Lengtíxw tse Schténgexqen Á7leng
House of Watching Over All the Territory

Samish Indian Nation-Department of Natural Resources

Incorporating Cultural Values and Climate Change in Modern Restoration:
Samish Indian Nation Beach Restoration Case Study

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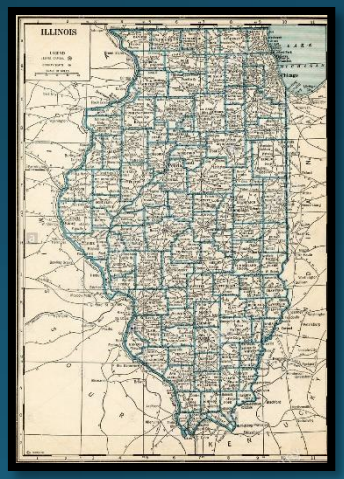
The Big Disclaimer….

1930's



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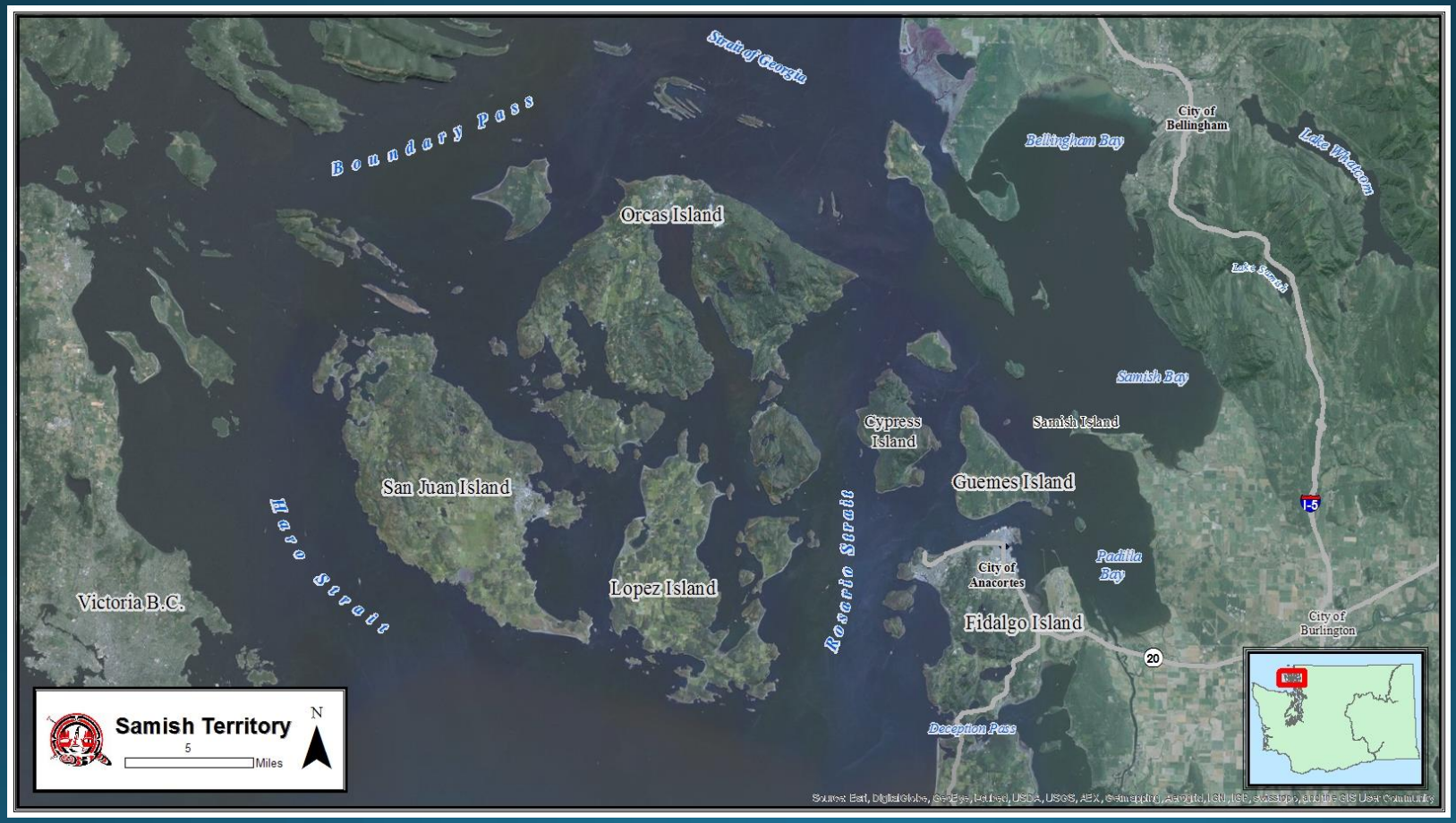
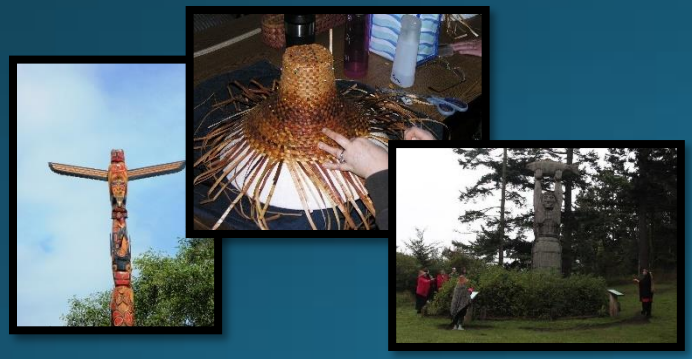
Samish Indian Nation Traditional Territory



