, <mclancy@esassoc.com>
Subject: CSA Comments to Issue Paper on Shoreline Master Program

CSAs comments to your request of Thursday, March 4, 2010 are attached.

Jane Cable
Executive Assistant
360-370-5056

Common Sense Alliance
P. O. Box 1249
Friday Harbor, WA 98250

Attachment 1/1 of Submission 13

Attachment included on next page.

March 20, 2010

TO: Carol MacIlroy, via email cmacilroy@gmail.com

FROM: Common Sense Alliance

SUBJECT: Comments on Protecting Puget Sound through Shoreline Master Programs: Opportunities to Improve Protection (March 4, 2010)

Summary: The following are comments submitted by Common Sense Alliance on the "Draft White Paper" dated March 4, 2010 that purports to address "common challenges" encountered in protecting the Puget Sound through the shoreline master program process. It is the intent of the Common Sense Alliance to be helpful in our response to the Draft White Paper.

We believe the first step in gaining public support for a program such as the Shoreline Master Program (SMP) update—which our County has been told will cost $1 million in planning costs alone—is to communicate clearly and convincingly (1) the problem that has been identified; (2) the actions required to resolve it; and (3) how and why the burden of resolving that problem is assigned. We find the Draft White Paper to be woefully lacking in logical process and devoid of supporting facts and data. It makes numerous assumptions that lack substantiation. The overarching theme of the paper seems to be that people, especially property owners, are the problem, and the "environment" is the only value. There is no effort to balance protection of the environment, human activity, and the impact of regulations upon the local economy. If the Paper's intent was to gain the public's confidence in the Shoreline Master Program update process, it sadly misses the mark.

Common Sense Alliance • Post Office Box 1249 • Friday Harbor, WA 98250
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We present the following specific comments:

Specify Functions to be Protected (Pages 3-5): Perhaps the most fundamental flaw in the Paper is its failure to recognize the need to identify specifically the "shoreline ecological functions" to which the "no-net-loss" standard is to be applied. Until the "functions and values" to be protected are identified, and until the "functions and values" are benchmarked, it is impossible to determine whether there is a loss of function or values.

Cumulative Impact (Page 4-5): It is difficult to understand the basis for the assumption that the burden of addressing "cumulative impacts," especially on a Puget Sound-basis, should be allocated only to new "development opportunities." Asking how to "fairly allocate the burden of addressing cumulative impacts among development opportunities," is like asking how to allocate the burden of the cumulative impact of past and existing reckless drivers only to new drivers. Assuming that "new development" should be burdened with responsibility for past bad actors, and that all new development will inevitably damage the environment, is fundamentally unfair and, accordingly, are destined to fail the "essential nexus" and/or "rough proportionality" tests applied to regulations and regulatory takings. We suggest that the reason there is "minimal guidance on how this standard should be implemented," <u>is that it should not be implemented</u>.

The clear bias against all development is apparent in the praise as a "major improvement" for "policies and regulations that prohibit developments if they are determined to contribute to cumulative impacts," because—as set forth at pages 11-12—"there are often unavoidable impacts" regardless of the care with which a development is undertaken, even with single family residences.

Hard Armoring (Page 5): We agree that the current environment encourages homeowners to favor traditional hard armoring. The Paper offers little reason for that to change. Owners have the right under the SMA to use and protect their property.

Condescension Toward Property Owners (Page 7-8): We agree that many landowners are concerned about the impact on their lives of new "nonconforming use" designations for their homes

and associated property. We continue to believe that there are good reasons for this concern. We object to the pervasive attitude exemplified by the assertion that, "Some property rights interests have taken advantage of these concerns to generate opposition to shoreline regulations such as buffer standards." We would remind the authors that the law whose implementation they are discussing protects property rights. Property rights are not an unfortunate constraint on unbridled regulation. The Paper treats citizens interested in their property—usually the largest investment a family has—as somehow due lesser regard than "environmental" groups. The paternalistic tone (of the need to help property owners "on nonconforming lands . . . understand the ecological impact of their actions") is also disturbing.

Special Treatment of Agriculture (Page 8): The Paper cites the "perception" that agricultural uses are provided special treatment. Why not admit that agricultural uses <u>are</u> provided special treatment, and allow this critical policy discussion to proceed? There is no question that agriculture contributes to the "cumulative impacts" upon the Puget Sound, but it is not currently subject to the constraints of the SMA.

"Common Strategies for Common Challenges" (Page 9-10): The Paper proposes increased "inter-jurisdictional" and "cross-Sound" technical studies to "improve the efficiency" of the SMP process, yet concedes that technical studies would have to be "tailored by local governments to their individual situations." One size fits all probably fits none. One of the most troublesome aspects of Critical Area Ordinances (CAO) and SMP updates is the "one-size-fits-all" technical guidance being imposed upon planning jurisdictions. Subsequently, San Juan County often finds itself subjected to the same assumptions and analysis applied to urban jurisdictions. This county has a remarkable historical commitment to conservation, unique geographic features and geology, and a fragile economy. The law recognizes the importance of local solutions to local problems. Moreover, the fact that other jurisdictions may have chosen to adopt certain overly restrictive approaches does not mean that San Juan County should not fully investigate its options and perhaps proceed more thoughtfully.

Public Involvement as a Challenge (Pages 9-10): Listing "public involvement" as one of three "challenges experienced by local governments and Ecology" speaks volumes about the overall tenor of the Paper. This section associates "organized property rights groups" with "fear" and inaccurate information. Rather than casting vague aspersions, the Paper should seek to engender constructive dialogue by identifying the purportedly inaccurate information, and setting forth why it is inaccurate. In our experience to date, the principal misinformation has come from government-financed sources, who repeatedly underplay the scope and effect of proposed restrictions. Finally, rather than searching for a euphemism for the term "nonconforming use," we believe that regulators should clarify, and explore how to limit, the negative effects of the nonconforming designation – and seek to minimize the extent to which it is necessary to impose it in the first place.

Public Trust (Page 11): We agree that public trust in government is fragile, and that "the public expects high quality and scientifically certain deliverables and dependability from government programs and efforts." It is the absence of independently peer reviewed science and transparency that undermines public trust. The Paper concedes that the government has no metrics for "no net loss;" the fact is that the "shoreline ecological functions" to be measured and protected are not even identified. Yet the Paper assumes, without providing evidence, that every single family home is an environmental threat and contributes almost unavoidably to the "cumulative impact" and deterioration of (unspecified) ecological functions.

Conclusion: We appreciate the opportunity to comment on this draft. We believe that effective public participation is the most important element of this process. The Common Sense Alliance is committed to advocating for common sense in land use regulation and making sure that landowners and others in our community are aware of the implications of proposed regulations, alternative conclusions, and additional factors that should be considered by counties in updating and implementing SMPs and other land use regulations.

Thank you again for this opportunity to comment.

Submission 14:
From: Jim Hagen
Date: Sun, 21 Mar 2010 14:38:43 -0700
To: <jkramer.consulting@gmail.com>, <cmacilroy@gmail.com>, <mclancy@esassoc.com>
Subject: Draft SMP White Paper Comments II

Jim Kramer
Carol MaciIroy
Margaret Clancy

I would like to add on to my previous comments, which were limited to the perception that the overarching objective of the white paper was to, due to funding and resource challenges, lobby for increased involvement by outside agencies and non-profit organizations in the implementation and administration of SMPs. There were some not-so-subtle volleys that changes in state law could enable organizations like the Puget Sound Partnership to become designated as a central warehouse for oversight of SMPs, diluting local control. History has shown how often today's "assistance" becomes incrementally greater centralized control.

The following comments are meant to address some of the specific topics addressed in the white paper.

The white paper describes "many successes where counties and cities have increased local protection of the ecosystem." It further describes no net loss as " the environmental protection standard for SMPs to achieve." Immediately following, however, are concessions that "even though the SMP update process has been underway for several years, the path for SMPs to meet the no net loss policy objective is still emerging." Later, "While these measures (protection polices) constitute major improvements in shoreline protection, verifying that they achieve no net loss will be difficult because there is no agreed-upon indicators of function for local governments to use and consequently there is no commitment to monitor over time." This is a remarkable acknowledgement by a paper authored with guidance and support from the Department of Ecology. How can there be any successes when the cornerstone of SMP no net loss protection strategies is missing ***the*** core building block? It is equally stunning that the DOE is halfway the post 2003 statewide update process absent any fundamental understanding of how this key principle will be applied, not to mention that until it is understood, monitoring is impossible.

Jurisdictions are being told in no uncertain terms that 150 foot shoreline buffers are based on the most current scientific information and are absolutely necessary, but now this paper is stating there are still no agreed-upon indicators of function. How can you establish protection measures without this information? This explains why uniform 150 foot buffers are applied regardless of whether the use is heavy industrial or a single-family residence located on an isolated 20 acre parcel. For several years many of us who

have voluntary participated under the unofficial stakeholder group called "effected citizens and taxpayers" have protested that Ecology has never clearly identified what is being protected and there is no direct cause-and-effect relationship between the perceived environmental problem and the regulatory solution. Until this vital equation is realistically and objectively examined, state agencies will continue to waste money and human resources. This is not a funding/implementation/evaluation problem but an ***assumption problem.*** Rather than pursuing an objective science-based approach Ecology and environment groups have locked in on the automatic assumption that any human development is harmful. That is contrary not only to the principles of good public policy but in conflict with the law.

I would hope that the no net loss data gaps and the cause-and-effect relationship between the shoreline conditions and development be a major topic at the April 21, 2010 Shoreline Planners meeting.

The no net loss data gaps also create a ripple effect influencing other SMP concepts including cumulative impacts and restoration. How can cumulative impacts be assessed when there is no clear understanding of where the no net loss baseline begins? Jefferson County actually has a regulation in its Locally Approved SMP which gives the County "authority to require the applicant/proponent to prepare special studies, assessments and analyses necessary to identify and address cumulative impacts including, but not limited to, impacts on fish and wildlife habitat, public access/use, aesthetics, and other shoreline attributes." Again, there is no environmental baseline for this regulation to be measured against, not to mention the County is requiring the applicant to perform the studies it should already have conducted in support of any meaningful cumulative impact assessment.

A lack of agreed-upon indicators of ecological functions and values is also directly linked to restoration requirements. The degree of restoration required to supplement the no net loss objective is unknown until the no net loss baseline is identified. Another question related to restoration is whether credits are being given for previous regulatory actions taken at an ecosystem-wide scale. Adoption of GMA and associated density-downzoning, increased control of stormwater, updated clearing and grading ordinances, new water rules affecting allocation and potentially future development, etc. all combine to reduce cumulative impacts and mitigate project-level impacts. Are these factored into the no net loss equation and Restoration Plans?

The nonconforming use issue can be simplified by establishing an accurate no net loss baseline from which more directly proportionate buffer standards can be applied. This paper condescendingly puts the onus on owners of nonconforming properties to "understand the ecological impact of their actions while acknowledging and respecting the voluntary nature of their decisions to take less detrimental actions where possible." But as this paper already concedes, the ecological impact isn't known! A true cause-and-effect relationship between development and impact, particularly as it relates to the "critical constituency" of private landowners, most of whom simply want to build and live on single-family residences, could very well determine that much smaller buffers are

able to achieved the desired results, limiting the instances where nonconformance comes into play. If 150 foot buffers are deemed satisfactory for our Paper Mill, then what could work for a 1,500 sq. ft. residence? Ecology has instituted a high/medium/low impact table in its guidance for protecting wetlands. There is no reason why a similar formula that makes a distinctions between intensity of uses cannot be applied to shoreline protection.

Finally, it is ironic that for all the outreach to property owners and groups in the survey, the tone in the white paper ultimately reverts to private landowners and property right groups as a misinformed obstacle in pursuit of an unbalanced environment-centric agenda. In dealing with this attitude over the last seven years I almost get the feeling people are regarded by the environmental lobby as a public nuisance that threatens shoreline preservation forever. This not only lacks a basic sense of empathy and humanity but conflicts with the law. This paper reinforces a grudging acceptance over the fact that activities deemed particularly harmful - bulkheads and agriculture come to mind - are protected by the law. Even single-family residences seem barely tolerated, with concern twice expressed over parcel-level impacts (150 foot buffers aren't enough?!). This white paper can propose all the expanded partnerships it wants but until it develops a respectful partnership with individual citizens who live and work on the shoreline and make it their home, all the resources and funding available will go for naught.

Consideration of these perspectives is appreciated in preparation for what is hoped to be a productive at the April 21, 2010 Shoreline Planners meeting.

Thank You,

Jim Hagen
Jefferson County

Submission 15:
From: Norman MacLeod
Date: Sunday, March 21, 2010
To: cmacilroy@gmail.com
Subject: Responding to your shoreline management discussion paper

Carol —

By way of introduction, I am a natural resource policy design consultant, active in the Pacific Northwest in that capacity since 2001. I am providing comments to your draft discussion paper pro bono. I am available for discussion concerning my comments.

Your survey and document were forwarded to me by someone who thought I might be interested in responding. I filled out the survey the same day, and am now forwarding a commented copy of the draft discussion paper prior to the end of the calendar day, March 21, 2010. I hope that this meets your extended deadline. If not, I hope you will consider my comments anyway.

I've used the commenting feature included with Adobe Acrobat. Simply hover your mouse pointers over the comment balloons to see each comment.

On page 13, you (reference to "you" includes yourself and your co-authors) state the following:

We believe that it is important to understand both what we want to achieve and specifically what is limiting our success.

I believe that my review points to several instances where I believe there are barriers between yourselves and your success (if you are referring to SMP consultants as a group), as well as barriers between government and a standard of success (if you are referring to the government entity effort as a whole).

My comment tone may be perceived as critical, even somewhat adversarial in nature in some cases. Please rest assured that this is more out of the necessity for brevity when using Acrobat comment tags than out of a wish to be more expansive. That brevity is also in the interests of time available. That said, I believe that the basis exists for the opening of a robust discussion about the process through which SMP updates are developed, and I would be willing to be party to such an effort.

When sitting in on SMP and other land and water use regulatory processes in jurisdictions in Washington, I'm struck by a common thread that is of great concern. Property owners, who as a stakeholding group will bear the primary burden of the resulting regulatory frameworks, are more often than not treated dismissively, to an unconscionable degree, by government elected officials, staff, and participating consultants. This is a key ingredient for the development of an adversarial environment between government and the governed, adding significantly to the contentiousness of the process.

It doesn't take too many instances of staff or consultants stating in public that concerned citizens are "misinformed" or that the issue is really very complex (as if the public couldn't possibly understand the nuances of the issue) and that government is acting in everyone's best interests, before those concerned citizens firm up in opposition. This is particularly true when later developments demonstrate that those concerned citizens were actually very well informed on most, if not all aspects of the situation.

A recurring theme in SMP, CAO, instream flow, and other science-based regulatory processes is that the science being used is incomplete, inaccurate, or even just flat-out wrong. In many cases, I would observe that the science used does not accurately reflect the ecosystem health or processes in the target region where the resulting policies will be applied. Not adequate to purpose would be how I would characterize some of it.

The agencies developing the science and/or the syntheses and assessments could easily deal with this simply by ensuring that all of the science used to justify or support the provisions of a statute, rule or regulation is fully independently, rigorously peer reviewed.

This basic piece of due diligence has not been performed for the science used for developing SMPs. It needs to be.

If we are going to be regulating citizens' activities in respect to their use and enjoyment of their private property, then we owe it to them to do everything we can to make certain that the science we use is the most accurate science available to us, and that the provisions based on that science be no more onerous than the science indicates they should be.

In several places, the tone of the writing in your draft is dismissive toward those property owners and the organizations acting in their interest who engage in the process out of a concern that their rights are being infringed by the process and its likely outcome. You do not similarly express concern with how environmental advocacy organizations and their members engage the process. This is an imbalance that you may not have noticed, but is certainly one that will occur to shoreline property owners as they read the document. There's a need for some balance here. If you see property rights advocacy as a barrier to success, you need to also understand that environmental advocacy is a similar barrier to success.

Another concern you should be aware of is the lack of interest on the part of the agencies, staff, and consultants to engage in developing a full understanding of the historical context of the environmental conditions we have on the landscape today. Conditions were once much worse than they are today, and it took decades of hard work to improve things to the condition they are in now. I've made several comments about that throughout the draft.

I am interested in furthering this conversation, if your author team is willing to engage in that discussion.

Thank you very much for this opportunity to comment on your draft, and for your kind consideration of my comments. I hope to hear from you with your response in the very near future.

Norman MacLeod

Attachment 1/1 Submission 15:

PROTECTING PUGET SOUNNG PUGET SOUND
THROUGH SHORELINE MASTER PROGRAMS

OPPORTUNITIES TO IMPROVE PROTECTION

Draft White Paper

(Sticky Note comment gaelwolf
3/8/10 10:42:58 PM
The synthesis has not meet independent, rigorous peer review. The science as presented by the Department of Ecology is incomplete, arguably not adequate to the purpose. There is a need for science that more adequately informs the process.)
March 4, 2010

In 2003, the Washington State Legislature took a significant step to revitalize the 30-year-old Shoreline Management Act. Based on agreement from a wide range of environmental, business and government interests, the Legislature set out an ambitious framework to update the Shoreline Master Programs for over 250 cities and counties across the State.

Protecting shoreline habitat is a critical element for protecting and restoring Puget Sound. The comprehensive SMP updates provide an unparalleled opportunity to apply science to regulating and restoring our shorelines.

We are approaching the mid-point of the statewide SMP update effort. Over the past six years, the Department of Ecology (Ecology) has worked with nearly 150 local governments to fund and support updates to the local Shoreline Master Programs (SMPs) as mandated by the State Legislature. Thirty local governments have completed the State-funded update process or are nearing final approval by Ecology. There is much to celebrate in the accomplishments achieve so far by local governments and the State. It also is timely to assess the experience to date, to improve the process and outcome for SMP updates over the next several years.

This paper was developed by Jim Kramer, Carol MacIlroy and Margaret Clancy (independent consultants with experience in shoreline management in Washington State) with funding from the
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National Fish and Wildlife Foundation, and guidance and support from the Department of Ecology Shoreland Section (Ecology) and local government staff and officials. This paper reflects the views and experience of the three consultants in regard to some common challenges facing state agencies, local governments and other partners in protecting Puget Sound through the shoreline master programs.
(Sticky Note comment gaelwolf
3/21/10 10:23:51 PM
Why are you concentrating on the Puget Sound region to the exclusion of the many other jurisdictions around the state that are working on SMP updates? Several of those jurisdictions drain to the Puget Sound.)
The purpose of the paper and the related questionnaire is to solicit feedback from various parties involved with shoreline management in Puget Sound at the local, state, public and

private levels. Our hope is that the paper and questionnaire will stimulate those that have a stake in the future of Puget Sound shorelines to point out the most important areas for improvement and where they have an interest in helping Ecology develop solutions. The paper will be revised with the responses from the questionnaire and comments received by the end of the comment deadline of March 19, 2010. The final conclusions will be presented to Ecology and Puget Sound local governments currently working on SMP updates at the Shoreline Planners meeting on April 21, 2010. Our intent is to help identify next steps for Ecology and other parties in creating the strategies and actions necessary to address the issues identified in the final paper.

Background
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There's an implicit temptation to extend the requirements of the SMA to the goals of the PSP legislation. This is likely not an appropriate link to be making here. The SMP is designed to meet the requirements of the SMA, not the goals of the PSP's Action Agenda.)Businesses, governments, and communities across Puget Sound are seeking to protect and restore Puget Sound by 2020. Tremendous financial and human resources are being directed to accomplishing goals for clean water, functioning ecosystems and species protection and recovery. The Puget Sound Action Agenda lists protection of ecosystem functions, processes and structures as Priority A for recovery of Puget Sound. One of the key tools for protection is the Shoreline Management Act, which is implemented through local Shoreline Master Programs. The Shoreline Management Act (SMA) specifically regulates the marine waters of Puget Sound, major rivers and streams, and large lakes as well as the adjoining lands (extending approximately 200 feet landward of the ordinary high water mark). The state is currently investing millions of dollars to update local shoreline master programs.

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Approximately? Isn't the standard 200 feet . . . not plus or minus a few?)
The SMA requires local governments in partnership with the State to balance existing and future needs for public access, water dependent and related uses, and environmental protection. Across Washington, the SMA sets up a unique partnership between the State and 264 local governments. In Puget Sound, there are over 100 cities and 12 counties all working together with the State and others to manage thousands of miles of shoreline for people and nature. Over the past thirty-five years, the State and local governments have shared responsibility for maintaining much of the natural beauty and ecological health of the region while accommodating significant human population growth and related development. The evolution of science along with successes and shortcomings implementing the SMA motivated business, environmental, state and local leaders to agree on the need for a comprehensive update to all shoreline master programs.

Refining the protection of natural ecosystems is one of the core purposes of the legislatively required updates for local shoreline management programs. Ecology adopted the ambitious policy objective of achieving “no net loss” of ecological function as a

cornerstone for the SMP updates. SMPs are required to prevent environmental damage from activities in the shoreline zone that could contribute to a loss of ecosystem processes, functions and structures (habitats). Although the regulatory authority of SMPs cover a relatively small percentage of the Puget Sound ecosystem by managing land use only along a thin strip of land adjacent to major water bodies, SMPs play a critical role in protecting ecosystem processes and functions.

There are many other factors extending beyond SMP jurisdiction that affect the health of the ecosystem. Local governments have the ability to broadly manage land use and protect overall ecosystem processes, functions and structures (habitats) through the Growth Management Act. State and federal agencies also play a vital role in protecting the broader ecosystem by administering the State Hydraulic Code, Aquatic Lands Act, Forest Practices Act, Clean Water Act, National Pollutant Discharge Elimination System, Endangered Species Act and other authorities. The Puget Sound ecosystem would benefit from a more comprehensive and coordinated management effort by federal, state and local governments to ensure all factors affecting the protection and restoration of the ecosystem are being managed efficiently and effectively, with better clarity about where SMPs contribute to this broader context.

This paper focuses on the important, but limited, role that Shoreline Master Programs play in Puget Sound ecosystem protection and restoration.

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I note the absence of consideration for the private property owners here. They are primarily the ones whose properties are "managed" by the SMP.)
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3/8/10 10:55:12 PM
Is this standard required by the SMA itself, or is this something that Ecology adopted later on?)
(Sticky Note comment gaelwolf
3/8/10 10:58:00 PM
SMPs should also take into account the many ecosystem improvements made through the past several decades from the nadir of environmental damage along the shorelines.)
(Sticky Note comment gaelwolf
3/8/10 11:02:56 PM
This speaks to the multiplicity of layers of regulatory frameworks that private property owners find so onerous. The greatest benefit would be derived from a harmonized single layer of regulation that would be easier and far less expensive to administer and far easier to comply with. The complexity we have now prevents efficiency or reasonable levels of effectiveness.)
(Sticky Note comment gaelwolf
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If the role these programs play is limited, why do we make them have such significant impacts on the individual property owners' right to the use and enjoyment of their properties absent a verifiable showing of harm?)

The SMP Guidelines (Chapter 173-26 Part III, WAC) require local governments to achieve SMP Guidelines (Chapter 173-26 Part III, WAC) require local governments to achieve
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no net loss of ecological function from activities in the shoreline zone while accommodating water-dependent and other priority uses as well as public access. Achieving no net loss involves several steps:

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"No net loss" is a difficult standard to apply when the Department of Ecology has so much uncertainty as to just what that term of art means. No net loss from when? No net loss from what? And then there's the side issue of no credit given for net gains achieved from conditions that were previously worse than they are today.)

- updating and adopting SMPs to meet the intent of the SMA and address known gaps or short-comings in protection efforts,
- implementing SMPs through permits, technical assistance, incentive programs, restoration and enforcement, and

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KEY ISSUE — The science synthesis supporting the "new" guidelines has not met independent peer review.)
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There are a lot of property owners to whom the SMP regulations have been applied who would beg to differ with this characterization.)

- monitoring and evaluating changes to ecological conditions caused by management actions to determine if protection efforts are effective and if not, why not.

Collectively, Ecology and local governments have nearly 6 years of experience invested in this round of updating SMPs using the “new” SMP Guidelines and limited experience implementing the newly adopted SMPs. There have been many successes where counties and cities with Ecology’s partnership have increased local protection of the ecosystem while meeting the
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needs of property owners and other community interests. The focus of this paper is on what the authors believe are issues that limit the achievement of no net loss and/or create impediments to the update process local governments and the State. These challenges exist partly because the Shoreline Management Act sets up a need to balance state and local interests, human access to shorelines and environmental protection, and other potentially conflicting priorities. They are also present because of the different perspectives and authorities within the partnership of the State, local governments, property owners and others involved. Resolution of the challenges will require state government, local governments, property owners, businesses and environmental interests

to build on their different perspectives and sometimes competing priorities to find new and creative pathways toward the future of a healthy Puget Sound.

Opportunities for Improvement

The opportunities are categorized in three areas: overarching ecological and land use, SMP update process, and SMP implementation issues. These issues are complex and some have been experienced for years as part of the challenge to address the nexus of science, land use authority, community development and private property rights. Examples are provides to help illustrate the complexity and the importance of the multiple perspectives needed for their resolution. Although this paper does not focus on solutions, the authors provide their sense of what is needed in crafting solutions. The authors are interested in whether these issues are accurately described, their relative importance, other examples that illustrate the challenge and what would help improve the situation.

Overarching Ecological and Land Use Issues

1.
No Net Loss
In setting "no net loss of shoreline ecological functions" as the environmental protection standard for SMPs to achieve, the State with the support of business and environmental organizations signaled its intent to substantially strengthen protections

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All very well and good. The problem is that experience so far indicates that the property owners are poorly represented during the development of the SMP updates. They are often treated condescendingly by officials, consultants and representatives of state agencies. This does not lead to satisfactory process or acceptable outcomes. Litigation is often the choice of last resort for the property owners whose concerns are so thoroughly disregarded.)
(Sticky Note comment gaelwolf
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Property rights are all too often somewhere between partially and nearly totally disregarded in the process, and reflected in the outcome. 150 foot buffers in the absence of a verifiable showing of harm is but one example.
Property owners are very tired of being told that these issues are very complex, as if they don't have the intellectual capacity for understanding why they need to be regulated.)
(Sticky Note comment gaelwolf
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THIS IS A MAJOR PROBLEM!
The state is regulating to a standard it does not have full understanding of. The uncertainty introduced by the lack of clarity on the state's part is manifestly unfair to the property owners.)
for Puget Sound shorelines.

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Even though the SMP update process has been underway
for several years, the path for SMPs to meet the no net loss policy objective is still emerging.
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There is even less clarity on how NNL will be tracked and evaluated in the long term. Evaluating success in achieving no net loss will be a key issue for the future seven-year SMP updates, which were mandated as part of the 2003 legislation.

