Shoreline Management Program Update

Inventory and Characterization

Planning Commission Meeting

November 16, 2010

Agenda

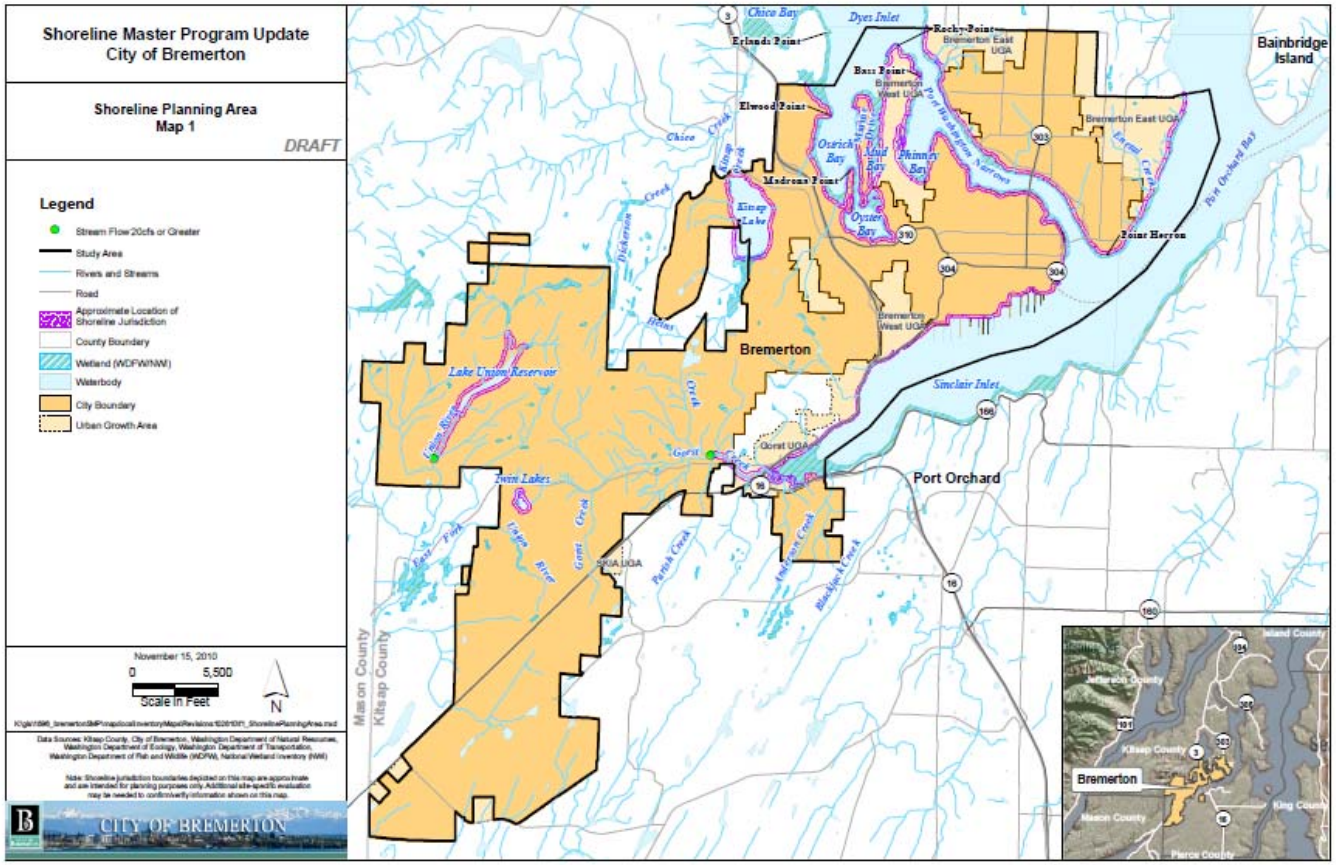
- Status of the update
- Inventory & Characterization – Draft results
  - Ecosystem processes & ecological functions
  - Inventory of Bremerton shorelines
  - Priority reaches and options
- What's next
- Questions/Input

Status and Timeline

- 2009
  - Gather shoreline data
  - Create Public Participation Plan
  - Outreach/involvement (website, etc.)
- 2010
  - Shoreline inventory, characterization, analysis
  - Consideration of options
- 2011
  - Draft policies and regulations
  - On-going community involvement
  - Cumulative Impacts Assessment & Restoration Plan
  - Adoption process

Where does the SMP apply?

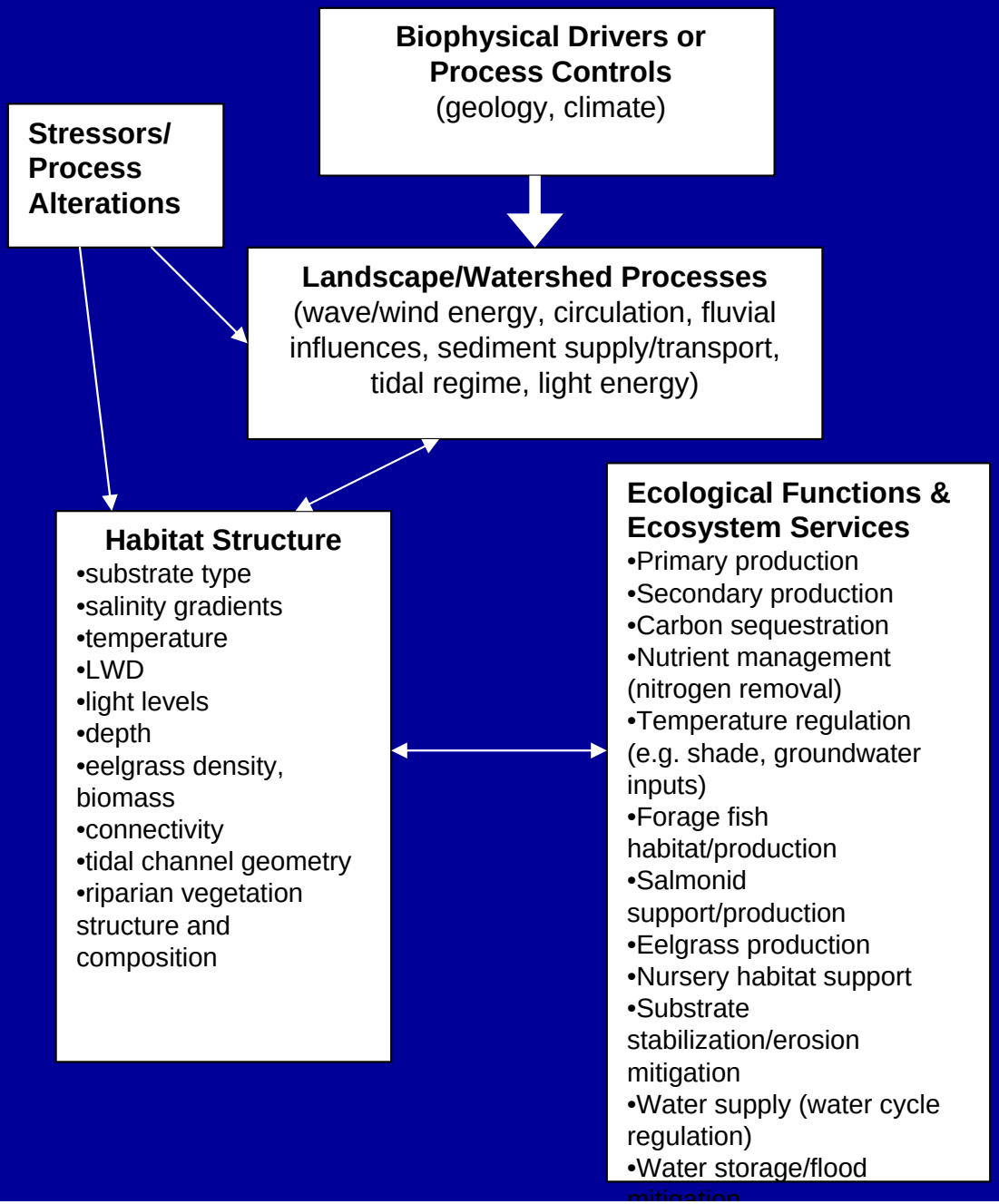
- Puget Sound
  - About 25 miles
- Lower Gorst Creek
- Kitsap Lake
- Union Reservoir
- Union River
- Twin Lakes



Meeting Requirements

- Know what is there today
  - Baseline from inventory & characterization
  - Describe *existing* conditions to inform policy
    - No Net Loss
    - Water dependent uses
    - Public access
- Predict future development
  - Understand how development will impact functions
- Program that accommodates development but does not harm ecological functions
  - Policies and regulations
  - Restoration plan

Inventory & Characterization



- Ecosystem wide processes and functions
  - Which processes and functions?
  - Status or condition
- Ecological functions in shorelines
- Measures to protect/restore function

