

San Juan Initiative

Issue Paper for July 24th Meeting

The San Juan Initiative continues to make substantive progress in implementing the recommendations endorsed by the County Council in December 2008. In recent months, we have developed web content to inform property owners (to be previewed at the meeting), mapped the feeder bluffs of San Juan County, and the County Council has approved an additional fee for inspection of shoreline structures.

As a continuation of gathering information to inform the Critical Areas Ordinance update and advance other recommendations, SJI staff has identified the following three policy issues to be addressed by the Policy Group:

1. Buffer Width and Vegetation Retention
2. Process of Defining Threatened Structures
3. Measuring Success

This paper provides background on these three issues and identifies the decisions necessary to move forward. The options prepared by staff are identified below. These options are not recommendations of the Puget Sound Partnership or any other state agency. They are options for consideration as part of the San Juan Initiative pilot process.

Section 1: Buffer Width and Vegetation Management: Background and Options

Overview

There are many benefits to natural buffers of undisturbed vegetation along marine shorelines. They include creating shade and temperature control for spawning forage fish, preserving terrestrial insects which are a source of food for fish, providing habitat for birds and other animals, and maintaining slope stability and water quality treatment. The value of these functions varies and depends on different shore types, habitat features and species needs. For example, trees adjacent to a forage fish spawning beach function in different important ways than a tree on a plunging rock shoreline. The size of the buffer and the type of vegetation are also significant in providing environmental benefits.

The buffer and vegetation management approach decided on by the Policy Group in previous meetings changes the objective of the County's regulations from an aesthetic goal to one that maintains shoreline ecological function. The Policy Group, in deciding to embark on this approach, stated the importance of maintaining the property owner's ability to create and maintain views as well as access the shoreline. The Policy Group supported the development of both a prescriptive standard and a process for unique situations where prescriptive standards are not appropriate.

Making a strong recommendation on buffer widths and a vegetation management program is timely because of the County's current process to amend its Critical Areas Ordinance and Shoreline Master Program regulations. We hope to have a joint County staff/San Juan Initiative option on buffer widths and vegetation management to put forward to the County Council and the public during this fall prior to the Planning Commission review. The Planning Commission will deliberate this fall.

The issues of buffer size and vegetation management are separated for the Policy Group's consideration. A buffer is the area set aside to protect ecological function and goes from the top of bank to the development. Vegetation management describes how the trees and ground cover will be protected within the buffer area and down to Ordinary High Water.

A. Buffer Width: Background and Options

The buffer distances are measured from top of bank to the developed area. The developed area includes "any man made change" (proposed CAO language) and is quite broad. The size of the buffer is generally determined by three factors:

1. slope
2. vegetation
3. type of shore

On rocky shores, the buffer area's predominate purpose is to protect water quality, wildlife corridors and any food provided for aquatic species. Buffer width on rocky shores is adjusted based on slope due to the limited soil available and the decreased capacity of the soil/vegetation to clean water as the slope increases. Along beaches and bluffs, the buffer area protects additional nearshore processes, including moderation of shoreline temperatures and protection of natural sediment and available nutrients. Buffer widths on beaches and bluffs vary based on vegetation and the presence of feeder bluffs, and slope is not considered. Slope was not considered on beaches and bluffs because there were no instances found (after a cursory review of shorelines) where a beach or bluff had greater than 10% slope landward of top of bank. The staff presented buffer option for feeder bluffs ensures an adequate setback to allow for erosion over time.

In determining the setback on rocky shorelines, staff assumed a few characteristics about run-off and existing water quality protection measures already in place. Runoff enters the buffer as overland and sheet flow. As the water flows through the buffer, the type of vegetation affects the manner in which that water is absorbed or cleaned. A model from Rutgers University was reviewed to develop buffer widths option on rocky shorelines. After reviewing 650 different studies, Rutgers University¹ developed an equation that can be used to size water quality buffers for streams and drinking water supplies based on the slope and type of vegetation. In their analysis, they found that a travel time of approximately 200 seconds through vegetative filter strips is necessary to allow sediment and associated pollutants to be removed from overland flow. This model was not designed for Puget Sound marine shorelines but does provide a correlation between the ability of different vegetation types to filter water at various slopes.

