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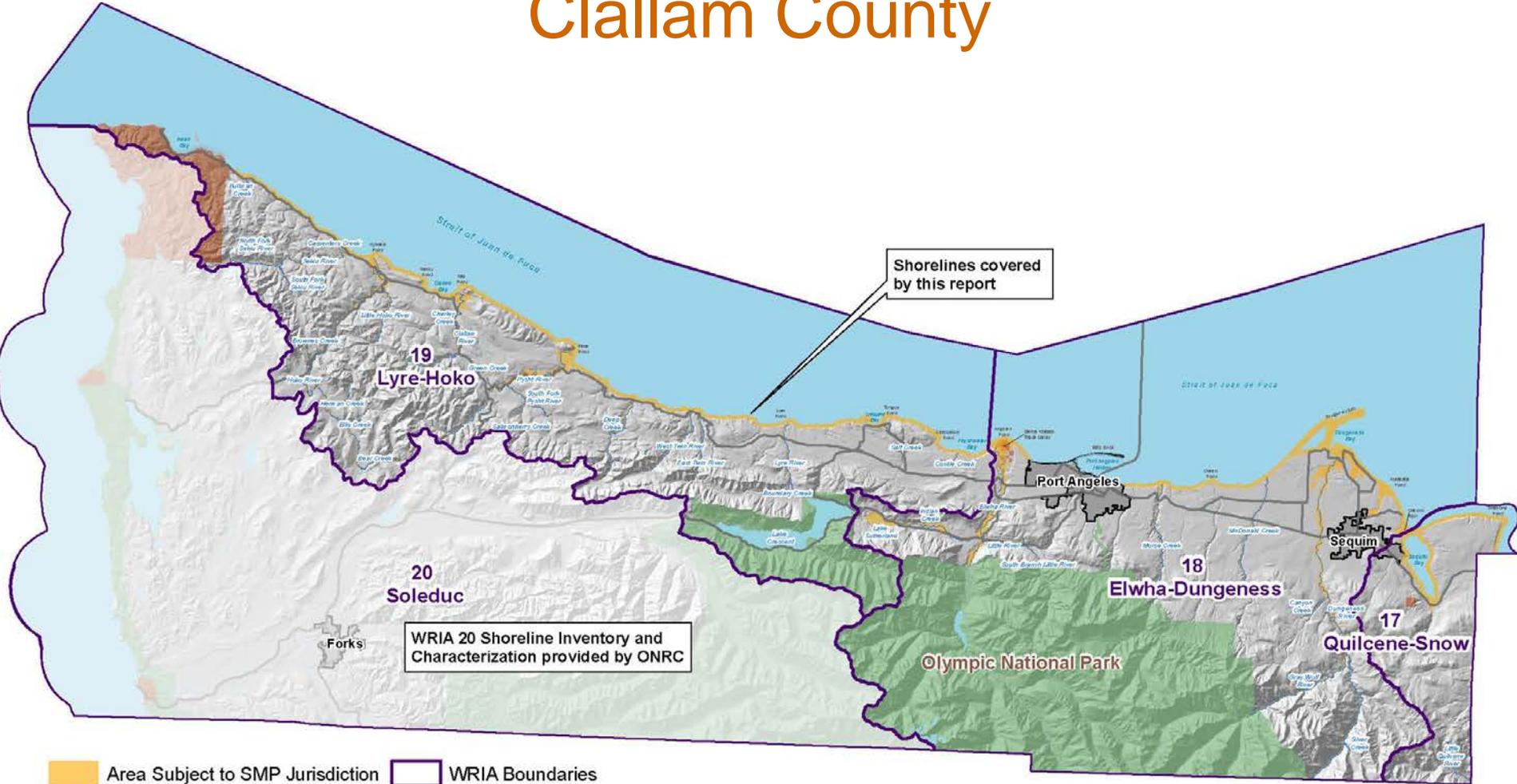
Measuring No Net Loss

Initial Findings from Clallam County

Summer 2012
Shoreline Planners
Meeting



Clallam County



Shorelines covered by this report

WRIA 20 Shoreline Inventory and Characterization provided by ONRC

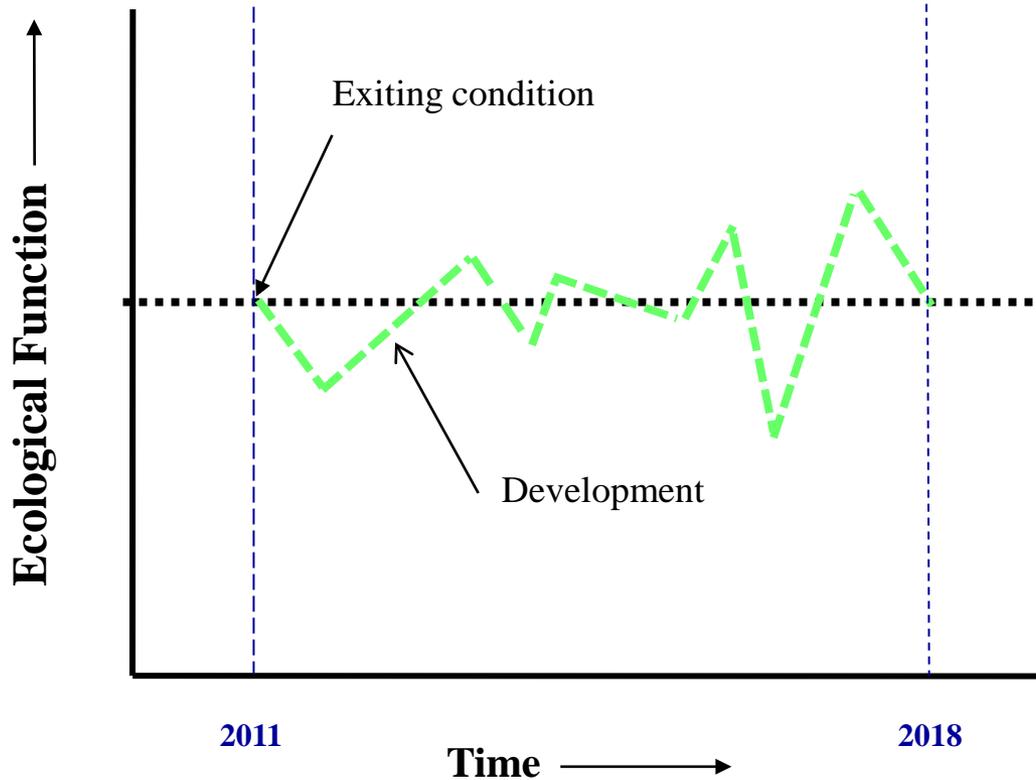
- Area Subject to SMP Jurisdiction
- WRIA Boundaries
- SMP Update Streams
- City Limits