Ecosystem Wide Processes

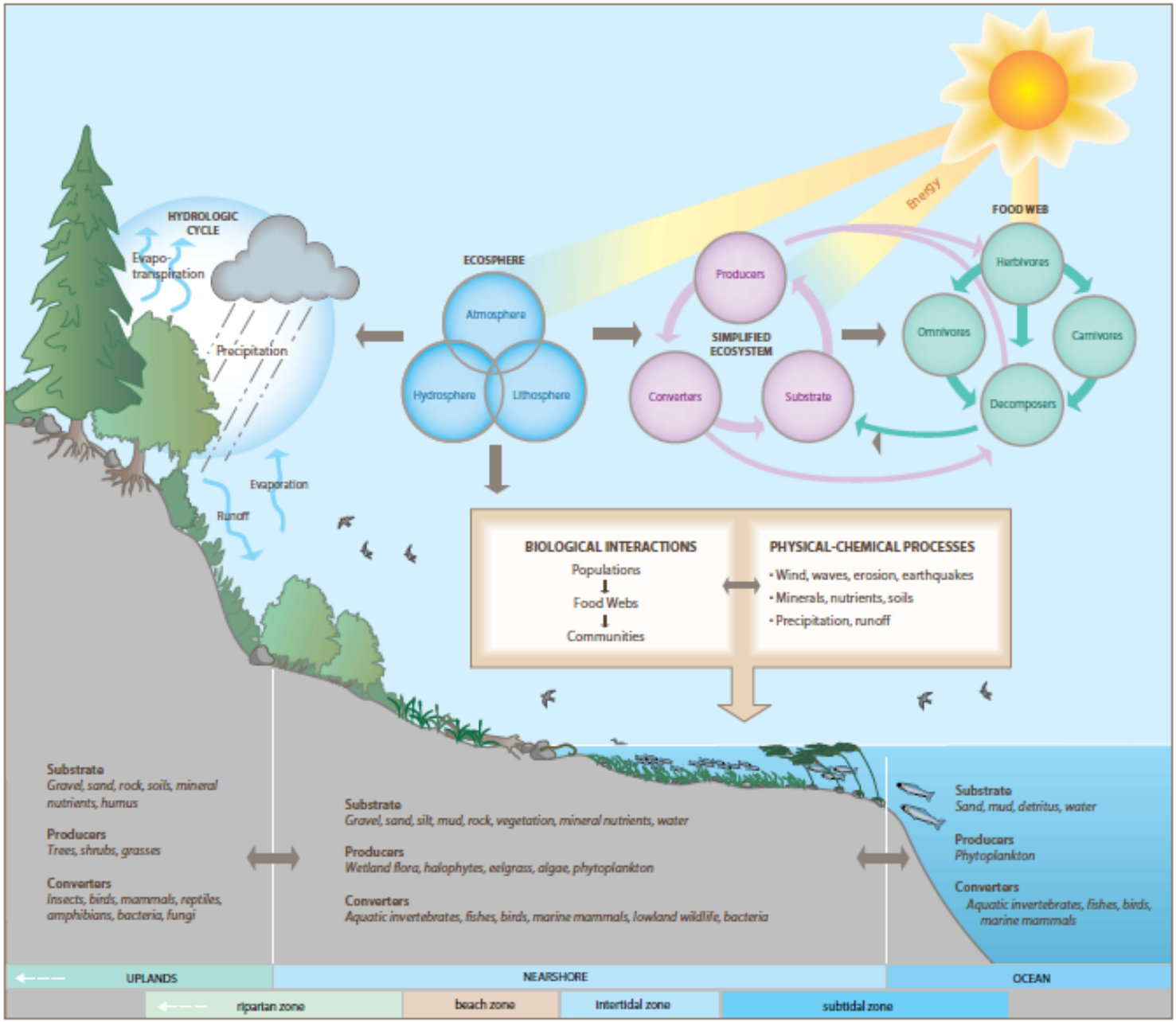


Figure 4

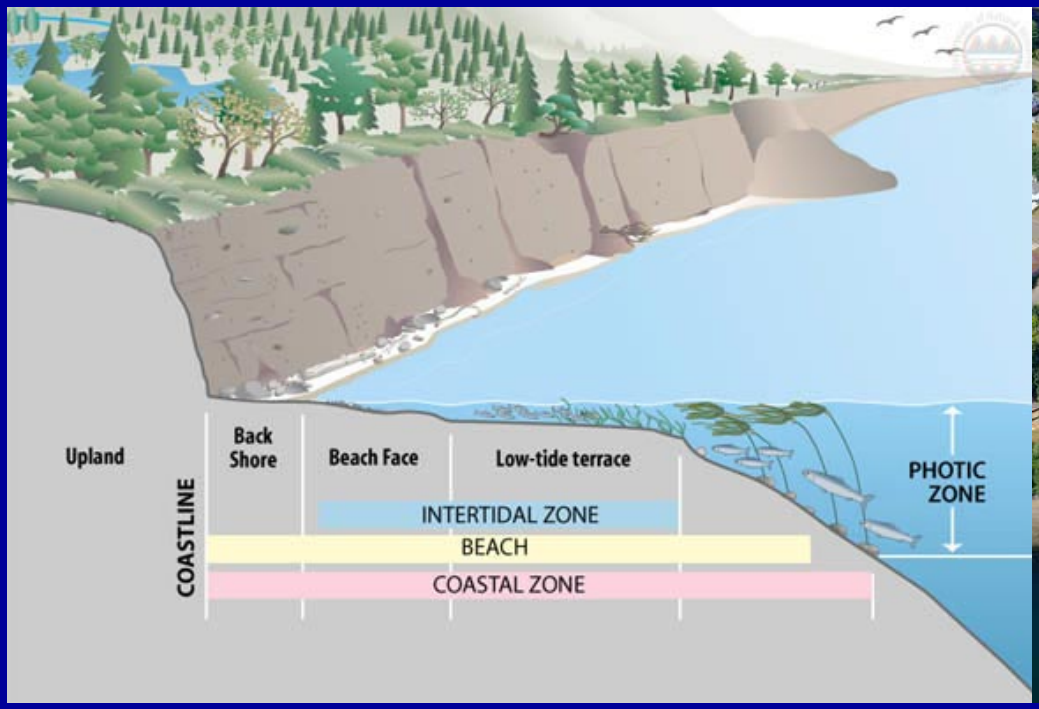
Simplified Conceptual Model of the Puget Sound Nearshore Ecosystem

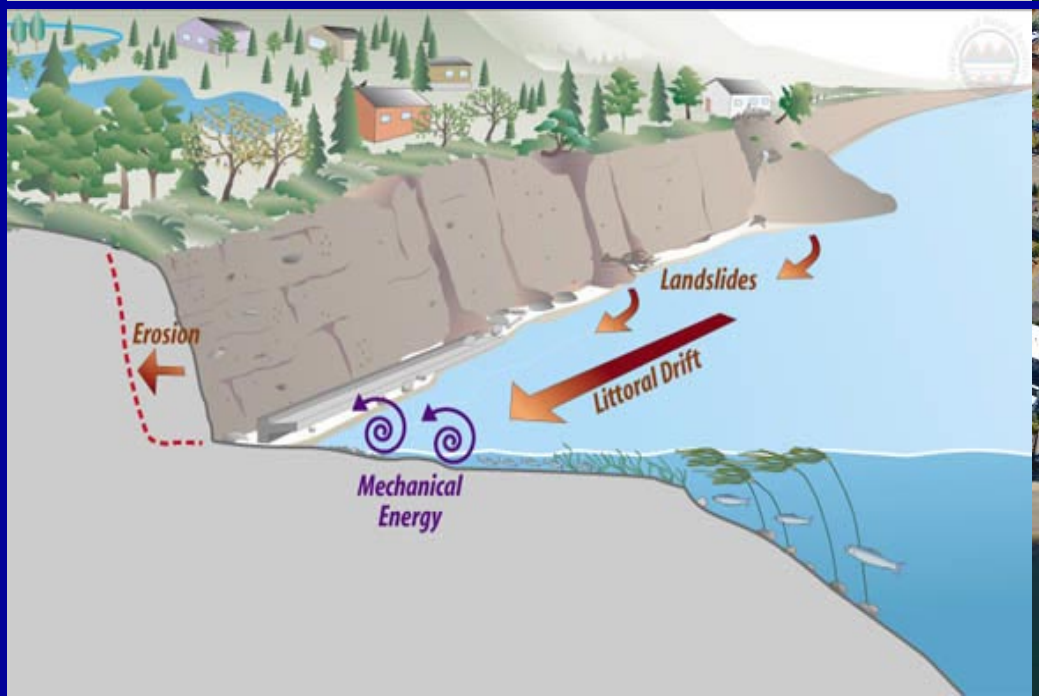
(after Proctor et al. 1980)