In addition to the buffer, stormwater quality is being addressed through Stormwater Best Management Practices (BMP's). BMP's are implemented in conjunction with upland development with the aim of preventing residential and business water pollutants from entering Puget Sound and other water bodies. Proposed regulations prevent the use of pesticides, fertilizers, or building materials containing zinc or copper within 200 feet of the shoreline.

One of the challenges of determining appropriate buffers for the marine shoreline is that much of the science addresses freshwater systems. That science is then applied to the marine shoreline. There are studies showing the importance of shade to forage fish, the importance of vegetation to bank stability, and the importance of food sources dropped from shoreline vegetation for salmon and other aquatic species. Although existing science does not provide precise information on what size of buffer is adequate to protect the functions of the various shoreline types, we do know that a vegetated buffer is beneficial. The degree of buffer is a policy question.

The Policy Group recommended allowing the width of buffers to be reduced on parcels with less than 200 feet of shoreline frontage. On these parcels, if the existing homes on adjoining waterfront lots are closer than 50 feet on each side, then a buffer width equal to the average setback of existing homes would be allowed.

The table below explains staff's preferred option for Policy Group consideration based on the information presented above. The buffer size varies due to the presence or absence of a "well distributed forest of trees and undisturbed soil/duff layer." This term is defined in the next section of this paper under vegetation management. This option also proposes that feeder bluff buffers be adequate to ensure a 100-foot vegetated

¹ *Buffer Strips to Protect Water Supply Reservoirs and Surface Water Intakes: A Model and Recommendations*. Cook College, Dept. of Environmental Resources, New Jersey Agricultural Experiment Station, Rutgers - The State University of New Jersey, New Brunswick, New Jersey, 1989 (143 pp).

buffer after 75 years of projected erosion at current erosion rates. If erosion rates are not known, 150 feet of buffer is recommended².

The Marine Resource Committee recently sent a Critical Areas Ordinance minority report to the County in which they are recommending a minimum of 150 feet for all shorelines. The minority report is attached to this paper. County Staff’s “CAO Background” paper also has information about setbacks on pages: 3, 5, and 9. Both of these documents were sent to you and are posted on the Initiative website: www.sanjuaninitiative.org, documents tab.

**Staff Options:
Buffer Width for Areas with Rocky Shoreforms, Non-erodible Substrate³**

Average Slope Across Buffer (from top of bank)	Well distributed forest with trees of all age classes and undisturbed soil and duff layer	Non Forested
0-5%	75 feet	150 feet
6-10%	110 feet	
10% or greater	150 feet	

Buffer Width for Beach Shoreforms and Pocket Beaches: Soft, Erodeable Shores²

Shoreline Type	Well distributed forest with trees of all age classes and undisturbed soil and duff layer	Non Forested
Beach ⁴	100 feet	150 feet
Feeder Bluff	150 feet	

Does the Policy Group support these buffer width options?

² Johannessen, J. and A. MacLennan. 2007. Beaches and Bluffs of Puget Sound. Puget Sound Nearshore Partnership Report No. 2007-04. Published by Seattle District, U.S. Army Corps of Engineers, Seattle, Washington. Erosion rates estimated in Northern Puget Sound at 2-10 cm /yr. Staff used the highest end for estimating 25 feet of erosion plus a 25 foot margin of safety after 75 years,

³ Shipman, H. 2008 “A Geomorphic Classification of Puget Sound Nearshore Landforms.” Puget Sound Nearshore Partnership Report NO 2008-01. Published by Seattle District, U.S. Army Corps of Engineers, Seattle, WA.

⁴ Protecting Neashore Habitat and Functions in Puget Sound: An Interim Guide. October 2007. Environvision, Herrera, and AHG.

B. Vegetation Management: Background and Option

Staff has struggled to find an approach to vegetation management that would meet the goals of protecting the environment while providing property owners flexibility and County planners administrative ease. The County will not have, in the near term, adequate staffing or expertise to assist property owners in managing their vegetation or answering in-depth all the questions about the best approach to protect shoreline vegetation. The Community Development and Planning office is challenged to enforce and administer complex regulations partly due to limited staff, high staff turnover, and a lack of understanding about existing site conditions. The Conservation District would like to provide these services but does not have the technical capacity to meet even the current needs of property owners. The Community has a strong ethic of stewardship and is more likely to respond positively to an incentive-based approach than to additional regulations that cannot -- and likely will not -- be enforced given the lack of County capacity. Finally, there exists in the community strong local expertise in the private sector to help property owners make wise decisions and appropriately steward their shoreline vegetation.