Presentation Overview

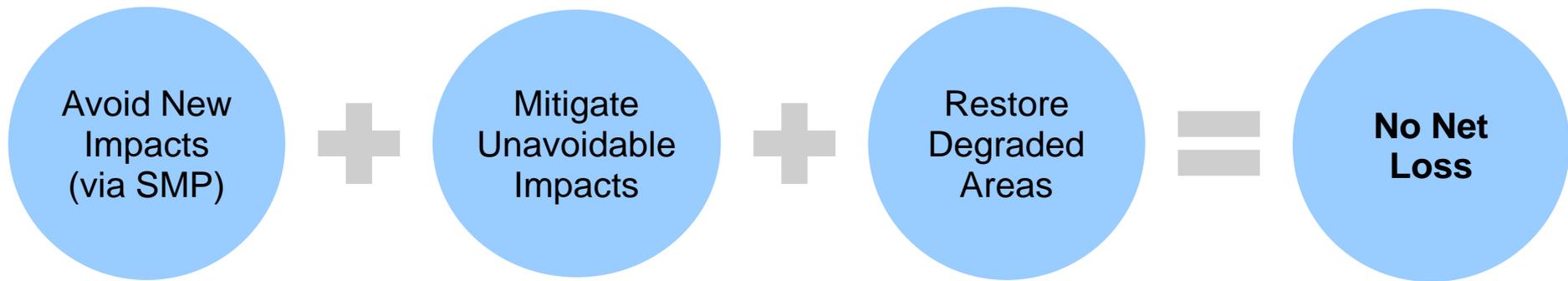
- What is No Net Loss?
- Background on Clallam County's EPA grant
- Steps for assessing NNL
- Examples for marine shorelines
- Ensuring NNL moving forward

What is No Net Loss?

As shoreline development occurs, ecological functions stay the same (or are improved) over time



It's simple...right?



Some Complexities:

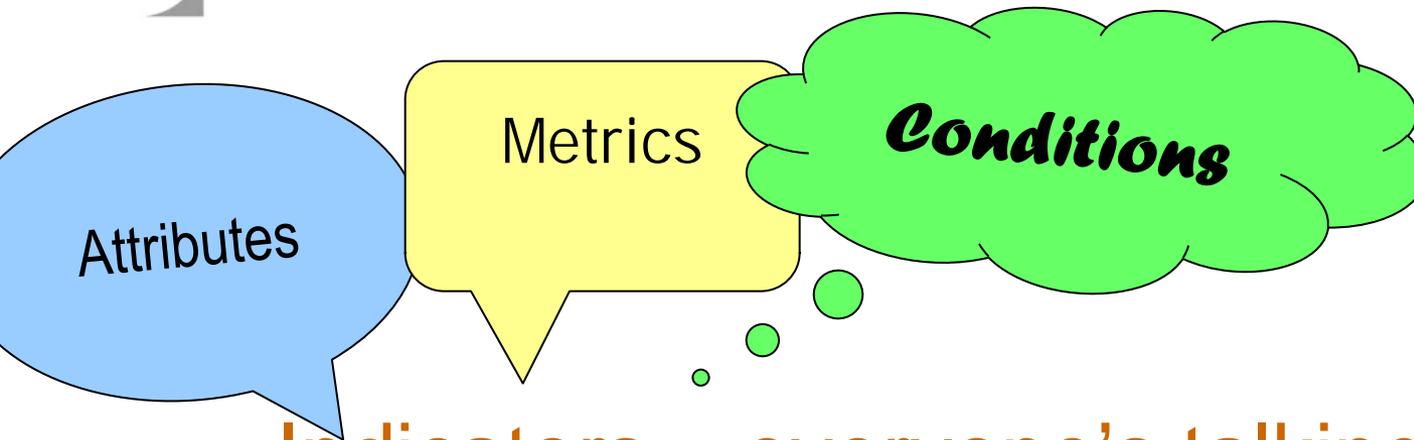
- How do you measure ecological functions?
- At what scale do you account for gains or losses?
- How do you segregate the effects of SMP development from other activities that affect ecological functions?
- Can you have development and still achieve no net loss?
- Can/should we rely on restoration when funding for restoration is limited and uncertain?
- How do NNL and salmon recovery fit together?

Goals of Clallam County's EPA Grant

- “Measure” shoreline conditions at the parcel and reach scales
- Document how future development would affect shoreline conditions over time
 - *Where, how much, what type?*
- Link potential changes in the shoreline ecology to specific SMP management decisions and tailor the SMP to achieve desired outcomes
- Identify restoration actions to offset specific functional losses (if any)
- Share methods and strategies with others

Measuring Functions





Indicators – everyone’s talking about them

- Puget Sound Partnership
- Willamette Partnership (EPA)
- Oregon Division of State Lands (ORWAP)
- Ecology (Chapter 4 - shoreline handbook)

Considerations for Selecting Indicators

- Data readily available (now and in the future)
- Relationship between indicators and shoreline functions
- Correlation between indicator and SMP decisions
- Measured with reasonable accuracy at reach scale
- Build from Ecology & PSP indicators
- Reflect conditions of importance or value

Two Kinds of Indicators

- Indicators of health



- Indicators of impairment (or alteration)



Metrics that Indicate Shoreline Health

- Percent of shoreland mapped as feeder bluff
- Percent of aquatic area supporting submerged aquatic vegetation (kelp)
- Percent closed canopy forest within 200 feet of the ordinary high water line
- Forage fish suitability index

Metrics that Indicate Shoreline Alteration

- Percent of shoreline classified as modified
- Percent of feeder bluffs with armoring
- Percent of armoring outside feeder bluffs
- Number of overwater structures

NNL Assessment Steps



Step 1. What do we care about?

Maintaining shoreline ecological functions by protecting habitat forming processes.