Samish Tradition

- S7a'mesh –"The Giving People"
- A people with hundreds of generations of history
- A deep connection to the Salish Sea and its abundant natural resources
- Rich in chela'ngen (culture) with traditions that continue to this day
- "When the Tide is Out, the Table is Set"



Beach types of the Salish Sea

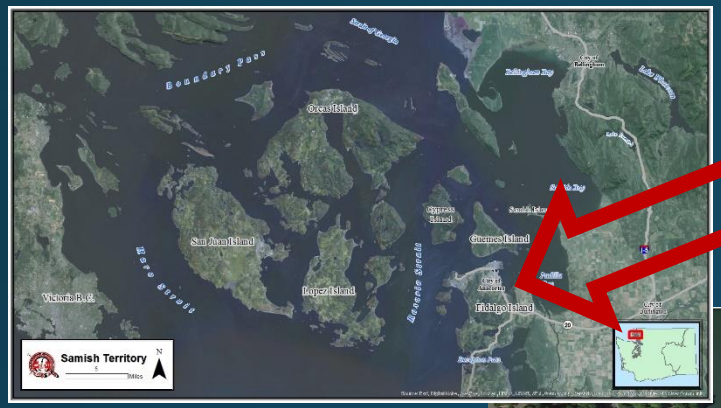
Gravel rather than sand

Fed by erosion of feeder bluffs

"armored" with driftwood

- Tides in our area range from a -3 to +9
- Mixed semi-diurnal tide cycle-HH,HL,LH,LL
- Critical forage fish habitat for surf smelt spawning

Weaverling Spit Restoration Projects



"You are here."

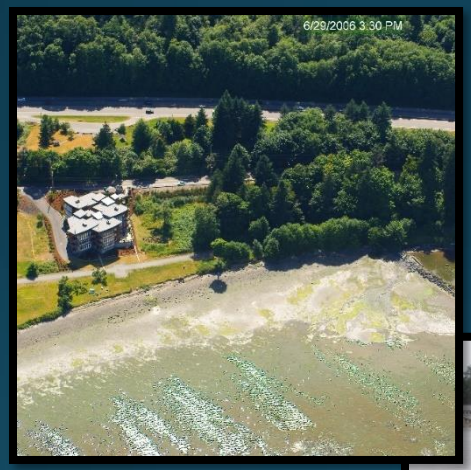
Three Phases completed between 2009-2016