State of the Nearshore Report

KING COUNTY

Sediment Processes and Alterations

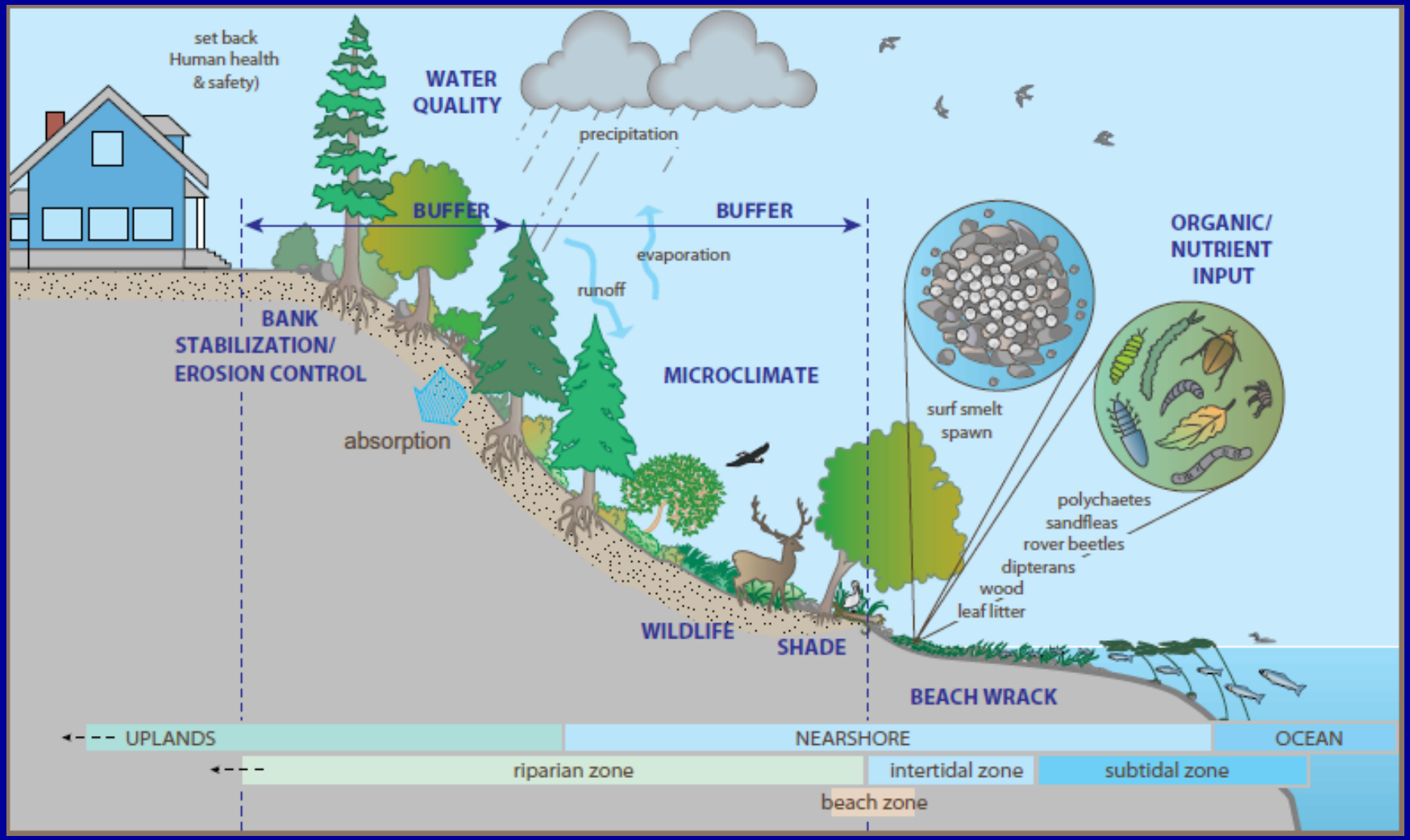




Sea Level Rise

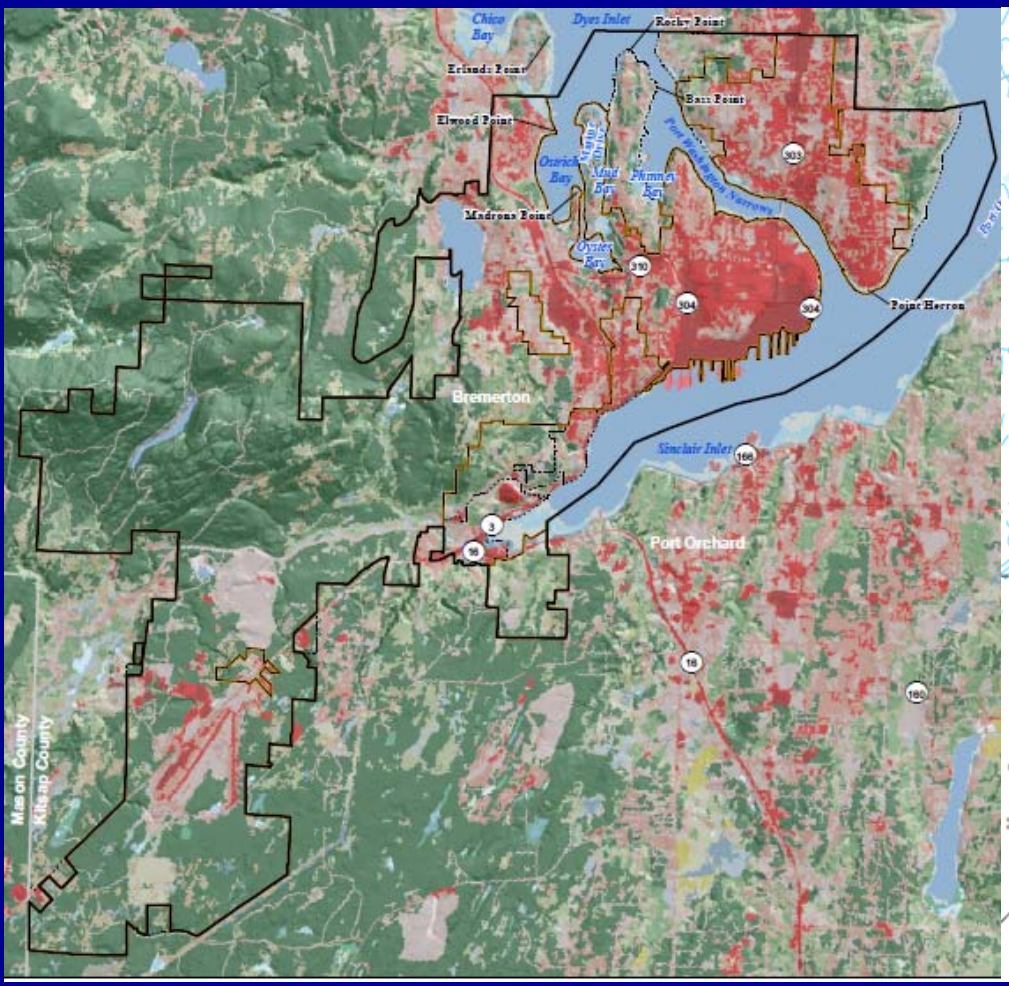
- Long-term ecosystem process likely to accelerate with climate change
- Result of *relative* movement of land and sea surface
- Warming (expansion); melting of glaciers and ice caps
- Models highly uncertain – a few inches to several feet in next 20-50 years
- Flooding and increased storm damage/erosion
- Saltwater intrusion – wetlands and aquifers
- Loss of estuaries, salt marshes, beaches

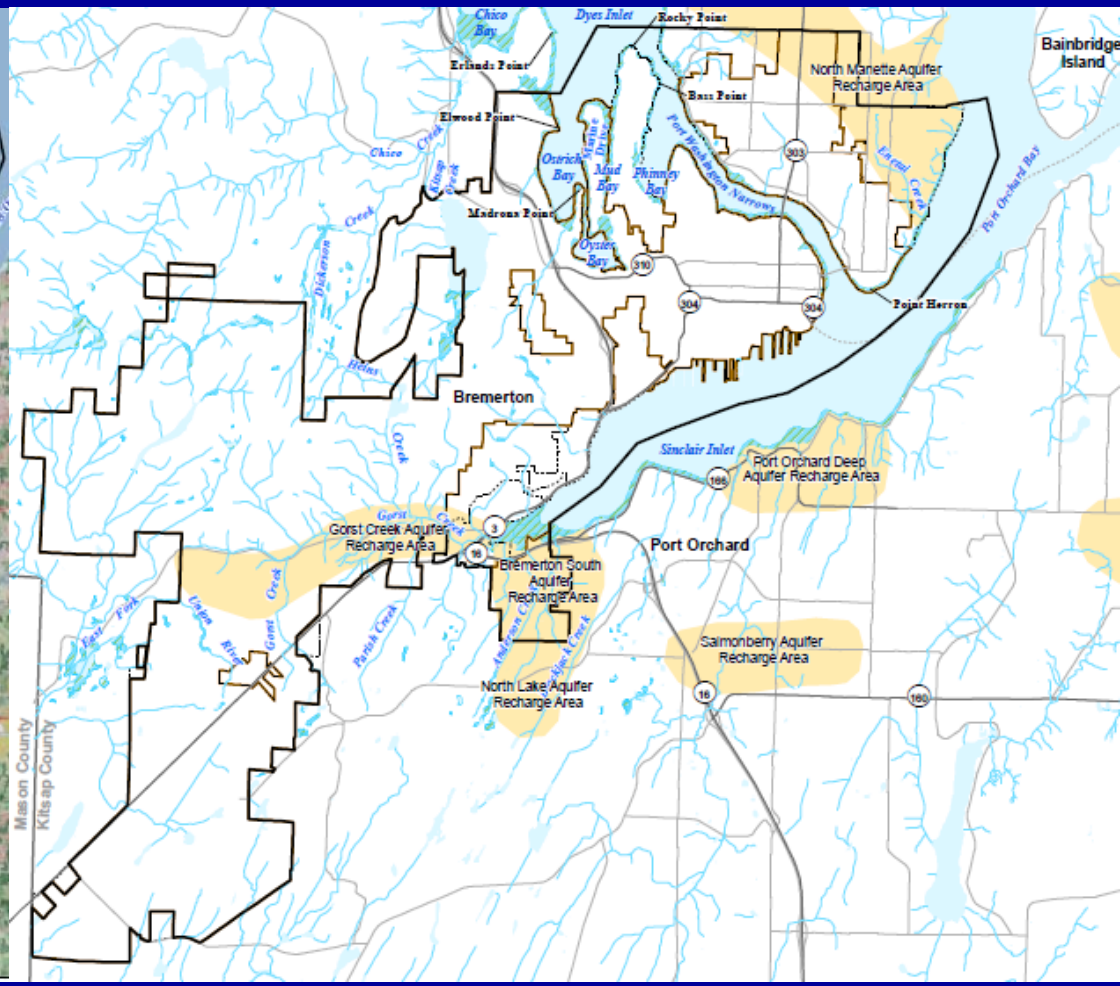
Riparian Vegetation Functions



Ecosystem and Shoreline Processes

Forested areas provide infiltration of rainfall and recharge of groundwater aquifers; retention of sediment and nutrients that improve water quality. Forested areas adjacent to Gorst Creek, Anderson, and Dee Enetai Creeks are important for water supply and water quality functions.