Step 2. What are the components of healthy shorelines? – **Marine Shorelines**

Nearshore Functions

Sediment supply
Sediment transport
Water quality
Tidal hydrology
Freshwater input
LWD/organic inputs
Fish/Wildlife habitat
Species movement

Components

Feeder bluffs /
sediment sources
Riparian vegetation
Aquatic vegetation
(eelgrass, kelp beds)
Pocket estuaries /
stream mouths
Salmon (stock status)
Forage fish

*Selected as part of
Inventory &
Characterization*

*Consistent with
regional efforts*

- *PSP*
- *PSNERP*
- *Ecology*

Step 2. What are the components of healthy shorelines? – **Freshwater Shorelines**

Stream Functions

Sediment supply /
transport

Substrate mobility

Water quality

Water Flow (transfer
and storage of water
between channel,
floodplain, and aquifer)

LWD / organic inputs

Fish / wildlife habitat

Components

Riparian vegetation

Bank condition

Floodplain / channel
migration zone
connectivity

Salmon (stock status)

*Selected as part of
Inventory &
Characterization*

*Consistent with
regional efforts*

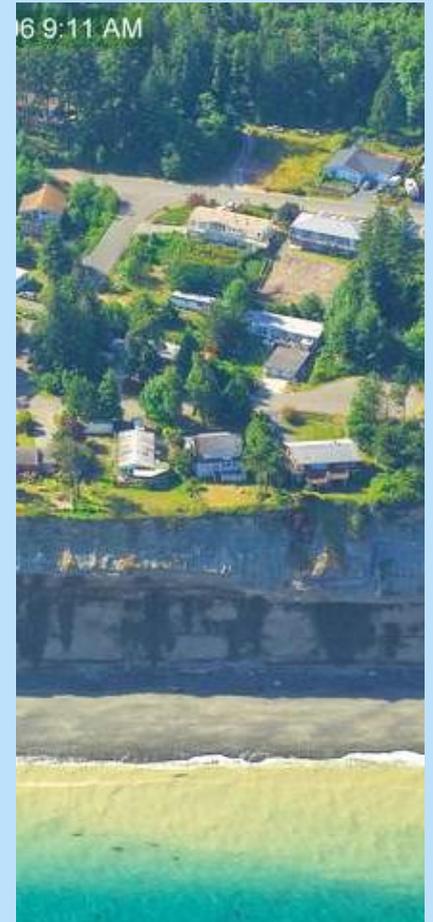
➤ *EPA*

➤ *Ecology*

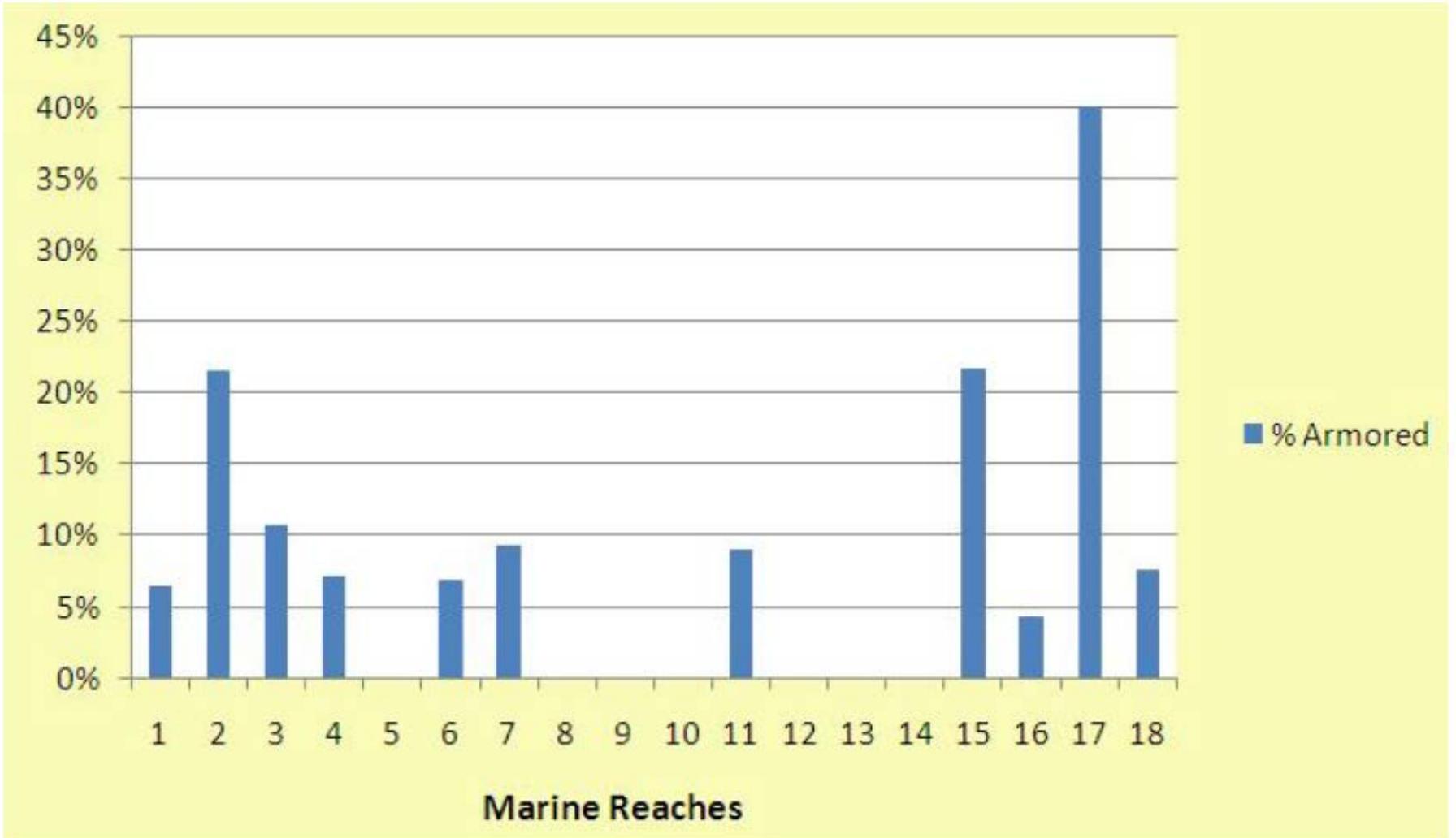
Step 3. How healthy are the shoreline components now?