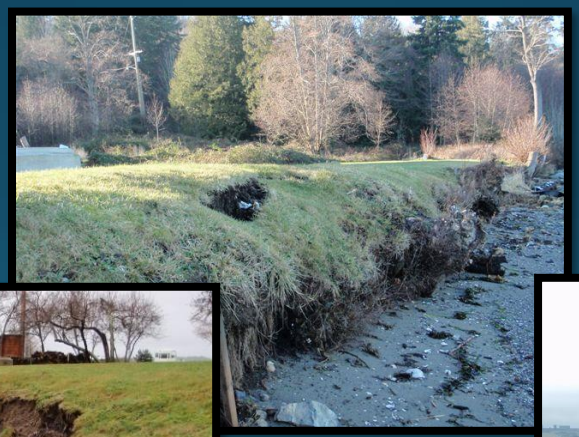
Project Need-Physical Concerns

- Huge erosion events along the entire stretch of beach over 2000 feet
  - 5 feet lost in one large event
- Failing rip rap hard armoring
  - Water overtopping during storms and infiltrating during king tides
- Beach deflating and becoming coarser
  - No natural sediment source to replenish the beach

Project Need-Cultural Concerns

- Erosion of Cultural Resources
- Ancestral remains at risk
- Cultural Events such as Canoe Journey also at risk

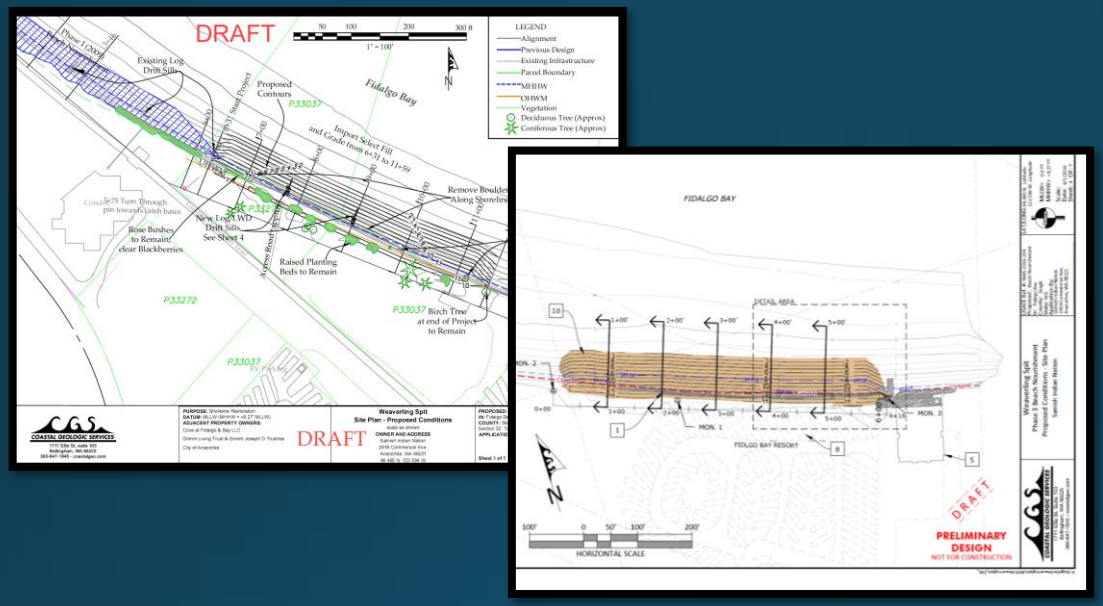




Project Need-Natural Resource Concerns

- Extensive Eelgrass beds supporting Salmon and a myriad of juvenile forage fish
- Some of the most productive surf smelt spawning beaches in the State
- Crab and Clam resources as First Foods

Project Design



- Projects designed by Coastal Geologic Services
- Elevations designed with Sea Level Rise in mind
  - Delay impacts to critical Tribal Business

Climate Change Driver (Change relative to 1991-2009 avg.)	Change by 2050s	Change by 2080s	Change by 2100s	Change by 2150s
Sea Level Rise	+1.4 ft	+3.2 ft	+4.9 ft	+10.1 ft