Statement of Intent

The purpose of the vegetation management proposed options are to ensure the protection of ecological function and support property owners in creating views and shoreline access. Filtered views from the main structure to the shore are allowed and maintained so long as the overall function of the shoreline vegetation is maintained.

Option: Prescriptive Standard for Vegetation Management within Shoreline Buffer Areas

The staff has had several discussions about how to develop a vegetation management approach with the trades group and the County staff. This included surveying actual sites on Henry Island with community members and Conservation District staff. Based on our research and these discussions, we prefer an approach that has been used in the State of Maine to protect their lake and marine shorelines. We applied this method in the field with Steve Schramm (a local arborist), Teri Williams and Jonathan White. We tested the vegetation management plan on four properties: three rocky shorelines, and one feeder bluff. The properties also had different types of vegetation. Two were thick with brush and two had mature forests. We used three criteria:

1. Ease of use

2. Ability to meet property owner's need for views
3. Retention of ecological function of trees

We found the method was usable with two people and a tape measure. On all the properties, very few trees would be removed and the method resulted in a filtered view that could conceivably be less than a property owner might want. We identified a few potential problems with the method. The first is that the property owner, with a savvy moving of the squares, could remove far more trees than is prescribed by careful adherence to the method. This problem can be solved by requiring that a right angle be created by either the Ordinary High Water/property line or corner of development/property line. The right angle is then the beginning of the grid. The method is easier to use when a survey of the property has been completed, although this may be onerous to require. In order for this method to work effectively, the applicant would need to assume the future location of the home, since they would be drawing a grid from Ordinary High Water to the edge of development.

Limited pruning of tree branches on the bottom third of the tree is permitted. Dead branches are permitted to be pruned without restriction. Understory and shrubs less than two inches in diameter may be hand pruned, shaped or thinned but shall not be removed. Shrubs may be trimmed to a height not less than five feet. Removal of trees shall be accomplished with minimal disturbance of soil, and stumps shall remain in the ground.

This option is designed to maintain a well-distributed stand of native vegetation and provide guidance for how to maintain views and access while protecting ecological function. A well-distributed stand of trees ensures a diversity of species, age, and other vegetation and is defined by a "point system." This system, which assigns values to trees down to two (2) inches in diameter, requires that a certain total value of trees be maintained in the 25-foot by 25-foot squares (625 square feet).

The tree values are based on tree diameters and are as follows:

Diameter of Tree at 4-1/2 feet above Ground Level (inches)

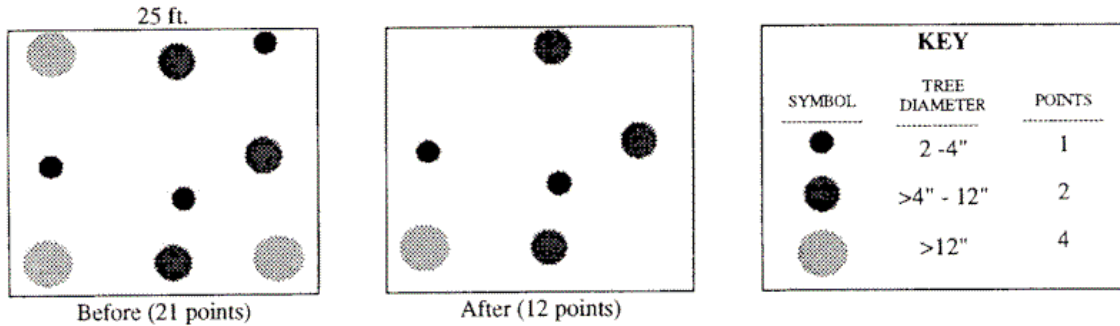
- 2-4 inches = 1 point
- 4-12 inches = 2 points
- More than 12 inches = 4 points

Adjacent to rocky, beach and bluff shorelines, a rating score of 12 or more points must be maintained for each 25-foot by 25-foot square. The point system was created to provide a more enforceable standard for tree-cutting activities within the buffer area while allowing for views and access.

As an example of the above rating system, if a 25-foot by 25-foot plot adjacent to a shoreline contains three (3) trees between 2 and 4 inches in diameter, three (3) trees between 4 and 12 inches in diameter, and two (3) trees over 12 inches in diameter, the rating score is:

$$(3 \times 1) + (3 \times 2) + (3 \times 4) = 21 \text{ points}$$

Thus, the 25-foot by 25-foot plot contains trees totaling 21 points. Trees totaling 9 points (21-12 = 9) may be removed from the plot provided that no cleared opening is created (no opening in the canopy greater than 250 square feet). The figure below is just one example of allowable cutting under the point system.