Example Reach – Green Point (MR-6)

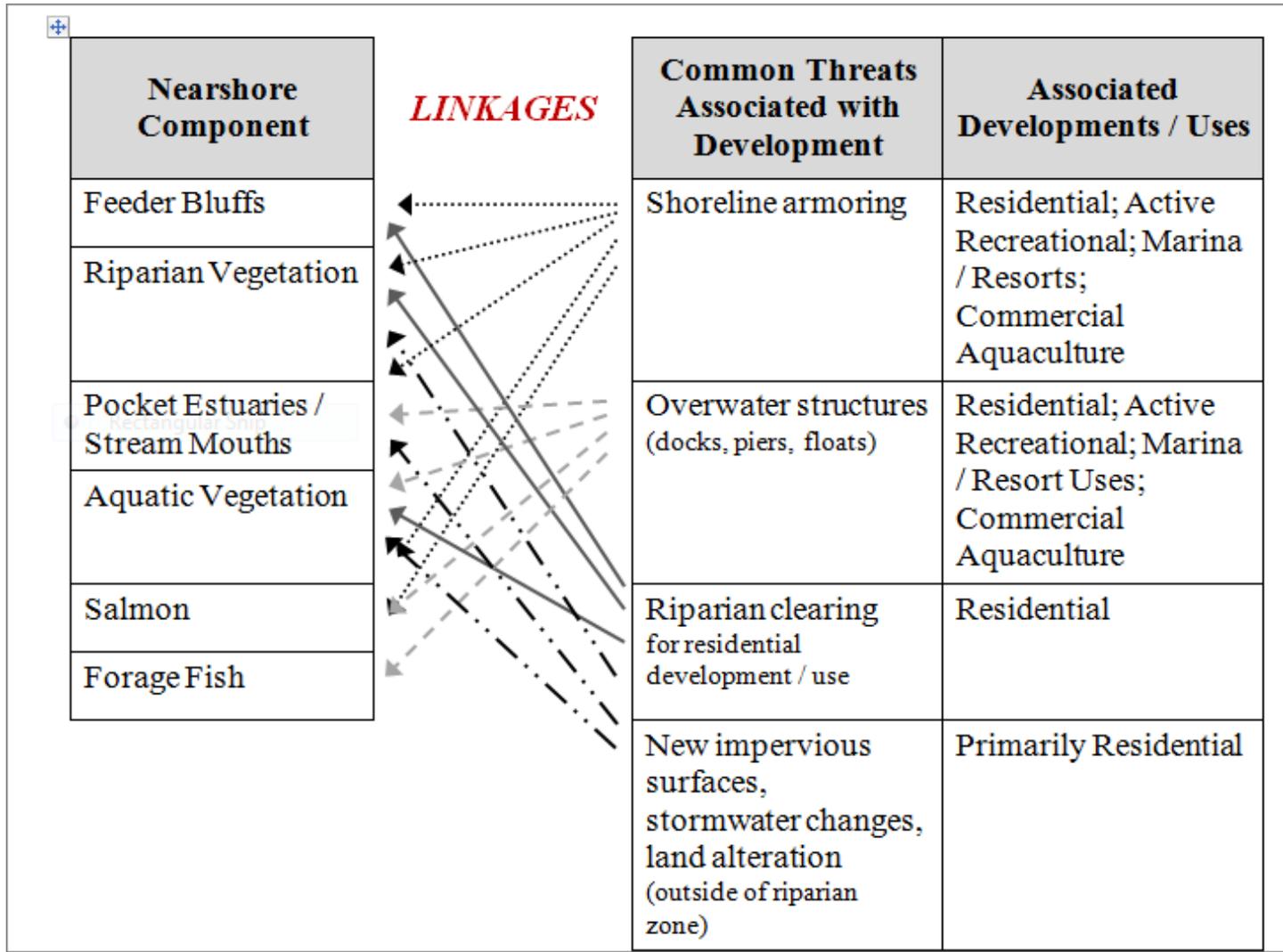
- Feeder Bluff: 70% – supplies sediments that maintain Dungeness Spit
- Riparian: 72% natural (30% forested); 19% mapped as lawn / residential landscaping
- Aquatic vegetation: Patchy eelgrass (3%) and kelp (37%)
- Salmon: Runs in streams draining to Reach (including Morse Creek), extensive use
- Forage fish: Spawning habitat (smelt) mapped E of Morse Creek