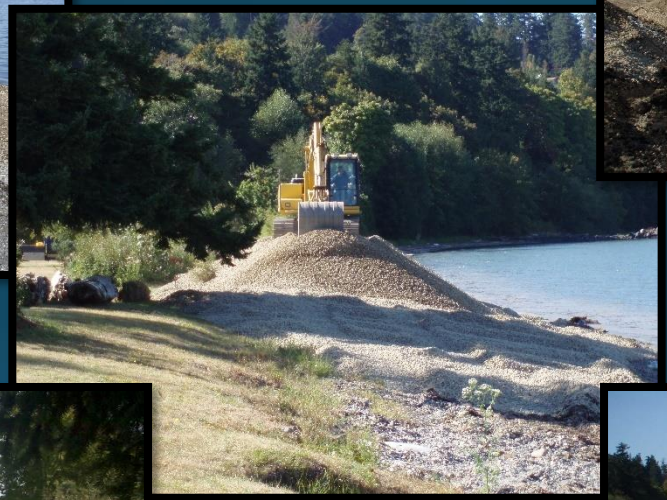
Table 3 Projected sea level rise in Samish Traditional Territory, centered on the coastal area near Anacortes under the RCP 8.5 scenario. Projections include a 19 year period centered on the dates above. Data generated on 07/18/2018, courtesy of the Washington Coastal Resilience Project. (http://www.wacoastalnetwork.com/wcrp-documents.html)

Construction

- Phase 1-September 3, 2009

Construction

Phase 2- Summer 2011



Construction

Phase 3- Summer 2016

Phase 1 -Complete

- **600 feet of beach restored**
- 1475 tons of 3-3.75" rock
- 375 tons of pea gravel
- Final layer of 132 tons of washed sand.

Phase I-Costs

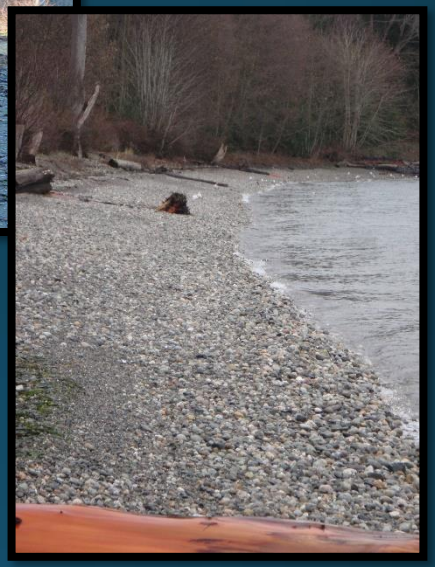
$109,278.00 Total

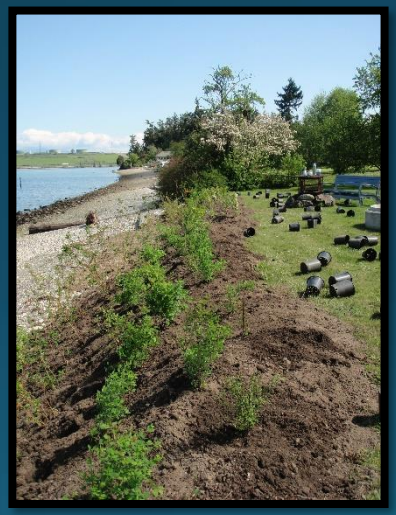
$95,938.00 Construction

$13,340 Archaeologist

Oversight of project 6 weeks by Samish DNR

Before and After





Spring 2009

Fall 2011

Phase 2-Complete

- Additional 500 feet of shoreline restored
- Approximately 2300 cy of beach nourishment material installed
- Additional 2 drift sills installed
- 7 planting beds installed

Phase II-costs

$123,838.75 Total

$12,000.00 Reserve

Oversight of project by Samish including archaeologist

Phase 3-Complete

- Additional 660 feet of shoreline restored
- 200 CY rip rap removed
- Approximately 4075 cy of beach nourishment material installed

Phase II-costs

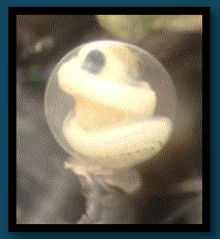
$150,000.00 Total

$25,000.00 Reserve

Oversight of project by Samish including archaeologist

Project Success Stories

Living Shorelines are more resilient and able to handle the increases storm events we are seeing along Weaverling Spit



Surf Smelt were spawning on Phase 1 literally the day after we finished the project and continue to heavily utilize both Phase 1 and Phase2