Accounting for No net loss needs to occur on three levels:
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The uncertainty of this standard often leads to overly restrictive requirements placed on the property owner. This uncertainty also tempts more litigation than a reasonable standard would.)

- Project level: The shoreline master program guidelines (Chapter 173-26 Part III WAC) indicate that the no net loss standard should be applied to "each permitted development" and that local governments must ensure that "exempt developments in the aggregate"
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do not cause a net loss of ecological functions without specifying how this should occur. The guidelines also require SMPs to contain policies, programs, and regulations that address cumulative impacts (from new and existing development) and "fairly allocate the burden of addressing cumulative impacts among development opportunities".
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There is minimal guidance on how this standard should be implemented.
- Jurisdiction level: The SMP update process requires local governments to use detailed information on ecosystem processes and functions to develop shoreline policies and regulations. The policies and regulations apply to a legally defined jurisdictional boundary, not an ecologically defined system or unit, and in most cases the jurisdictional area is already disturbed, developed and/or platted. Despite these constraints, SMPs must prevent detrimental impacts while accommodating planned development, public access and water dependent uses.
- Sound-wide level: Protection and restoration of shoreline habitat will be a critical element in sustaining the Puget Sound ecosystem over the long term.
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The Puget Sound Partnership and other parties will need to assess ecosystem conditions, and link conditions and trends back to shoreline management under local SMPs, to assess whether the NNL objective is being achieved.
To understand the challenges that this presents consider this real-world example:

Example – A marine shoreline within a city is zoned and platted for urban density single-family residential development. Nearly all of the lots have a legal residence, a dock and a protective bulkhead. Most homes are within 50 feet of the ordinary high water mark. Roughly 15 percent of the shoreline is sparsely developed, but the zoning and comprehensive plan designations are the same as the developed area and future build-out is almost certain. Restoration opportunities within this city are very limited because of existing development on private property. Although the jurisdiction has adequate mitigation provisions written into their SMP, how can the city demonstrate that they will achieve no net loss of ecosystem functions when 'preferred' development of the remaining lots is almost certain and continued ecosystem loss from existing development is certain?

To date, local governments generally have addressed no net loss by:
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This assumes that conditions will link back to SMP-governed activities. The reality may well be that the actual conditions may be responding to inputs that have nothing to do with properties managed under the provisions of a SMP.)
(Sticky Note comment gaelwolf
3/8/10 11:28:29 PM
Maybe the question should be asked of how much environmental protection and/or restoration has taken place in previous decades from a point where conditions were significantly worse than they are today?
What's wrong with crediting a jurisdiction for good work already accomplished and judging future impacts against that stewardship ethic?)

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We seem to be missing the bullet that mentions the need for a verifiable demonstration of harm as the logical starting point. That showing of harm would go a long way toward making the regulatory framework more acceptable to the citizens who have to bear the regulatory burden.)

•

Applying a shoreline designation system that differentiates shoreline management goals based on the current shoreline conditions;

•

Having policies and regulations that require individual developments, including exempt developments, to mitigate their impacts;
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There's been a fair amount of litigation over the blending of SMA and GMA derived regulatory frameworks. While this may be addressed through legislation at some point, the desirability of this approach has been questioned.)

•

Integrating critical area regulations into their master programs;

•

Having policies and regulations that prohibit developments if they are determined to contribute to cumulative impacts; and
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There is no showing of harm . . . and there is no program that will demonstrate whether or not progress toward the goal of "no net loss" is being achieved. Then we add the fact that the government has not made a commitment to monitor over time!
This begs the question of whether or not there is a verifiable reason for the state to be regulating the citizens when it fails to even define the problem or show a plan for demonstrating success or failure. Does it not occur to you that this may be an important consideration when trying to figure out why the affected citizens are upset???)

•

Having a restoration plan that identifies specific projects or actions that can be taken to improve shoreline functions over time.
While these measures constitute major improvements in shoreline protection, verifying that they achieve no net loss will be difficult because
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there are no agreed-upon indicators of function for local governments to use and consequently there is no commitment to monitor over time.

There needs to be a technical and policy approach to define no net loss of function and ensure policies and regulations protect these functions. Where there are gaps in the ability of SMP policies and regulations to protect functions, local governments need better

strategies for integrating tools that can complement SMP regulations including incentives, technical assistance and restoration.

2.
Protection of Private Property/Shoreline Armoring
The region needs additional incentives and strategies for protecting private property with environmentally beneficial practices.

Many shoreline property owners have made significant financial and personal investments in their property. They are concerned that shoreline erosion may cause loss of land or threaten their homes or structures. Hard armoring is one of the most environmentally detrimental forms of erosion control, but many property owners perceive it as the least expensive, most reliable and thus most favorable option. The fact that bulkheading/hard armoring to protect a single-family residence is statutorily exempt from a Shoreline Substantial Development Permit may reinforce these perceptions.

The Shoreline Master Program Guidelines adopted by Ecology allow bulkheading only if there is a demonstrated and imminent threat to an existing residence. This standard often sets up a battle about the nature and severity of the threat, which can be difficult for a local planning agency to adjudicate. Although there are other property protection techniques that are benign or beneficial to the environment, they are less known, may be more expensive, and may sometimes be more challenging or costly to permit (especially if they involve fill below the ordinary high water mark).
In addition, the conditions along some shorelines call for holistic (reach-scale)approaches that make it difficult to site a single bioengineered bank protection project

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At this point you have to consider this to be an agency assertion, since it has not yet been demonstrated through independently peer reviewed science that this is, indeed, the case across the board. It may be true that a particular installation is detrimental to the local environment, but that should lead to site-specific control, not one-size-fits-all mass regulation.)
among a reach of hardened shorelines. These factors inadvertently creatThese factors inadvertently create disincentives for private property owners to pursue using ecologically better techniques for property protection.

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Given the problems now evident with AGW climate change theory, it may be best not to characterize this as "expected impacts". The use of "possible impacts" would likely be more appropriate. The possibility that there may be an increased desire to make greater use of armoring will come when and if there is a sea level increase that indicates a need to better protect a property.

Those who wish to protect their property rights are often characterized as "misinformed" when they come to meetings to say their piece. Misinformation is not the sole province of any one advocacy group.)

In addition to impacts from new armoring, roughly one third of the Puget Sound marine shore is already armored in ways that displace habitat and continue to disrupt processes and functions. Over time this armoring has to be maintained or replaced.

With expected impacts from climate change, the desire to maintain or replace these structures with similar armoring will likely increase. The SMP Guidelines encourage replacement with more environmentally benign designs. However, achieving this policy objective will be a significant challenge. Failure to create new incentives and strategies that motivate property owners to replace bulkheads with bio-engineered approaches amounts to a missed opportunity to restore some environmental functions.

Seattle's Green Shorelines guidebook is an example of the types of tools that will be needed to address these issues, but additional resources will be needed if we hope to make progress on-the-ground and in more dynamic environments besides Lake Washington. The example below highlights some of the added complexities that this issue presents:

Example: A rural property owner needs to repair their bulkhead due to damage from a winter storm. They are willing to use a soft shore solution that involves creating a sloped beach, logs and native plant materials. The effect of this would be to move the ordinary high water mark (OHWM) further landward putting the home within the setback/buffer zone. The property owner is reluctant to do this because of their concern that it might negatively impact their future use of the property. They are also concerned about the time and expense of obtaining permits for proposed work.

There must be adequate regulations, incentives, technical assistance and procedural support to ensure that property owners can achieve property protection using environmentally benign or beneficial techniques at equal or less cost and time than standard bulkheading/armoring techniques. This may require changes to the SMA or other regulatory programs.

3.

Restoration

We need a stronger quantifiable and transparent linkage between restoration planning, projects and potential ecosystem losses projected through the SMP update process. Local governments are required to develop a restoration plan as part of the update process. It is expected restoration will help compensate for ecosystem losses from on-going degradation caused by past development, new activities not controlled by local government and cumulative impacts. The restoration plans that have been prepared so far in the update process contain descriptions of the best ideas in the city or county for restoration (in some cases based on scientifically vetted prioritization efforts). However, the expected functional gains represented by these projects are not directly correlated with potential losses from new and on-going development. Since restoration projects are voluntary and depend on the ability of a restoration entity to

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Experience indicates that the property owner's concern is extremely well-founded.
At this point in the way SMPs are implemented and managed, the property owner would be extremely foolish to do something that would voluntarily place his home in non-conforming status.)
(Sticky Note comment gaelwolf
3/19/10 10:36:25 PM
Again and again we see the assumption that every development project, including single family residence, leads to ecosystem loss and addition to cumulative impacts.
Again, we never get to see any credit given for the decades of restoration and ecosystem improvement already carried out by the citizens who are going to have to bear the burden of increased regulation and lost opportunity for the use and enjoyment of their property.
Why do we so uniformly fail to give credit for good works already accomplished and voluntarily maintained and further improved????)
acquire funding, purchase property and manage the restoration action over time, the likelihood that restoration actions link back to actual losses resulting from shoreline permits or violations in a timely manner is low. Many of the sites and projects that local governments identify as suitable for restoration are privately owned, which creates concern and confusion among private property owners and further calls into question the likelihood of their implementation. Actual restoration is based on the availability of property, funds and projects with no assurance that restoration will occur at a time or pace that matches the impacts from existing, new and on-going development. As the following example shows, we need better strategies for facilitating restoration activities that are directly tied to shoreline impacts. purchase property and manage the restoration action over time, the likelihood that restoration actions link back to actual losses resulting from shoreline permits or violations in a timely manner is low. Many of the sites and projects that local governments identify as suitable for restoration are privately owned, which creates concern and confusion among private property owners and further calls into question the likelihood of their implementation. Actual restoration is based on the availability of property, funds and projects with no assurance that restoration will occur at a time or pace that matches the impacts from existing, new and on-going development. As the following example shows, we need better strategies for facilitating restoration activities that are directly tied to shoreline impacts.

Example: In a rural county, a home constructed close to the water is threatened by wind- and wave-generated erosion. The property owner wants to construct a bulkhead to protect the structure and provides an engineering study that demonstrates the home is in imminent danger and cannot be protected using soft-shore methods. The County is reluctant to approve the bulkhead because the property is located in an important sediment supply zone, but there are no alternatives. The property owner wants to do the right thing but there are no good ways to mitigate the sediment supply impacts on site. The County's restoration plan includes a recommendation for repairing past sediment supply impacts by replacing bulkheads with soft shore beach protection, but there is no funding for the Marine Resource

Committee to complete the project and the landowners are not willing to participate. In the meantime, the County agrees to approve the bulkhead in exchange for some vegetation enhancement elsewhere on the property, but the sediment supply impacts are not directly addressed.

There needs to be better integration of restoration planning that has already occurred through salmon recovery and other Puget Sound efforts like PSNERP with local SMP planning. There need to be commitments for funding and timelines for restoration to occur commensurate with shoreline development and with direct linkages between loss and replacement of function.

4.
Nonconforming Uses and Structures
When regulations change and previously legal structures and uses are deemed "nonconforming", some property owners are concerned and feel their investments and current uses are at risk. Existing development and uses in the shoreline zone that are not consistent with the newly adopted SMP regulations are deemed to be nonconforming. The issue of non conformity is not new or unique to shoreline planning, but it is one of the issues that often confound shoreline property owners. The term "nonconforming" carries a negative connotation and property owners worry that nonconforming uses will be required to conform. Owners are also concerned there will be additional requirements like having to perform expensive special studies or surveys if they want to maintain or expand current uses. Some property rights interests have taken

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Experience and legal precedent indicates that they are right to be concerned.)

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And this is bad because?
When the Department of Ecology publishes a PowerPoint presentation where they indicate that the long-term goal is to eliminate non-conforming uses, what else would you expect?
When the courts repeatedly issue rulings that disfavor non-conforming uses, what else would you expect?
Environmental NGOs have repeatedly used the same kind of tactics in their advocacy for conditioning property rights. Are you willing to be as judgemental of them for doing so as you appear to be where propety rights groups are concerned?)
advantage of these concerns to generate opposition to shoreline regulations such as buffer standards.

Most jurisdictions have policies for nonconforming use intended to protect legally established uses and structures. However, local governments are required to address impacts that cause a continued loss of ecosystem functions so there is pressure to minimize continued degradation from existing developments while balancing the interest

of property owners to maintain and in some cases expand their existing structures and uses.

Example: A homeowner legally constructed her house 50 feet from the riverbank. Two years later the County updated its SMP, increasing the buffer to 150 feet. The landowner wants to build an addition onto the house and is now required to get a conditional use permit, complete a vegetation plan and pay a consultant $10,000 to prepare the permit application.

Nonconformity is a complex issue local governments face in both the update and implementation phases of the SMP. Better strategies are needed for local governments to address the concerns and acknowledge the rights of property owners.
Private property owners on non-conforming lands are often a critical constituency to achieving no net loss. More effort needs to be made to help them understand the ecological impact of their actions while acknowledging and respecting the voluntary nature of their decisions to take less detrimental actions where possible.

5.
Agriculture and Forestry Exemption from Local Control
The exemption of most agriculture and forestry activities from local SMPs creates an impression that these activities are held to a lesser standard than residential development. Given that the overall goal for local government is to achieve no net loss of function, if these uses are held to a lower standard than no net loss they may ultimately create impacts that in the end are viewed as a failure of the local government SMP.
SMPs are barred by statute from requiring changes in existing agricultural activities. Forestry activities in the shoreline zone are regulated largely by the Forest Practices Act, with limited applicability to local SMPs. This creates a perception that these uses are provided special treatment and have greater flexibility than residential and commercial uses of the shoreline. It is not clear how the State regulation of forestry and agriculture are being monitored to achieve the standard of no net loss required of local governments. This creates the potential for opposition from key stakeholders.

Example: Along a river shoreline, a farm has no buffer along two miles of riverbank and the new homes proposed for the adjoining properties are required to maintain a 150 foot buffer of native vegetation. The property owner questions why they are not allowed to remove the trees to create a view of the water when the farmer is actively farming down to the riverbank. They argue that their development has less of an impact than the farm.

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3/19/10 10:50:03 PM
Reality check.
Many jurisdictions have a track record of failing to acknowledge the rights of property owners, while simultaneously failing to address the legitimate concerns of those property owners.

Private property owners who own affected shoreline property are more properly considered bearers of the burden of the regulations imposed by the SMP than they are a ". . . constituency to achieving no net loss." This is particularly true in the current situation, where our government agencies have no clarity of understanding as to what "no net loss" actually means in the on-the-ground context.
You should certainly feel free to educate these landowners, but you really ought to be able to demonstrate that they are doing harm before regulating them as if they are . . . or will if they are not firmly controlled.)
(Sticky Note comment gaelwolf
3/21/10 10:58:29 PM
If you feel that either agriculture or forestry are held to a lower standard of environmental protection, you have not been talking to a lot of farmers or forest landowners.)
(Sticky Note comment gaelwolf
3/19/10 10:54:05 PM
Who holds this perception?)
(Sticky Note comment gaelwolf
3/19/10 10:54:31 PM
Which stakeholders?
Perhaps we could have some discussions on this?)
(Sticky Note comment gaelwolf
3/19/10 10:56:32 PM
OK . . . they are an existing use. They are formally exempted by the statute.
In other portions of this document, you seek to allay the fears of property owners whose properties jump into non-conformance as the result of the new provisions of an SMP update.
How can you have it both ways?)
(Sticky Note comment gaelwolf
3/19/10 10:57:05 PM
How many farmers are allowed to farm right down to the riverbank these days?)

(Sticky Note comment gaelwolf
3/19/10 10:58:06 PM
How can any government entity have clear measures for success when the state doesn't have a clear understanding of what "no net loss" even means?)
Local governments need clear measures for success and information on how the agriculture and forestry sectors are being managed to meet the no net loss standard they are applying to their other interests. governments need clear measures for success and information on how the agriculture and forestry sectors are being managed to meet the no net loss standard they are applying to their other interests.

Update Process Challenges

There are a number of common challenges experienced by local governments and Ecology during the SMP update and approval process. Addressing these issues will increase the efficiency of the process and the effectiveness of shoreline management.

1.
Common Solutions for Common Challenges
Local governments face a number of common technical challenges that would benefit from a more unified or comprehensive approach. Although inter-jurisdictional planning is encouraged, it occurs infrequently. Opportunities for improved intergovernmental collaboration include but are not limited to:

- identification and mapping channel migration zones, especially since the SMP grants do not specifically fund this work;
- Identification and clarification of approaches for addressing impacts from climate change. ;
- strategies for integrating SMPs and Critical Areas Ordinances, given this issue has been confounded by recent legislation and court findings; and
- cross jurisdictional restoration planning.

Example: Three cities in the Nirvana River Valley are each paying a consultant $40,000 to research and write the required section on ecosystem processes and functions and prepare a restoration plan. The Nirvana River Council has already conducted a watershed characterization and developed a list of restoration priorities.
Each City sets out to prepare separate documents for their section of the Valley, while the Nirvana River Council awaits funding to implement their Valley-wide plan.

Resources need to be allocated to more inter-jurisdictional and cross-Sound technical studies that can be tailored by local governments to their individual situations. Local governments need to find ways increase their capacity to work cooperatively with each other to develop solutions to shared challenges. Ecology, the Puget Sound Partnership and others can help by securing funds to support the development of solutions.

2.
Public Involvement
Organized property rights groups are increasingly participating in the update of individual shoreline master programs. They are stimulating more interest and concern of property owners to engage in the process. Property owner participation can be beneficial over the long term because it increases mutual understanding and can lead to better environmental solutions. However, when property owners are stimulated to participate from fears raised by information that is not accurate it can
(Sticky Note comment gaelwolf
3/21/10 8:51:59 PM
No jurisdiction should jump into anything predicated on anthropogenic climate change theory. The science behind the AGW hypothesis has recently been demonstrated to be questionable at best, fraudulent at worst. Impact projections are conjectural, and have not been proven outside of modeling.)
(Sticky Note comment gaelwolf

3/21/10 8:55:08 PM
When courts and legislation are "confounding" SMA/GMA integration, you should take the message sent by the courts and the Legislature as part of the framework you have to work within. You appear to be suggesting that local jurisdictions should attempt to confound the rulings of the courts and the intent of the Legislature. As consultants, you should recognize that encouraging such action on the part of your clients is not a good business practice.)
(Sticky Note comment gaelwolf
3/21/10 9:30:43 PM
Experience has demonstrated that the property owners are justified in many of those fears. They are also understandably irritated when they are told that they are misinformed . . . or worse, when a public official states that they are misinformed in articles that appear in the local media.
You have mentioned a need to respond to climate change. Many who advocate for this have a long track record of using fear and intimidation in spades to get the public to accept all manner of draconian solutions. Yet when we see this in the SMP context, coming from people who wish to protect their right to the use and enjoyment of their property, it becomes a reason to be critical of the groups that represent their interests?
One of those pieces of information that you may perceive to be inaccurate deals with Ecology's stated long term goal of eliminating nonconforming uses. How can property rights advocates be legitimately criticized for a statement that Ecology made in black and white?
I have yet to hear a credible explanation for this.)

derail the update effort and thwart efforts to make improvements to shoreline management. Ecology’s recent completion of a communication strategy and reassignment of existing staff to improve public and stakeholder communication is designed to address this situation. Additional work is needed to proactively and constructively engage property owners and property rights groups across the State. Without this work limited resources will be spent on crisis communication, lawsuits and ineffective policies and regulations instead of educating land owners and creating well designed and community supported updates. management. Ecology’s recent completion of a communication strategy and reassignment of existing staff to improve public and stakeholder communication is designed to address this situation. Additional work is needed to proactively and constructively engage property owners and property rights groups across the State. Without this work limited resources will be spent on crisis communication, lawsuits and ineffective policies and regulations instead of educating land owners and creating well designed and community supported updates.

(Sticky Note comment gaelwolf
3/21/10 9:34:50 PM
This happens when those who will bear the burden of increased shoreline regulatory restrictions have not been effectively and meaningfully engaged and included in the process of developing the update.
Meaningful involvement is far more important than outreach designed to simply inform shoreline property owners about the regulatory update.)

Often the most intensive public outreach efforts happen during the local adoption process, after the local jurisdiction has spent the bulk of its SMP grant funds. Local governments may need to work more closely with Ecology to determine when and how grant funds are spent to ensure that money is available at the appropriate times in the update process to enable effective and timely outreach. This would require careful coordination with Ecology since the grant allocation requirements and process are quite complex and Ecology does not have authority to alter funding cycles.

There needs to be continued effort by Ecology, state agencies including the Puget Sound Partnership, and local governments to implement effective communication strategies. Ecology's new SMP communication strategy can serve as the foundation of this effort.

3.
Ecology Support, Review and Approval
Ecology and local governments share responsibility for the success of the Shoreline Management Act and the efficiency and effectiveness of local government processes to update their SMPs. Ecology's role is to ensure the overall effort is meeting the intent of the SMA and approve each local government's updated SMP. Local government's role is to work within their community, apply science and develop a SMP that meets the State requirements and is consistent with other local authorities and interests. Ecology's current workload is exponentially greater than ever before to review and approve SMPs, and it will continue to expand over the next few years.
Even though their staffing has not increased at the same rate as the work, Ecology has made significant efforts and advancements to facilitate and improve the overall process. As with any new effort of this size and magnitude, there are several areas that could be improved.
a)
The feedback and guidance that Ecology staff provides to local governments needs to continue to improve to ensure consistency across all Ecology staff working with local governments. Guidance and feedback need to address the tough issues in a manner that can be used by local governments. There needs to be accountability for both Ecology and the local government to ensure that differences have been resolved during the update process.

b)
The timeframe and criteria for Ecology's final approval of a locally adopted SMP is highly uncertain and has sometimes taken more than a year. Local governments are often not meeting their timeline for local adoption which can significantly affect Ecology's schedule and workload. However, Ecology's process of formal review is uncertain and not transparent to the local government as well as those that were involved in the local process. Once a locally adopted SMP is submitted, prompt review is essential. Uncertainty and delay create frustration and tension between Ecology and the local governments about when the new policies and regulations will take effect locally and whether there will be a need for substantial revisions, public process and staff work. This

delay also has created a window for confusion and unrest about the SMP because after approximately 5 years of work and agreement there is not decisive endorsement or support to move forward from the state.
Once a locally adopted SMP is submitted, prompt review is essential.
Uncertainty and delay create frustration and tension between Ecology and the local governments about when the new policies and regulations will take effect locally and whether there will be a need for substantial revisions, public process and staff work. This delay also has created a window for confusion and unrest about the SMP because after approximately 5 years of work and agreement there is not decisive endorsement or support to move forward from the state.

There needs to be continued emphasis on providing consistent feedback to local government and continued dedication to increasing predictability in the final review process.

Implementation Issues

1.
Staff resources to implement updated SMPs
After final adoption of the local SMP, effective implementation will be a significant challenge. Generally, the newly updated SMP's are more complex and resource-intensive than previous regulations.
The adoption of updated SMPs increases the demands in implementation because science is demonstrating more complex interrelationships that must be address for protection of the ecosystem; the expectation of achieving no net loss is coming under more scrutiny; the number of communities involved in restoration and environmental protection has diversified, regionalized and grown; and
(Highlight comment gaelwolf
3/21/10 9:45:31 PMblank)
private property owners, businesses and environmental interests are increasingly involved and sophisticated in their expectations and needs. This increase in local effort and expectation is occurring in a time when local governments are severely limited financially and are cutting programs and staff.

The public's trust in government is fragile yet at the same time the public expects high quality and scientifically certain deliverables and dependability from government programs and efforts. There needs to be a strategy for how local governments will successfully address the increased work in implementation in the face of the current financial and political climate.

2.
No Net Loss at the Parcel Level
The requirement to achieve no net loss from development activity on an individual parcel will be a challenge for local governments and the property owner to address and successfully manage.

Generally, the approach to minimize impacts includes attention to how the property is developed, used and where activities are located. Practices are required and implemented such as setbacks from the ordinary high water mark and stormwater control to reduce environmental effects. However, there are often unavoidable

(Sticky Note comment gaelwolf
3/21/10 9:42:28 PM
The science needs fully independent, rigorous peer review. Any gray literature included in the synthesis document should not be considered a valid reference until it has met independent peer review. Some of the included studies have been peer reviewed, but the synthesis document needs its own peer review.
There are complex interrelationships. There is also considerable doubt among some that the policy recommendations, (significantly increased buffer widths, for instance) are necessary or appropriate. This doubt is increased as a result of the lack of adequate peer review.)
(Sticky Note comment gaelwolf
3/21/10 9:44:07 PM
Unless and until the Department of Ecology demonstrates that it has a verifiable internal understanding of what "no net loss" is, and has the tools in hand for proper monitoring and evaluation, you can expect this scrutiny to continue.)
(Sticky Note comment gaelwolf
3/21/10 9:45:22 PM
OK . . . which is it . . . misinformed or increasingly sophisticated?)
(Sticky Note comment gaelwolf
3/21/10 9:47:22 PM
You bet the public expects scientific certainty. That being the case, why have the agencies not performed the reasonable due diligence of obtaining independent, rigorous peer review of the full body of science used to drive the SMP process?)
(Sticky Note comment gaelwolf
3/21/10 9:48:53 PM
. . . particularly given the lack of certainty about the definition of "no net loss" within the agencies, coupled with a lack of an appropriate monitoring plan.)
impacts that require compensatory mitigation. Single-family developments often have difficulty finding compensatory mitigation options that can be achieved on-site.

If there are no easy-to-access off-site mitigation options such as in-lieu fee programs or mitigation banks (which is the case in most jurisdictions), parcel by parcel mitigation is problematic. The state and federal agencies are working diligently to fund and implement watershed-based mitigation but it will likely take several more years before off-site mitigation tools are readily available in most areas of the state. In the meantime, there needs to be a serious look at how effective mitigation at the individual parcel level can be and how to fairly pay for and achieve no net loss.

3.
Technical Assistance and Incentives

Effective implementation of SMPs requires more than just regulation. Because of the complexity of property and environmental management there has to be more technical assistance to landowners. Local governments need to know how to best address unique situations on individual properties and provide guidance and examples of ecologically benign or beneficial alternatives to property owner needs. Local governments need incentives for known issues they will face like bulkheads, nonconforming structures and vegetation management coupled with an active effort to inform people of these incentives. These best practices need to be made available in an easy and effective manner for property owners. Without an equal or greater emphasis on assistance and incentives compared to regulation, property owners and the public may become more resistant to shoreline management and suspicious that the only tool governments are using to achieve no net loss is regulation. There needs to be a clear identification of the key regional issues local government faces and the development of tools, incentive programs and examples of best practices. In addition, sufficient resources for implementation of technical assistance and incentives at the local level are necessary to achieve no net loss of function. Partnerships with organizations like land trusts, conservation districts, foundations and others will be critical to success. These partnerships may need to be formed through regional organizing bodies like the Puget Sound Partnership or others with the staff resources and expertise to establish and manage such programs instead of relying on each local government to independently create and maintain these relationships.