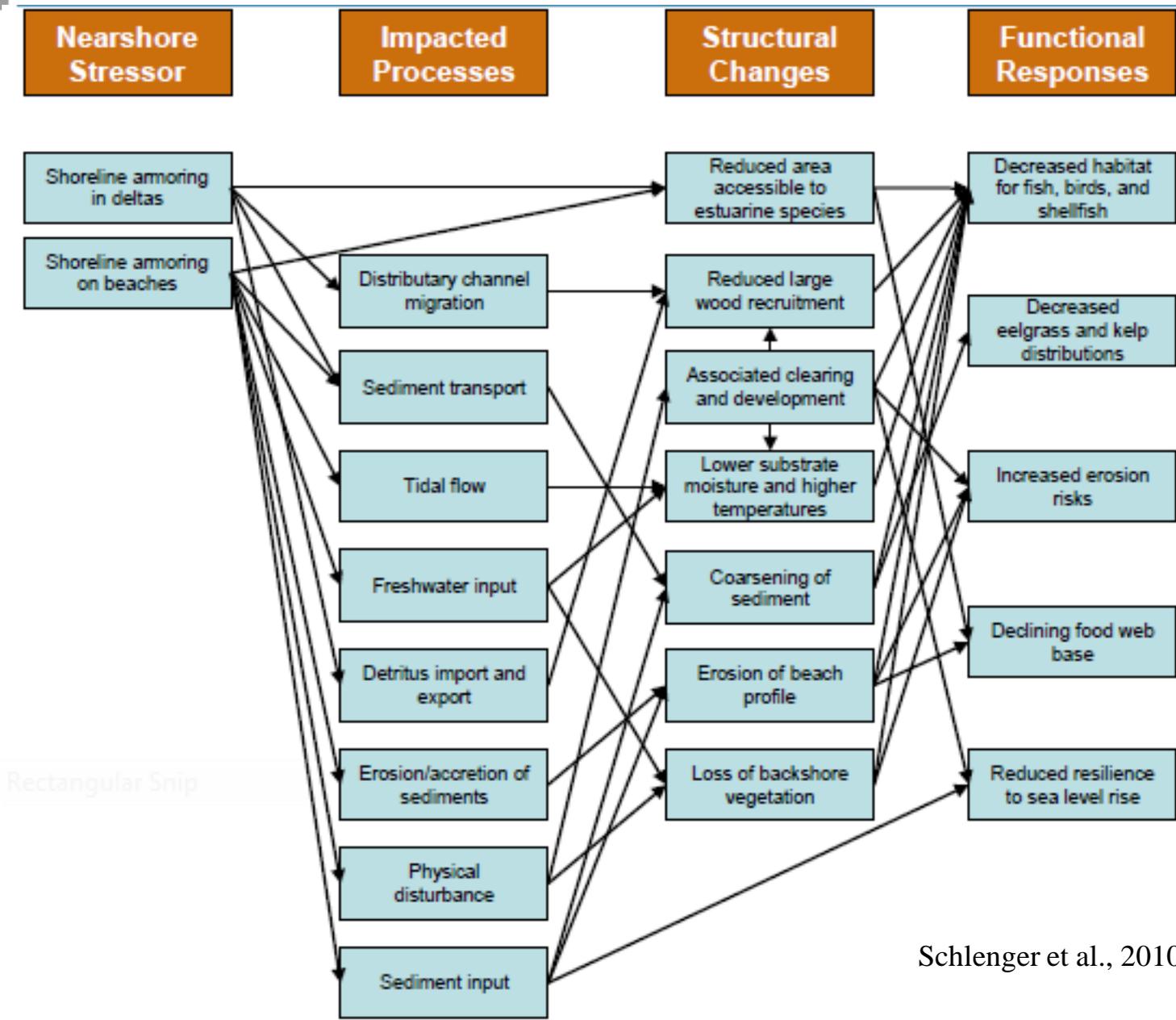


Step 3. How healthy are the shoreline components now?



Step 4. What are the major threats to healthy shorelines?





Rectangular Snip

Step 4. What are the major threats to healthy shorelines? – Marine Shorelines

Nearshore

Functions

Sediment supply
 Sediment transport
 Water quality
 Tidal hydrology
 Freshwater input
 LWD/organic inputs
 Fish/Wildlife habitat
 Species movement

Components

Feeder bluffs /
 erosive shorelines
 Riparian vegetation
 Aquatic vegetation
 (eelgrass, kelp beds)
 Pocket estuaries /
 stream mouths
 Salmon (stock status)
 Forage fish

Alteration Indicators

Armoring (of feeder
 bluffs)
 Armoring (non feeder
 bluff, including at
 stream mouths)
 Riparian clearing
 Impervious surface
 coverage
 OW structures

Step 5. Where are threats most prevalent?

- Assessed development potential at the parcel scale using GIS and aerial photos
 - existing development
 - zoning
 - subdivision potential
- Overlay of other data (armoring, riparian vegetation mapping, feeder bluff / erosion hazards, floodplains, CMZs)

Step 5. Where are threats most prevalent?

- Areas of small lots
- Many subdividable and/or vacant lots
- Zoned for more intensive development
- Commercial forest lands were largely excluded



Existing Use / Future Development Potential

	Developed / Subdividable
	Developed / Non-subdividable
	Vacant / Subdividable
	Vacant / Non-subdividable
	Nonresidential