Seining data shows increased diversity 5 years post project

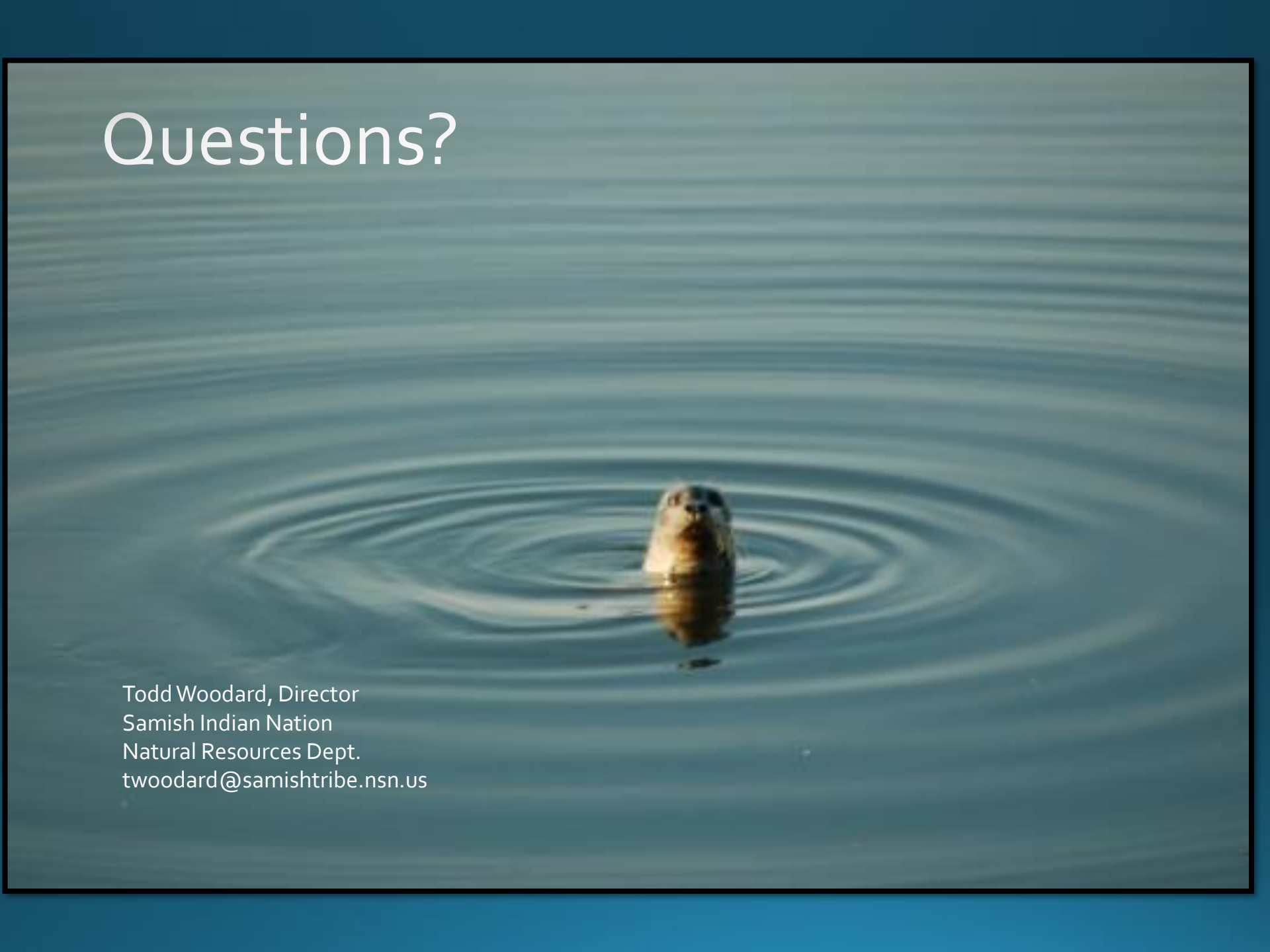
Provides an excellent accessible outreach site for shoreline landowners and the greater community regarding the success of living shorelines as a better option than hard armoring.

What's Next-Climate Change and Sea Level Rise

- The lower RV park was once a salt marsh and will be again.
- Samish Climate Resiliency staff is beginning to develop a managed retreat plan for this area
  - Focus on removal of infrastructure
  - Allow for the beach to migrate to preserve natural resources.

Samish DNR

Questions?



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