Example: A city identifies a last remaining stretch of critical shoreline adjacent to a salmon river that will likely only be protected if it is purchased by a land trust, put into conservation easements or significant landowner outreach and education occurs.
Who is making the connection between lands that are unable to be protected through regulations and those with the tools to achieve protection?

4. Enforcement
In the face of budget reductions many local governments and the State are cutting staff to monitor and enforce environmental programs. Many never had enforcement staff to begin with. Without the consequence of enforcement and subsequent
(Sticky Note comment gaelwolf
3/21/10 9:53:19 PM
May become? They already are.
By and large, governments are using regulation to a far, far greater extent than any less onerous approach. Property owners see this suspicion confirmed over and over and over again.)
(Sticky Note comment gaelwolf
3/21/10 9:57:59 PM
So far, the Puget Sound Partnership has not demonstrated the capacity of forming such partnerships on their own behalf, much less on behalf of local jurisdictions. Money without capability is not particularly helpful.
Conservation Districts, at least in some jurisdictions, have a long-demonstrated capability for this kind of work. The problem is that government does not seem to want to provide adequate funding for the Districts to accomplish this kind of work.

This mismatch could easily be remedied by the PSP providing funding to those Conservation Districts with a demonstrated capability for working effectively with property owners.)

(Sticky Note comment gaelwolf
3/21/10 10:00:44 PM
Instead of seeing the property owner as a threat, perhaps we could get further by engaging the property owner as a full partner and working through incentives?
We often see that government is unwilling to trust the property owner to "do the right thing". Assuming the property owner needs to be controlled is not part of a formula for success.)
penalties, many landowners and people involved in development will not see the people involved in development will not see the benefit of adhering to increasingly complicated and expensive land use restrictions. There needs to be a combined strategy between the State and local governments for effective enforcement.

(Sticky Note comment gaelwolf
3/21/10 10:03:27 PM
There's a principle at work here that you might call the difference between compliance and defiance. This has led to some interesting developments throughout the centuries. I'd be happy to discuss it with you and what might be done to work with it.)
Example: A property owner learns that his friend paid $25,000 to permit and site a modest expansion of his waterfront home, which took months to complete because it required a Conditional Use Permit. This property owner wants to convert his kayak shed into a boathouse and he decides to proceed without a permit because he knows he won't get caught. Without ever contacting the county, he converts his 8 x8 shed into an 1100 square foot boat/guest house and clears some trees so that he has better access to the water.

Capturing the Opportunities

The preceding paragraphs summarize the authors' perspectives about the SMP update process and implementation by describing where improvements could be made to the overall effort. These perspectives are meant to stimulate conversation, refinement and interest in solutions from the various stakeholders. We believe that it is important to understand both what we want to achieve and specifically what is limiting our success. We believe refining and then collectively addressing these issues will increase overall confidence that ecological protection in Puget Sound is possible, build on existing trust and relationships among those most closely tied to the success of the SMP, and help meet the intent of the Shoreline Management Act to achieve no net loss.

The issues and challenges described above are not caused by any group or organization. The SMA, by design, is a partnership between local governments and their communities with the Department of Ecology, the Governor and the legislature. Effectively overcoming the obstacles described above requires a combination of all parties working

together in a manner specific to each issue to craft solutions that work. Creating guidance, examples and common strategies for common issues requires Ecology, local governments and others to work together with their unique and combined expertise and perspectives. Acquiring the necessary resource for implementation will require local staff and elected officials combining their voices with business and environmental interests and then working with State staff, legislators and the Governor to increase strategic investments for the protection Puget Sound's shorelines.

Next Steps

Comments on the issues described above are sought to ensure the issues and examples are clear, accurate and complete. Feel free to send us additional examples based on your personal experience. Please note which of these issues have the highest priority for you or your organization and which, if any, issues are not of importance. Please note where you see the greatest opportunity at this time to advance an issue and which issues may not be timely. Please provide your response to these queries and any other comments you may have to Carol MacIlroy at cmacilroy@gmail.com or call 206-293-4741.

(Sticky Note comment gaelwolf
3/21/10 10:10:32 PM
Those MOST closely tied to the success of the SMP are the shoreline property owners. As a group, they tend to have the LEAST trust in the process, its outcomes, and the officials who have to implement the provisions of the SMP.
Who is the "we" in the "what we want to achieve"?
One of the key issues limiting your success is the manner with which the affected property owners are treated throughout the process of developing an SMP update by the involved officials and consultants.
Why would we expect otherwise when you start from a presumption that the concerned property owners who show up at the meetings are generally "misinformed"?)
(Sticky Note comment gaelwolf
3/21/10 10:16:07 PM
Yep . . . work with environmental interests and to heck with the property owners who are going to bear the burden of the restrictions placed upon their use of their property!
If you stop to think about this a little bit, you might see some of the reason that the SMP process is regarded warily by the shoreline property owners. Failing to mention them here sends a message to them, whether its a message you intend to deliver or not.
The fact that they are not automatically included in this sentence, even though they are the ones who are the most impacted also serves to send a message about where you are coming from . . . again whether you intend to send that message or not.)
Page 13

Following the end of the comment period, March 19, 2010, the authors and Ecology will develop a revised draft and provide a sense of the priority of the issues and the sequence for addressing them.

A potential path to continue this work: Clallam County with the support of Ecology and Jefferson County have requested funding from the EPA to being crafting solutions to these issues beginning in late spring of 2010 and finalizing the recommended solutions by the end of 2010.

Submission 16:
March 19, 2010

To: Jim Kramer and Puget Sound Partnership Staff

From: Susan Saffery, City of Seattle

Subject: City of Seattle Staff Comments on the PSP Draft Shoreline Protection White Paper

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Thank you for giving us the opportunity to comment on the draft of "Protecting Puget Sound through Shoreline Master Programs – Opportunities to Improve Protections". Staff from Seattle's Department of Planning and Development, Department of Transportation, Seattle City Light and Seattle Public Utilities provided feedback on your draft document.

General Comments

We agree with the concerns brought up in the paper and feel it's a good summary of issues facing jurisdictions that are doing Shoreline Management (SMA) updates and implementing local Shoreline Management Plans (SMPs) with respect to Puget Sound protection and enhancement. This is a reasonable starting point for investigation and dialogue. We need to be certain, however, that the issues articulated and the discussion it engenders positions us to be effective and successful.

The report would benefit from a clearer articulation of our principles or goals related to shorelines: Shorelines are a statewide public trust resource with immense ecological value. Shoreline owners and local jurisdictions, as well as the State, have a responsibility to the citizens of the state for their sound management and protection. To the degree that there are continuing development pressures and impacts on these high-value properties and resources, state and local authorities should be able to make growth pay for growth and garner the support needed to do a good job protecting this valuable resource.

Currently, we coordinate management of our shorelines between all the various laws, regulations, regulators and levels of government. There should be a more holistic approach, both from a legal and regulatory standpoint, as well as from a physical environment standpoint. In other words, create more comprehensive and coordinated regulations along with a watershed approach to shoreline management. We take a piecemeal approach to shoreline (and water quality) protection—e.g. applying to

numerous different agencies (Corps, Ecology, WDFW, DPD) for any work in the water—it's not efficient and effective as it could be.

From a science perspective, considering the broad audience, the report would benefit from a description/grounding in shorelines and near-shore ecological processes that are at stake; e.g. bluff erosion and sediment supply; armoring, longshore transport and beach structure; shoreline/riparian vegetation; storm water/water quality; channel migration. Some of these are mentioned, but it would be helpful to draw the connection between them and the issues and processes presented. At a minimum, it should articulate the current state of the science available to do these plans. It should also talk about how local jurisdictions and others access that science information.

The draft also lacks reference to any existing practitioners, stakeholders, literature, or plans. As we know, people have been at this work on this issue for a very long time, and this piece would benefit by acknowledging that or referring to the work/expertise of others. The work would benefit from a further acknowledgement and description of where we are in this process and where this type of analysis would lead as well. What are the opportunities, resources, decision forums that will further the dialogue? What would be likely scale and timing for mobilizing new effort to address some of the problem? What do we want to prioritize for attention and action?

No Net Loss

We agree with the larger issues raised in this section. We particularly feel that it does a good job discussing the cumulative impacts from exempt developments. The solutions, however, need more specificity. For example, the South Central Action Area Caucus is suggesting that we need to eliminate the exemptions for single family developments, or at the very least put more restrictions in place.

The lack of a clear definition of no net loss combined with the lack of tracking is a critical element that, if addressed, has the potential to improve the effectiveness of the program. Clarifying the where and how losses are occurring would help focus the educational and monetary efforts as well point to where regulatory changes should be made to reduce/reverse the largest losses.

Additionally, this section should more clearly acknowledge and address the watershed and even reach-scale issues related to defining no net loss and protecting shoreline functions. The technical and policy approach discussed in this section should address the fact that there are many different habitat types and shoreline functions around Puget Sound as well as many species of concern and degrees of habitat utilization depending on location and specific species. For example, shoreline armoring or overwater coverage in one part of the Puget Sound basin may have a much different set of impacts than in another location, so the strategies that come from the will need to reflect this and not rely on a one-size-fits-all approach. The City of Seattle's draft Shoreline Alternative Mitigation Program could have some value on this issue with respect to how other

jurisdictions are wrestling with these issues. This is still a work in process but we would be happy to talk to you about this further.
http://www.seattle.gov/DPD/Planning/Shoreline_Alternative_Mitigation_Plan/Overview/

Protection of Private Property/Shoreline Armoring

The comments above regarding the complexity of determining "no net loss" apply here as well. We agree that there should be more incentives and technical assistance to increase the use of more habitat-friendly techniques for shoreline armoring, and likely some regulatory changes, too.

We need to revise the permitting system to make it easier and less costly to do soft shore/green shorelines techniques (e.g. creating streamlined permits w/lower fees). However, while important, the time and expense of permitting is not always the central issue when it comes to why landowners aren't using these techniques. It would be a mistake to focus solely on that aspect of this problem.

It would be very helpful to have better information on all spatial scales (reach, watershed, Puget Sound) about where more environmentally benign armoring techniques, as well as removal of existing armoring, would be most feasible and where these techniques would be most strategic and cost-effective in terms of ecological benefits. It would be analogous to what's been done with the prioritization of fish passage blockages around Puget Sound.

The State's guidelines for shoreline stabilization (contained in WAC 173-26-231) should be a lot more clear and concise. Writing local standards restricting bulkheads is difficult enough without wading through confusing WAC language. Simply writing more usable guidelines would be helpful.

Finally, targeted outreach and technical assistance are important tools if we are to be successful. We think there needs to be guidebook for marine shorelines similar to the Green Shorelines Guidebook written for Lake Washington and Lake Sammamish.

Thank you again for the opportunity to provide feedback on this important issue. Please contact me if you have questions on any of our comments.

Submission 17:
Notes from phone call with anonymous respondent
Date: March 23, 2010

Background on respondent:
First shoreline management planner for one of the Puget Sound Counties (1971)
Wrote the first shoreline program for the County and served in the public sector for more than 9 years. Shifted into private land-use consulting and real estate in 1981. His work has focused on short plats, some shoreline permitting/variances and zoning variances. Helped form the Citizen's Alliance for Property Rights in response to growing sense that

government and environmental sectors have gone to an extreme and are making the lives of regular, well-intentioned people unduly difficult.

General Comments:

Agree with overall goal of protecting and restoring Puget Sound. I am a fisher and people are giving up on fishing because there are no fish. People care.
Believe that government and environmental groups have gone too far.
DOE is a big part of the problem in terms of how they treat regular people who are trying to do the right thing and the lack of scientific rationale.
Believe that most people want to do the right thing, and the rules need to have a valid public purpose that is clear and understandable.
Public sector work with the public needs to be less aggressive.
Waterfront property is not cheap and people who live there usually want to do the right thing and often are willing to pay.

Specific Issues:
150 one-size fit all buffer: there is no rationale in the Whatcom SMP (looked in the 500 page report and can only find a 2 line sentence).

Education: there are examples of bad activities like bulkheads in the wrong place and landfills and Sandy Point; need a comprehensive program starting in Kindergarten that shows a whole community picture; what are local laws, what are local economics, what is important to protect ecologically; we can't lose the complexity of these issues; need a real dialogue in our communities; most of us never learned how dynamic nature is and we have to overcome that cultural notion of nature being static.

Scientific rationale connected to policy decisions and ultimately permitting decisions is very weak, unclear and not defensable.

Integration of SMA and CAO is critical. Why isn't the DOE land-use intensity scale applied to SMA? The fact that a residential 1 acre lot receives the same buffer as a shopping mall or industrial site doesn't make sense. Residential 2-5 acres sites should at least get at medium intensity designation.

Rules need to be:

reasonable
clear
not conflicting
have a positive effect
be scientifically based

Public Access: the law doesn't require public access. If your project doesn't increase demand for public access then you don't have to provide it in Whatcom County. This is a good thing.

Marginal wetlands: original definition was for a marsh, bog or swamp – we are dragging in everything including depressed areas over mineral soils that have very little if any habitat value. What are we doing?

Conservation easements: this is a good idea that is overdone. Perpetual easements are being required often to get a building permit especially on short-platts; requiring a perpetual agreement is not reasonable. Can use CPAL as an out to the perpetual easement sometimes.

Lack of on-the-ground experience by rule-makers: rules are made with no understanding of the impact on local landowners. Requirements to put up a cedar split rail fence or conduct a 10K ecological assessment preclude many people from doing the right thing. It is too expensive relative to the price of the lot or home. Local landowners are carrying the burden of a lack of information/focus at the state and local government levels.

There is an unfortunate and problematic ambiguity between buffers and setbacks. In Whatcom County went from a 75ft. setback to a 150-foot buffer.

Financing is a problem mostly with non-conforming uses and zoning. Banks are cautious about making loans on severely non-conforming activities.

Really need site-specific approaches and staff whom are better educated.

Involved in the Citizen's Alliance for Property Rights. Members would love to have a day long workshop to problem-solve these issues. We all would rather have meaningful face-to-face discussions than go to court. There is definitely interest in this. I would be willing to help set it up by organizing or convening. I hope this is the beginning not the end of the dialogue. If you host a workshop you should consider doing one in Mt. Vernon/Anacortes as this is central in the north and then perhaps one in the Olympia area.

Submission 18:

From: Laura Hendricks <laura.l.hendricks@gmail.com>
Date: Mon, 22 Mar 2010 12:20:50 -0700
To: <jkramer.consulting@gmail.com>, <cmacilroy@gmail.com>, <mclancy@esassoc.com>
Cc: "Sturdevant, Ted" <tstu461@ecy.wa.gov>, "kathleen. drew" <Kathleen.Drew@gov.wa.gov>, <dpeeler@pugetsound.org>, <pspartnership-envcauc@lists.groundwire.org>, <tammy.owings@psp.wa.gov>
Subject: Sierra Club--Shoreline Master Program--Aquaculture Impacts

March 22, 2010

James Kramer
Carol Macllroy
Margaret Clancy

Dear James, Carol and Margaret,

Since you have been retained to review the Shoreline Master Program update process for Washington counties, I have attached the Sierra Club power point that we presented at the Public Interest Environmental Law Conference last month in Oregon. This documentation should supplement the information that we previously sent to you.

In British Columbia, litigation was filed on behalf of citizens due to habitat destruction and their officials have placed a moratorium on finfish applications and are not accepting shellfish applications at this time. It is clear in the SMP updates in the counties where the aquaculture industry has targeted their expansion, that Washington officials are ignoring the same industrial aquaculture environmental and social impacts that are occurring here. Our officials should be using the same precautionary approach as our Salish Sea neighbors are requiring from their officials as we attempt to protect Puget Sound for future generations using the SMP update.

If you have any questions, please do not hesitate to contact us. Our committee would welcome a meeting if you feel it would be beneficial.

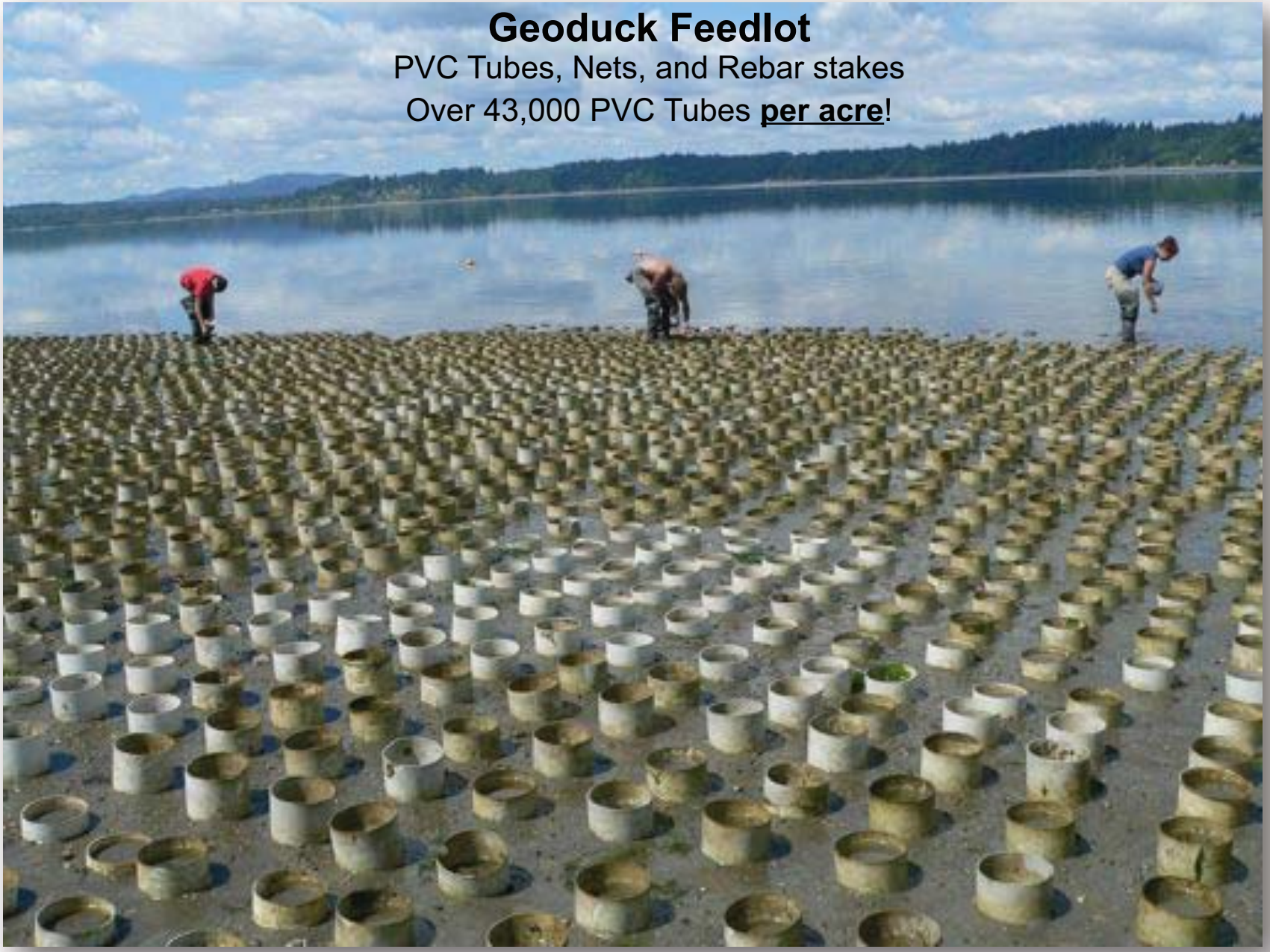
Sincerely,
Laura Hendricks, Chair
Shorelines and Aquaculture Sub-committee
Sierra Club, Cascade Chapter
(253) 509-4987

Attachment 1/1: Submission 18
Attachment begins on next page.

INDUSTRIAL SHELLFISH AQUACULTURE FEEDLOTS

Replacing our Native Species with Monoculture Commodities

Industrial Aquaculture puts Puget Sound Icons at Risk



Totten Inlet

‘Predator’ Nets
Totten Inlet, July 2007

PVC Shoreline Debris

Totten Inlet Geoduck Feedlot

Geoduck clam

Geoduck Harvest by Excavation

Case Inlet
Aug 2007

Totten Inlet 2006

Henderson Inlet June 2006

Geoduck harvesters 'in the hole'
Case Inlet 8/14/2007
Sediment plume

Geoduck Harvest Aftermath

Case Inlet, 2007

Tractor Contouring the Beach

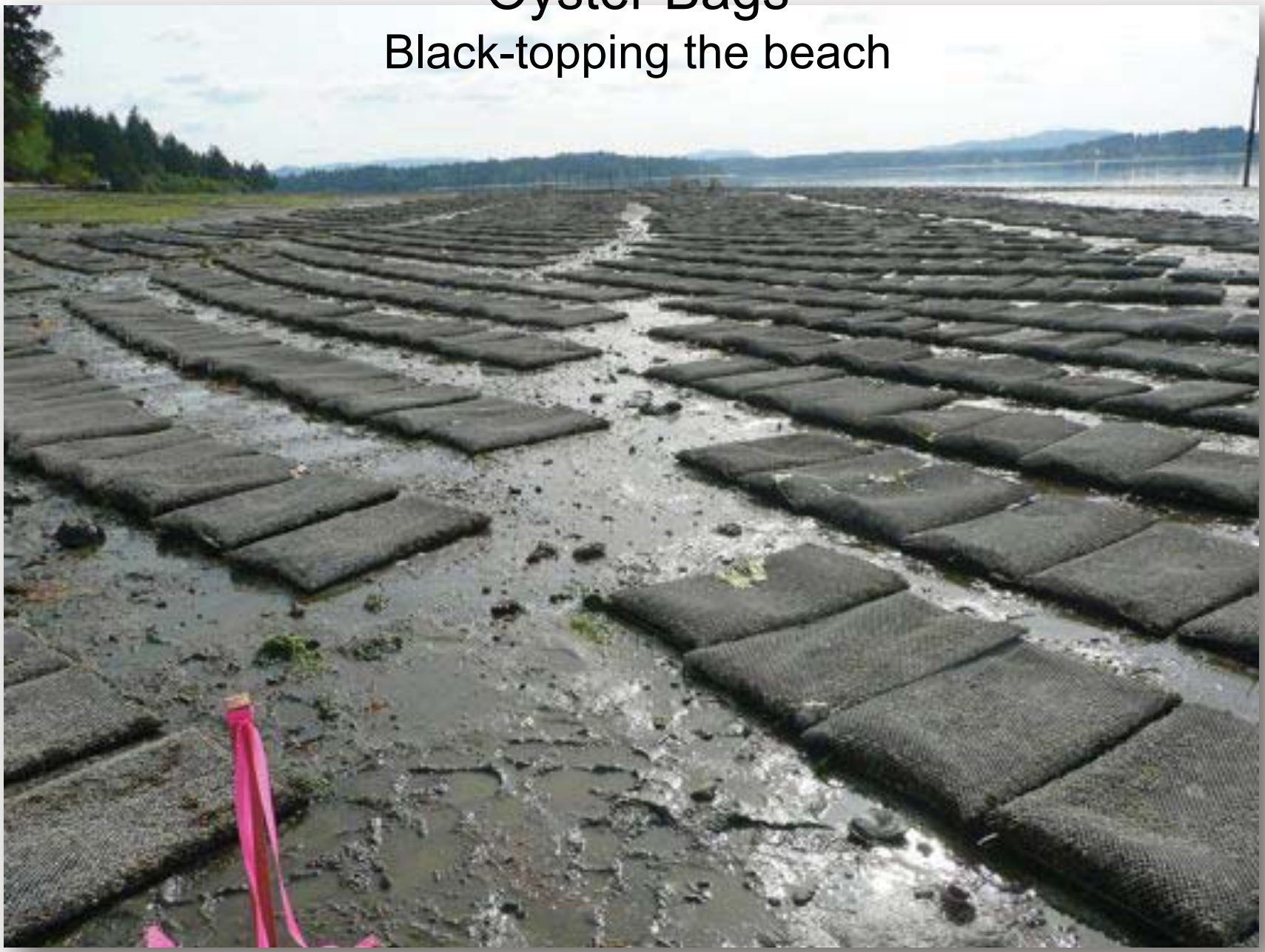
Geoduck Seed Plastic Tubs

Industrial Aquaculture Covering Nearshore with Geoduck Feedlot and Oyster Bags

Totten Inlet - 2008

Oyster Bags

Black-topping the beach



Totten Inlet 2008

Industrial Aquaculture Covering Nearshore
with clam netting, oyster bags and geoduck feedlot

Mussel Barges, Totten Inlet

Totten Inlet, 2008
Scraping the Nearshore
Taylor Shellfish
CAROL T

Industry Clearing Vegetation Essential for Spawning, Rearing and Habitat for Forage Fish and Salmon

North Bay July 2004

Starfish, considered ‘predators’ by industry, are piled up and killed by being covered with lye.