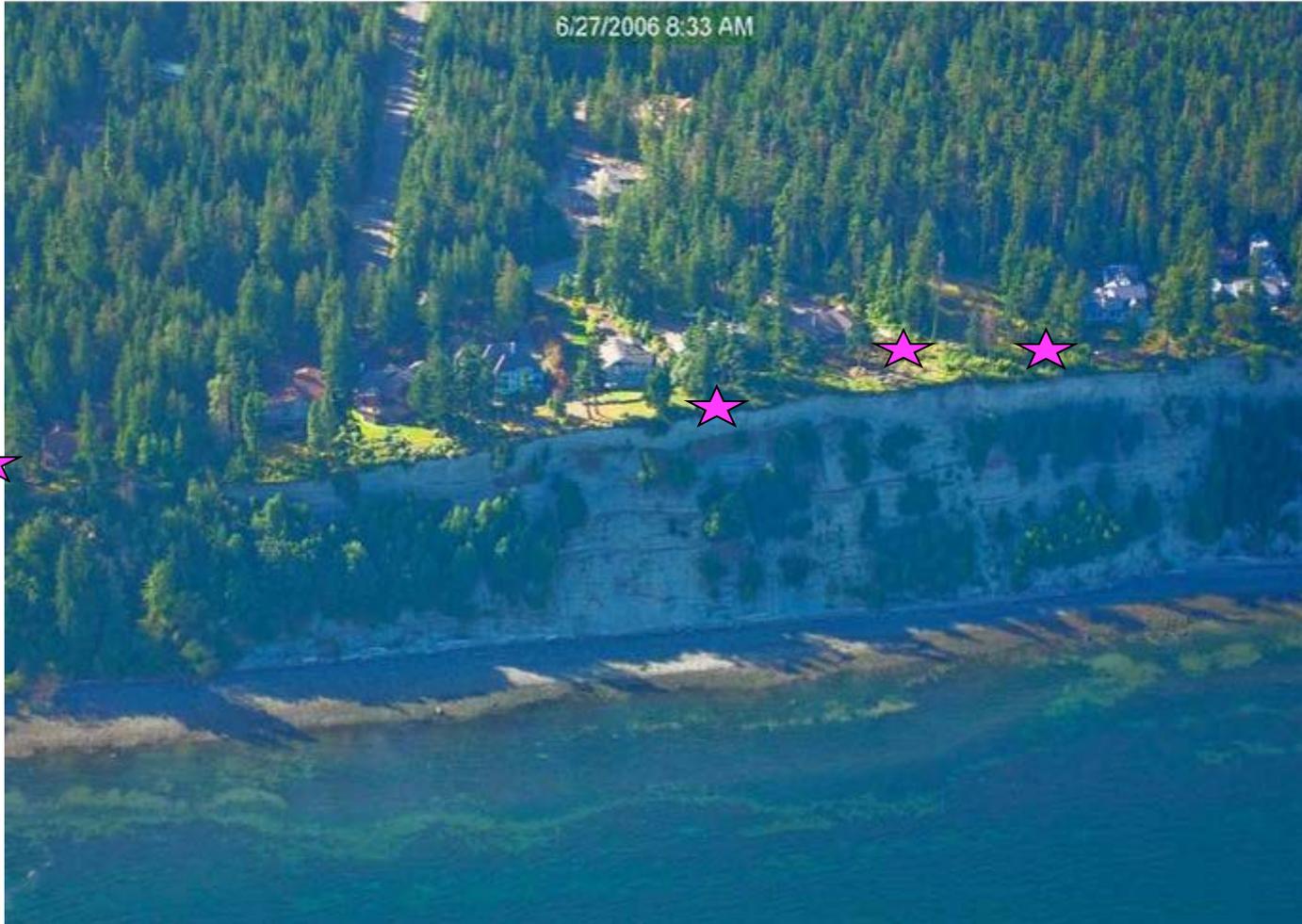
Image © 2012 GeoEye

Diamond Point – Oblique Photo



 = Existing vacant lots where development would occur

Travis Spit – Oblique Photo



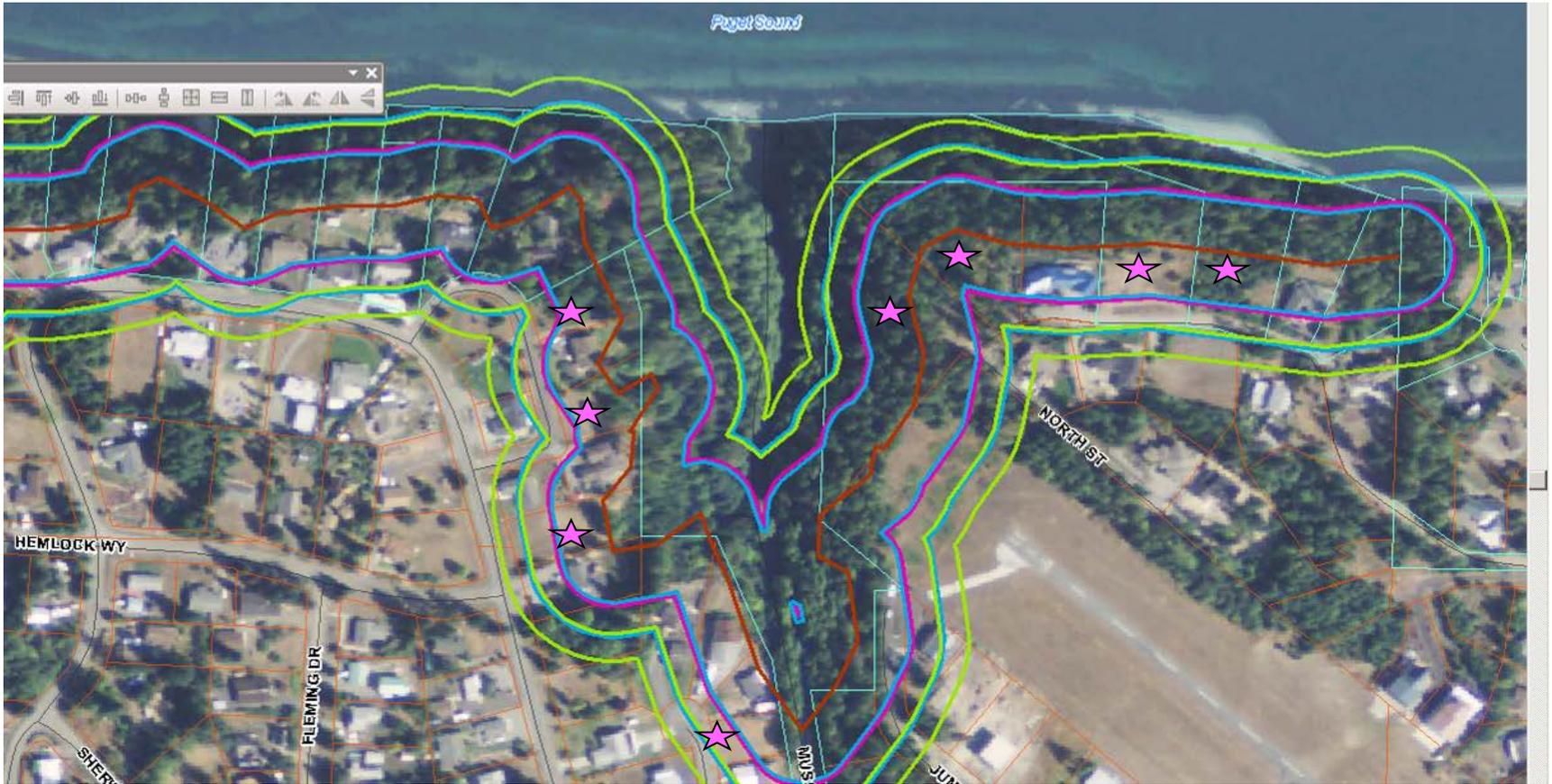
 = Existing vacant lots where development would occur

Step 6. How will the SMP address threats?

(where? how much? what type?)

- Where could new shoreline armoring occur?
- Where will allowances for view corridors impact riparian forest canopy?
- Where will existing lot patterns required development within 'buffers'?
- Where will subdivision / new residential development impact shorelines outside of buffers?
- Where could new piers / docks be built?