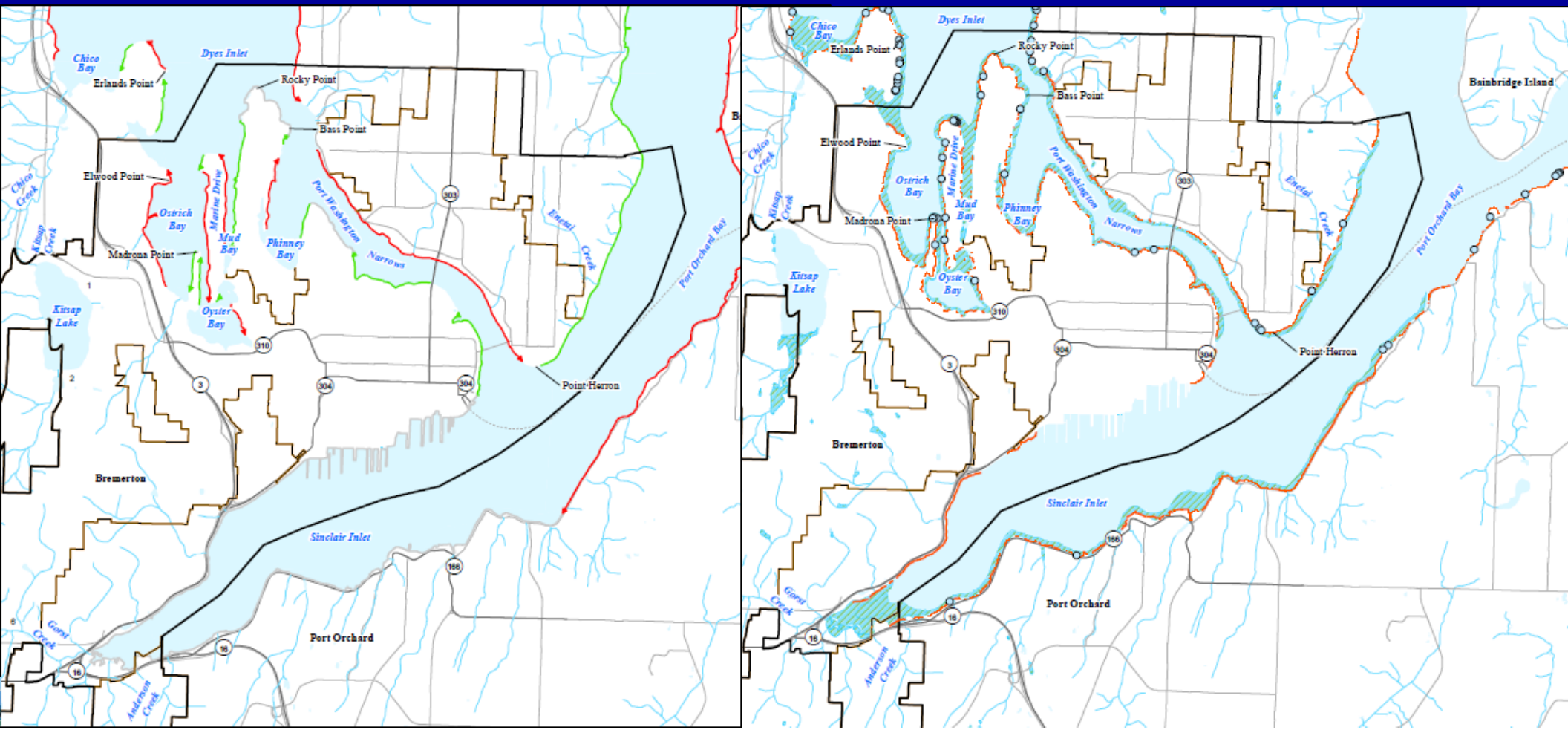




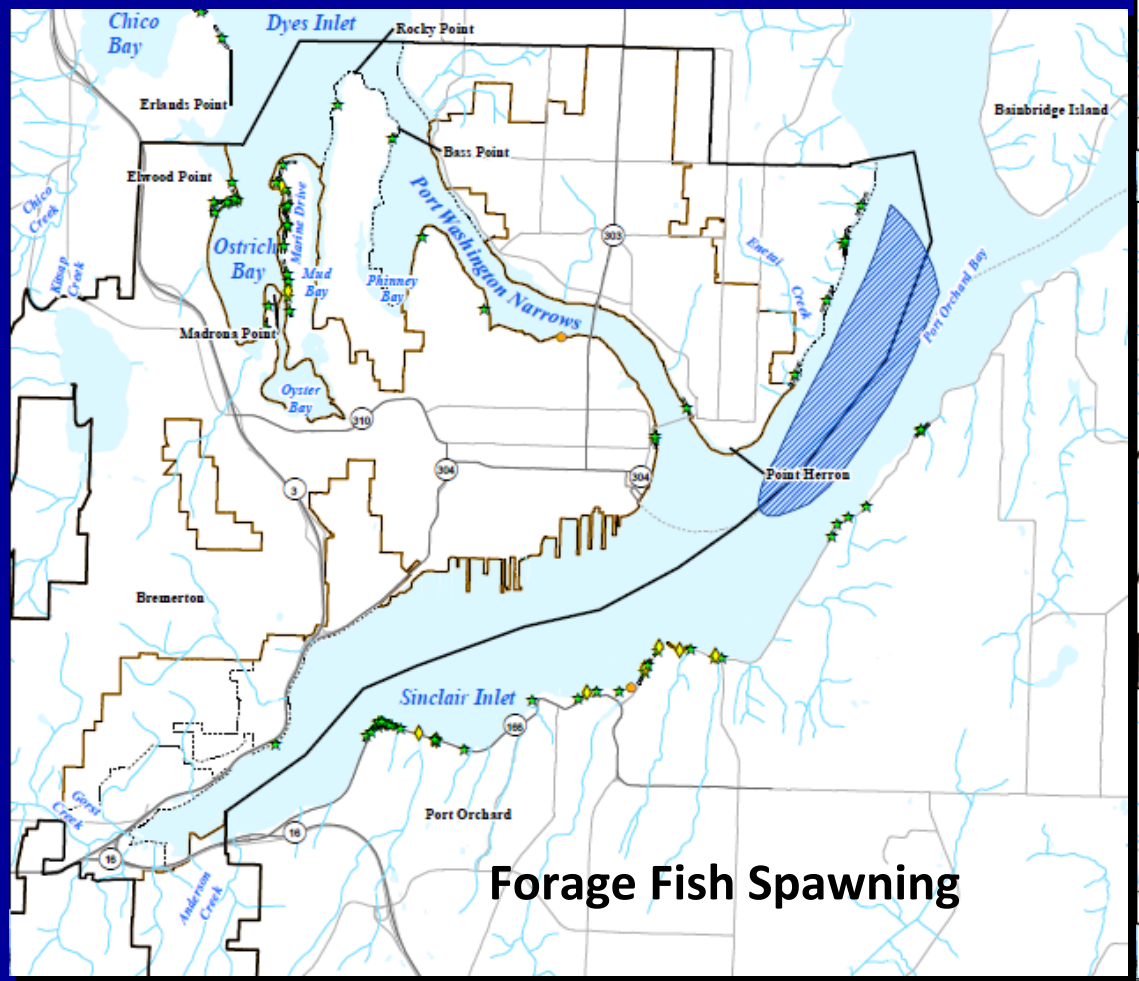
Ecosystem and Shoreline Processes

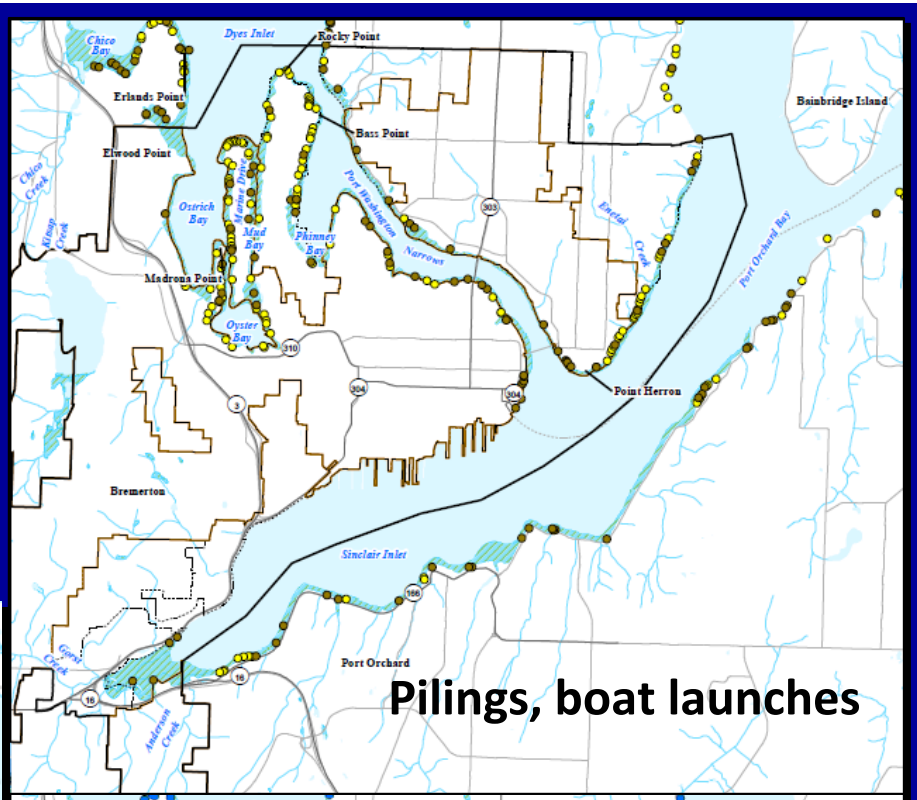
Drift Cells – movement of sediment; formation of beaches; eelgrass habitat….

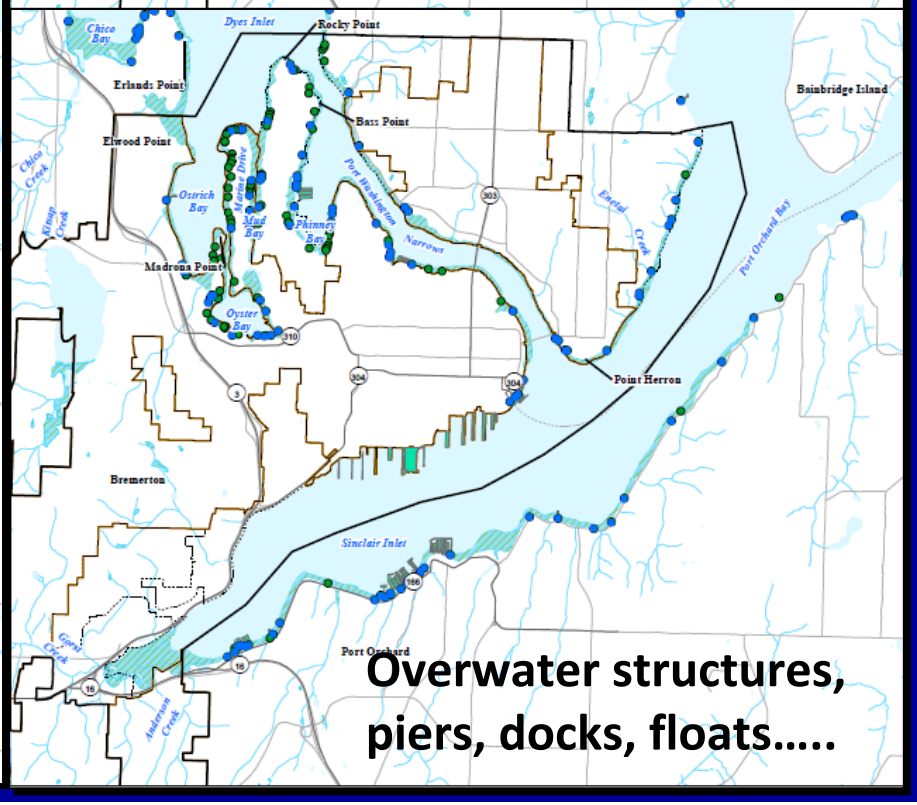
Armoring (red lines) alters sediment movement and impacts forage fish beaches, eelgrass, marsh habitats