Administration of the Standard

There are several ways the proposed standard could be administrated, ranging from high oversight and cost to low oversight and cost. The most restrictive would be to prohibit cutting until a vegetation management plan is approved by the County. This is likely to cost something (approx. \$500) and will require all property owners who want to cut a tree to submit a plan. At the other end of the spectrum is not requiring the submission of a plan but expecting that property owners will follow the standard. A third alternative is to have the Conservation District work with the property owner to develop a shoreline vegetation management plan consistent with the prescriptive standard. The plan is then recorded with the County and can be inspected and enforced. In all three alternatives we assume the County’s right to inspect and enforce. This third approach is a desirable option because it involves the least amount of bureaucracy and the most amount of technical expertise at the lowest cost.

Standard for Access to Shoreline

It is important to prevent runoff from funneling directly along a pathway to the water. For this reason, a footpath, not to exceed (5) feet in width as measured between tree trunks, is allowed provided that a cleared line of sight to the water through the buffer strip is not created. It is important that the footpath meander so that the runoff is trapped by vegetation and natural depressions within the buffer strip.

Policy Group Questions

- A . Do you support the standards for vegetation management and shoreline access?
- B. Which administrative approach does the Policy Group prefer?

Exception Process to Prescriptive Standard

Due to site conditions, the property owner may feel that an alternative solution would be more protective of native forest and undergrowth than that allowed under the prescriptive standard. In these cases, the property owner may elect to submit a Critical Area Site Plan (CASP) for approval. CASP is described in the new CAO regulations. The CASP is a site-specific process that allows greater flexibility as long as the ecological functions are achieved.

Section 2: Process and Definition of Threatened Structures

Overview:

The San Juan Initiative is recommending a new standard for placement of hard shore armoring along beaches and bluffs. The new standard would only allow the placement or replacement of hard shore protection if the main structure, accessory dwelling structures, roads, septic systems and driveways are shown to be threatened by erosion in a three year time frame. This new standard has been vetted by the public and is supported by the community. The Policy Group directed staff to provide a robust definition of “threatened” based on science and develop a process for determination that could be implemented by County staff.

The San Juan Initiative received a grant from the Puget Sound Partnership to help develop an issue paper with a technical addendum outlining the important issues to consider in defining a structure as threatened. A workshop of regional planners, engineers and policy makers was convened to inform that process. The Initiative hired Jim Johannessen of Coastal Geologic Services to develop the technical addendum. The issue paper and the technical addendum are attached as appendices to this paper.

Carol MacIlroy’s paper, “Creating a Workable Standard for Allowing Shoreline Stabilization Structures on Beaches and Bluffs,” provides an in-depth discussion of the issues that are summarized here. If, after reading the attached papers, there are additional issues that the Policy Group members would like to address, please raise them at the July 24 meeting.

Staff prefers the following approach for the County to determine if a property is threatened, and, if so, how to proceed with finding a solution.

1. Structures to be Protected:

Option:

“Structures considered for shoreline protection include: primary parcel structure, accessory dwelling units, (includes commercial, industrial or residential), septic system, public road, public infrastructure like pipes or utilities, and private driveways/roads where relocation is not feasible. Due to non-significance or inherent location in a risk zone, the following are not generally considered worthy of protection: stairs, tram, trail to the beach, bathhouse, deck/patio, fence, stormwater facility, sheds, trees, and landscaping.”

2. Determination of “Threatened”

Option:

Coastal Geological Services explored various technical approaches. Their research and experience with the geology of Puget Sound and the state of science in this region suggests that the most appropriate technical approach is to use “documented erosion rates over a long enough timeframe to dampen the effect of short-term changes.” The recommended time frame is 30--40 years. Coastal Geologic Services also recommends using an additional hazard assessment process to ensure that the structure is not exposed to landslide hazards potentially not captured in the erosion rate methodology. If the erosion rate and additional hazard assessment suggest that harm will occur to the structure within a 3--year timeframe then the property is deemed “threatened”.