Diamond Point – Feeder bluff along north shoreline of Miller Peninsula



 = Existing vacant lots where development would occur within proposed buffer

Travis Spit – Feeder bluff along northwest shoreline of Miller Peninsula

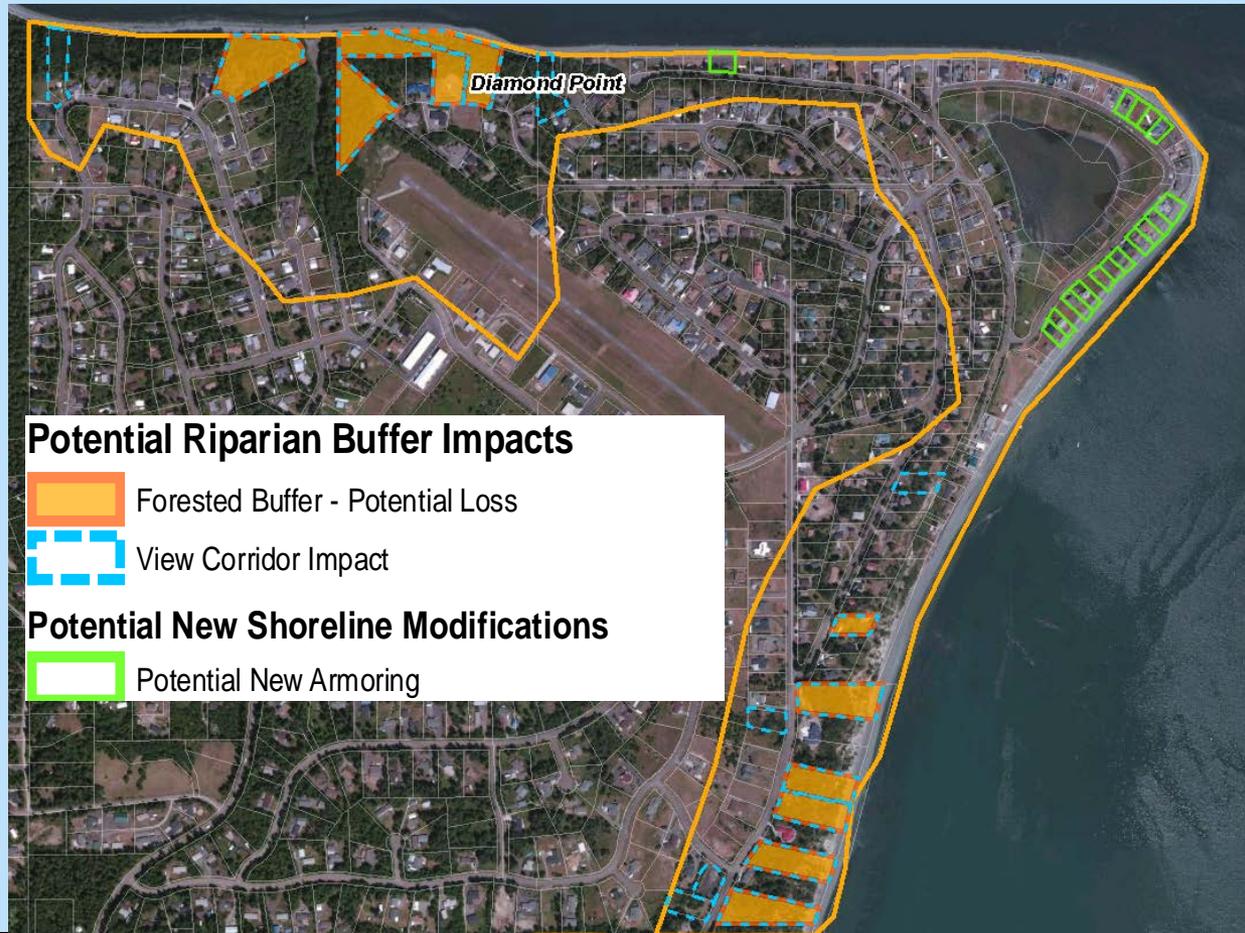


 = Existing vacant lots where development would occur within proposed buffer

Step 6. How will the SMP address threats?

Example Analysis – Diamond Point

- Many existing constrained parcels
- Primarily developed; however many undeveloped parcels remain
- Moderate to substantial potential for riparian loss
- Substantial potential for new shoreline armoring



Step 7. How to compensate for potential loss?

Example Analysis – Diamond Point

- Draft Restoration Plan identifies actions specific to Diamond Point:
 - Removal of wharf piles and pile walls to improve sediment transport
 - Remove fill, restore tidal prism of coastal lagoon/embayment

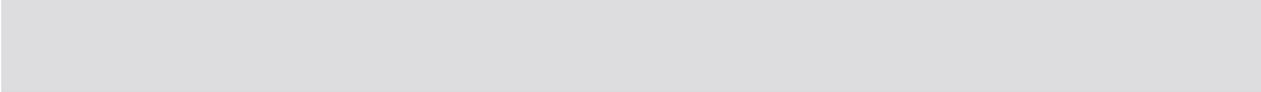


Ensuring NNL Moving Forward

- County draft SMP includes goals and policies for monitoring and reporting changes in indicators
- Ability to implement restoration will be key to meeting the NNL mandate
- Changes in conditions may indicate need to adjust SMP policies and regulations

The background of the text is a photograph of a wide, sandy beach. The water is shallow and calm, reflecting the sky. A lone figure is walking on the beach in the distance. The sky is filled with soft, white clouds, and the overall atmosphere is serene and natural.

Questions?
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Achieving No Net Loss Using Salmon Restoration Projects

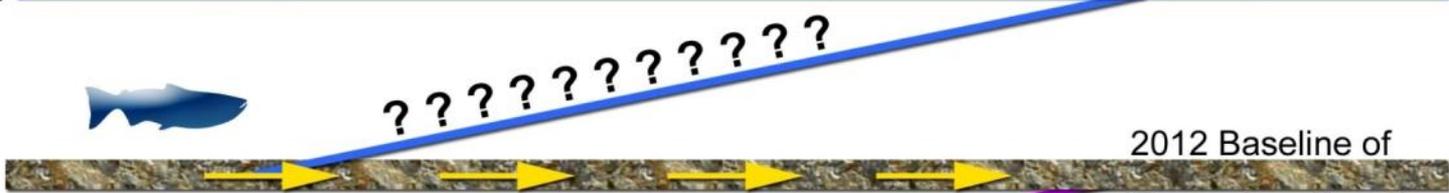


Salmon Recovery



Higher
↑
Ecosystem Function
Lower

No Net Loss



2012 Baseline of
Ecosystem Functions

Development Impacts
with mitigation

Salmon Restoration Projects

Development Impacts
without mitigation

Mitigation

Time (years)