Distribution of marine forage fish (left) and shoreline modifications (right) that impact shallow nearshore habitats critical for spawning and juvenile rearing……



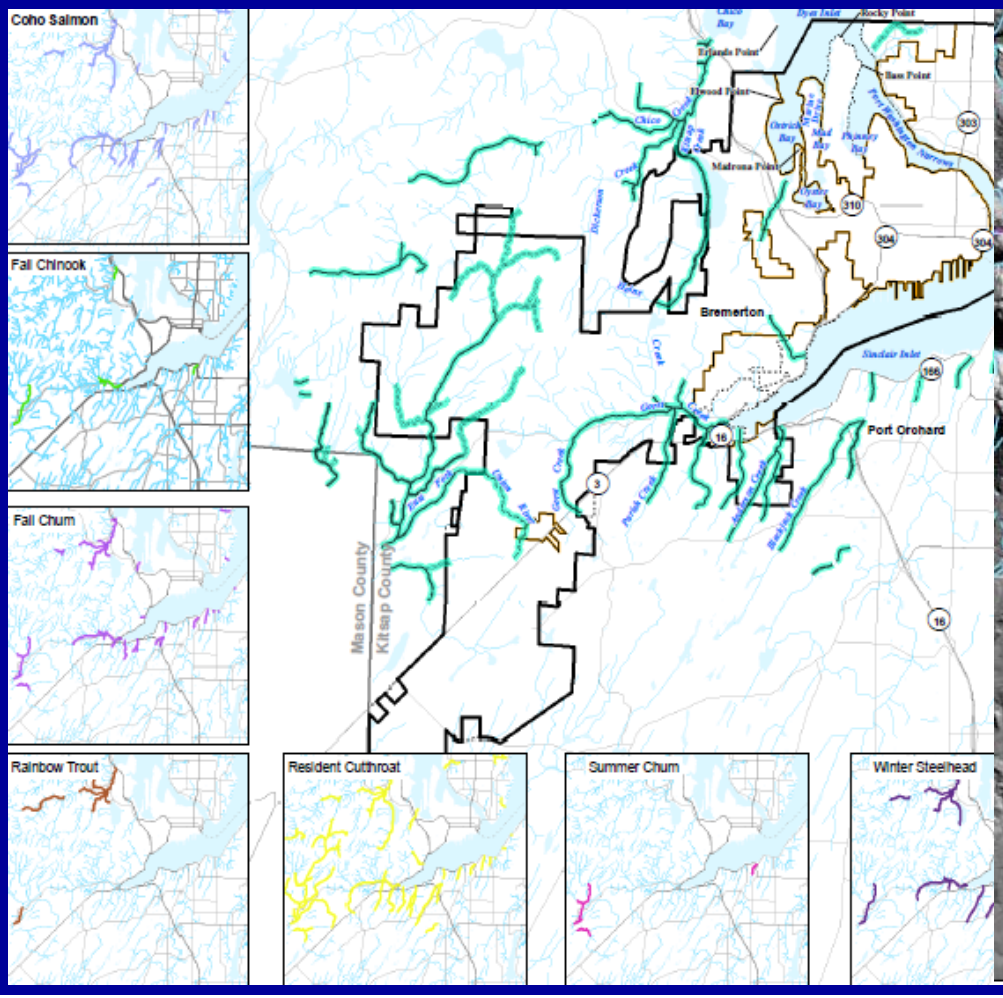


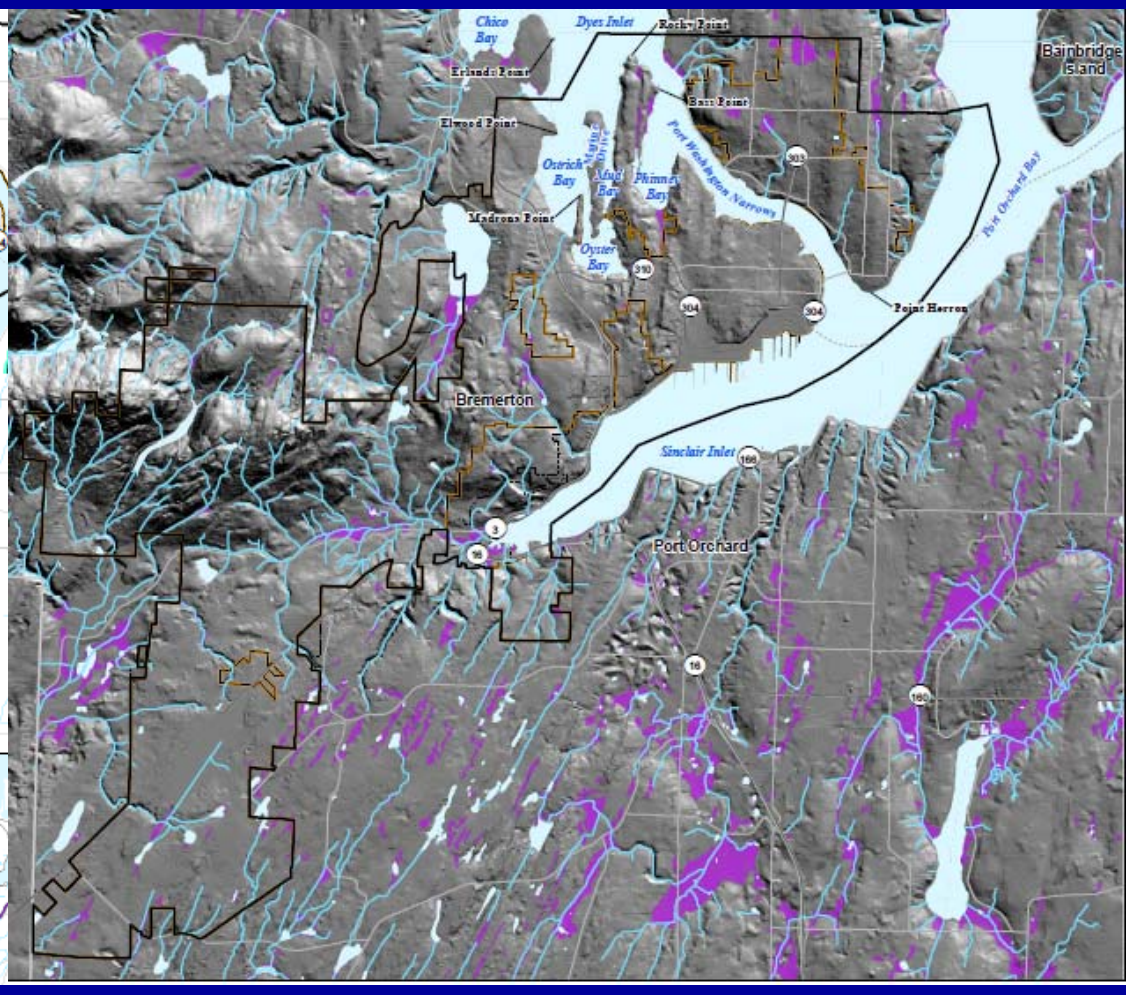


Hydric soils, wetlands, and water quality

Distribution of salmon in area streams

Hydric soils/wetlands along Gorst, Kitsap Lake, Phinney Bay, Enetai Creek, Parrish and Anderson Creeks important for water quality and stream flows



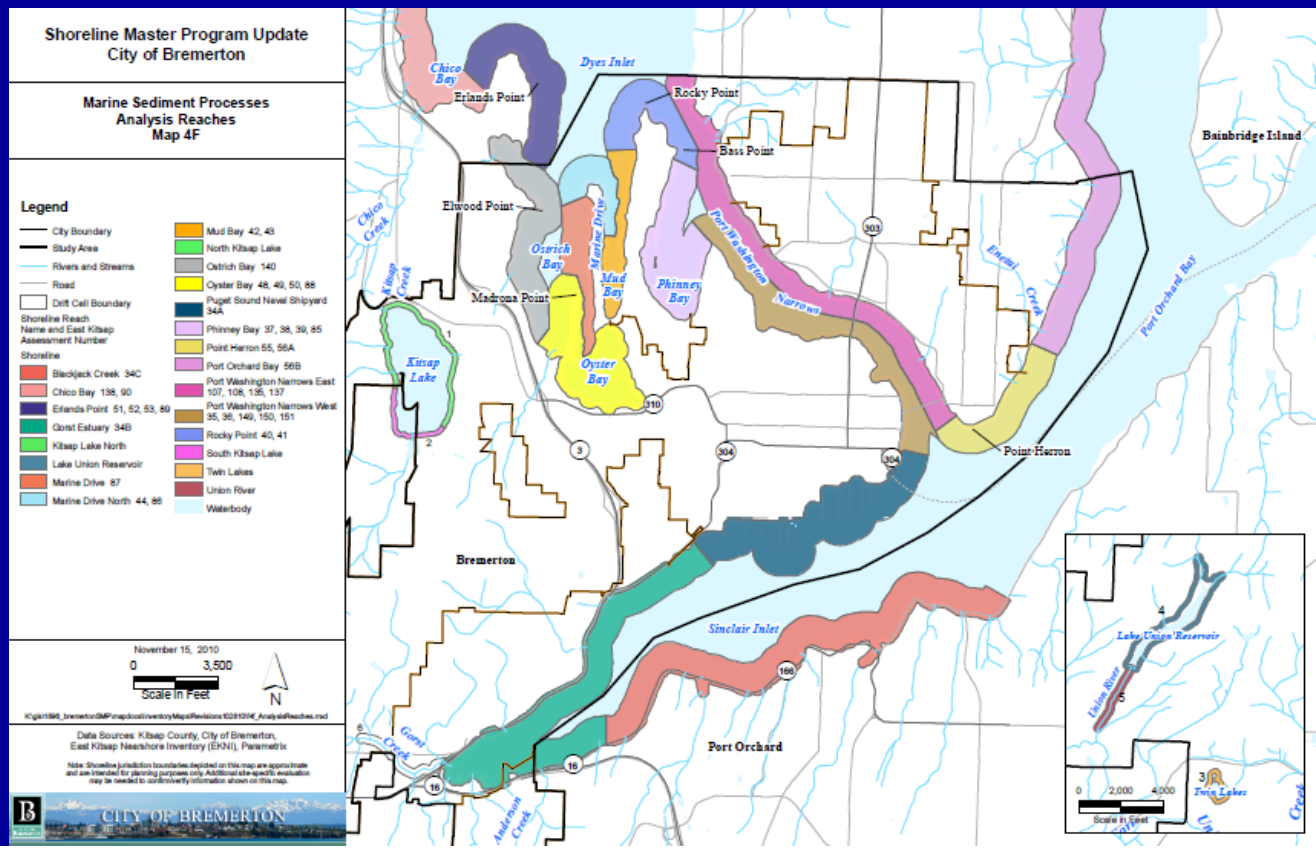


Ecosystem Processes

- To sum up, we want to know:
  - Where do they occur?
  - How and where have they been altered?
  - What functions are affected by alterations?