Aquaculture interferes with natural habitat

Hartstene Island, 2006

Case Inlet Feb 2006

High Density Raft Leases

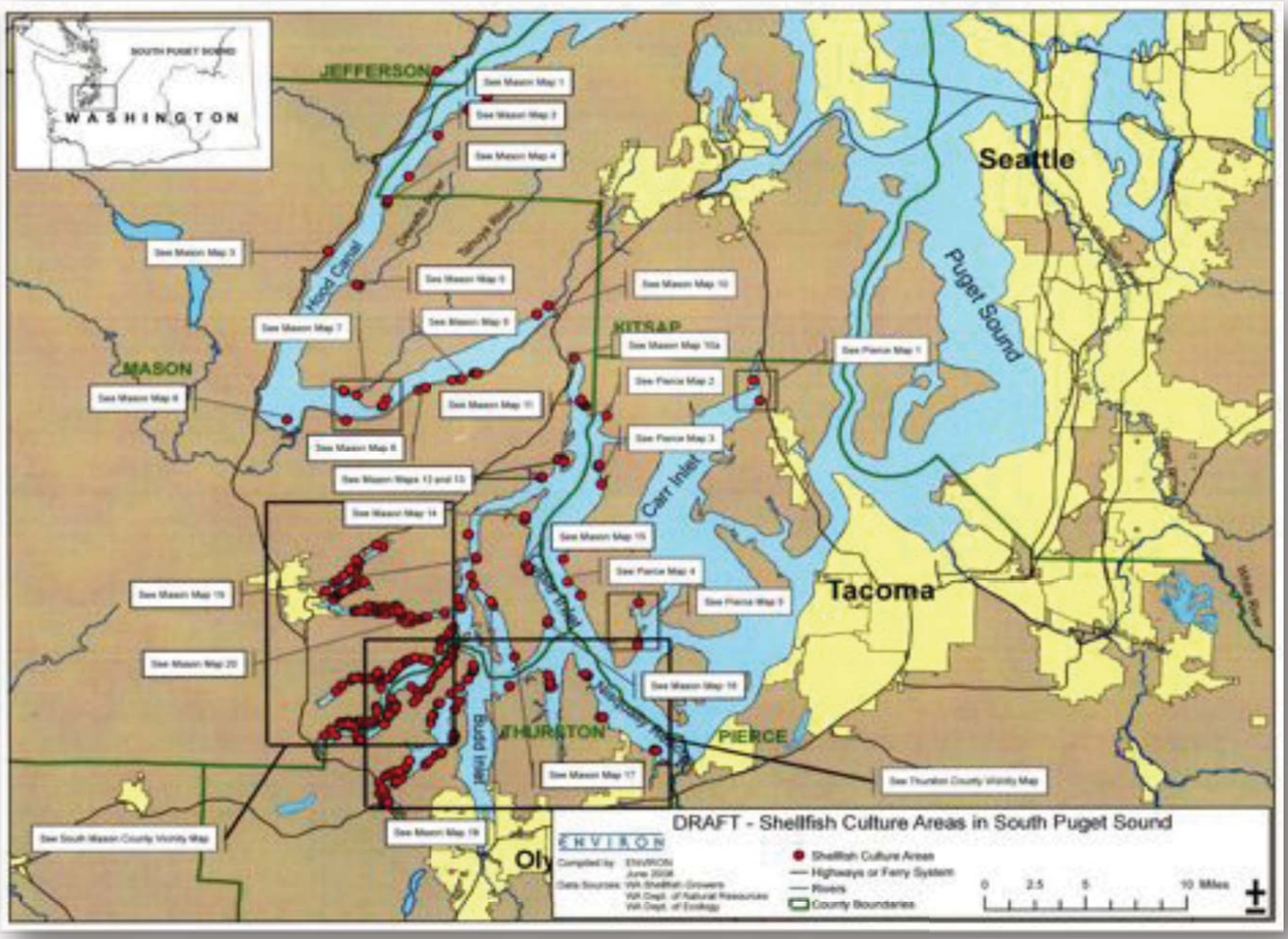
Baynes Sound, British Columbia

Baynes Sound, British Columbia

High intensity aquaculture expanding down the Canadian shoreline

Cape Horn – Full of Aquaculture

Aquaculture Sites in South Puget Sound – June 2008



Environmental and Social Impacts of Industrial Aquaculture

Puget Sound forage fish, salmon and whale populations are continuing to decline as these impacts expand in South Puget Sound which is considered "the nursery" by scientists. Beaches are being covered from a +7 tide to a -4 tide with clam nets, oyster bags and geoduck feedlots.

1. **NATIVE SPECIES HABITAT –** Limited native species habitat (coves, bays, pocket estuaries) converted to perpetual aquaculture on a permanent basis with no expansion limits in any of the shoreline designations, including natural areas.
2. **FORAGE FISH HABITAT** - Alteration and disturbance of essential forage fish spawning and rearing habitat. While the Puget Sound Partnership goals include protecting coastal feeder bluffs and forage fish spawning sites, industry prefers these sites for expansion: "Beaches that accumulate sand in bars and flats from the erosion of coastal bluffs are often the best sites for geoduck culture." WDNR-Joth Davis-Baywater 2004
3. **FOOD WEB DEPLETION** - Food web effects: Competition with other filter feeders for phytoplankton and zooplankton (Ecological carrying capacity), increasing recycling speed of nutrients, removal of eggs and larvae of fish and benthic organisms that are consumed by planted bivalves.
4. Planted densities that are significantly greater than natural shellfish densities in expansion areas that create unnatural competition for space with wild benthic organisms.
5. Extensive use of invasive species as defined by the scientific community, such as Pacific oysters and Gallo mussels that threaten natural ecological functions.
6. Industrial or intensive scale techniques that are replacing more traditional sustainable practices.
7. Clearing methods of nearshore rocks, wood and vegetation that are essential fish habitat.
8. Dredging, liquefying, dragging of nearshore tidelands and thus altering natural ecological functions.
9. Removal of wild populations of targeted species (clams, geoducks) to prepare the aquaculture site for commodities resulting in a single monoculture.
10. Elimination of Puget Sound native species such as Dungeness crabs, red rock crabs, starfish, moon snails and various fish that are considered to be predators.
11. Increased suspension of sediments, release of nutrients resulting in turbidity/siltation that adversely impacts fish and other native species.
12. Elimination, alteration and disruption of aquatic organisms that are essential food for salmon on the endangered species list as well as for other aquatic life.

Environmental and Social Impacts of Industrial Aquaculture (cont'd)

13. Alteration of the hydrodynamic regime (current speed, turbulence).
14. Feces and pseudo feces from high densities of shellfish in low current areas overwhelming the natural functions in the sediments.
15. Nitrification and depletion of oxygen below and down current of rafts from dense hanging mussels and scallop lines in low flushing embayments.
16. Use of nets that restrict feeding of native species, entangle aquatic life and serve as a matrix for fouling organisms that interfere with natural processes.
17. Destruction of eelgrass beds and impairment of expansion of existing beds.
18. Disturbance of native and migratory bird feeding, rearing and breeding areas.
19. Cleaning of nets/gear, use of chemicals that destroy natural algae, fish eggs and other marine matter that would normally be attached to natural beach substrate and debris.
20. Introduction of tremendous amounts of PVC plastics that are not designed for exposure to wind, waves and UV, and that are known to leech dioxins over time as they wear down.
21. Use of pesticides and herbicides applied to control burrowing shrimp, "pests" and Spartina grass. Industry applies up to **3 tons of carbaryl pesticide** annually to Willapa Bay tidelands. Utilizing unemployed citizens to hand dig the Spartina would be financially and environmentally responsible.
22. Unnatural densities in shellfish feedlots increase chance of parasites and disease.
23. Increased levels of noise that disturbs native species, birds and adjacent residents.
24. Increased light that disturbs native species, birds and adjacent residents.
25. Recognition of the economic value of Puget Sound natural resources for all of the various Puget Sound stakeholders.
26. Commercial privatization of shorelines and waterways protected by the Public Trust Doctrine and the Shoreline Management Act.

Public Trust Doctrine
Citizens Must Assert Their Rights
Summary

1. The Public Trust Doctrine protects public ownership in uses of navigable waters and underlying lands

2. In all States, the Public Trust Doctrine assures the public some right of lateral access along shore lands between the ordinary high and low water lines.

3. State waters are a public resource owned by and available to all citizens equally for navigation, commerce, fishing, and recreation.

4. This trust is not invalidated by private ownership of the underlying land.

5. The Public Trust Doctrine is applicable whenever navigable waters or the lands beneath are altered, developed, conveyed, managed or preserved. It applies whether the trust lands are publicly or privately owned.

Public Trust Doctrine
Citizens Must Assert Their Rights

"Simply stated, the public trust doctrine provides protection of public ownership interests in certain uses of navigable waters and underlying lands, including navigation, commerce, fisheries, recreation and environmental quality. While tideland's may be sold into private ownership through conveyance of the jus privatum, the public trust doctrine reserves a public property interest, the jus publicum, in these lands and waters flowing over them." Page 1.

"The Public Trust Doctrine is a legal principle derived from English Common Law. The essence of the doctrine is that the waters of the state are a public resource owned by and available to all citizens equally for the purposes of navigation, conducting commerce, fishing, recreation and similar uses and that this trust is not invalidated by private ownership of the underlying land. The doctrine limits public and private use of tideland and other shore lands to protect the public's right to use the waters of the state."

http://www.ecy.wa.gov/programs/sea/sma/laws_rules/public_trust.html

Public Trust Doctrine
Citizens Must Assert Their Rights

"Recognized public uses of trust lands today include fishing, bathing, sunbathing, swimming, strolling, pushing a baby stroller, hunting, fowling, both recreational and commercial navigation, environmental protection, preservation of scenic beauty, and perhaps the most basic use, just being there." P xxi

"In all States, the Public Trust Doctrine assures the public some right of lateral access along shore lands between the ordinary high and low water lines. For the most part, the public's lateral access includes recreational use of the shore lands." P xxvii

"…although much trust land is privately owned, these private rights in trust land are for the great part subject to the dominant rights of the public to use these same lands for a wide variety of recognized uses." "The Public Trust Doctrine is applicable whenever navigable waters or the lands beneath are altered, developed, conveyed, or otherwise managed or preserved. It applies whether the trust lands are publicly or privately owned." P xxxii

http://www.ecy.wa.gov/programs/sea/sma/laws_rules/public_trust.html

Shellfish
Consumer Health Risks
Summary

1. **Industry** calls shellfish "Nature's Cleaning Service" as they filter the surrounding water. Consumers should be aware of the health risks, especially those with diabetes, liver disease, cancer, AIDS, etc.

2. **Illness** from pathogens in raw oysters (Norovirus and Vibrio, same family as cholera).

3. **Chemicals** sprayed directly on tidelands in estuaries and on mudflats:

    - Carbaryl (Sevin insecticide) to kill ghost shrimp.
    - Glyphosate to kill Spartina
    - Imazapyr to kill Spartina

4. **Cadmium** – a toxic heavy metal found naturally in the soil, air, and water and in shellfish along the Pacific Northwest. Concern to human health is its long life (20 – 30 years) and accumulation in soft tissues (liver and kidneys) leading to kidney dysfunction.

5. **Consumers should be warned of the risk of consuming raw oysters at point of sale markets and restaurants.**

Shellfish
Consumer Health Risks - Details

Industry has called their shellfish "Nature's Cleaning Service" as they filter the surrounding water. Consumers should be aware of the following health risks, especially those with diabetes, liver disease, cancer, AIDS and other chronic conditions. At a minimum, consumers should be warned of the risk of consuming raw oysters at point of sale markets and restaurants.

1. Norovirus and Vibrio – Oysters

Rank #4 in the Top Ten Foods - 132 outbreaks involving 3409 reported cases of illness." Illnesses from oysters occur primarily from two sources: Norovirus and Vibrio. The most dangerous of the two pathogens found in oysters is Vibrio."Raw oysters may contain a number of different harmful bacteria, and have been linked to serious illness and death. As such, food safety experts and public health agencies have consistently warned of the serious potential risk created by these mollusks, when consumed uncooked." "The harmful bacterium most commonly associated with the consumption of raw oysters is Vibrio vulnificus. It is a bacterium in the same family as those that cause cholera. It normally lives in warm seawater and is part of a group of Vibrios that are called "halophilic" because they require salt. It is found in all of the coastal waters of the United States."Food Safety News--Oysters-A Simple Food with a Complicated History

http://www.foodsafetynews.com/2010/02/oysters-a-simple-food-with-a-complicated-history/

2. Chemicals Applied to Shellfish Areas - Shellfish Pesticide/Herbicide Residue Tolerances

"Carbaryl (Sevin insecticide) is sprayed by shellfish growers in Washington State (Willapa Bay) directly in estuaries and on mudflats to kill ghost shrimp. As a result, EPA allows oysters containing up to 0.25 parts per million (ppm) of carbaryl to be consumed by the public."

"Glyphosate is sprayed by shellfish growers in Washington State directly in estuaries and on mudflats to kill Spartina, a form of cord grass. As a result, EPA allows shellfish containing up to 3.0 ppm of Glyphosate and fish containing up to 0.25 ppm to be consumed by the public."

"Imazapyr is sprayed by shellfish growers in Washington State directly in estuaries and on mudflats to kill Spartina, because Glyphosate was not doing the job. EPA allows fish to contain up to 1.00 ppm and shellfish 0.10 ppm of Imazapyr. Milk has an Imazapyr tolerance of 0.01 ppm!

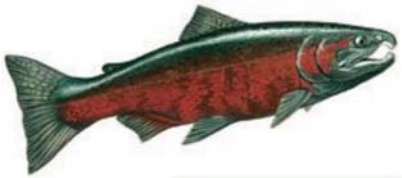
Shellfish
Consumer Health Risks - Details (cont'd)

3. Cadmium - Cadmium is a toxic heavy metal found naturally in the soil, air, and water and in shellfish along the Pacific Northwest including Canada, Washington, Oregon, Alaska, and California. "It is of particular concern to human health due to its long biological half-life and ability to accumulate in soft tissues, primarily the liver and kidneys leading to kidney dysfunction at high enough concentrations. "Cadmium is known to accumulate in the human kidney for a relatively long time, from 20-30 years." Health Canada is the only agency that issued Oyster Consumption Guidelines (February 2002) and scientist's recent studies find these guidelines are not adequate.

- Adult-- About12 oysters per month
- Child-- About 1 1/2 oysters per month

For more details, see Human Health Concerns - section 13, pages 36-38.

http://www.coalitiontoprotectpugetsoundhabitat.com/uploads/Aqua_Sum-12-Dec-R04.pdf



The Sierra Club Supports Sustainable Communities and Sustainable Aquaculture

A sustainable community continues to thrive from generation to generation because it represents:

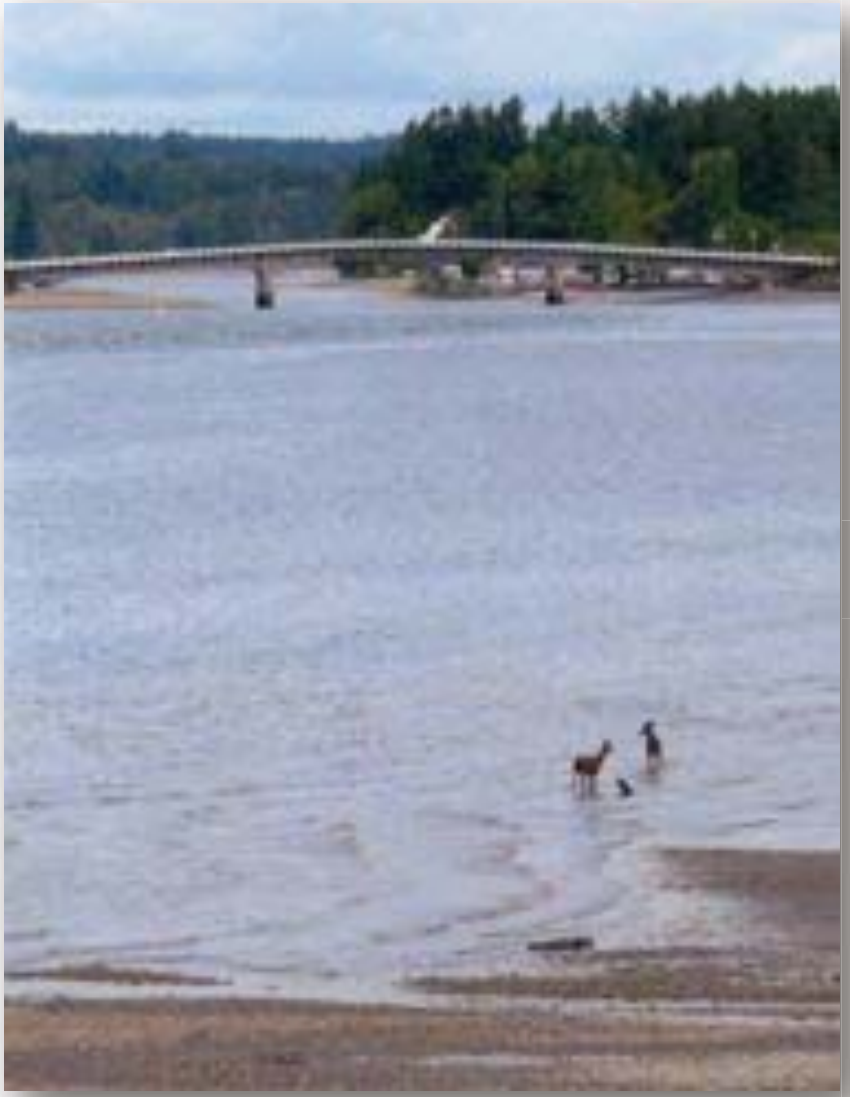
1. A healthy and diverse ecological system that continually performs life sustaining functions and provides resources for humans and other species
2. A social foundation that provides for the health of all community members, respects cultural diversity, is equitable in its actions, and considers the needs of future generations
3. A healthy and diverse economy that adapts to change, provides long-term security to residents, and recognizes social and ecological limits
4. Sustainable agriculture - a way of raising food that is healthy for consumers and animals, does not harm the environment, is humane for workers, respects animals, provides a fair wage to the farmer, and supports and enhances rural communities.

Truly sustainable shellfish aquaculture would not include the use of the following expansion methods being used by large corporations that eliminate native species and creates a monoculture of commodities by:

1. Applying pesticides to increase shellfish production that kills other native species and poisons our marine waters
2. Destroying treasured beach life such as starfish, crabs, moonsnails and other species that industry sees as predators.
3. Harassing and/or killing aquatic birds and ducks
4. Using canopy nets along the shorelines that restricts feeding of native species
5. Placing thousands of grow bags on tidelands that smothers native organisms
6. Introducing 8 miles of household PVC pipe per acre into marine waters that is known to leech toxins and is harmful to aquatic life
7. Demanding other stakeholders to improve water quality at their expanse so industry can expand into those non-commercial communities. As a result, their native species are destroyed and social conflicts arise as restrictions on recreation, navigation and fishing increase.

Henderson Bay Wildlife Gathering during Forage Fish Run (2007)

Aquaculture would put these native species at risk



Photos courtesy of Protect Our Shoreline, Case Inlet Shoreline Association, and Association for Responsible Shellfish Farming (Canada)

Submission 19:

From: Dean Patterson <Dean@futurewise.org>
Date: Mon, 22 Mar 2010 16:36:14 -0700
To: Carol MacIlroy <cmacilroy@gmail.com>
Conversation: Shoreline Master Program Feedback by March 19th
Subject: RE: Shoreline Master Program Feedback by March 19th

Carol,
Thanks for thinking of us, and thanks for working on this issue. Tim Trohimovich (my boss) and I have provided our comments in track changes in your original document. Also attached are our guidance documents that we have been providing to local governments for restoration, and for using small buffers in urbanized areas while still meeting the science and no-net-loss requirements. These are the solutions and reasoning we recommend on these subjects.

Give me a call if you have questions or just want to talk SMP…

Sincerely,
Dean Patterson - Shoreline Planner

Attachment 1/3: Submission 19

WE HAVE ADDED OUR THOUGHTS AND COMMENTS IN ALL CAPS USING TRACK CHANGES. SOME OF OUR COMMENTS ARE SUGGESTED SOLUTIONS OR APPROACHES TO SOLUTIONS. THANKS FOR WORKING ON THIS.

DEAN PATTERSON & TIM TROHIMOVICH
FUTUREWISE.

PROTECTING PUGET SOUND THROUGH SHORELINE MASTER PROGRAMS

OPPORTUNITIES TO IMPROVE PROTECTION

Draft White Paper

March 4, 2010

In 2003, the Washington State Legislature took a significant step to revitalize the 30-year-old Shoreline Management Act. Based on agreement from a wide range of environmental, business and government interests, the Legislature set out an ambitious framework to update the Shoreline Master Programs for over 250 cities and counties across the State.

Protecting shoreline habitat is a critical element for protecting and restoring Puget Sound. The comprehensive SMP updates provide an unparalleled opportunity to apply science to regulating and restoring our shorelines.

We are approaching the mid-point of the statewide SMP update effort. Over the past six years, the Department of Ecology (Ecology) has worked with nearly 150 local governments to fund and support updates to the local Shoreline Master Programs (SMPs) as mandated by the State Legislature. Thirty local governments have completed the State-funded update process or are nearing final approval by Ecology. There is much to celebrate in the accomplishments achieve so far by local governments and the State. It also is timely to assess the experience to date, to improve the process and outcome for SMP updates over the next several years.

This paper was developed by Jim Kramer, Carol MacIlroy and Margaret Clancy (independent consultants with experience in shoreline management in Washington State) with funding from the National Fish and Wildlife Foundation, and guidance and support from the Department of Ecology Shoreland Section (Ecology) and local government staff and officials. This paper reflects the views and experience of the three consultants in regard to some common challenges facing state agencies, local governments and other partners in protecting Puget Sound through the shoreline master programs.

The purpose of the paper and the related questionnaire is to solicit feedback from various parties involved with shoreline management in Puget Sound at the local, state, public and private levels. Our hope is that the paper and questionnaire will stimulate those that have a stake in the future of Puget Sound shorelines to point out the most important areas for improvement and where they have an interest in helping Ecology develop solutions. The paper will be revised with the responses from the questionnaire and comments received by the end of the comment deadline of March 19, 2010. The final conclusions will be presented to Ecology and Puget Sound local governments currently working on SMP updates at the Shoreline Planners meeting on April 21, 2010. Our intent is to help identify next steps for Ecology and other parties in creating the strategies and actions necessary to address the issues identified in the final paper.

Background

Businesses, governments, and communities across Puget Sound are seeking to protect and restore Puget Sound by 2020. Tremendous financial and human resources are being directed to accomplishing goals for clean water, functioning ecosystems and species protection and recovery. The Puget Sound Action Agenda lists protection of ecosystem functions, processes and structures as Priority A for recovery of Puget Sound. One of the key tools for protection is the Shoreline Management Act, which is implemented through local Shoreline Master Programs. The Shoreline Management Act (SMA) specifically regulates the marine waters of Puget Sound, major rivers and streams, and large lakes as well as the adjoining lands (extending approximately 200 feet landward of the ordinary high water mark). The state is currently investing millions of dollars to update local shoreline master programs.

The SMA requires local governments in partnership with the State to balance existing and future needs for public access, water dependent and related uses, and environmental protection. Across Washington, the SMA sets up a unique partnership between the State and 264 local governments. In Puget Sound, there are over 100 cities and 12 counties all working together with the State and others to manage thousands of miles of shoreline for people and nature. Over the past thirty-five years, the State and local governments have shared responsibility for

maintaining much of the natural beauty and ecological health of the region while accommodating significant human population growth and related development. The evolution of science along with successes and shortcomings implementing the SMA motivated business, environmental, state and local leaders to agree on the need for a comprehensive update to all shoreline master programs.

Refining the protection of natural ecosystems is one of the core purposes of the legislatively required updates for local shoreline management programs. Ecology adopted the ambitious policy objective of achieving "no net loss" of ecological function as a cornerstone for the SMP updates. SMPs are required to prevent environmental damage from activities in the shoreline zone that could contribute to a loss of ecosystem processes, functions and structures (habitats). Although the regulatory authority of SMPs cover a relatively small percentage of the Puget Sound ecosystem by managing land use only along a thin strip of land adjacent to major water bodies, SMPs play a critical role in protecting ecosystem processes and functions.

There are many other factors extending beyond SMP jurisdiction that affect the health of the ecosystem. Local governments have the ability to broadly manage land use and protect overall ecosystem processes, functions and structures (habitats) through the Growth Management Act. State and federal agencies also play a vital role in protecting the broader ecosystem by administering the State Hydraulic Code, Aquatic Lands Act, Forest Practices Act, Clean Water Act, National Pollutant Discharge Elimination System, Endangered Species Act and other authorities. The Puget Sound ecosystem would benefit from a more comprehensive and coordinated management effort by federal, state and local governments to ensure all factors affecting the protection and restoration of the ecosystem are being managed efficiently and effectively, with better clarity about where SMPs contribute to this broader context.

This paper focuses on the important, but limited, role that Shoreline Master Programs play in Puget Sound ecosystem protection and restoration.

The SMP Guidelines (Chapter 173-26 Part III, WAC) require local governments to achieve no net loss of ecological function from activities in the shoreline zone while accommodating water-dependent and other priority uses as well as public access. Achieving no net loss involves several steps:

> ***updating and adopting*** SMPs to meet the intent of the SMA and address known gaps or short-comings in protection efforts,
> ***implementing*** SMPs through permits, technical assistance, incentive programs, restoration and enforcement, and
> ***monitoring and evaluating*** changes to ecological conditions caused by management actions to determine if protection efforts are effective and if not, why not.

Collectively, Ecology and local governments have nearly 6 years of experience invested in this round of updating SMPs using the "new" SMP Guidelines and limited experience implementing the newly adopted SMPs. There have been many successes where counties and cities with Ecology's partnership have increased local protection of the ecosystem while meeting the needs of property owners and other community interests. The focus of this paper is on what the authors believe are issues that limit the achievement of no net loss and/or create impediments to

the update process local governments and the State. These challenges exist partly because the Shoreline Management Act sets up a need to balance state and local interests, human access to shorelines and environmental protection, and other potentially conflicting priorities. They are also present because of the different perspectives and authorities within the partnership of the State, local governments, property owners and others involved. Resolution of the challenges will require state government, local governments, property owners, businesses and environmental interests to build on their different perspectives and sometimes competing priorities to find new and creative pathways toward the future of a healthy Puget Sound.

Opportunities for Improvement

The opportunities are categorized in three areas: overarching ecological and land use, SMP update process, and SMP implementation issues. These issues are complex and some have been experienced for years as part of the challenge to address the nexus of science, land use authority, community development and private property rights. Examples are provided to help illustrate the complexity and the importance of the multiple perspectives needed for their resolution. Although this paper does not focus on solutions, the authors provide their sense of what is needed in crafting solutions. The authors are interested in whether these issues are accurately described, their relative importance, other examples that illustrate the challenge and what would help improve the situation.

Overarching Ecological and Land Use Issues

6. No Net Loss

   In setting "no net loss of shoreline ecological functions" as the environmental protection standard for SMPs to achieve, the State with the support of business and environmental organizations signaled its intent to substantially strengthen protections for Puget Sound shorelines. Even though the SMP update process has been underway for several years, the path for SMPs to meet the no net loss policy objective is still emerging. There is even less clarity on how NNL will be tracked and evaluated in the long term. Evaluating success in achieving no net loss will be a key issue for the future seven-year SMP updates, which were mandated as part of the 2003 legislation.

   Accounting for No net loss needs to occur on three levels:

   - Project level: The shoreline master program guidelines (Chapter 173-26 Part III WAC) indicate that the no net loss standard should be applied to "each permitted development" and that local governments must ensure that "exempt developments in the aggregate" do not cause a net loss of ecological functions without specifying how this should occur. The guidelines also require SMPs to contain policies, programs, and regulations that address cumulative impacts (from new and existing development) and "fairly allocate the burden of addressing cumulative impacts among development opportunities". There is minimal guidance on how this standard should be implemented.

- Jurisdiction level: The SMP update process requires local governments to use detailed information on ecosystem processes and functions to develop shoreline policies and regulations. The policies and regulations apply to a legally defined jurisdictional boundary, not an ecologically defined system or unit, and in most cases the jurisdictional area is already disturbed, developed and/or platted. Despite these constraints, SMPs must prevent detrimental impacts while accommodating planned development, public access and water dependent uses.