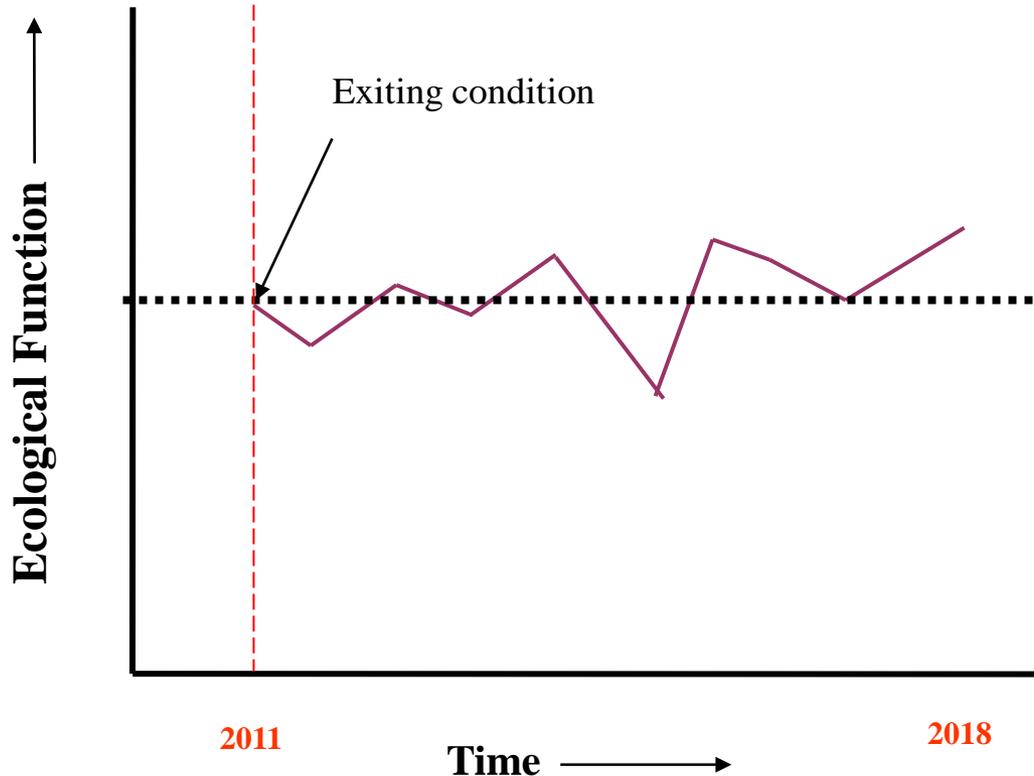


NNL, Mitigation and Restoration

	No Net Loss	Mitigation	Restoration
Scale	County-wide	Project / site	Site (linked to reach, waterbody, and basin scales)
Scope	<ul style="list-style-type: none"> • Cumulative impacts of new development • Ongoing impairment • Illegal actions • Failed mitigation 	<ul style="list-style-type: none"> • New, permitted development 	<ul style="list-style-type: none"> • Previous and ongoing impairment
Context	Uses ICR existing conditions as a baseline based on indicators	Uses existing conditions as a baseline (site assessment and ICR) to establish impact avoidance, minimization, and compensation measures.	Improve the baseline - goal is to achieve recovery goals and address impairments

What is No Net Loss (NNL)?

As shoreline development occurs, ecological functions stay the same (or are improved) over time



NNL Assessment Steps – Key Questions

1. What do we care about?
2. What are the components of healthy shorelines?
3. How healthy are the shoreline components now?
4. What are the major threats to healthy shorelines?
5. Where are threats present/relevant?
6. How will the SMP address the threats?
7. Where are the threats likely to result in loss of ecological function?
8. How can we compensate for potential losses?

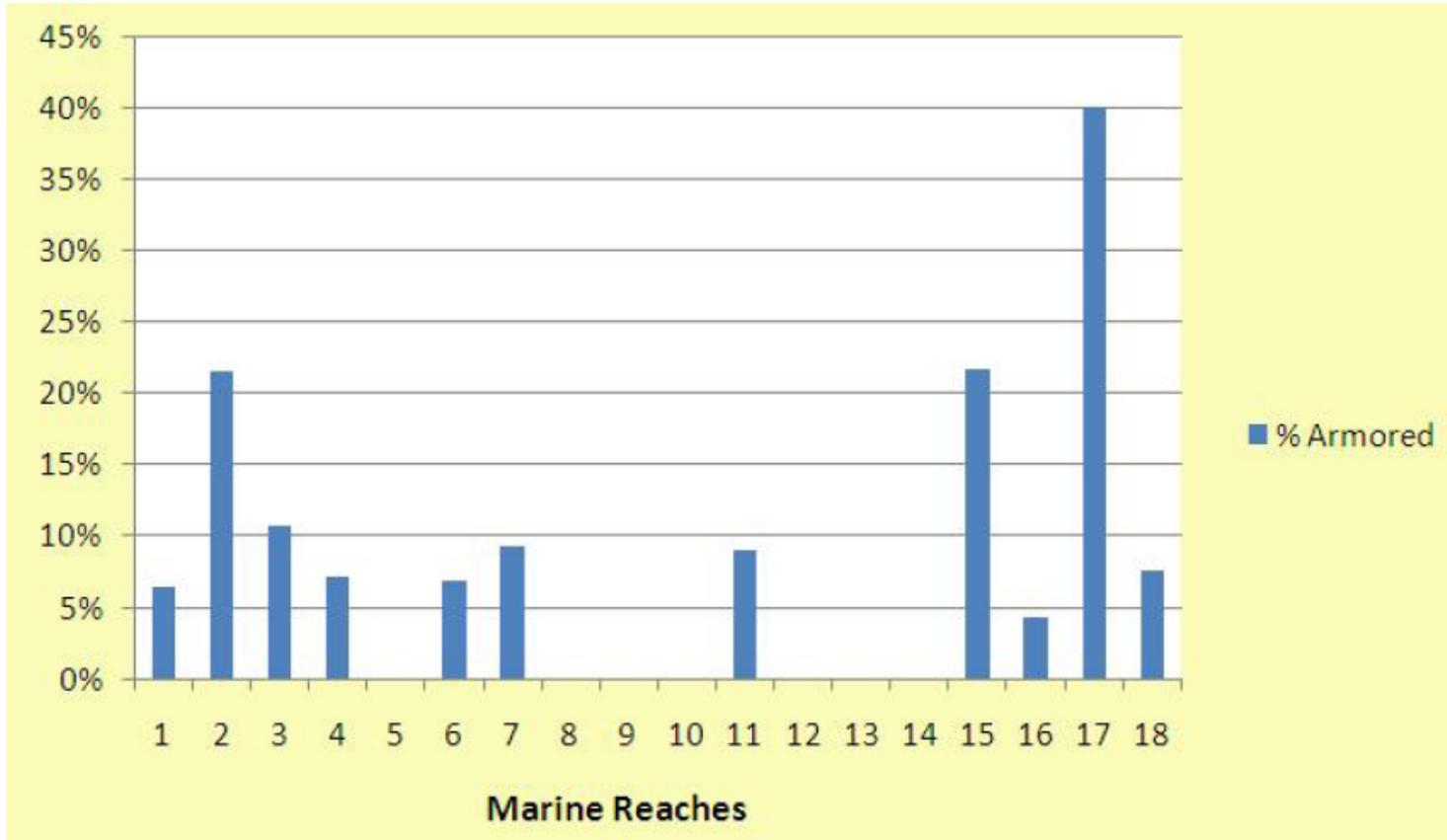


Figure 3-9. Percent of each reach with hard armoring along the Strait of Juan de Fuca in Clallam County (data from point PSNERP 2009, Battelle 2008)

Step 5. Where are threats relevant?

Example Analysis – Dungeness Bluffs

- Limited potential for riparian buffer forest cover loss: 3.8% of lots



- Moderate potential for buffer forest cover loss as a result of the view corridor allowance: 10.8% of lots
- No potential for future shoreline modification identified - no areas appropriate for new residential armoring / docks