1. Process for Conducting Report

Based on discussions with experts across Puget Sound, there are two components that will make the implementation of a threatened structure more successful. One is requiring specified elements be addressed in a technical report and the other is changing the process for developing the technical report.

Option:

To ensure that a thorough assessment of the site has been conducted and to provide the basis for a more consistent application of the policy for hardening the shoreline, the following elements of a technical report are critical to require

as part of the determination of threatened. These are taken from the recommendation section of the technical addendum with minor modifications based on policy feedback.

- Describe the exact factors which are causing the structure to be threatened. Determine which option is least invasive to the function of the near--shore environment while still preventing damage or loss of property.
- Structure relocation should be considered a viable option, especially as rising sea levels and on-going maintenance and repair are issues.
- All anthropogenic factors should be addressed, such as drainage, landscaping, and so forth.
- Soft solutions that could reduce risk, such as dewatering, re-vegetating the slope, and placement of beach nourishment and/or large woody debris, should be evaluated and integrated into a solution.
- If the above solutions are not adequate or feasible, then the minimal bulkheading could be considered to protect only the threatened structure, not the entire property.
- Mitigate impacts from alterations to functions and processes as they relate to the site and to the landscape (drift cell).

Option:

To reduce the problem of “dueling experts,” it is the staff presented option that the County amend County Critical Areas Ordinance/Shoreline Master Program to require shoreline property owners to pay the County to hire a third party expert to determine if structure is threatened. It is the staff presented option that San Juan County have a pool of qualified consultants that the County pays from applicant fees. (Desired consultant qualifications are discussed in section 5.4 in the Appendix.) The report work would be conducted in a manner that is removed from both the County and the applicant. The qualifications of the pool of consultants would be transparent and consistent.

Policy Group Questions:

- A. Does the Policy Group support the definition of what can be protected and the technical approach for determining a “threatened structure?”
- B. Does the Policy Group support the described elements for conducting the technical report?
- C. Does the Policy Group support hiring a third party paid for by applicant fees?

Section 3: Measuring Success

Overview:

Staff has incorporated the key suggestions from the Policy Group Meeting of May 28th regarding how success of the San Juan Initiative could be measured. The changes recommended by the Policy Group can be summarized as follows:

1. Make the monitoring simpler.
2. Tie the monitoring to the ecological outcomes and data that has already been collected.

Staff has developed an overarching suite of objectives with specific measurable outcomes over three time horizons, near term (December, 2009) medium term (December 2010) and long term (December 2012). Staff is still working on developing the strategy and work plan for how the monitoring will occur, who will be responsible, and what it would cost.

Overall Objectives for Success

1. More vegetation is retained in the development of new homes.
2. There are less bulkheads/armoring along feeder bluffs and soft shore beaches.
3. Builders, realtors, community leaders, County officials and the public believe there is a strong working relationship in which each party is respected for their role in protecting the environment.
4. Property owners have easy access to technical assistance for how best to maintain views, create access to the shoreline, and protect the shoreline.

Monitoring Future Outcomes

By December 2009

1. CAO passed with tailored approach and other key SJI recommendations for shorelines incorporated into County code.
2. New property owner recognition program initiated by the Conservation District that builds on the Shore Steward program with Beachwatchers.
3. Post-construction inspections are occurring.
4. Web-site is operating and gets frequent hits.
5. An on-going structure for implementation and monitoring is in place.
6. Puget Sound Partnership is contributing funding for implementation and monitoring of the San Juan Initiative recommendations.

By December 2010

1. No new bulkheads have been constructed without a permit, and a new soft shore beach project or threatened structure relocation has been completed.
2. 75% of all exemption and substantial development permits have had post-construction inspections to ensure compliance with permit.

3. Riparian vegetation in the case study area has been increased by 2% or sample of residential properties with new homes shows intact buffer vegetation
4. 20 properties have received the green stewardship recognition from the Conservation District

By December 2012

1. No new bulkheads have been constructed since the end of 2010. There are 5 new soft shore projects or threatened structure relocations completed.
2. Riparian vegetation in the case study areas has not decreased below 85% on any individual property.
3. 50 properties have received the green stewardship recognition.
4. Surveys of builders, property owners and County staff demonstrate that they are positive about their working relationships and feel their efforts are successfully developing and maintaining properties in a manner that protects ecosystem functions.

Policy Group Questions:

- A. Is anything missing that is critical for you to feel Initiative has achieved its goals?
- B. What refinements should be made to the measures for success?