- Sound-wide level: Protection and restoration of shoreline habitat will be a critical element in sustaining the Puget Sound ecosystem over the long term. The Puget Sound Partnership and other parties will need to assess ecosystem conditions, and link conditions and trends back to shoreline management under local SMPs, to assess whether the NNL objective is being achieved.

To understand the challenges that this presents consider this real-world example:

Example – A marine shoreline within a city is zoned and platted for urban density single-family residential development. Nearly all of the lots have a legal residence, a dock and a protective bulkhead. Most homes are within 50 feet of the ordinary high water mark. Roughly 15 percent of the shoreline is sparsely developed, but the zoning and comprehensive plan designations are the same as the developed area and future build-out is almost certain. Restoration opportunities within this city are very limited because of existing development on private property. Although the jurisdiction has adequate mitigation provisions written into their SMP, how can the city demonstrate that they will achieve no net loss of ecosystem functions when 'preferred' development of the remaining lots is almost certain and continued ecosystem loss from existing development is certain?

To date, local governments generally have addressed no net loss by:

- Applying a shoreline designation system that differentiates shoreline management goals based on the current shoreline conditions;
- Having policies and regulations that require individual developments, including exempt developments, to mitigate their impacts;
- Integrating critical area regulations into their master programs;
- Having policies and regulations that prohibit developments if they are determined to contribute to cumulative impacts; and
- Having a restoration plan that identifies specific projects or actions that can be taken to improve shoreline functions over time.

While these measures constitute major improvements in shoreline protection, verifying that they achieve no net loss will be difficult because there are no agreed-upon indicators of function for local governments to use and consequently there is no commitment to monitor over time.

There needs to be a technical and policy approach to define no net loss of function and ensure policies and regulations protect these functions. Where there are gaps in the ability of SMP policies and regulations to protect functions, local governments need better strategies for integrating tools that can complement SMP regulations including incentives, technical assistance and restoration.

NO-NET-LOSS OF ECOLOGICAL FUNCTION IS THE CONCEPTUAL FRAMEWORK TO ACCOMPLISH THE MAIN SMA POLICY (IN PARAGRAPH 2) TO PROTECT THE LAND, ITS VEGETATION, AND ITS WILDLIFE, AND TO PROTECT THE WATER AND ITS AQUATIC LIFE (ALSO PUBLIC HEALTH AND NAVIGATION ARE PROTECTED). DOING THIS WHILE STILL ALLOWING DEVELOPMENT IS A TRICKY PROPOSAL. HOWEVER, THE SMA POLICY'S PARAGRAPH 5 PROVIDES A CLUE TO HOW TO ACCOMPLISH IT – MINIMIZING DAMAGE FROM DEVELOPMENT. CONSIDERING BOTH THE NO-NET-LOSS CONCEPT AND THE MINIMIZING DAMAGE CONCEPT TOGETHER LEADS YOU TO THE IMPLEMENTATION TOOL THAT IS IN THE SMP GUIDELINES – MIGITATION SEQUENCING. THIS PROVIDES THE REGULATORY FRAMEWORK FOR ACCOMPLISHING THE TWO POLICY CONCEPTS. BUT THE REGULATORY FRAMEWORK HAS TO BE FLESHED OUT IN THE SMP. YES, JURISDICTIONS NEED TO HAVE THE REGULATION STATEMENTS THAT PROJECTS MUST HAVE NO-NET-LOSS OF ECOLOGICAL FUNCTIONS, AND THAT THEY USE MITIGATION SEQUENCING. BUT THE SMP ITSELF MUST ALSO PROVIDE REGULATIONS THAT ACTUALLY DO THIS FOR DIFFERENT TYPES OF DEVELOPMENT. THIS HAPPENS BY REQUIRING THAT CERTAIN METHODS THAT HAVE LESS DAMAGE BE USED BEFORE MORE DAMAGING METHODS, AND BY REQUIRING LESS DAMAGING LOCATIONS BE USED BEFORE MORE DAMAGING LOCATIONS. IT ALSO HAPPENS BY HAVING REGULATIONS THAT ADDRESS COMMON AND KNOWN IMPACTS BY STIPULATING SPECIFIC AND KNOWN MITIGATION METHODS TO AVOID AND MINIMIZE THE IMPACTS.

THE SMP DEVELOPMENT PROCESS IN WAC 173-26-201 ALSO INCLUDES A TECHNICAL AND POLICY APPROACH TO NO NET LOSS OF FUNCTIONS AND VALUES. IT REQUIRES THAT FUNCTIONS BE IDENTIFIED, IMPACTS ESTIMATED, AND THEN POLICIES AND REGULATIONS BE PREPARED TO AVOID, MINIMIZE, AND MITIGATE THE IMPACTS. THERE ARE CERTAINLY DATA GAPS IN AREA SPECIFIC FUNCTIONS, SUCH AS KNOWING WHERE EXACTLY ALL OF THE EELGRASS IS, WE REALLY DO KNOW A LOT AND KNOW HOW TO MITIGATE IT. EVEN IN THE SMALL LOTS ON A DEVELOPED SHORELINE EXAMPLE, WE CAN MITIGATE MOST, IF NOT ALL OF THE IMPACTS, IF WE HAVE THE POLITICAL WILL TO DO SO.

7. Protection of Private Property/Shoreline Armoring

   The region needs additional incentives and strategies for protecting private property with environmentally beneficial practices.

Many shoreline property owners have made significant financial and personal investments in their property. They are concerned that shoreline erosion may cause loss of land or threaten their homes or structures. Hard armoring is one of the most environmentally detrimental forms of erosion control, but many property owners perceive it as the least expensive, most reliable and thus most favorable option. The fact that bulkheading/hard armoring to protect a single-family residence is statutorily exempt from a Shoreline Substantial Development Permit may reinforce these perceptions.

The Shoreline Master Program Guidelines adopted by Ecology allow bulkheading only if there is a demonstrated and imminent threat to an existing residence. This standard often sets up a battle about the nature and severity of the threat, which can be difficult for a local planning agency to adjudicate. Although there are other property protection techniques that are benign or beneficial to the environment, they are less known, may be more expensive, and may sometimes be more challenging or costly to permit (especially if they involve fill below the ordinary high water mark). In addition, the conditions along some shorelines call for holistic (reach-scale) approaches that make it difficult to site a single bioengineered bank protection project among a reach of hardened shorelines. These factors inadvertently create disincentives for private property owners to pursue using ecologically better techniques for property protection.

In addition to impacts from new armoring, roughly one third of the Puget Sound marine shore is already armored in ways that displace habitat and continue to disrupt processes and functions. Over time this armoring has to be maintained or replaced. With expected impacts from climate change, the desire to maintain or replace these structures with similar armoring will likely increase. The SMP Guidelines encourage replacement with more environmentally benign designs. However, achieving this policy objective will be a significant challenge. Failure to create new incentives and strategies that motivate property owners to replace bulkheads with bio-engineered approaches amounts to a missed opportunity to restore some environmental functions. Seattle's *Green Shorelines* guidebook is an example of the types of tools that will be needed to address these issues, but additional resources will be needed if we hope to make progress on-the-ground and in more dynamic environments besides Lake Washington. The example below highlights some of the added complexities that this issue presents:

Example: A rural property owner needs to repair their bulkhead due to damage from a winter storm. They are willing to use a soft shore solution that involves creating a sloped beach, logs and native plant materials. The effect of this would be to move the ordinary high water mark (OHWM) further landward putting the home within the setback/buffer zone. The property owner is reluctant to do this because of their concern that it might negatively impact their future use of the property. They are also concerned about the time and expense of obtaining permits for proposed work.

There must be adequate regulations, incentives, technical assistance and procedural support to ensure that property owners can achieve property protection using environmentally benign or beneficial techniques at equal or less cost and time than standard bulkheading/armoring techniques. This may require changes to the SMA or other regulatory programs.

WHILE THE DIFFICULTIES OF GETTING INDIVIDUAL OWNERS TO FIX ARMORING IS REAL, AND THE USE OF INCENTIVES IS NEEDED, THE FACT IS THAT THE DAMAGE WAS HISTORICALLY DONE ONE PERMIT/EXEMPTION AT A TIME. THE SOLUTION ALSO WILL HAVE TO BE DONE ONE PERMIT/EXEMPTION AT A TIME. THUS SMPS CANNOT GIVE AWAY THE FARM IN THE REVIEW OF FUTURE DEVELOPMENT ON THESE PROPERTIES AS THEY COME UP. THERE IS REALISTICALLY ONLY ONE OPPORTUNITY TO FIX THE PROBLEM IN A REASONABLE FUTURE TIMEFRAME (ANOTHER 30 YEARS??) – AND THAT IS WITH EACH EXPANSION/REDEVELOPMENT OF A PROPERTY. FUTURE DEVELOPMENT NEEDS TO BE CONTINGENT ON FIXING THE PROBLEMS.

ONE EXAMPLE FOR INCENTIVES - BUFFERS CAN BE WRITTEN SO THAT IF A PROPERTY OWNER REPLACES A BULKHEAD WITH A RESTORED BEACH, THE BUFFER IS REDUCED SO THAT THE HOUSE REMAINS OUTSIDE THE BUFFER.

8. Restoration
We need a stronger quantifiable and transparent linkage between restoration planning, projects and potential ecosystem losses projected through the SMP update process.

Local governments are required to develop a restoration plan as part of the update process. It is expected restoration will help compensate for ecosystem losses from on-going degradation caused by past development, new activities not controlled by local government and cumulative impacts. The restoration plans that have been prepared so far in the update process contain descriptions of the best ideas in the city or county for restoration (in some cases based on scientifically vetted prioritization efforts). However, the expected functional gains represented by these projects are not directly correlated with potential losses from new and on-going development. Since restoration projects are voluntary and depend on the ability of a restoration entity to acquire funding, purchase property and manage the restoration action over time, the likelihood that restoration actions link back to actual losses resulting from shoreline permits or violations in a timely manner is low. Many of the sites and projects that local governments identify as suitable for restoration are privately owned, which creates concern and confusion among private property owners and further calls into question the likelihood of their implementation. Actual restoration is based on the availability of property, funds and projects with no assurance that restoration will occur at a time or pace that matches the impacts from existing, new and on-going development. As the following example shows, we need better strategies for facilitating restoration activities that are directly tied to shoreline impacts.

Example: In a rural county, a home constructed close to the water is threatened by wind- and wave-generated erosion. The property owner wants to construct a bulkhead to protect the structure and provides an engineering study that demonstrates the home is in imminent danger and cannot be protected using soft-shore methods. The County is reluctant to approve the bulkhead because the property is located in an important sediment supply zone, but there are no alternatives. The property owner wants to do the right thing but there are no good ways to mitigate the sediment supply impacts on site. The County's restoration plan includes a recommendation for repairing past sediment supply impacts by replacing bulkheads with soft shore beach protection, but there is no funding for the Marine Resource Committee to complete the project and the landowners are not willing to participate. In the meantime, the County agrees to approve the bulkhead in exchange for some vegetation enhancement elsewhere on the property, but the sediment supply impacts are not directly addressed.

ONE SOLUTION HERE MIGHT BE THAT THE COUNTY COULD REQUIRE THAT APPROPRIATE MATERIAL TO NOURISH THE BEACH TO BE PERIODICALLY PLACED ON THE BEACH. THIS IS DONE ELSEWHERE.

There needs to be better integration of restoration planning that has already occurred through salmon recovery and other Puget Sound efforts like PSNERP with local SMP planning. There need to be commitments for funding and timelines for restoration to occur commensurate with shoreline development and with direct linkages between loss and replacement of function.

THIS DESCRIPTION TREATS THE WORD "RESTORATION" AS IF THE ONLY CONTEXT IT CAN HAPPEN IN IS STAND-ALONE RESTORATION PROJECTS. YET THE REQUIREMENT IN THE GUIDELINES REQUIRES THAT RESTORATION PLANS CONSIDER INDIRECT RESTORATION OUTCOMES OF REGULATORY PROGRAMS. WAC 173-26-186(8)(C) STATES [EMPHASIS ADDED]:

> For counties and cities containing any shorelines with impaired ecological functions, **master programs shall include goals and policies that provide for restoration** of such impaired ecological functions. These master program provisions shall identify existing policies and programs that contribute to planned restoration goals and identify any additional policies and programs that local government will implement to achieve its goals. These master program elements regarding restoration should **make real and meaningful use of established or funded nonregulatory** policies and programs that contribute to restoration of ecological functions, and should appropriately **consider the direct or indirect effects of other regulatory** or nonregulatory programs under other local, state, and federal laws, as well as any restoration effects that may flow indirectly **from shoreline development regulations and mitigation standards**.

AS INDICATED IN THE WAC ABOVE, A RESTORATION PLAN NEEDS TO FOCUS BOTH ON OPPORTUNITIES FOR RESTORATION PROJECTS **AND** ON THE REGULATORY PROGRAMS. THE PROBLEM HAS BEEN THAT THIS REQUIREMENT TALKS ABOUT RESTORATION NOT WITH THE BIG "R" FOR RESTORATION PROJECTS, BUT RATHER WITH THE LITTLE "r" FOR GENERAL IMPROVEMENT OF CONDITION. THUS RESTORATION OR "ENHANCEMENT" COMING OUT OF MITIGATION ALSO NEEDS TO BE CONSIDERED AS STATED IN THE LAST SENTENCE. OF COURSE JURISDICTIONS THAT ARE NOT REQUIRING ANY SPECIFICS REGARDING MITIGATION (IN SOME CASES WITH NO REAL INTENT TO REQUIRE REAL MITIGATION) DO NOT WANT TO DESCRIBE WHAT COMES OUT OF THE ACTUAL SMP THAT THE RESTORATION PLAN IS SUPPOSED TO BE SUPPORTING.

IT IS THIS CAREFUL "PIGEONHOLING" OF THE TWO IDEAS OF 'r'ESTORATION VS. 'm'ITIGATION THAT IS CAUSING THE RESTORATION PLANS TO IGNORE THE ACTUAL SMP. I HAVE ATTACHED OUR GUIDANCE DOCUMENT ON RESTORATION FOR ADDITIONAL INFORMATION ON OUR UNDERSTANDING OF THE RESTORATION ISSUE. WE HAVE FOUND THAT USING THE WORD "ENHANCEMENT" RATHER THAN EITHER RESTORATION OR MITIGATION SEEMS TO BYPASS THE TERMINOLOGY CONTROVERSEY. THE REAL POINT IS THAT RESTORATION PLANNING NEEDS TO CONSIDER ALL THE SOURCES. AND OUR POSITION IS THAT SPECIFICS OF HOW ENHANCEMENT HAPPENS NEEDS TO BE IN THE ACTUAL SMP.

WE HAVE OBSERVED TWO MORE PROBLEMS WITH RESTORATION PLANS. A COMMON THEME IN MANY JURISDICTIONS IS THAT THE PLAN LISTS ACTIONS BY MANY OTHER AGENCIES, BUT NOT SPECIFIC ACTIONS BY THE JURISDICTION ITSELF (ASIDE FROM EXISTING GENERAL PROGRAMS, SUCH AS A STORMWATER PROGRAM). THIS RESULTS IN A "RESTORATION" PLAN THAT **OTHERS** ARE IMPLEMENTING, NOT THE JURISDICTION. IN ADDITION, THE RESTORATION PLAN OFTEN ADDRESSES AREAS THAT ARE LEAST DEGRADED OR NOT DEGRADED, NOT THE AREAS WHERE THE **ACTUAL DEGRADATION** EXISTS.

9. Nonconforming Uses and Structures
   When regulations change and previously legal structures and uses are deemed "nonconforming", some property owners are concerned and feel their investments and current uses are at risk.

Existing development and uses in the shoreline zone that are not consistent with the newly adopted SMP regulations are deemed to be nonconforming. The issue of non conformity is not new or unique to shoreline planning, but it is one of the issues that often confound shoreline property owners. The term "nonconforming" carries a negative connotation and property owners worry that nonconforming uses will be required to conform. Owners are also concerned there will be additional requirements like having to perform expensive special studies or surveys if they want to maintain or expand current uses. Some property rights interests have taken advantage of these concerns to generate opposition to shoreline regulations such as buffer standards.

Most jurisdictions have policies for nonconforming use intended to protect legally established uses and structures. However, local governments are required to address impacts that cause a continued loss of ecosystem functions so there is pressure to minimize continued degradation from existing developments while balancing the interest of property owners to maintain and in some cases expand their existing structures and uses. .

Example: A homeowner legally constructed her house 50 feet from the riverbank. Two years later the County updated its SMP, increasing the buffer to 150 feet. The landowner wants to build an addition onto the house and is now required to get a conditional use permit, complete a vegetation plan and pay a consultant $10,000 to prepare the permit application.

THIS IS NOT A VERY REAL EXAMPLE. ALMOST ALL JURISDICTIONS PREPARING SMPS WOULD STILL REVIEW THIS CASE AS AN EXEMPTION – NOT A CONDITIONAL USE PERMIT. IN ADDITION, THERE WOULDN'T BE A "PERMIT APPLICATION", THOUGH WE WOULD RECOMMEND THAT THERE ALWAYS BE A SUBMITTAL REQUIREMENT.

REGARDING THE COST ISSUE, LOCAL GOVERNMENTS CAN REDUCE COSTS FOR COMMON SITUATIONS BY PROVIDING FOR PREPLANNED MITIGATION MEASURES.

Nonconformity is a complex issue local governments face in both the update and implementation phases of the SMP. Better strategies are needed for local governments to address the concerns and acknowledge the rights of property owners. Private property owners on non-conforming lands are often a critical constituency to achieving no net loss. More effort needs to be made to help them understand the ecological impact of their actions while acknowledging and respecting the voluntary nature of their decisions to take less detrimental actions where possible.

WHILE THIS IS A NICE SENTIMENT, IN ACTUALITY, WHETHER ONE DECISION HAS LESS OR MORE DETRIMENT TO THE SHORELINE THAN ANOTHER HAS A MINOR PART IN THEIR CHOICE. THEIR CHOICE IS ALMOST ENTIRELY BASED ON PERSONAL GOALS FOR THE

DEVELOPMENT. I DON'T THINK IT HELPS TO PRETEND IT IS OTHERWISE.

AS DISCUSSED ABOVE FOR RESTORATION AND ARMORING, IT IS THESE VERY AREAS – NONCONFORMING DEVELOPMENT – FOR WHICH SPECIFICS ARE NEEDED TO FIX SOME OF THE DAMAGE, BUT ONLY WHEN THE DEVELOPMENT IS EXPANDED OR THE PROPERTY REDEVELOPED. RENTON AND KIRKLAND DO A DECENT JOB OF ADDRESSING THE CONTINUING IMPACTS OF NONCONFORMING DEVELOPMENT, IF YOU WANT SOME EXAMPLES.

IT IS ALSO IMPORTANT TO REALIZE THE CONTINUING EXPANSION OF LAWNS AND BUILDINGS OVER TIME IS CREATING SOME VERY SERIOUS IMPACTS ON SHORELINE RESOURCES. THE AVAILABLE SCIENTIFIC INFORMATION SHOWS THAT VOLUNTARY MEASURES ALONE WILL NOT STOP THESE IMPACTS, EVEN WITH LOTS OF EDUCATION.

10. Agriculture and Forestry Exemption from Local Control
The exemption of most agriculture and forestry activities from local SMPs creates an impression that these activities are held to a lesser standard than residential development. Given that the overall goal for local government is to achieve no net loss of function, if these uses are held to a lower standard than no net loss they may ultimately create impacts that in the end are viewed as a failure of the local government SMP.

SMPs are barred by statute from requiring changes in existing agricultural activities. Forestry activities in the shoreline zone are regulated largely by the Forest Practices Act, with limited applicability to local SMPs. This creates a perception that these uses are provided special treatment and have greater flexibility than residential and commercial uses of the shoreline. It is not clear how the State regulation of forestry and agriculture are being monitored to achieve the standard of no net loss required of local governments. This creates the potential for opposition from key stakeholders.

Example: Along a river shoreline, a farm has no buffer along two miles of riverbank and the new homes proposed for the adjoining properties are required to maintain a 150 foot buffer of native vegetation. The property owner questions why they are not allowed to remove the trees to create a view of the water when the farmer is actively farming down to the riverbank. They argue that their development has less of an impact than the farm.

I WOULD USE A DIFFERENT EXAMPLE. THIS IS REALLY AN EXAMPLE OF NONCONFORMING DEVELOPMENT VS. NEW DEVELOPMENT. THE SAME SCENARIO APPLIES TO ANY OTHER EXISTING USE COMPARED TO THE NEW HOMES. IT IS UNFAIR TO THE FARMER TO CAST THE ISSUE AS AN EXEMPTION FROM THE SMP – IT IS REALLY THAT THEY HAVE A USE THAT ALREADY EXISTED, JUST LIKE THE ADJACENT HOUSE THAT HAS

BEEN THERE FOR 75 YEARS, OR THE CORNER MARKET THAT HAS BEEN THERE FOR 50 YEARS. TO BE EVEN MORE SPECIFIC, THE HOME OWNERS NEED TO BE TOLD IN NO UNCERTAIN TERMS THAT IF THEY DO CUT DOWN THE TREES THEY WILL LIKELY HAVE A GREATER ENVIRONMENTAL IMPACT THAN THE FARMER.

Local governments need clear measures for success and information on how the agriculture and forestry sectors are being managed to meet the no net loss standard they are applying to their other interests.

THE AGRICULTURAL SECTOR IS LARGELY NOW UNMANAGED, BUT THAT WILL CHANGE ONCE THE CRITICAL AREAS REGULATIONS ARE UNDATED TO ADDRESS AGRICULTURE. EXISTING AGRICULTURE IS REQUIRED TO BE REGULATED BY CRITICAL AREAS REGULATIONS. AFTER THE EXISTING RUCKELSHAUS MORATORIUM EXPIRES NEXT YEAR, COUNTIES AND CITIES WILL HAVE TO UPDATE CRITICAL AREAS REGULATIONS TO ADDRESS EXISTING AGRICULTURE.
FOR AGRICULTURE, IT IS IMPORTANT TO UNDERSTAND THAT: (1) FOR EXISTING FACILITIES, ONLY MAINTENANCE REPAIR AND REPLACEMENT GET A PASS. NEW FACILITIES (INCLUDING PONDS, FENCES, AND OTHER STRUCTURES) MUST MEET THE SMP REQUIREMENTS. (2) FOR LAND, ONLY EXISTING LAND AREAS ALREADY USED FOR AGRICULTURAL ACTIVITIES GET A PASS. EXPANDING INTO UNUSED LAND AREAS MUST MEET THE SMP REQUIREMENTS.

THUS AGRICULTURE IS TREATED ALMOST THE SAME AS ALL OTHER EXISTING USES. THE REAL BENEFIT TO AGRICULTURE IS THAT CHANGING CROPS OR PRODUCTS GETS A PASS, BUT ONLY IF NO NEW FACILITIES ARE NEEDED. THUS, FOR EXAMPLE, ROW CROPS CAN BE CHANGED TO ORCHARD OR LIVESTOCK RAISING.REGARDING FORESTRY, PLEASE NOTE THAT THE WASHINGTON STATE SUPREME COURT HELD IN WEYERHAEUSER CO. V. KING COUNTY THAT THE FOREST PRACTICES ACT DOES NOT PREEMPT THE REGULATION OF FOREST PRACTICES UNDER THE SHORELINE MANAGEMENT ACT. COUNTIES AND CITIES NEED TO ADDRESS FOREST PRACTICES IN THE SMPS AND THE BUFFERS AND OTHER MEASURES ADOPTED IN THE SMP NEED TO APPLY TO FOREST PRACTICES. SEE *WEYERHAEUSER CO. V. KING COUNTY*, 91 WN.2D 721, 728, 592 P.2D 1108, 1112 (1979).

ON THE OTHER HAND, THE SMP GUIDELINES ARE FAIRLY LENIENT WHEN IT COMES TO THE FOREST PRACTICES RULES AND TEND TO RELY ON THEM. IF AN SMP IS GOING TO WAIVE STANDARDS LIKE VEGETATION MANAGEMENT IN FAVOR OF THE FOREST PRACTICES ACT RULES, I THINK ITS IMPORTANT TO DESCRIBE THE FOREST PRACTICE

RULES AS A SET OF REGULATIONS THE STATE HAS DEEMED EQUAL TO, OR COMPARABLE TO THE SET OF SHORELINE REGULATIONS. WHILE NOT COMPLETELY ACCURATE, IT COMES CLOSE, AND PROVIDES A CONCEPTUAL REASONING FOR WHY FORESTRY GETS TREATED LENIENTLY.

Update Process Challenges

There are a number of common challenges experienced by local governments and Ecology during the SMP update and approval process. Addressing these issues will increase the efficiency of the process and the effectiveness of shoreline management.

4. Common Solutions for Common Challenges

Local governments face a number of common technical challenges that would benefit from a more unified or comprehensive approach. Although inter-jurisdictional planning is encouraged, it occurs infrequently. Opportunities for improved inter-governmental collaboration include but are not limited to:

identification and mapping channel migration zones, especially since the SMP grants do not specifically fund this work;

Identification and clarification of approaches for addressing impacts from climate change. ;

strategies for integrating SMPs and Critical Areas Ordinances, given this issue has been confounded by recent legislation and court findings; and

cross jurisdictional restoration planning.

A REGIONAL SMP ALSO HAS THE IMPORTANT BENEFITS OF REDUCING THE COSTS OF DOING THE UPDATE TO THE JURISDICTIONS, BECAUSE ONLY ONE EFFORT IS UNDERTAKEN FOR THE GROUP, RATHER THAN MANY REPETITIVE EFFORTS FOR EACH JURISDICTION.

ANOTHER BENEFIT IS THAT THE DEVELOPMENT COMMUNITY ONLY HAS TO BE FAMILIAR WITH ONE SET OF REGULATIONS RATHER THAN A PATCHWORK OF DIFFERENT REGULATIONS FOR EACH JURISDICTION.

EVEN IF A FULL REGIONAL SMP IS NOT PREPARED, SOME TASKS CAN AND SHOULD BE SHARED. FOR EXAMPLE, THE SHORELINES INVENTORIES REALLY SHOULD BE DONE BY THE COUNTY AND CITIES TOGETHER, RATHER THAN SEPARATELY BY EACH JURISDICTION.

Example: Three cities in the Nirvana River Valley are each paying a consultant $40,000 to research and write the required section on ecosystem processes and functions and prepare a restoration plan. The Nirvana River Council has already conducted a watershed characterization and developed a list of restoration priorities. Each City sets out to prepare separate documents for their section of the Valley, while the Nirvana River Council awaits funding to implement their Valley-wide plan.