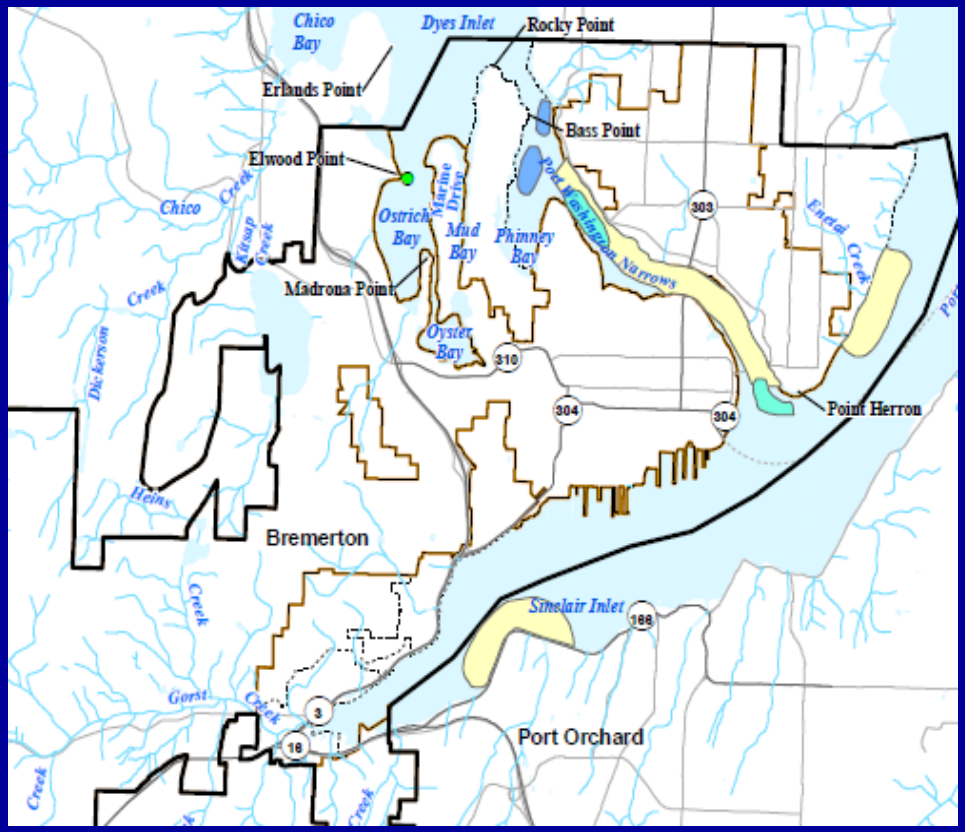
Reach Level Characterization

- Existing data – processes and resources
- Map and summarize conditions
  - Land use
  - Infrastructure
  - Vegetation
  - Critical Areas
  - Public access
  - Archeological