Resources need to be allocated to more inter-jurisdictional and cross-Sound technical studies that can be tailored by local governments to their individual situations. Local governments need to find ways increase their capacity to work cooperatively with each other to develop solutions to shared challenges. Ecology, the Puget Sound Partnership and others can help by securing funds to support the development of solutions.

5. Public Involvement

Organized property rights groups are increasingly participating in the update of individual shoreline master programs. They are stimulating more interest and concern of property owners to engage in the process. Property owner participation can be beneficial over the long term because it increases mutual understanding and can lead to better environmental solutions. However, when property owners are stimulated to participate from fears raised by information that is not accurate it can derail the update effort and thwart efforts to make improvements to shoreline management. Ecology's recent completion of a communication strategy and reassignment of existing staff to improve public and stakeholder communication is designed to address this situation. Additional work is needed to proactively and constructively engage property owners and property rights groups across the State. Without this work limited resources will be spent on crisis communication, lawsuits and ineffective policies and regulations instead of educating land owners and creating well designed and community supported updates.

Often the most intensive public outreach efforts happen during the local adoption process, after the local jurisdiction has spent the bulk of its SMP grant funds. Local governments may need to work more closely with Ecology to determine when and how grant funds are spent to ensure that money is available at the appropriate times in the update process to enable effective and timely outreach. This would require careful coordination with Ecology since the grant allocation requirements and process are quite complex and Ecology does not have authority to alter funding cycles.

There needs to be continued effort by Ecology, state agencies including the Puget Sound Partnership, and local governments to implement effective communication strategies. Ecology's new SMP communication strategy can serve as the foundation of this effort.

WHILE ECOLOGY CAN HELP A LITTLE, ALMOST ALL THE BURDEN IS BOURNE BY THE LOCAL JURISDICTION. THE REAL EFFORT NEEDS TO BE ON HELPING THE JURISDICTION PREPARE MATERIALS TO COUNTER THE SCARE TACTICS AND HAVE THEM PREPARED AHEAD OF TIME. THIS MEANS BEING SKILLED AT IDENTIFYING THE PROBLEM ISSUES IN ADVANCE OF THE PUBLIC HEARINGS WHEN OPPOSITION MOST COMMONLY DEVELOPS.

6. Ecology Support, Review and Approval

Ecology and local governments share responsibility for the success of the Shoreline Management Act and the efficiency and effectiveness of local government processes to update their SMPs. Ecology's role is to ensure the overall effort is meeting the intent of the SMA and approve each local government's updated SMP. Local government's role is to work within their community, apply science and develop a SMP that meets the State requirements and is consistent with other local authorities and interests. Ecology's current workload is exponentially greater than ever before to review and approve SMPs, and it will continue to expand over the next few years. Even though their staffing has not increased at the same rate as the work, Ecology has made significant efforts and advancements to facilitate and improve the overall process. As with any new effort of this size and magnitude, there are several areas that could be improved.

c) The feedback and guidance that Ecology staff provides to local governments needs to continue to improve to ensure consistency across all Ecology staff working with local governments. Guidance and feedback need to address the tough issues in a manner that can be used by local governments. There needs to be accountability for both Ecology and the local government to ensure that differences have been resolved during the update process.

d) WE DISAGREE WITH THIS PARAGRAPH, AS DISCUSSED BELOW.

There needs to be continued emphasis on providing consistent feedback to local government and continued dedication to increasing predictability in the final review process.

OUR EXPERIENCE IS THAT THE ISSUES THAT COME UP HAVE BEEN RAISED BEFORE THE LOCAL GOVERNMENT BY ECOLOGY AND OFTEN OTHERS. THE CRITERIA ARE CLEAR. ECOLOGY GENERALLY SPELLS THEM OUT IN THEIR COMMENT LETTERS AND THE CHECKLIST LISTS THEM. ECOLOGY IS TYPICALLY QUITE CLEAR THAT SUBSTANTIAL REVISIONS MAY BE NEEDED, ALTHOUGH SOME LOCAL GOVERNMENTS DO NOT BELIEVE THEM. SO I THINK THERE IS PREDICTABILITY. THE ONLY UNCERTAINTY IS JUST HOW MUCH THE LOCAL GOVERNMENTS CAN WEAR DOWN ECOLOGY TO COMPROMISE ECOLOGY'S COMMENTS AND THE REQUIREMENTS IN THE SHORELINE MASTER PROGRAM GUIDELINES.

THERE IS A TRADE OFF BETWEEN A QUICK ECOLOGY DECISION AND HAVING ECOLOGY AND THE LOCAL GOVERNMENT TAKE THE TIME TO NEGOTIATE A SOLUTION. THE YAKIMA CO. SMP, FOR EXAMPLE, TOOK SEVERAL YEARS TO WORK OUT, BUT RESULTED IN ECOLOGY LARGELY APPROVING IT WITH CHANGES THE COUNTY COULD ACCEPT. A SHORTER TIME IN NEGOTIATIONS MAY MEAN LESS LOCAL GOVERNMENT ACCEPTANCE.

FUTUREWISE DOES NOT BELIEVE THAT IT IS ACCURATE TO SAY THAT ECOLOGY'S "DELAY ALSO HAS CREATED A WINDOW FOR CONFUSION AND UNREST ABOUT THE SMP BECAUSE AFTER APPROXIMATELY 5

YEARS OF WORK AND AGREEMENT THERE IS NOT DECISIVE ENDORSEMENT OR SUPPORT TO MOVE FORWARD FROM THE STATE." THERE IS DECISIVE ENDORSEMENT OR SUPPORT TO MOVE FORWARD FROM THE STATE. THE LEGISLATURE AND GOVERNOR HAVE, DURING THE WORST BUDGET CRISIS SINCE THE GREAT DEPRESSION, APPROPRIATED MORE MONEY THEN THE AGREEMENT ARRIVED AT AS PART OF THE COMPROMISE NEGOTIATED FOR THE 2003 SHORELINE MASTER PROGRAM GUIDELINES. ECOLOGY HAS QUICKLY AWARDED THE APPROPRIATED FUNDS AND PROVIDED EXTENSIVE TECHNICAL ASSISTANCE TO LOCAL GOVERNMENTS. FOR EXAMPLE, AT A RECENT PANEL DISCUSSION FUTUREWISE MODERATED, REDMOND STAFF SAID THAT THEY WERE IN CONTACT WITH ECOLOGY STAFF ON A WEEKLY BASIS DURING THEIR UPDATE AND WE SEE ECOLOGY STAFF AT MANY OF THE LOCAL GOVERNMENT HEARINGS ON SMPS THAT FUTUREWISE STAFF ATTEND. ECOLOGY HAS URGED LOCAL GOVERNMENTS TO ADOPT AND ECOLOGY HAS ALSO APPROVED MOST OF THE SMPS SUBMITTED TO DATE AND IS WORKING ON THE OTHERS. IT IS HARD TO SEE WHAT MORE THE STATE COULD DO TO SUPPORT THE UPDATES.

Implementation Issues

5. Staff resources to implement updated SMPs

   After final adoption of the local SMP, effective implementation will be a significant challenge. Generally, the newly updated SMP's are more complex and resource-intensive than previous regulations.

   The adoption of updated SMPs increases the demands in implementation because science is demonstrating more complex interrelationships that must be addressed for protection of the ecosystem; the expectation of achieving no net loss is coming under more scrutiny; the number of communities involved in restoration and environmental protection has diversified, regionalized and grown; and private property owners, businesses and environmental interests are increasingly involved and sophisticated in their expectations and needs. This increase in local effort and expectation is occurring in a time when local governments are severely limited financially and are cutting programs and staff.

   The public's trust in government is fragile yet at the same time the public expects high quality and scientifically certain deliverables and dependability from government programs and efforts. There needs to be a strategy for how local governments will successfully address the increased work in implementation in the face of the current financial and political climate.

   MOSTLY, THERE NEEDS TO BE MONEY BOTH FOR ECOLOGY AND FOR LOCAL GOVERNMENTS TO ADMINISTER THE NEW SMPS. SOME OF THE FUNDING NOW GOING TO UPDATES SHOULD BE RETAINED BY ECOLOGY AND USED TO FUND ITS OWN ENFORCEMENT STAFF AND TO

PROVIDE FUNDING EITHER REGIONALLY OR TWO COUNTIES FOR ADMINISTRATION AND ENFORCEMENT.

6. No Net Loss at the Parcel Level

The requirement to achieve no net loss from development activity on an individual parcel will be a challenge for local governments and the property owner to address and successfully manage.

Generally, the approach to minimize impacts includes attention to how the property is developed, used and where activities are located. Practices are required and implemented such as setbacks from the ordinary high water mark and stormwater control to reduce environmental effects. However, there are often unavoidable impacts that require compensatory mitigation. Single-family developments often have difficulty finding compensatory mitigation options that can be achieved on-site.

If there are no easy-to-access off-site mitigation options such as in-lieu fee programs or mitigation banks (which is the case in most jurisdictions), parcel by parcel mitigation is problematic. The state and federal agencies are working diligently to fund and implement watershed-based mitigation but it will likely take several more years before off-site mitigation tools are readily available in most areas of the state. In the meantime, there needs to be a serious look at how effective mitigation at the individual parcel level can be and how to fairly pay for and achieve no net loss.

7. Technical Assistance and Incentives

Effective implementation of SMPs requires more than just regulation. Because of the complexity of property and environmental management there has to be more technical assistance to landowners. Local governments need to know how to best address unique situations on individual properties and provide guidance and examples of ecologically benign or beneficial alternatives to property owner needs. Local governments need incentives for known issues they will face like bulkheads, non-conforming structures and vegetation management coupled with an active effort to inform people of these incentives. These best practices need to be made available in an easy and effective manner for property owners.

Without an equal or greater emphasis on assistance and incentives compared to regulation, property owners and the public may become more resistant to shoreline management and suspicious that the only tool governments are using to achieve no net loss is regulation. There needs to be a clear identification of the key regional issues local government faces and the development of tools, incentive programs and examples of best practices. In addition, sufficient resources for implementation of technical assistance and incentives at the local level are necessary to achieve no net loss of function. Partnerships with organizations like land trusts, conservation districts, foundations and others will be critical to success. These partnerships may need to be formed through regional organizing bodies like the Puget Sound Partnership or others with the staff resources and expertise to establish and manage

such programs instead of relying on each local government to independently create and maintain these relationships.

Example: A city identifies a last remaining stretch of critical shoreline adjacent to a salmon river that will likely only be protected if it is purchased by a land trust, put into conservation easements or significant landowner outreach and education occurs. Who is making the connection between lands that are unable to be protected through regulations and those with the tools to achieve protection?

8. Enforcement
   In the face of budget reductions many local governments and the State are cutting staff to monitor and enforce environmental programs. Many never had enforcement staff to begin with. Without the consequence of enforcement and subsequent penalties, many landowners and people involved in development will not see the benefit of adhering to increasingly complicated and expensive land use restrictions. There needs to be a combined strategy between the State and local governments for effective enforcement.

   Example: A property owner learns that his friend paid $25,000 to permit and site a modest expansion of his waterfront home, which took months to complete because it required a Conditional Use Permit. This property owner wants to convert his kayak shed into a boathouse and he decides to proceed without a permit because he knows he won't get caught. Without ever contacting the county, he converts his 8 x8 shed into an 1100 square foot boat/guest house and clears some trees so that he has better access to the water.

WHILE THIS IS UNDOUBTEDLY A REAL REACTION, THE REAL REASON IT IS CONSIDERED IS ALMOST ALWAYS BECAUSE THERE IS NO COUNTERVAILING CONSEQUENCE BECAUSE ENFORCEMENT IS ALMOST NONEXISTENT. THUS THE PRECEIVED CHOICE IS A LONG WAIT AND HIGH COST VS. LITTLE COST AND EASILY GETTING AWAY WITH IT. THERE ARE SEVERAL MINIMAL ENFORCEMENT OPTIONS THAT CAN ESTABLISH THE COUNTERVAILING CONSEQUENCE SHORT OF MAJOR ENFORCEMENT FUNDING. THE IMPORTANT ELEMENT IS ACTUALLY TAKING THE ACTION, SO THAT WORD GETS OUT TO THE COMMUNITY THAT THERE ARE CONSEQUENCES TO VIOLATIONS. PLANNING STAFF RESPONSIBLE FOR SHORELINE PERMITTING ARE ABLE TO ALSO DO THIS MINIMUM OF ENFORCEMENT. GUIDANCE DOCUMENTS NEED TO POINT OUT THE BIG BENEFITS OF AT LEAST A MINIMAL LEVEL OF ENFORCEMENT.

i. SIMPLY IDENTIFYING AND ACKNOWLEDGING THE VIOLATION IS THE FIRST STEP, WHICH IS FAIRLY SIMPLE. ALL THAT IS REQUIRED IS A NOTICE OF VIOLATION WITH THE IMPLICATION (EVEN IF ONLY A BLUFF) OF LARGE FINANCIAL PENALTY. THIS IS OFTEN ADEQUATE TO GET VIOLATORS TO CORRECT THE VIOLATION.
ii. JUST AS IMPORTANT, IS ISSUING A NOTICE OF VIOLATION TO THE CONTRACTOR PERFORMING THE WORK. CONTRACTORS OFTEN

AGREE TO PERFORM VIOLATIONS IF THE PROPERTY OWNER ACCEPTS THE CONSEQUENCES OF THE VIOLATION AND ENFORCEMENT ACTIONS WONT BE TARGETED AT THEM. BUT IF THE CONTRACTORS PERFORMING THE VIOLATION KNOW THEY ARE ALSO RESPONSIBLE AND THERE ARE CONSEQUENCES ON THEIR OPERATIONS, THEY ARE LESS LIKELY TO PERFORM THE VIOLATION.

iii. ANOTHER EASY TOOL IS TO SIMPLY DECIDE THAT ADDITIONAL DEVELOPMENT PERMITS FROM THE JURISDICTION WILL NOT BE ISSUED TO PROPERTIES WITH VIOLATIONS. THEN PROPERTIES WITH UNRESOLVED VIOLATIONS WILL BE UNABLE TO OBTAIN A FUTURE PERMIT UNLESS THEY CORRECT THE VIOLATION, SOME VIOLATORS WILL NOT REACT TO MINIMAL ENFORCEMENT UNLESS THE JURISDICTION WITHHOLDS SOMETHING THEY WANT – A PERMIT APPROVAL.

iv. WE ALSO NEED TO GET REAL ON ENFORCEMENT. ECOLOGY ALMOST NEVER DOES A CLEAN WATER ACT ENFORCEMENT ACTION WITHOUT LEVYING A FINE AND THAT NEEDS TO BE THE CASE UNDER THE SHORELINE MANAGEMENT ACT TOO. IF A PERSON SAVED $25,000 NOT APPLY FOR THE PERMIT, THEY NEED TO BE FINED $25,000 FOR THEIR ECONOMIC BENEFIT AND A PENALTY PART TOO.

v. WE ALSO NEED TO BE MORE EFFICIENT. MOST SHORELINE VIOLATIONS ARE PRETTY OBVIOUS ON AERIAL PHOTOS. THE CORPS OF ENGINEERS USED TO DO FALSE COLOR AERIAL PHOTOS THAT THEY PROVIDED TO ECOLOGY WHO PROVIDED TO LOCAL GOVERNMENTS. NOW WITH COMMONLY AVAILABLE GIS THOSE AERIALS CAN BE OVERLAID SHOWING FILLS, BULKHEADS, AND NEW BUILDINGS. IF THE CORPS NO LONGER PROVIDES THOSE PHOTOS, ECOLOGY SHOULD USING SOME OF THE MONEY THAT IS CURRENTLY GOING TO THE UPDATES.

Capturing the Opportunities

The preceding paragraphs summarize the authors' perspectives about the SMP update process and implementation by describing where improvements could be made to the overall effort. These perspectives are meant to stimulate conversation, refinement and interest in solutions from the various stakeholders. We believe that it is important to understand both what we want to achieve and specifically what is limiting our success. We believe refining and then collectively addressing these issues will increase overall confidence that ecological protection in Puget Sound is possible, build on existing trust and relationships among those most closely tied to the success of the SMP, and help meet the intent of the Shoreline Management Act to achieve no net loss.

The issues and challenges described above are not caused by any group or organization. The SMA, by design, is a partnership between local governments and their communities with the Department of Ecology, the Governor and the legislature. Effectively overcoming the obstacles described above requires a combination of all parties working

together in a manner specific to each issue to craft solutions that work. Creating guidance, examples and common strategies for common issues requires Ecology, local governments and others to work together with their unique and combined expertise and perspectives. Acquiring the necessary resource for implementation will require local staff and elected officials combining their voices with business and environmental interests and then working with State staff, legislators and the Governor to increase strategic investments for the protection Puget Sound's shorelines.

Next Steps

Comments on the issues described above are sought to ensure the issues and examples are clear, accurate and complete. Feel free to send us additional examples based on your personal experience. Please note which of these issues have the highest priority for you or your organization and which, if any, issues are not of importance. Please note where you see the greatest opportunity at this time to advance an issue and which issues may not be timely. Please provide your response to these queries and any other comments you may have to Carol MacIlroy at cmacilroy@gmail.com or call 206-293-4741.

Following the end of the comment period, March 19, 2010, the authors and Ecology will develop a revised draft and provide a sense of the priority of the issues and the sequence for addressing them. A potential path to continue this work: Clallam County with the support of Ecology and Jefferson County have requested funding from the EPA to being crafting solutions to these issues beginning in late spring of 2010 and finalizing the recommended solutions by the end of 2010.

Attachment 2-3/3: Submission 19

Attachments begin on next page.

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Note: this document will be updated with additional science citations in the future, please check our website for the current version

Introductionl

In the course of reviewing Shoreline Master Programs (SMPs), Futurewise has seen several proposals for small buffers in areas of existing development. Some of these proposals seem to be based on the belief that, if a small buffer is established based on existing development patterns, unlimited new development (including redevelopment, expansion, and more intensified uses) outside that small buffer will have no additional impacts to shoreline ecological functions, and thus no mitigation is necessary. This paper shows that there is no scientific basis for such a strategy, and provides a recommended strategy for the acceptable use of small buffers in existing intensely developed areas which we believe allows for reasonable development while also having a reasonable chance of protecting the existing shoreline functions, as the Shoreline Management Act and the Shoreline Master Program Guidelines require.

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The Shoreline Management Act (SMA) policy statement in RCW 90.58.020 lists the primary policy objective of the act [with emphasis]: "This policy contemplates protecting against adverse effects to the public health, *the land and its vegetation and wildlife, and the waters of the state and their aquatic life*, while protecting generally public rights of navigation and corollary rights incidental thereto." In addition, the SMA policy provides that "[p]ermitted uses in the shorelines of the state shall be designed and conducted in a manner to *minimize*, insofar as practical, any resultant damage to the ecology and environment of the shoreline area and any interference with the public's use of the water."

To implement these policies to protect the ecology and to minimize damage, as well as other policies of the SMA, the SMP Guidelines require **no-net-loss of ecological functions**, stating specifically: "Local master programs shall include policies and regulations designed to achieve no net loss of those ecological functions."[1]

This is accomplished through **mitigation sequencing**,[2] whereby the first task of mitigation is avoidance of impacts, the second task is minimization of impacts, and the third is compensation for remaining impacts. Stated another way, allowing development to impact the shoreline is supposed to be the last option, not the first option. Impacts should only be allowed to the extent that it is not practical to avoid damage to the environment and the

[1] WAC 173-26-186(8)(b) under Governing Principles of the Guidelines relating to ecological functions; and implemented in WAC 173-26-201(2)(c) under Basic Concepts. Despite being called 'Guidelines,' the SMA, in RCW 90.58.080(1), requires that shoreline master programs shall be consistent with the SMP Guidelines.

[2] WAC 173-26-201(2)(c) under Basic Concepts and Protection of Ecological Functions; and implemented in WAC 173-26-201(2)(e) under Basic Concepts, Environmental Impact Mitigation.

public's use of the water, and then the development should minimize and compensate for those impacts.

Designing an SMP to achieve no-net-loss of ecological functions is largely a scientific exercise, and the SMA is specific in its requirements to use science in developing the SMP. It requires using "a systematic interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts."[3] This science requirement is similar to the Growth Management Act's "Best Available Science" requirement. While each has its own terminology, these two science requirements are functionally the same in that they require the use of current up-to-date science.

The science literature on the impacts of development near water bodies provides the basis for jurisdictions to accomplish mitigation sequencing for shoreline waters (streams, lakes, wetlands, marine waters, etc.) and adjacent shorelands. One essential strategy for protecting the functions and values provided by intact riparian vegetation is using a regulatory buffer (or a setback and vegetation retention area) of a width supported by science. An adequate buffer can provide many important functions and help protect water quality and water resources. While an adequate buffer can accomplish much, it cannot mitigate everything, especially impacts from degraded upland areas and the broader watershed – for example stormwater, erosion, habitat loss, etc. Other regulations are needed to deal with such impacts, including those areas outside shoreline jurisdiction.[4]

An adequate regulatory buffer can do much to provide mitigation sequencing:

(1) It helps accomplish the first task of mitigation sequencing – avoidance. *But this is only the case if the buffer is intact*. An adequate buffer will help protect a large percentage of the functions that riparian vegetation provides, and will encompass the most important riparian habitat areas.
(2) While an adequate buffer can do much, it can't accomplish everything. Thus, an intact buffer can be a first step in minimizing the adverse impacts of development to functions that extend outside the buffer. It also reduces or helps minimize those repeating or ongoing impacts from adjacent development, such as water quality, glare, and noise impacts, by filtering pollutants, screening glare, and reducing noise transmission.
(3) For both degraded and intact areas, a science-based regulatory buffer also identifies an area within which new development will cause impacts that need compensation. In addition, when buffers are degraded, they provide a location where any impacts of the development can be compensated for by enhancing the degraded functions.

Even when science-based buffers are degraded, they can still perform functions at a dampened level, depending on the amount of degradation. Even heavily degraded shorelines will perform

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[3] RCW 90.58.100, with emphasis added.

[4] For example, to maintain the health of streams and salmon habitats, rivers basins should limit effective impervious surfaces to no more than ten percent and forest cover to no less than 65 percent.
Derek B. Booth, *Forest Cover, Impervious-surface Area, and the Mitigation of Urbanization Impacts in King County, Washington* p. 16 (University of Washington, Seattle Washington: September 2000). Accessed on March 10, 2010 at: http://depts.washington.edu/cuwrm/research/forest.pdf

functions at a very low level. This is specifically stated in the SMP Guidelines,[5] and documented in the science literature (including those footnoted below) that compares developed and undeveloped sites. For example, even lawns can provide better animal feeding, runoff treatment, and other functions than paved surfaces and structures. ew impervious surfaces and more intensive use will degrade these even further. Thus, if the regulatory buffer is not of adequate width to avoid and mitigate impacts, as is the case when using small buffers, new development outside the small buffer will still cause new impacts.

Vegetative Buffer Areas Perform Many Functions

The peer-reviewed scientific evidence has been reviewed and synthesized in several documents that show that intact buffers of adequate width are needed to mitigate the impacts of adjacent development on lakes, rivers, streams, marine waters, and wetlands.[6] An item of particular

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[5] WAC 173-26-201(2)(c) under Basic Concepts and Protection of Ecological Functions.

[6] akes: aren Cappiella and Tom Schueler, *Crafting a Lake Protection rdinance*, rban Lake Management, Watershed Protection Techniques 3( ) (2001). Accessed on March 10, 2010 at: http: www.cwp.org Resource Library Center Docs special lakes ulm lakeprotectionord.pdf. Widths - p. 756; Functions - pp. 752-75 .

akes: S. Engel and . L. Pederson r., *The construction, aesthetics, and effects of lakeshore development: a literature review* (Research report 177, Wisconsin. Dept. of atural Resources, 1998). Accessed on March 10, 2010 at: http: digicoll.library.wisc.edu cgi-bin Eco atRes Eco atRes-idx id Eco atRes.D RRep177. Functions - pp. 9-2 ; widths not addressed.

treams, akes, and arine: ational Marine Fisheries Service - orthwest Region, *Endangered Species Act Section 7 Consultation Final Biological pinion for Implementation of the ational Flood Insurance Program in the State of Washington, Phase ne Document Puget Sound Region* (Sept. 22, 2008). Accessed on March 10, 2010 at: https: pcts.nmfs.noaa.gov pls pcts-pub biop results detail reg inclause in (' WR') idin 29082. Widths pp. 222 223; Functions and development impacts: pp. 2 150.

treams and akes: Spence, B. C., G. A. Lomnicky, R. M. ughes, and R. P. ovitzki, *An Ecosystem Approach to Salmonid Conservation.* (ManTech Environmental Research Services Corp., Corvallis, R, Doc. : TR- 501-96-6057, available from the ational Marine Fisheries Service, Portland, regon. 1996). Accessed on March 10, 2010 at: http: www.nwr.noaa.gov Publications Reference-Documents ManTech-Report.cfm. Widths - pp. 215-230 (esp. p. 229); Functions - pp. 51-55.

treams: . L. nutson . L. aef, *Management Recommendations for Washington's Priority abitats: Riparian* (Wash. Dept. Fish and Wildlife, lympia WA, 1997). Accessed on March 10, 2010 at: http: wdfw.wa.gov hab ripfinal.pdf. Widths - p. 87; Functions - pp. 19-38.

etlands: D. Sheldon, T. ruby, P. ohnson, . arper, A. McMillan, T. Granger, S. Stanley, and E. Stockdale, *Wetlands in Washington State - olume 1: A Synthesis of the Science* (Washington State Department of Ecology Publication 05-06-006, 2005). Accessed on March 10, 2010 at: http: www.ecy.wa.gov biblio 0506006.html. Widths all of Chapter 5 p. 5-55; Functions All of Chapter 2 parts of Chapter 3 and .

arine: Enviro ision, errera Environmental, and the Aquatic abitat Guidelines Working Group, *Protecting earshore abitat and Functions in Puget Sound: An Interim Guide* (ctober 2007). Accessed on March 10, 2010 at: http: wdfw.wa.gov hab nearshore guidelines . Widths - pp III-38 to III- 1; Functions - pp. II-38 to II- 6.

arine: . S. Brennan, and . Culverwell, *Marine Riparian: An Assessment of Riparian Functions in Marine Ecosystems (*Washington Sea Grant Program, niversity of Washington, Seattle, 200). Accessed on March 10, 2010 at: http: www.wsg.washington.edu research pdfs brennan.pdf. Widths - p. 16; Functions pp. ii-iii 3-1 .

TE: If some links do not operate, removing the last item on the link may provide an alternate access path. therwise perform a search on that website or the internet in general.

note is that some studies[7] found that riparian vegetation performed similar functions for all types of water environments. Indeed, many of the science articles seeking numerical values for buffer widths are not based on any particular type of water feature (stream v. wetland, etc.). The buffer widths recommended to protect the wide variety of ecological functions in these synthesis studies are summarized in the following table. Specific functions are described in more detail below the table.

Science Review Source	Recommended Vegetated Buffer Width			
	Stream	Wetland	Lake	Marine
Cappiella and Schueler, *Crafting a Lake Protection Ordinance* (Review of Lake Ordinances)			Range from 50-150'; Septic 100'+	
Engel and Pederson, *The construction, aesthetics, and effects of lakeshore development*			Only functions listed	
National Marine Fisheries Service, *ESA Consultation Biological Opinion for NFIP in Wa. State*	Greater of: Lg. rivers - 150'; or CMZ +50'; or floodway		100'	100'
Spence et al., *An Ecosystem Approach to Salmonid Conservation*. (ManTech Report for NOAA)	1 site pot. tree height (up to 150')		1 site pot. tree height (up to 150')	
Knutson & Naef, *Management Recommendations for Washington's Priority Habitats: Riparian* (WDFW)	150-250' per str. type + floodplain			
Sheldon et al., *Wetlands in Washington State - Volume 1: A Synthesis of the Science* (Ecology)		150'-300' for most human uses		
EnviroVision et al., *Protecting Nearshore Habitat and Functions in Puget Sound: An Interim Guide* (Aquatic Habitat Guideline Working Group)				150-200'
Brennan and Culverwell, *Marine Riparian: An assessment of riparian functions* (SeaGrant)				>30m (>100')

NOTE: See footnote 6 for full citations and links to the studies.

These science reviews document that: (1) small buffers, even with intact vegetation, are incapable of fully mitigating development impacts; and (2) degraded buffers are unable to fully perform their buffering function.[8] The science of intact buffer areas of adequate width shows that they perform many functions - some of which are provided below and grouped by similarity.

[7] Sheldon, et al., *Wetlands in Washington State - Volume 1,* p. 5-25 to 5-26.
Brennan and Culverwell, *Marine Riparian*, pp. 2 & 16.
EnviroVision, et al., *Protecting Nearshore Habitat, p. III-38.*

[8] See particularly: Spence et al., *An Ecosystem Approach to Salmonid Conservation.* (ManTech Report for NOAA) Chapter 6: Effects of Human Activities.

Water Quality and Infiltration

- Inhibiting surface erosion from surface runoff and flood flows.
- Filtering sediment from surface runoff and flood flows.
- Removing and transforming nutrients and harmful substances from surface runoff and flood flows.
- Infiltrating and storing surface runoff and flood flows into groundwater for later release to water bodies.
- Removing and transforming nutrients and harmful substances from groundwater passing through root zones.

Wtaeiliuation

- Providing stabilization to streambanks, lake shores, and marine waters against erosive water forces through root mats and root-strength.
- Contributing in-water woody debris which reduces and slows erosive water forces against streambanks and lake shores through barriers and increased roughness.
- Protects uplands from surface erosion caused by storms and rising sea levels.

IntWater I aeitat Contrieutions

- Providing fish with over-water hanging cover from predators.
- Providing shade to help cool the water, especially for shallow margins.
- Contributing in-water woody debris needed for creation of fish habitat.
- Contributing in-water organic matter to support fish food species (insects and invertebrates), and other aquatic life.
- Screening or dampening noise, glare, and human activity from the water.

Wand I aeitat

- Providing refuge for fish from fast flows during floods, as well as access to new food sources.
- Contributing large woody debris needed for amphibian, small mammal, bird, and insect habitat.
- Providing wildlife habitat areas (for feeding, reproducing, resting, etc.) for riparian species, and for upland species that use riparian areas.
- Providing a wildlife dispersal and migration corridor along the water to other areas.
- Generating organic matter needed for foundation of food web.
- Providing natural processes and food web functions to support wildlife.
- Altering the microclimate near the water to be more suitable for aquatic and riparian species by sheltering from wind, holding humidity, etc.
- Screening or dampening noise, glare, and human activity.
- Providing separation from human activity for sensitive aquatic and upland species.

While full-sized, intact buffers perform or protect almost the full level of the functions above, degraded buffers still perform low levels of functions, and additional development continues to impact these. It is not the case that degraded buffers have no functions; thus mitigation is needed for new development outside any buffer area which is too small to fully perform or protect the full range of shoreline functions.

Small Degraded Buffers Cannot Protect Shoreline Functions

The currently available science shows that using the science-based buffer for avoidance and minimization in mitigation sequencing has several *policy implications* that bear on the use of small buffer regulations for existing development:

1. If the science-based buffers are intact, they can provide functions and protect the resource from many impacts from nearby development.
2. If the buffers are not intact, they cannot provide the functions nor protect the resource from adjacent development - even if it meets the science-based width - and there will be impacts.
3. If development takes place within the buffer area, there will be impacts.
4. In the case of existing development within the science-based buffer width, the vegetation is both degraded and there is not enough width. The presence of existing development does not mean that new development will not have impacts or even that existing development does not have ongoing impacts. Just as in #3 above, additional development in the science-based buffer area will increase the impacts. Simply making the regulatory buffer width smaller to match the existing development does not change the presence of impacts.
5. Using small regulatory buffer widths to accommodate existing development establishes built-in impacts in the SMP review system.
6. Since the normal path of development in urban areas over time is expansion and intensification, there will be a continual increase in impacts and degradation across shoreline jurisdiction in these areas. This creates additional impacts that must be addressed in both the Cumulative Impacts Analysis and the Restoration Plan.

This information shows that just because the science-based buffer area is degraded, it is not the case that unlimited additional development has no additional impacts as long as it meets a small regulatory buffer or setback. It also shows that small buffers cannot be applied to areas that may still have intact functions, especially if it is possible to maintain or establish a scientific buffer width, as those areas need to be protected from loss.

Some small buffer systems proposed in some SMPs seem to assume that the smaller degraded buffer works the same as an intact science-based buffer, i.e. adequately providing functions and buffering against impacts as long as development is outside the buffer line. But the peer-reviewed scientific literature shows that a smaller degraded buffer is incapable of performing functions adequately and incapable of protecting the resource it is intended to protect.

Sea DeDelopment and Esisting DeDelopment Impact Shoreline Functions

Expansion of existing development, redevelopment, and new development on vacant land all adversely affect shoreline resources and functions. In fact, even existing development can continue to cause impacts to ecological functions. As described above, this is the case even for development outside a small regulatory setback. Consider the following adverse impacts of development on the shoreline resources.

- New structures and impervious surfaces increase runoff volumes, remove vegetation, remove native soils that absorb water, and reduce the area available to infiltrate those volumes. Note that these impacts are partially mitigated through stormwater ordinances. However, stormwater regulations generally only address increased peak runoff volumes, not the other impacts.[9] In addition, small developments are only required to comply with some of the storm water requirements, thus reducing the ability of those regulations to address these impacts.[10]
  a. The increased runoff is focused into smaller receiving areas, thus increasing the erosive power and sediment carrying ability of the surface runoff in those areas.
  b. Where infiltration can still occur, the focused runoff drives infiltrated water to the groundwater table more rapidly with less opportunity for soil treatment.
  c. Less vegetation area is available to filter sediment and nutrients from flood waters and the larger volumes of surface runoff passing over the site.
  d. Less native soils and vegetation root structure is available to treat groundwater.
  e. The trend of decreased infiltration in a drainage basin changes the hydrology of the basin by increasing winter flows and deceasing summer and fall flows adversely affecting water quality and aquatic habitats.

- Adding new structures, additions, or impervious surfaces, and removing or simplifying vegetation (cutting trees, replacing shrubs with lawn, paving, etc.) also adversely affect habitat:
  a. Higher value habitat areas and migration pathways are eliminated or replaced with lower value areas, until the most simplified areas (open impervious surfaces) have only limited value for migration pathways and separation areas. More complex areas for nesting and refuge are most susceptible to loss.
  b. Substituting native vegetation with non-native species, or their total removal, results in a loss of food sources for the entire food web. For example, many native insect species cannot effectively use non-native vegetation for food. The reductions in insect populations then affect the fish that feed on them.
  c. Natural processes, insect food sources, and food web functions are reduced or eliminated with the progressive removal of complex vegetation elements.
  d. Species (large and small) capable of using degraded areas are greatly reduced with greater degradation.
  e. Microclimate is altered for species currently using site.
  f. Reduces the organic matter input to the water from drifting and blowing wind that supports the aquatic food web and aquatic life.
  g. Reduces the large woody debris input from trees and branches falling into the water that is needed to form and diversify fish and aquatic life habitat.

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[9] Washington State Department of Ecology, *Stormwater Management Manual for Western Washington Volume 1 – Minimum Technical Requirements* pp. 1-20 – 1-26 (February 2005). Accessed on March 10, 2010 at: http://www.ecy.wa.gov/biblio/0510029.html

[10] *Id.* at p. 2-9.

- In addition removing or simplifying the vegetation near water also:
  a. Reduces the root strength and root mats that provide bank stabilization.
  b. Increases sun exposure on shallow water areas and heats them.

- Residential uses have additional impacts, not directly related to construction, that increase with enlargement or expansion of the use. Aside from lighting, very little can be done to mitigate these impacts – they are a function of the existence of the development. Non-residential uses can have impacts similar to residential uses that vary depending on the activities and the level of use.
  a. Human presence and activity that impacts or drives off fish and wildlife. Bigger residences usually mean more people on the property, whether family members or guests.
  b. Pets that prey on or drive off fish and wildlife. More family members increase the likelihood of having more pets.
  c. Machinery and vehicular noise that impacts or drives off fish and wildlife. More people on the property increase the likelihood of having more machines and vehicles – including automobiles, watercraft, yard machinery, and recreational vehicles.
  d. Use of chemicals and fertilizers for house and yard. Larger structures and grounds increase the use of chemicals.
  e. Use of night lighting that impacts or drives off fish and wildlife. Larger structures and grounds typically increase the use of night lighting.

- Existing development that has inadequate buffers can also have ongoing impacts or impacts that increase over time. While shoreline master programs do not apply to most existing uses, these impacts show that allowing an expanded, redeveloped, or new use that continues to rely on existing, degraded buffers or non-existent buffers will result in an increased loss of shoreline functions, contrary to the requirements of the SMA. Further, shoreline master programs do apply to ongoing activities that require five year permit renewals. The SMP should require measures to protect shoreline functions when those permits are renewed.
  a. Inadequate buffers allow larger pollutant loads to pass than intact buffers. Thus the receiving waters become more and more contaminated as pollutants build up in aquatic sediments and the water body year after year. Some pollutants are removed or transformed by flushing and biological processes, but others build up over time.
  b. Inadequate buffers allow larger sediment loads to pass than intact buffers. Thus aquatic life and habitat areas continue to be smothered by sediment, and water turbidity continues to impact organisms.
  c. Buffers degrade over time, so existing uses increase their pollution loads as the buffers degrade. The degraded buffers also provide fewer functions and mitigate fewer impacts.

Recommendations for Using Small Buffers, or Setbacks with Plantings

Based on the discussion above, regulatory systems that use small buffers alone are ineffective and fail to comply with the SMA. While a science-based regulatory buffer can provide a means of avoidance and minimization, small degraded regulatory buffers and setbacks do not, and result in a system with built-in adverse impacts to ecological functions.

Since a system that uses small buffers or setbacks alone cannot accomplish avoidance, or otherwise mitigate the impacts of a development, the only other acceptable strategy for their use is if the built-in impacts are offset by built-in mitigation measures, including mitigation for habitat impacts. This is best accomplished by an improvement of the existing degraded buffer or habitat conditions. While this approach can be used with validity, it must be only one part of a system that addresses the range of different shoreline conditions in a logical and systematic manner. Below is our recommended strategy for jurisdictions to use small buffers or setbacks for existing developed areas.

1. The shoreline area should be carefully mapped, and the existing level of development should be characterized. This should be part of the inventory and characterization step of the SMP update. When broad variations exist in setback and vegetation, the areas should be categorized based on the character so the protection measures can consider such variations.
2. Science-based regulatory buffer widths need to be adopted for areas with intact functions or with consistently large setbacks. These areas need to be protected from further degradation.
3. Small regulatory buffers widths or setbacks, along with built-in mitigation (as described below), can be used for areas of existing development, and should be based on the vegetation and setback categories identified during mapping. These areas need to be wide enough to function, and function over time. For example, the narrowest high quality buffer that can filter nutrients is 13 feet, and for filtering pollutants you need 33 to 52 feet.[11] And buffers degrade over time as they filter out nutrients and pollutants. The area needs to be at least 20 feet wide (enough for a fully grown tree) to provide minimum functions. Wider buffers are needed to protect other important shoreline functions.
4. Built-in mitigation requirements need to be included when an intact science-based buffer cannot be used to mitigate impacts of new development. This should include various means of enhancing the degraded shoreline areas where doing so is possible – such as planting native shoreline vegetation, removal or reduction of unnecessary shore armoring or other near-water structures, etc. Where native vegetation is planted, it needs to include native groundcover, shrub, and tree planting; and needs to extend across the shoreline with allowances for water access.
5. Even if a science-based buffer can be used in some places, it will be ineffective if it is degraded or non-vegetated. In such cases, the buffer or setback must be planted and maintained in order to buffer the impacts of the new development. This must include native understory, shrub, and tree planting and extend across the shoreline with allowances for water access.

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[11] K. L. Knutson & V. L. Naef, *Management Recommendations for Washington's Priority Habitats: Riparian* p. XI, pp. 164 (Wash. Dept. Fish and Wildlife, Olympia WA: 1997).

In addition to built-in mitigation in the form of enhancement, the use of small buffers means other impacts need to be carefully controlled, which means the use of additional standards.

1. Only very limited uses should be allowed in the setback and no uses can be allowed within the planted areas if they are to function. Encroachments into a buffer or setback vegetation should be limited to those that are water-dependent and water-related. Water-enjoyment and non-water-oriented uses and facilities can function without being in the buffer area.
2. Low impact development (LID) techniques should be required to minimize storm water runoff and help maintain a more natural hydrologic system. This is needed to help reduce the polluted storm water that would otherwise overwhelm the narrow planting strip.
3. Major redevelopments and changes in use, which usually result in great intensification, must established scientific based buffers to ensure no net loss of shoreline functions.
4. When permits for activities are renewed every five years, buffers or setbacks and vegetation plantings should be required.

While small buffers can be made acceptable for highly developed urban areas and rural areas, there needs to be policy support for not basing the buffer width on the available scientific information - of course science-based buffers should be used for intact areas. Such justification can be provided in the jurisdiction's policy that supports the use of shoreline buffers. We recommend a policy similar to the following:

> *BUFFER POLICY:* While buffers widths based on science are necessary to protect ecological functions, using them is not possible in existing heavily developed areas, such as along some parts of [FILL IN THE BLANK]. In such areas, an alternative strategy is established using smaller buffers [OR setbacks] that are based on the existing development pattern, in combination with mitigation requirements for new development that provide enhancement of the smaller buffer and other degraded features to address impacts of the new development outside the small buffer areas.

For more information please contact:
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Recommendations for Incorporating Restoration Planning into Shoreline Master Programs (SMPs)

The Restoration Plan is one of several important documents that support the shoreline master program (SMP). However it is not a stand-alone document. It is also important in the context of the other SMP documents, because they are all interdependent on each other.

- Inventory and Characterization – This is the foundation of the SMP by establishing baseline conditions that are used in the other documents.
- Restoration Plan – Uses the baseline conditions to identify opportunities for restoration, and identifies regulatory and non-regulatory programs that exist or are needed to accomplish shoreline restoration.
- Land Use Analysis – Based on the inventory, assesses the existing and future demand for water-dependant, water-related, and water-enjoyment shoreline uses against the available shoreline lands.
- Goals, Policies, and Regulations – Uses and influences the other documents in an iterative manner to establish regulatory standards for new shoreline development and non-regulatory courses of action for the jurisdiction (such as transportation planning).
- Cumulative Impact Analysis – Assesses the ability of the regulatory program and restoration program to result in "no-net-loss of ecological functions" at full build out.[1]

Restoration plans sometimes only address large stand-alone restoration projects. Yet this is not the limit of the requirement for restoration planning.

One of the primary functions of the Shoreline Management Act (SMA) is to protect the natural character of the state's shorelines. This is stated in the SMA policy statement in 90.58.020:

> "This policy contemplates protecting against adverse effects to the public health, the land and its vegetation and wildlife, and the waters of the state and their aquatic life, while protecting generally public rights of navigation and corollary rights incidental thereto."

In the history of shoreline development under the SMA, this protection hasn't been done very well because people did not fully understand, or did not care about the impacts of development on aquatic and riparian areas, floodplains, and wetlands. As a result, extensive shoreline areas have been degraded over the last 30 years. The current SMP Guidelines try to address this problem in two ways: protecting existing shorelines with a requirement of no-net-loss of ecological function, and improving the condition of degraded shorelines with a requirement for restoration planning. These three subjects - SMA policy, no-net-loss of ecological function, and restoration planning - are intimately tied together, as described in

[1] WAC 173-26-186(8)(d). The Shoreline Master Program Guidelines [chapter 173-26 Washington Administrative Code (WAC)] can be downloaded from: http://www.ecy.wa.gov/programs/sea/sma/guidelines/index.html Shoreline master programs must be consistent with the guidelines. RCW 90.58.090(2)(d); *Samson v. City of Bainbridge Island*, ___ Wn. App. ___, 202 P.3d 334 (2009). Despite their name, the guidelines are binding rules.

more detail below. A SMP and its supporting documents need to implement these requirements.

No-net-loss is typically thought of in terms of avoiding and mitigating the impacts of permitted uses and activities. However, not all project impacts can be mitigated, since developments and activities convert habitat into human use areas or converts land to more intensive uses. Nor does site specific mitigation address the continual creep of existing human development that gradually encroaches on native vegetation and wildlife habitat. Without a method of offsetting this effect, shoreline wildlife will get displaced or driven off, habitat and native vegetation slowly disappear, and shoreline waters get slowly degraded - even with project specific mitigation. In addition to the one time impacts of the conversion of native vegetation to development, development can also cause continuing adverse impacts on shorelines. For example, development located along a river with narrow or non-existent buffers will continue to adversely impact the shorelines due to unfiltered water pollution, noise, glare, and other ongoing adverse impacts. Restoration offsets these lost functions and the creeping degradation caused by new development, and helps maintain the condition of no-net-loss of ecological functions. It also addresses the 30 plus years of historic unmitigated degradation since establishment of the SMA. This is why restoration planning is needed.

The restoration plan "should be designed to achieve overall improvements in shoreline ecological functions over time, when compared to the status upon adoption of the master program."[2] One of the important functions of the shoreline master program restoration plan is to determine how the jurisdiction will accomplish the restoration of ecological functions over time in the face of historic and future degradation. This is indicated in the Restoration Planning requirements of WAC 173-26-186(8)(c), which states [emphasis added]:

> For counties and cities containing any shorelines with impaired ecological functions, master programs shall include goals and policies that provide for restoration of such impaired ecological functions. These master program provisions shall identify existing policies and programs that contribute to planned restoration goals and identify any additional policies and programs that local government will implement to achieve its goals. These master program elements regarding restoration should make real and meaningful use of established or funded nonregulatory policies and programs that contribute to restoration of ecological functions, and should appropriately consider the direct or indirect effects of other regulatory or nonregulatory programs under other local, state, and federal laws, as well as any restoration effects that may flow indirectly from shoreline development regulations and mitigation standards.

As indicated in the WAC above, a restoration plan needs to focus both on opportunities for restoration projects and on the regulatory programs.

Restoration Plans that have come out recently have been thorough in assessing shoreline conditions and opportunities for future restoration projects. Such an assessment can be used

[2] WAC 173-26-201(2)(f).

by future restoration project proponents in targeting locations and improving conditions that have been degraded in those locations. Thus they do well in addressing restoration in the context of nonregulatory restoration projects. However, they typically do not address the regulatory programs.

Most jurisdictions have vast areas of degraded shorelines; yet stand-alone nonregulatory restoration programs can only address a small fraction of those areas, and are thus incapable of achieving overall improvements in shoreline ecological functions over time. The most effective method of addressing these large degraded areas in a programmatic way is through the regulatory program, which works jurisdiction-wide in the course of redeveloping land, expanding existing uses, infill development, and urbanizing undeveloped land on a project-by-project basis. Such everyday development review will encounter degraded areas on a scale that is hundreds of times larger and more common than normal restoration projects, and it is these degraded areas that is the very reason for the restoration planning requirement.

To be clear, requirements for restoration should not be applied retroactively to the continued operation, maintenance, and repair of existing development – just to new development in degraded areas.

In short, the SMP plays a critical role in development review, and restoration needs to be incorporated into development review. Whether the word "restoration," "enhancement", or some other term is used is immaterial, as long as the intent is to improve degraded areas and thereby offset the adverse impacts of development and redevelopment.

The commonly understood first priority of shoreline regulation has been "protect what you have". This is traditionally done during the permit review process. Restoration needs to be incorporated into the permit process so that the priority becomes "protect what you have and improve what you can." Such a no-net-loss and restoration strategy would use the line of logic provided below, which integrates restoration efforts at the common smaller-scale permit level and the uncommon larger-scale restoration project level into a *comprehensive strategy*. Note that the first five bullets are about mitigation sequencing, and that it is only the last three bullets that are the focus of a typical Restoration Plan.

- Set the shoreline environments and the uses allowed within them to limit uses appropriately.[3]
- Avoid impacts for allowed uses when possible – meeting buffers goes a long way toward accomplishing avoidance, though not entirely.[4]
- Minimize impacts when avoidance is not possible.
- Determine the impacts that are being caused – it can be difficult and very expensive to determine the exact impacts, especially for homeowners and smaller project proponents, since a report is required. The restoration plan and other technical studies can help by establishing a natural resource baseline.

[3] See WAC 173-26-191(1)(d).
[4] *See* WAC 173-26-201(2)(e).

- Mitigate for impacts caused.
- Use restoration of degraded conditions to mitigate impacts – for example: removing structures or fill, removing sources of pollution, removing lawn at the waterline, etc. Judicious application of restoration also avoids the need to determine exact impacts and exact amounts of mitigation, which may be a basis for waiving a difficult and costly report.
- Require that degraded buffers be restored and given long term protection, so they are capable of protecting Puget Sound and marine waters, rivers, streams, lakes, and wetlands they are meant to protect.
- Where structures and uses already exist, and the critical areas or shorelines are degraded, provide restoration *as much as possible* to reduce the continuing and ongoing impacts of existing development, in addition to mitigating new development.
- As required by law, the mitigation must be tied to the impacts of the proposed development and the extent of required restoration would have to be roughly proportional to the extent of development being undertaken and its impacts.
- Make stand-alone restoration projects easier to approve and review by providing properly limited exemptions, etc. Note: Structural elements (such as hard stabilization, etc.) should not normally be considered restoration for an exemption, and should obtain a permit.
- Incorporate existing restoration efforts, programs, planned projects, and ongoing projects into the Restoration Plan.
- Make Restoration Plan opportunities and Inventory documents available to guide future proponents of restoration projects, and required mitigation.

Summary

In both the Restoration Plan and the SMP, the restoration goals and policies need to address restoration comprehensively - in both the regulatory program and in non-regulatory programs. The goals and policies then need to be translated into the SMP regulations.

Sur mure infurmatiun please cuntact:

Dean Patterson, Shoreline Planner, Futurewise. E-mail: dean@futurewise.org. Direct Cell 509-823-5481.

Or contact the Futurewise main office at 206-343-0681. Web: www.futurewise.org.

Submission 20:
From: Chris Davis <cdavis@TNC.ORG>
Date: Thu, 25 Mar 2010 01:12:54 -0400
To: Carol MacIlroy <cmacilroy@gmail.com>
Conversation: Shorelines
Subject: Shorelines

Carol and Jim –

Please accept my comments to your shorelines draft. Thanks for the chance to review.

Congratulations on producing an unusually salient and insightful analysis. Your summary prompted a number of thoughts for me. Figuring I'm probably not the prime audience and that your timeline for comments is likely past anyway, I'll only allude to some thoughts here. If you're interested in continued discussion, that would be great. I would be.

1. I was surprised that in your discussion of the challenges of NNL, you never addressed the question of what is meant by function. Perhaps this is confronted elsewhere and was out of the scope of your work. But ever since I came across the standard, I've been troubled by the notion of predicating the entire aim of the SMP on the concept. Function of what? – nearshore drift? Erosion/deposition? Primary productivity? Migratory or spawning habitat? – What if an action increases one function but diminishes another? How would you possibly aggregate the net effects, regardless the scale challenges. It's an obvious line of criticism and likely out of the scope of your work but I remain perplexed by it.

2. The bulk of your recommendations seemed aimed at regulatory actors which makes sense. I think there's a market for similar thinking, perhaps going further on possible remedies and ideas, among implementers and NGOs. I came away with several thoughts of how commissioning similar work on this and related topics might stimulate coordinated action among key non-governmental players in Puget Sound. I'd be keen to discuss your interest in that idea if you're game.

3. In many ways, the NNL principle cries out for a mitigation bank solution. You reference that and I know there's been much work on that by you, Dennis and others. I know less about how real that is and what practical hurdles exist. Moreover, I'm generally highly skeptical of most mitigation banking solution sets given their record in some regions. Nevertheless the Conservancy has at time pioneered new standards and

approaches to mitigation banking in other regions, particularly around grasslands and carbon in the Midwest. I'd like to know more of the challenges around this for Puget Sound shorelines and functions.

Submission 21:
From: Michael R Gallagher
Date: Fri, 26 Mar 2010 19:52:18 -0700 (PDT)
To: <cmacilroy@gmail.com>
Cc: David Cable
Subject: 4 March White Paper

Carol MacIlroy:

I am a property owner of a single-family home on a shoreline lot in San Juan County. I completed the Survey (found in the Island Guardian) and have read the above-referenced draft "**Protecting Puget Sound Through Shoreline Master Programs - Opportunities to Improve Protection**". I appreciate your making your e-address available for comment.

Overall, I am frustrated with the generalized language used in the paper, and the lack of specific definitions which one would expect to be used as a basis for your defining, and my undersanding, the problem with my living on the shoreline.

On Page 2 you state " **Ecology adopted the ambitious policy objective of achieving "no net loss" of ecological function as a cornerstone for the SMP updates.**" However, there is no specific definition of **No Net Loss of ecological function** in your Paper. **No Net Loss** has an origin with wetlands protection. Is it now to be applied to the basic human habitation of land without wetlands? And what is the legal strength of an **Ecology Policy Objective?** Sounds kind of fuzzy when considering the enormous economic value in shoreline property. There is also no specific definition of **Ecological Function,** nor of how it is measured to determine what or if loss has occurred; and if so, what level of mitigation is required.