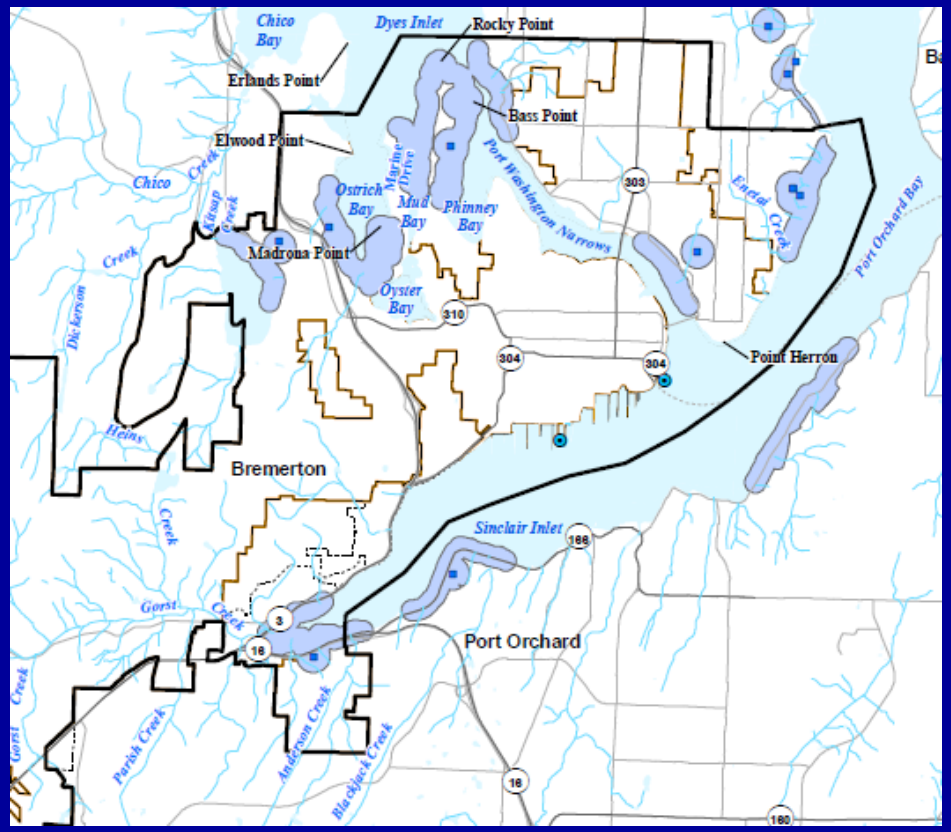


Biological Resources

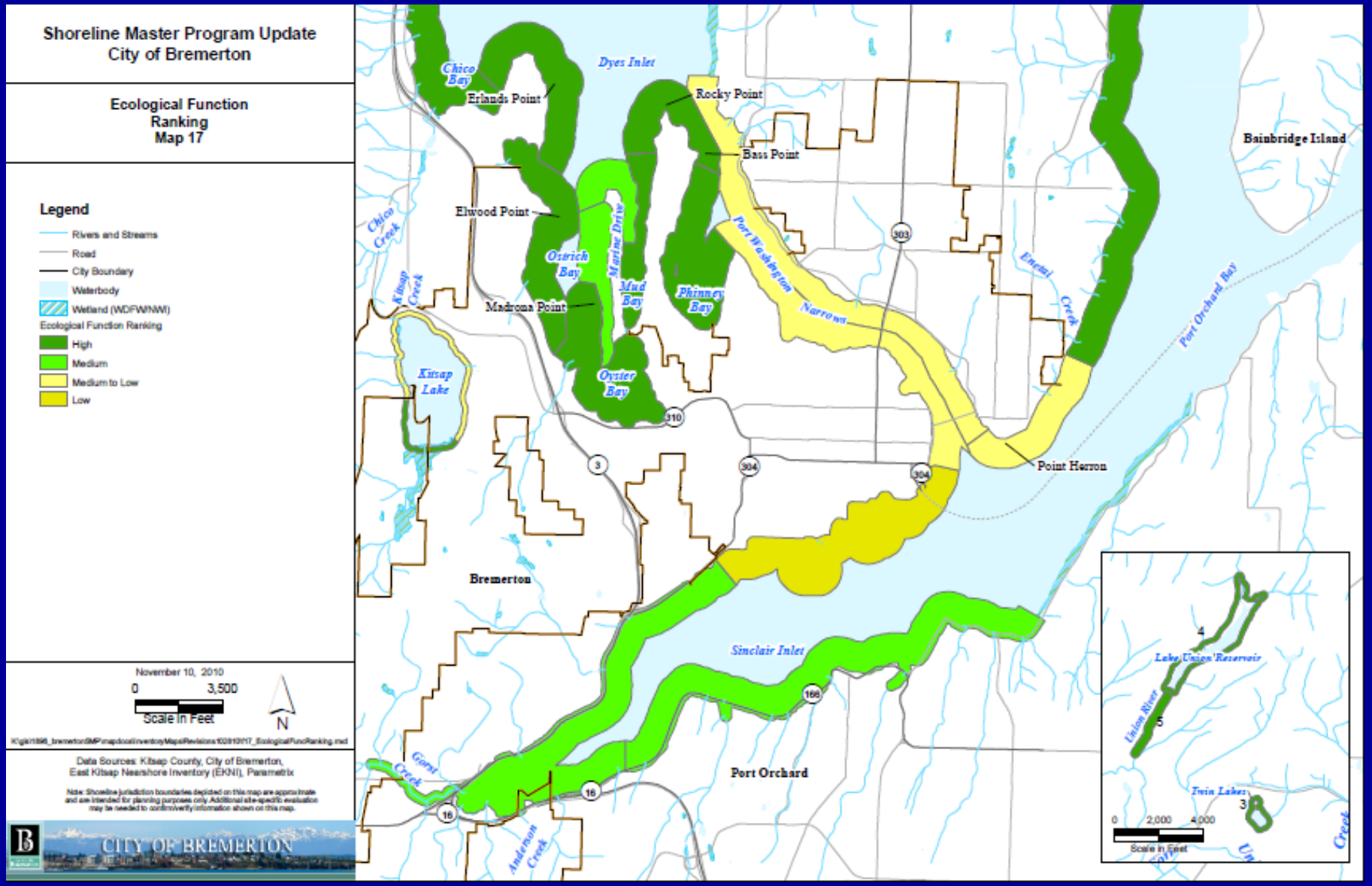
Shellfish



Bald Eagle nesting and foraging



Synthesis and Characterization of Ecological Function/Potential for Restoration

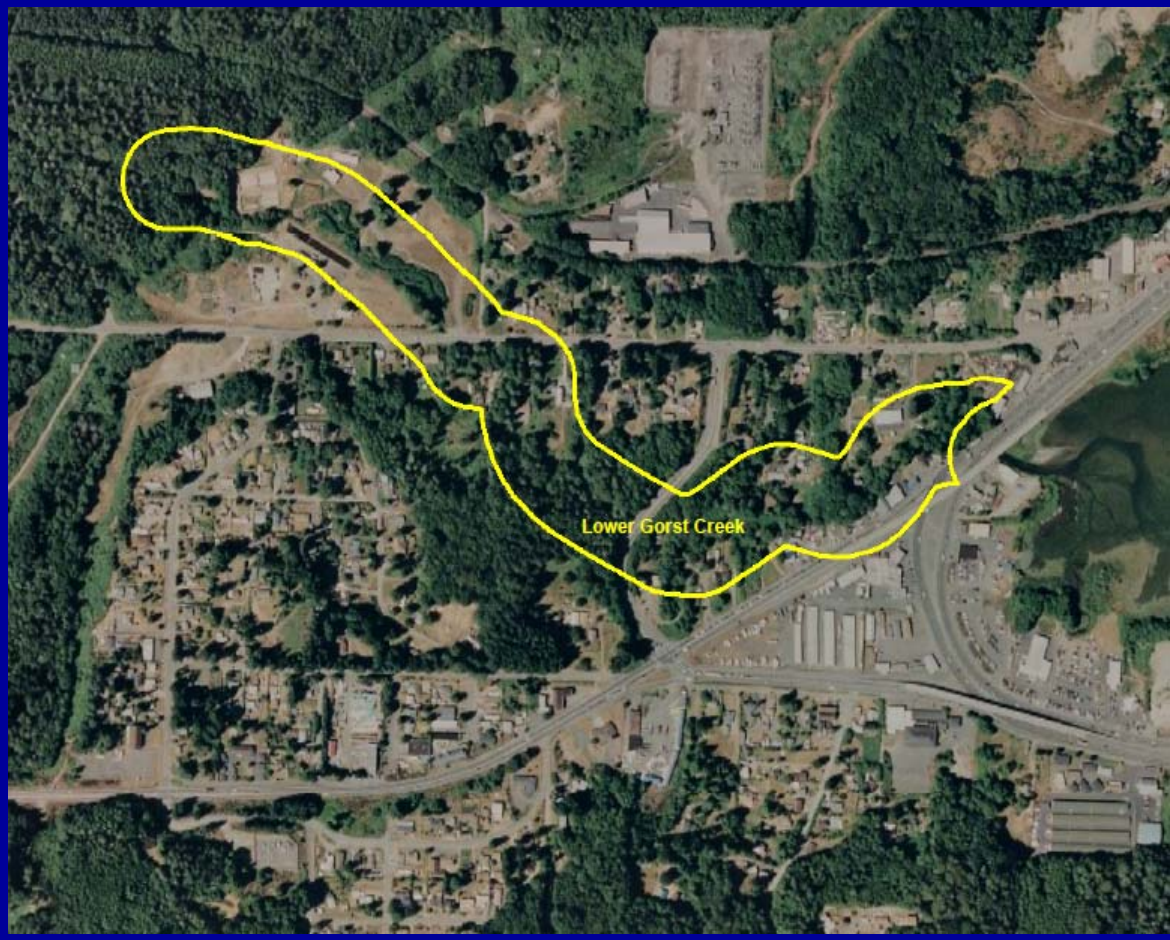


Gorst Estuary

- **Functions**: Water quality, sediment processes, primary production, juvenile salmon support, aquatic food web, shellfish habitat, nursery habitat
- **Resources:** Chinook, coho, fall chum, steelhead, cutthroat, bald eagle, waterfowl, eelgrass, salt marsh, forage fish
- **Alterations:** moderate to high
- **Restoration potential – moderate**

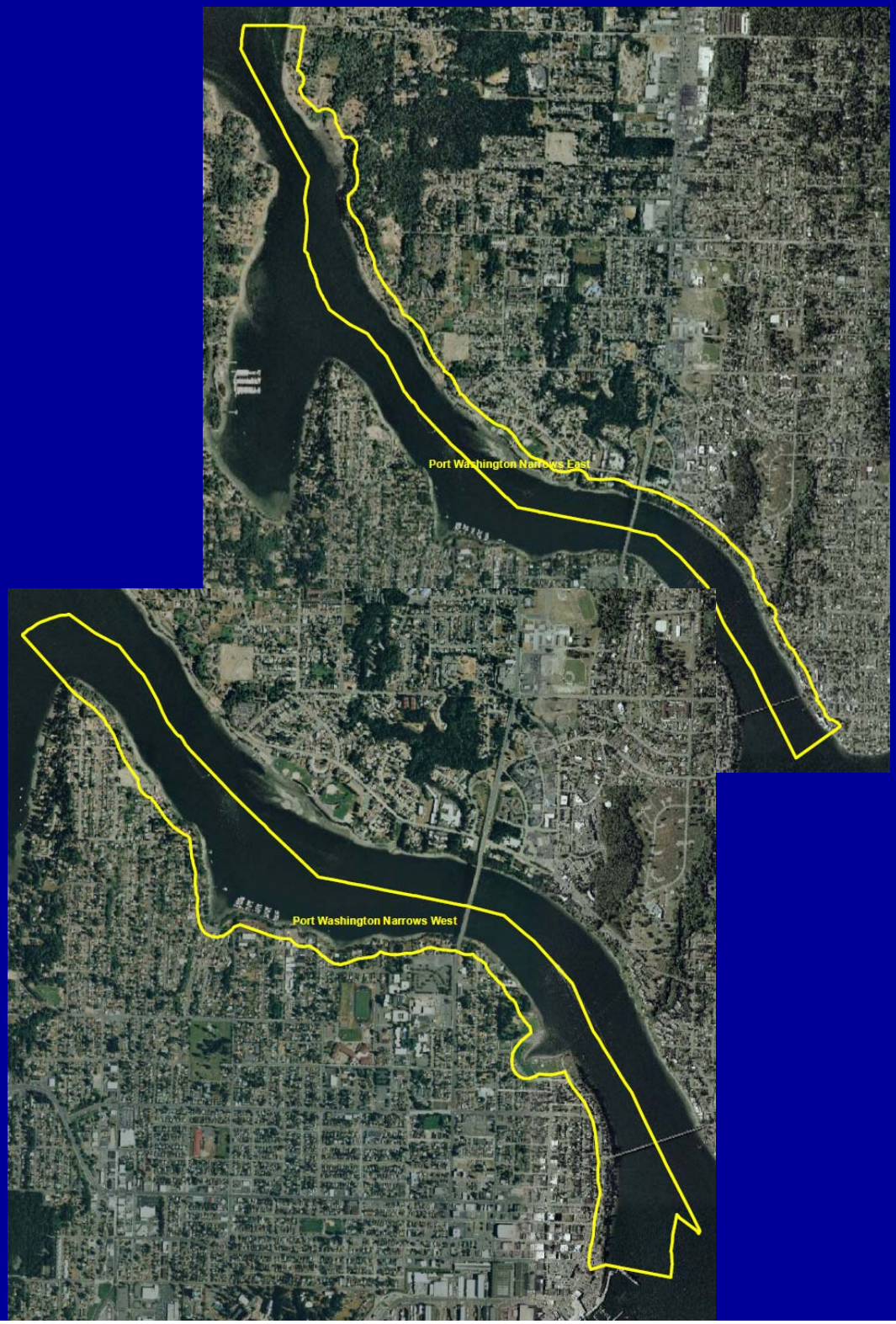
Lower Gorst Creek

- **Functions:** salmon migration/Chinook hatchery; water storage; water quality (shade, sediment, LWD); aquifer recharge
- **Resources:** salmonids, some riparian forest
- **Alterations:** moderate
- **Restoration potential - moderate**



Port Washington Narrows

- **<u>Functions:</u>** sediment supply and transport; beach formation; migratory pathway; pocket estuaries – juvenile salmon
- **<u>Resources:</u>** bald eagle; waterfowl; shellfish; surf smelt
- **<u>Alterations:</u>** high
- **Restoration potential – moderate to low**



Phinney Bay

- **Functions:** juvenile salmon rearing and refuge; riparian vegetation functions; food web; eelgrass and salt marsh habitat
- **Resources:** salt marsh, eelgrass, surf smelt, shellfish, bald eagle
- **Alterations:** moderate
- **Restoration potential high**

Marine Drive & Marine Drive North

- **Functions:** forage fish spawning habitat; food web; riparian vegetation functions; juvenile salmon rearing;
- **Resources:** surf smelt and sand lance spawning; bald eagle; eelgrass and kelp; patchy salt marsh
- **Alterations**: moderate to high
- **Restoration potential moderate**

Oyster Bay

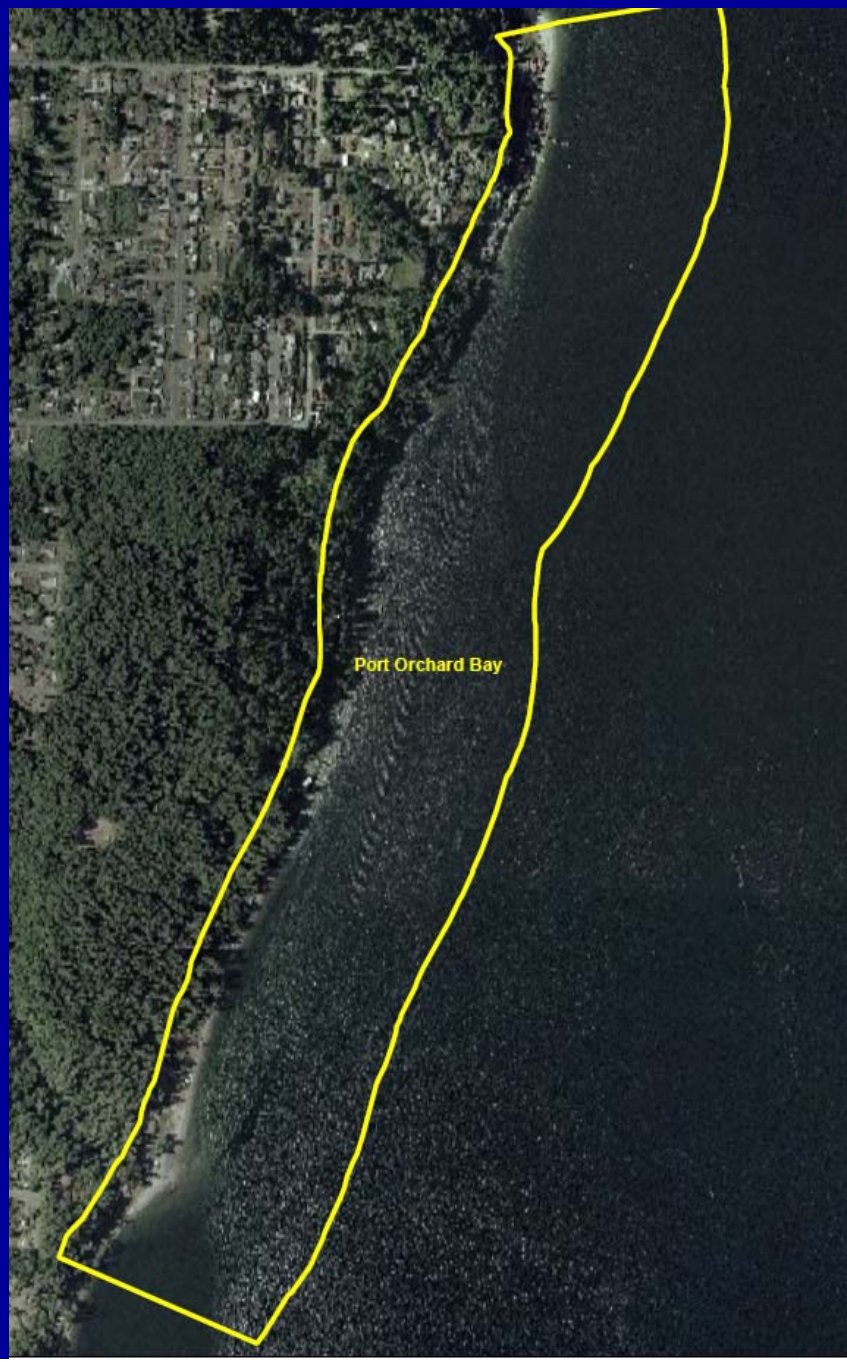
- **Functions:** primary production; food web; juvenile salmon rearing – pocket estuary; water quality
- **Resources:** Salt marsh, eelgrass, shallow sand/mud flats/shellfish, coho/chum/ cutthroat, bald eagle foraging
- **Alterations:** moderate
- **Restoration potential moderate to high**

Ostrich Bay & Erlands Point

- **<u>Functions:</u>** juvenile salmon rearing, primary production, food web, riparian vegetation functions, forage fish spawning, sediment supply and transport
- **<u>Resources</u>**: bald eagle, salt marsh, pocket estuary, eelgrass, seal/sea lion haulout, surf smelt significant estuaries/marshes
- **<u>Alterations:</u>** moderate
- **Restoration potential high**

Port Orchard Bay

- **<u>Functions:</u>** Sediment supply and transport; riparian vegetation functions; juvenile salmon rearing; water quality; water quantity (forested areas); forage fish spawning
- **<u>Resources:</u>** pocket estuary; coho, chum and cutthroat; riparian vegetation; surf smelt; bald eagle; kelp
- **<u>Alterations:</u>** low to moderate
- **Restoration potential high**



Kitsap Lake North

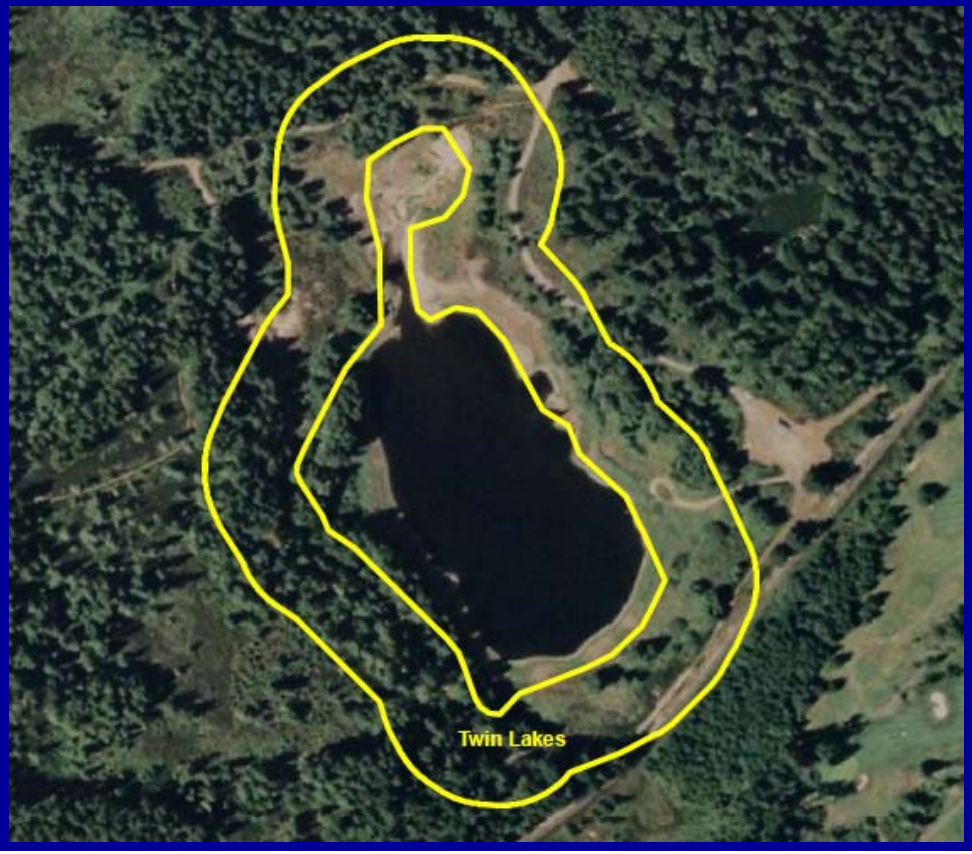
- **Functions:** water storage; water quality (riparian vegetation functions); salmon migration;
- **Resources:** bald eagle foraging and nesting; coho and cutthroat
- **Alterations:** moderate to high
- **Restoration potential moderate to low**

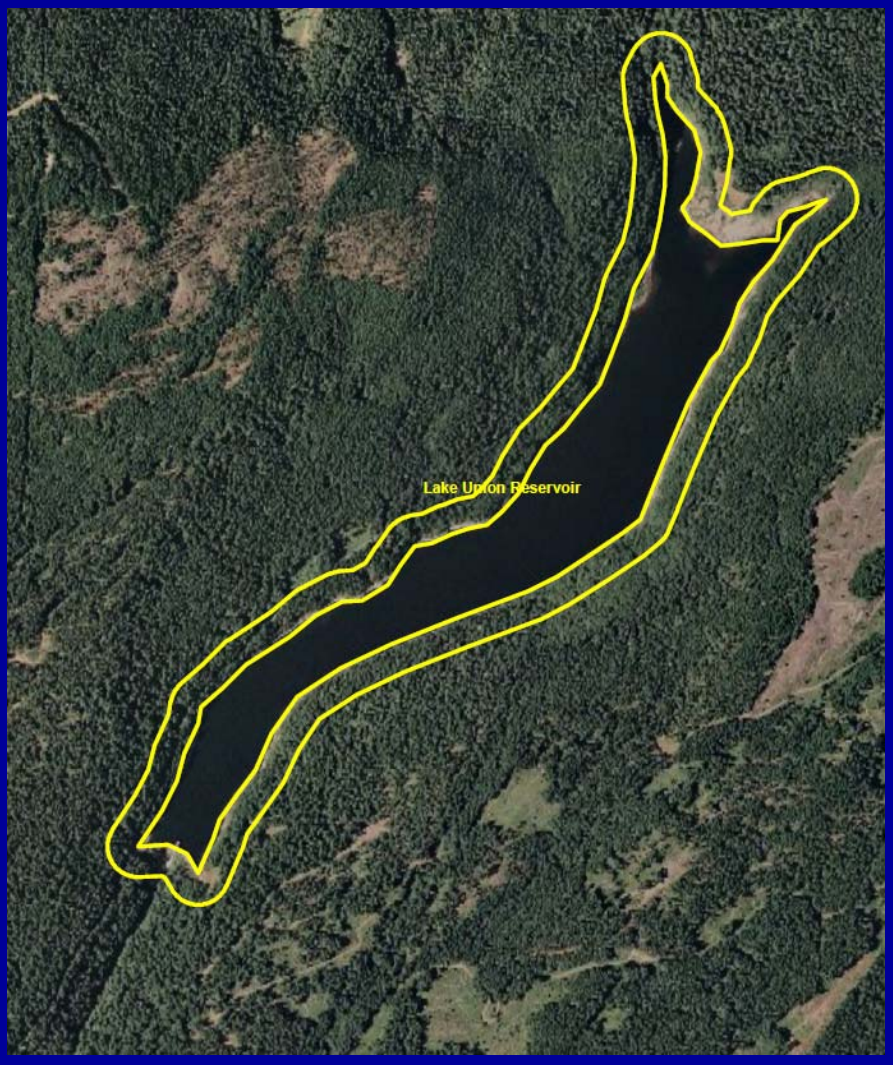
Kitsap Lake South

- **Functions:** water storage; water quality (riparian vegetation functions); water quality (nutrient management in wetlands); water quantity (forest cover); salmon migration;
- **Resources:** bald eagle foraging and nesting; coho and cutthroat
- **Alterations:** moderate to low
- **Restoration potential high**

Union Reservoir, Union River, Twin Lakes

- Alterations – low
- Protection potential – high





Options

- **Important functions** – sediment processes; water quality; water quantity; habitat – eelgrass, salt marsh, forage fish spawning, riparian vegetation, juvenile salmon rearing and migration
- **Protection** – protect priority areas; address alterations (impervious surface, armoring)
- **Restoration** – focus on riparian vegetation, vegetation management, 'soft' armoring or removal, removal of passage or tidal barriers
- **Enhancement/repair** – stormwater management, vegetation management, riparian plantings, minimize/re-design overwater structures

Next steps

- Inventory: Planning Commission and Public Review – revised draft
- SMP:
  - Drafting SMP: January/February 2011
  - Planning Commission and Public Review

Questions or Comments

Please do not ask questions about your specific property – as we have not yet gotten to that level of detail in the planning process

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