You get around to acknowledging this lack of specifics on Pg 5: **"There needs to be a technical and policy approach to define no net loss of function and ensure policies and regulations protect these functions.**" (Rhetorical question: How is it that this process has gone on for so long with so much public and private time and dollars expended when the very basics of the problem remain undefined?)

I recognize that human habitation of land can result in habitat destruction, pollution, and other detrimental (visual) effects, but not always in every circumstance. There are already abundant laws and community regulations in effect to mitigate such problems when they are identified. Further, the scarcity and high values of waterfront land also serve to insure prudent use. It is the lack of specific problem identification and establishing tolerance levels that is frightning: that the government thinking may slosh over us to conclude that just placing a dwelling on a shoreline lot automatically creates an

intolerable loss of ecological function of some sort, and that only one-size-fits-all mitigation will resolve such undefined (but generally assumed to be there) loss.

My biggest concern is with my property being grouped in a "non-conforming " status by some top-down regulation based upon conclusions drawn from generalized ecological function studies. You state on Pg 7 **"The issue of non- conformity is not new or unique to shoreline planning, but is one of the issues that often confound shoreline property owners."** I think that statement is more true in terms of zoning, than ecological function non-conformity. Zoning case law history of non-conforming uses and structures is more than 100 years old, and has a strong basis in changing economic land values which are recognized in the growth of the community. (You might recall a picture of 2 new multi-story office buildings with an old single-family house between them as a visual example of both a non-conforming use/structure (house) and the changed land values (offices). But non-conformity due to No Net Loss of ecological function? Where is the case law on that level of land use regulation?

Finally, the examples are helpful, but two of them include the "bulkhead" issue, which is sort of a 'red herring'. Concrete bulkheads are not that numerous in the islands. A more helpful example would be the single-family home on a parcel without bulkheads or docks, and the specific verifiable reasons why it would create an intolerable ecological situation on one part of the parcel and not on another. In the riverbank example, there is no explanation for why the river bank setback went from 50 ft to 150ft. That's what is frustrating: there seems no recognition of the obligation to explain why such physical constraint regulations are necessary.

Thank you again for the opportunity to comment.

Michael Gallagher
17 March 2010

Submission 22:

From: Kit Rawson <krawson@tulaliptribes-nsn.gov>
Date: Mon, 29 Mar 2010 19:05:09 -0700
To: <cmacilroy@gmail.com>
Conversation: Comments on Shoreline management "white paper"
Subject: Comments on Shoreline management "white paper"

Carol -- Please find comments on the white paper attached. Thank you for giving me an opportunity to comment after the March 19 deadline. Also, congratulations on the approval of the Jefferson/Clallam/DOE watershed grant you are part of. Clearly, making the concept of no net loss more concrete is key to effective habitat protection. I hope you are successful in moving towards that goal. -- Kit

Attachment 1/1: Submission 22

March 29, 2010

To Carol Macilroy and Jim Kramer:

I have a few comments on the paper "Protecting Puget Sound through shoreline master programs: opportunities to improve protection". I don't know if these will arrive in time to contribute to document revisions, but I hope they will be helpful. Unfortunately, I and many others were notified about this only through an item buried in some notes from the Puget Sound Partnership's ECB sent out on March 9, when I was out of town. Northwest Indian Fisheries Commission staff and tribal ECB representatives did not red-flag it for us, which in hindsight was a mistake. It first flashed on my radar screen on Tuesday evening last week, several days after your stated comment deadline of March 19.

First of all, the document covers the background and purpose of the SMA well and explains in clear language what SMPs are and why they are being updated now. The list of issues: no net loss, protection/armoring, etc., is helpful in delineating the problems that property owners and regulators can face. The examples do help to illustrate these problems and even create some sympathy for the plight of some shoreline property owners. The list of key implementation issues is also informative, especially technical assistance and enforcement.

However, I also have some concerns. One thing that bothered me was the lack of mention of the tribes throughout the document. This omission may be deliberate since the tribes are not subject to the requirements of the SMA, which is a state law. However, Tulalip and a number of other tribes have their own shoreline protection laws, which they are in various stages of implementing. More to the point, though, is that both the state and the federal governments have obligations to the tribes that the SMA helps to support if it is implemented in the right way and that can be subverted if the SMA is implemented the wrong way. Also, the above notwithstanding, I am frankly surprised that you didn't proactively reach out to the tribes for help with reviewing and commenting on this material. The worst that could have happened is that you would have been ignored. But more likely, you would have gotten additional useful comments, received before the deadline, that would have helped improve your advice to DOE and shoreline planners.

A bigger concern is that the tone of the paper reminds me of a front page headline in the Skagit Valley Herald back in 1990: "Wetlands Threaten More Home Sites". When I read that twenty years ago, I was struck by how this statement was 180 degrees from the truth. It was, in fact, the home-sites-to-be (many of which have since been developed) that were threatening the wetlands, not the opposite, as the headline stated. Subsequently, the newspaper published a letter from me, pointing this discrepancy out. Although I received some positive feedback from habitat biologists and others, I'm not sure general attitudes have changed much in the ensuing two decades. Land use laws are still often seen mainly as a burden on individual property owners rather than a means to a necessary societal good.

So it is with this document. The comments you have already received from some "common sense" people notwithstanding, the white paper is overly focused on the problems, concerns, and inconveniencing of individual private property owners. The interests of society, i.e. all of us, in protecting and restoring the ecosystem functions that depend on intact shoreline processes is lumped off to the side as "environmental protection" or "nature", as if these are arcane goals of interest to only a few elite environmentalists. The goals of protecting or achieving no net loss of "ecosystem function" or "ecological function" are stated a number of times, but without any definition or explanation of why these are important. As a result, people are justified in being confused about what "no net loss" means since they have no idea what it is they are trying not to lose.

This paper, and the public's understanding of the SMA, would be much stronger if the positive goals of the SMA were the driver of the document rather than problems of individual shoreline property owners. You both have lots of experience encouraging people to articulate why they care about protecting and restoring the natural environment, and you have good knowledge of the science of environmental protection. I believe that you understand that we are talking about something much greater than environmentalists versus property owners here, but that doesn't come through in this document. The law requires that private property rights be balanced with the natural resources that are in the public trust. In this region, the law also requires that the resources that support tribal treaty rights be protected. This white paper fails to emphasize or even to articulate these positive goals of the SMA. I think they should be listed at the beginning.

As I said above, the list of "overarching ecological and land use issues" is a pretty good list of land use issues. But I think that a parallel list of ecological issues is missing. Here are a few ecological issues:

1) How do you measure what it is you don't want to lose so that you can evaluate whether or not you are losing any of it? Some of the salmon modeling work done since the Puget Sound Chinook listing gets at that. Some of the habitat trend assessment that the tribes are doing and that NOAA is doing at the request of the tribes also gets at it in a different way. The Partnership's accountability program should also contribute to this. It's a difficult problem ("The Impossible Will Take a Little Longer", as Jim reminded us during the Shared Strategy years), but we need to tackle it in order to implement the no net loss requirement of the SMA, and we are. I think it would help to articulate this point more clearly in this white paper.

2) Closely related to the above, how do we measure cumulative effects in a way that allows us to evaluate a program or activity as part of the set of all activities that affect the natural ecosystem? We do this in harvest management already, you know. If you go fishing, if I go fishing, none of us individually has a measurable effect on the resource. But our harvest management models do take the cumulative effects of all fishing into account, as well as we can with our current tools, allowing us to regulate individual actions based on their cumulative effect on the resource. This is what we expect (and require) from habitat management as well, but so far it is usually only individual projects that are evaluated in a vacuum. This is another fundamental ecological issue that has to be addressed, according to the requirements of the SMA.

3) Even if we could maintain current function and effectively evaluate cumulative effects, is that sufficient to achieve the ecosystem function that we need? Some ecosystem components are already degraded well below the point where they can support public resources or treaty-reserved resources. In other words, the current baseline is not good enough. If we don't point this out, who will? If not now, when?

I doubt very much that DOE or local jurisdictions will develop specific guidance or requirements related to the above three items on their own. Yet somehow we must find ways to address these three to implement the law. I think that this white paper would be much more useful if it clearly delineated the ecological issues raised by the SMA along with suggested approaches to resolving them. There are undoubtedly a number of other key ecological issues, beyond the three listed above, that should also be on the list. I hope that the three items I've listed could help get that list started.

In summary, there is a definite need for clarification of SMP update requirements and development of ways to do this better. This "white paper" is a start in that direction, but I think it could be greatly improved by focusing on the positive environmental goals of the SMA and creating a separate list of ecological issues to go with the list of land use issues.

Thanks for the opportunity to provide comments.

Kit Rawson
Conservation Science Program Manager
Tulalip Tribes, Treaty Rights Office
krawson@tulaliptribes-nsn.gov

Submission 23:

From: Kit Rawson

Date: Tue, 30 Mar 2010 08:03:28 -0700

To: Carol MacIlroy <cmacilroy@gmail.com>

Conversation: Comments on Shoreline management "white paper"

Subject: RE: Comments on Shoreline management "white paper"

In case you want me to "say more about" the positive benefits of land use planning, I ran across the attached testimony from a property-owning citizen (me, 15 years ago).

Attachment 1/1/: Submission 23

Attachment begins on next page.

Testimony of Kit Rawson

to the Skagit County Planning Commission

January 23, 1995

Members of the Planning Commission, my name is Kit Rawson and I reside at 1338 Carol Lane, Mount Vernon, Washington, in unincorporated Skagit County. As a property owner and a citizen of Skagit County I am here this evening to express my support for the draft Environment Element of the Skagit County Comprehensive Plan and my hope that this draft will be incorporated, unchanged, into the final comprehensive plan. As a relative newcomer to Skagit County (my wife and I moved our family here about seven years ago) I have to recognize that others will want to move here in the near future and that we must make provision for that growth. As a professional biologist I know that the natural environment of Skagit county is relatively healthy now, and I believe that growth can occur without jeopardizing that health if we properly take basic environmental principles into account. On the other hand, we will destroy our special treasure in short order if we ignore the factors that we know are necessary to maintain environmental health. As a parent I am very interested in preserving this special treasure for my children, their children, and for many generations to come.

At a recent public hearing in Everett a developer brought his grandson to the microphone and was successful in generating sympathy for the boy's possible difficulties in purchasing a house 20 years from now and how that house might cost more if the growth management policies of Snohomish county were too restrictive. Although, I am concerned about what my children and grandchildren will have to pay for housing, I am more concerned about the kind of environment we will leave for them to raise their families in. At this time of year my 9-year-old daughter watches flocks of swans fly overhead every morning as she waits for the school bus. She learns a lot from this activity

and she could probably verify a lot of the points made in the draft Environment Element: that healthy ecosystems require a mosaic of connected natural habitats, that wetlands are important, and that, indeed, nature's beauty can coexist with human beings, if we are careful and plan ahead. She also has learned the lesson that, up to this point, older people have cared enough to maintain a place for the swans in this world. I want my daughter's daughter to have the opportunity to learn the same lesson.

People have often made the point that land use planning is a form of restriction, limiting what an owner can do with their land. This point of view is incomplete as clearly shown by the broad support that zoning and other forms of reasonable planning have received over the years. Is the value of my property enhanced or diminished when a shopping mall is built on an adjacent parcel? Indeed, the fact that retail business have been restricted to commercial zones has made the residential zones where the customers live all the more livable and therefore more valuable. This has helped, not hurt, business, and undoubtedly improved the bottom line of many retailers. With growth management, and especially the Environment Element, we are extending this concept to a scale appropriate to the natural world we all want to preserve. Environmental health enhances economic health.

Finally, I want to remind the Planning Commission that you are charged with making decisions for the good of the community as a whole. That includes owners of large parcels of land, homeowners like me, and residents of the county who do not own property. I also urge you to consider future generations as part of the community you serve. What you decide here will profoundly affect the kind of world we leave to our descendants. I believe that the draft Environment Element of the Skagit County Comprehensive Plan is blueprint from which we can build a future which includes more

people, a robust economy, and a healthy natural environment in Skagit County. I urge you to incorporate the Environment Element into the plan as written.

Thank you.

Submission 24:

From: Nancy Tosta
Date: Tue, 30 Mar 2010 17:52:28 -0700
To: Carol MacIlroy <cmacilroy@gmail.com>
Conversation: Please distribute the attached email and document to Shoreline planners
Subject: RE: Please distribute the attached email and document to Shoreline planners

No worries Carol. I just filled it [the survey] out. I found some of the questions challenging to answer – so noted the perspective I was answering them from.

I might find some time to give you some comments on the document (as I sit listening to the Planning Commission discuss the SMP tonight). Thanks for the opportunity to engage and I look forward to further discussions. As a shore owning environmentalist I find myself frustrated and conflicted on a lot of fronts with the SMP process. I am amazed at how much animosity it has created in my community (Burien) and how much energy is being expended and already $$ on lawyers – it seems like such a waste, when a few different moves on the part of the city would have made it a more productive process.

Nancy

Submission 25:
From: Katie Anderson <kanderson@nwifc.org>
Date: Mon, 12 Apr 2010 14:12:52 -0700
To: <cmacilroy@gmail.com>
Cc: "James W. Weber" <jwweber@nwifc.org>
Conversation: NWIFC letter
Subject: NWIFC letter

Attached is a letter sent to Gordon White from Mike Grayum.

Katie Anderson
Receptionist
Northwest Indian Fisheries Commission
(360)438-1180

Attachment 1/1: Submission 25

Attachment begins on next page.

Northwest Indian Fisheries Commission
6730 Martin Way E., Olympia, Washington 98516-5540
Phone (360) 438-1180 www.nwifc.org FAX # 753-8659

April 12, 2010

Mr. Gordon White, Manager
Shorelands and Environmental Assistance Program
Washington Department of Ecology
PO Box 47600
Olympia, WA 98504-7600
gwhi461@ecy.wa.gov

RE: "Protecting Puget Sound Through Shoreline Master Programs; Opportunities to Improve Protection"

Dear Mr. White,

The Northwest Indian Fisheries Commission appreciates this opportunity to provide comments on the draft white paper entitled "Protecting Puget Sound Through Shoreline Master Programs; Opportunities to Improve Protection" (March 4, 2010 draft) developed by Carol MacIlroy and others.

Role of Indian Tribes

As authors and implementers of salmon protection and rebuilding plans both in Puget Sound and the Washington coast, the Commission's member tribes are vital partners in Washington's efforts to reverse the degradation of the state's shorelines. Unfortunately, at no point does the word "tribe" ever appear in the draft white paper. It would seem that the state's shoreline protection goals would be furthered by recognizing the mutual interests of the state and Indian tribes in improving shoreline protection. The Shoreline Management Act twice mentions the need to consult with tribes.[1] The absence of any consideration of the interests and activities of Indian tribes in the paper indicates that the paper is incomplete.

Relationship of SMPs to Related State and Federal Processes

There is no mention of how the SMP process fits into, or conflicts with, the goal of restoring the health of Puget Sound by 2020. There is no mention of how SMPs should support or dovetail with the efforts of local communities to comply with NMFS' reasonable and prudent alternative (RPA) for implementing the National Flood Insurance Program in Puget Sound. While NMFS' RPA initially focuses on Puget Sound, it is likely that the rules for development in floodplain and riparian areas will be broadened to include the coast and other state shorelines where activities may affect ESA-listed salmonids.

[1] *See* RCW 90.58.060(2)(a) and 90.58.570. *See also e.g.*, WAC 173-26-201(2)(a) (Local governments encouraged to work cooperatively with Indian tribes).

The draft white paper does not mention that SMPs are subject to ESA §7 consultation once they are approved by the WDOE. It would be wise to provide for coordination with NMFS during the development of SMPs to assure that they at least comply with the minimum requirements of the ESA. However, it is important to keep in mind that compliance with the requirements of §7 does not assure compliance with either salmon recovery plans or with treaty rights to take fish and shellfish reserved by Puget Sound and coastal Indian tribes.

Claims of Success at Achievement of SMA Goal of No-Net Loss

The draft white paper asserts that: "There have been many successes where counties and cities with Ecology's partnership have increased local protection of the ecosystem while meeting the needs of property owners and other community interests." (p.3). What are these successes? Are they examples of local governments achieving the no-net-loss objective or are they merely examples of local governments successfully implementing habitat improvement projects? If they are the former, it would help everyone to know what happened and how. If they are the latter, then the paper is misleading.

The draft white paper properly notes that accounting for no-net-loss needs to occur on at least three levels: the project, jurisdiction, and Sound-wide levels. Unfortunately, the "real-world" example that the paper uses to illustrate this issue (p.4) contains the unwarranted assumption that "the jurisdiction has adequate mitigation provisions written into their SMP." This assumes the existence of a key part of the solution. As illustrated in WDOE's Mitigation That Works report, more often than not, mitigation has failed to achieve the goal of no-net-loss.

The draft white paper cites policies employed by some local governments to implement no-net-loss, but concedes that "there are no agreed-upon indicators of function for local governments to use and consequently there is no commitment to monitor over time." (p.5). While the latter does not necessarily follow from the former, it is impossible to determine whether no-net-loss is being achieved if there are no agreed-upon indicators. WDOE and others who seek to determine whether no-net-loss is being achieved may wish to draw upon some of the salmon modeling and habitat assessment work that the tribes are doing.[2] NMFS may also be doing some habitat trend assessment.

One cannot assess whether no-net-loss is being achieved without assessing the cumulative impacts of numerous individual actions. It is noteworthy that this is already done in salmon harvest management. Salmon harvest management models take into account the effects of numerous individual fishers. Consequently, the actions of individuals are regulated based upon their cumulative effect on the salmon resource. Actions that affect shorelines should be addressed similarly.[3]

Exemptions from the Shoreline Management Act

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[2] Kit Rawson, biologist with the Tulalip Tribes, would be a good person to contact on this issue.

[3] Again, Kit Rawson would be able to further explicate how salmon harvest addresses cumulative effects and how the lessons learned there could be used to address cumulative effects stemming from land use activities.

The draft white paper notes that hard armoring is one of the most environmentally detrimental forms of erosion control and that this activity is exempt from SMP coverage where done to protect a single-family residence. As a solution, instead of proposing that the Shoreline Management Act be amended to remove this antiquated exemption, the draft white paper proposes private landowner education and incentives. The paper fails to cite any empirical data indicating that reliance on education and incentives is a strategy that is likely to result in success. In the absence of actual data indicating success and a commensurate commitment of funding from the Legislature, it is not reasonable to place any reliance on incentives as a tool for restricting hard armoring of shorelines.

With respect to agriculture and forestry activities, the white paper delicately tiptoes by noting that "[t]he exemption of most agriculture and forestry activities from local SMPs creates an impression that these activities are held to a lesser standard than residential development." (p.8). Actually, there is no question that agriculture is held to a lesser standard than residential development.[4] Unlike residential development, there is no permitting requirement for agricultural land disturbing activities in riparian areas that can result in significant impacts to water quality and fish habitat. Moreover, agriculture is either partially exempted or totally exempted from GMA critical area protection requirements by the vast majority of Washington counties. Nor is there any question that agriculture is a significant source of impacts to shorelines, water quality, and salmon habitat. As summarized by Spence et al. (1996):

> Although agriculture is not a dominant land use in the Pacific Northwest (approximately 16% of the total land area), alterations to the land surface are more severe than those caused by forestry or grazing, are generally permanent, and tend to involve repeated disturbance. Replacing natural grasslands, forests, and wetlands with annual crops leaves much area unvegetated during part of the year and dramatically changes the function of plants and soil microbes in the tilled areas. Repeated tillage, fertilization, and harvest permanently alter soil character, resulting in reduced infiltration and increased surface runoff. These changes alter seasonal streamflow patterns by increasing high flows, lowering water tables, and reducing summer base flows in streams. Channelizing to reduce local flooding and alter the geometry of cropped lands also facilitates more rapid routing of water to the stream channel, thereby increasing peak flows downstream. Sediment yield from agricultural lands is typically greater than from prairie, forest, or wetland areas, and can reduce the quality of spawning gravels and the abundance of food organisms. Where riparian shading is lost or summer base flows are reduced, stream temperatures are increased. Nutrients, insecticides, and herbicides are typically elevated in streams draining agricultural areas, reducing water quality. Channelization, snag removal, revetments, and removal of riparian vegetation reduce habitat complexity, decrease channel stability, and alter the food base of the stream. As a result, incised and channelized streams in agricultural areas typically support smaller fish and fewer fish species.[5]

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[4] Unlike agriculture, forestry is subject to a regulatory program that includes a permitting requirement, riparian protection, and adaptive management. Accordingly, it is neither fair nor accurate to lump the two industries together as the draft white paper does.

[5] Spence, B. C., G. A. Lomnicky, R. M. Hughes, and R. P. Novitzki. 1996. An ecosystem approach to salmonid conservation. Funded jointly by the EPA, U.S. Fish and Wildlife Service, and National Marine Fisheries Service. TR-4501-96-6057. Man Tech Environmental Research Services Corp., Corvallis, OR. Chapter 1, page 10.

The draft white paper implies that there is a lack of evidence indicating the impacts of agriculture by noting that it is "not clear" how agriculture is being "monitored to achieve the no-net-loss required of local governments." (p.8). Given the well documented impacts of agricultural activities in riparian areas, the failure of SMPs to protect against agricultural impacts likely results in undermining the efforts of other property owners. As the draft white paper states:

> Given that the overall goal for local government is to achieve no net loss of function, if these [agriculture and forestry] uses are held to a lower standard than no net loss they may ultimately create impacts that in the end are viewed as a failure of the local government SMP."

Draft White Paper at 8. More importantly, the failure of the SMP results in a failure to protect salmon and other public resources.

Treaty Right to Take Fish is a Property Right

The draft white paper goes on at length about the need to protect some property rights – generally those of waterfront landowners. The paper ignores the property rights of others. There is no mention that the treaty reserved right to take fish at all usual and accustomed places is also a compensable property right. *See e.g., Muckleshoot Indian Tribe v. Hall*, 698 F. Supp. 1504, 1512-13 (W.D. Wash. 1988), citing *Menominee Tribe v. U.S.*, 391 U.S. 404, 413 (1968). Nor is there any mention of tideland owners, both tribal and non-tribal, whose property interests are harmed by bulkheads installed to benefit upland property owners. To the extent that there is a need to discuss property rights, then the discussion needs to be fair and accurate.

While there is a lot of rhetoric from property rights groups, it simply isn't true that any and all land use restrictions amount to an unconstitutional taking of property rights. It is well established that a regulation that results in mere diminution of value of property does not necessarily constitute a taking.[6] Also, property rights are not being protected if the property rights of waterfront homeowners are being nurtured at the expense of the treaty-reserved property rights of Indian tribes.[7] In addition, while the state has the authority to condemn the property rights of waterfront property owners, only Congress has the authority to abrogate the treaty-reserved right to take fish. In sum, the draft white paper needs to fully and fairly explain the property rights interests involved and not merely summarize the views of the most vocal.

Potential for Inter-jurisdictional Cooperation

The draft white paper identifies three opportunities for inter-governmental collaboration: mapping channel migration zones, addressing climate change, and integrating SMPs and critical areas ordinances. These are good suggestions. Another opportunity that should be considered is integrating compliance with NMFS' reasonable and prudent alternative for implementation of FEMA's National Flood Insurance Program with SMPs and critical areas ordinances.

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[6] *See e.g., Penn Cent. Transp. Co. v. New York City*, 438 U.S. 104, 125 (1978).

[7] It is noteworthy that the treaty right to take fish is a shared right – treaty fishers may take 50% of the harvestable surplus and non-treaty fishers may take the other 50%.

Additionally, there may be opportunities for cooperation between state, local, and tribal governments where there are claims of authority by these governmental entities to regulate non-Indian fee simple waterfront property owners.

No-Net-Loss at the Parcel Level

The paper discusses the difficulties of achieving no-net-loss at the single-family development level (pp. 11-12). In essence, it concedes that, until in-lieu fee mitigation, mitigation banks, and improved off-site mitigation tools become available, it will be very difficult to achieve no-net-loss. What does this mean in the interim? Should treaty-protected (and ESA-listed) salmon bear the risk of inadequate mitigation or should those who trigger the impacts bear the risk and responsibility of assuring that those impacts are fully mitigated? Salmon and Indian tribes have already borne more than their share of this burden.

Incentives and Enforcement

The draft white paper correctly points out that many local governments are reducing their monitoring and enforcement budgets and that others never had enforcement staff to begin with. It also notes that "[w]ithout the consequence of enforcement and subsequent penalties, many landowners and people involved in development will not see the benefit of…land use restrictions." (p.12). As a solution, the paper states that "[t]here needs to be a combined strategy between the state and local governments for effective enforcement." (p.13). Unfortunately, the paper doesn't suggest what this strategy should be. It would be helpful if the authors outlined some options for consideration.

The authors appear enamored with the use of incentives as a means of getting waterfront property owners to properly manage their shorelines. Unfortunately, no examples are provided of where incentives have been successfully used to comprehensively improve shoreline management. If the use of incentives for this purpose is unprecedented, then this should be disclosed and measures for reducing risk should be identified. The Commission is aware that, at times, there are advantages to a system that leads with incentives, but follows up with enforcement to deal with those who refuse to do the right thing. While this approach may appear to be politically attractive, it is not cheap. Paying someone to do what, arguably, they ought to do on their own nickel may get the job done with less conflict, but it is more expensive. If one believes in personal responsibility, then it makes sense that those who live adjacent to the shoreline must be prepared to accept not only the benefits, but also the responsibilities that come with that property.

It would be helpful if the paper would propose some alternative strategies for inducing shoreline landowners to properly manage their lands. Alternatives discussed should include: maintaining the status quo; beefing up enforcement; and implementing the "carrot and stick" approach that the authors appear to favor. The discussion should also address the costs of these approaches; how they will be funded; and how well these alternatives further the goals of cleaning up Puget Sound, restoring salmon, and making shoreline property ownership more compatible with our beautiful and dynamic shorelines.

Thank you for this opportunity to provide comments. The Commission believes that improving management of shorelines is critical to restoring salmon. The Commission is not alone. We need to remember that NMFS has declared (in the context of reviewing FEMA's National Flood Insurance Program in Puget Sound) that current management of floodplains (and shorelines) by 122 communities of Puget Sound is so harmful to fish habitat that it jeopardizes the continued existence of Puget Sound Chinook, Hood Canal summer chum, Puget Sound steelhead and Southern Resident killer whales. Revising the Shoreline Management Act and Shoreline Master Programs will be key to turning this situation around.

Sincerely,

Justin R. Parker

for Mike Grayum
Executive Director

cc: Commissioners
Carol MacIlroy