



Padden Creek Estuary Enhancements

December 11, 2013



City of
Bellingham

Public Works Natural
Resources Division

Padden Creek Estuary

- Padden Creek estuary overview
- Early restoration actions
- Current restoration actions
- Stormwater treatment improvements
- Questions

Padden Creek Estuary Functions:

- Pocket estuary
- Mud flat
- Wildlife corridor
- Refuge and nursery for forage fish and juvenile salmon



Birds:

- Green heron
- Blue heron
- Kingfisher
- Redtail hawk
- Gulls
- Winter waterfowl

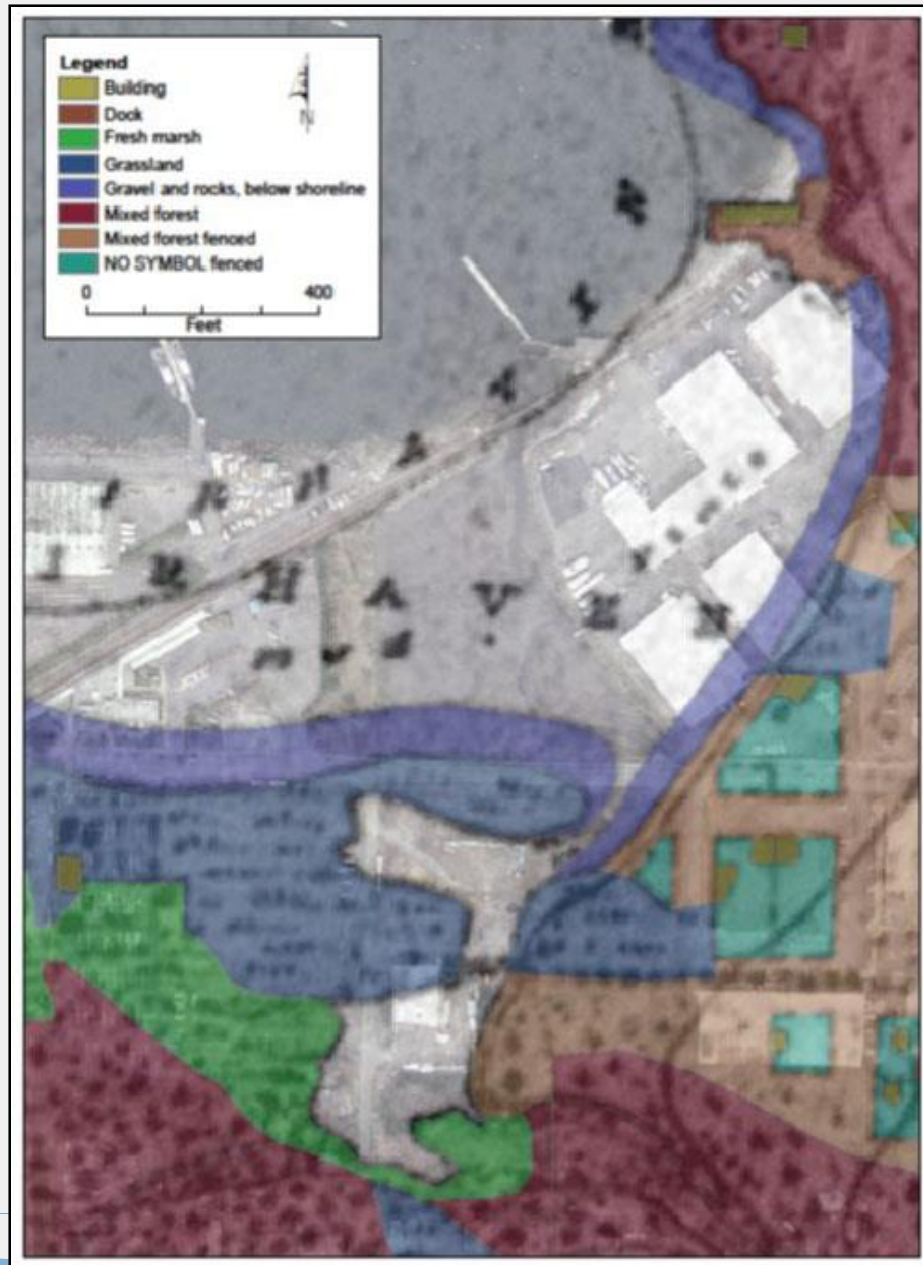


Wildlife:

- River otters
- Muskrat
- Weasel
- Mink
- Garter snake
- Chum salmon
- Coho salmon
- Forage fish



1888



1950



1963



1975



2013



Early Restoration - 1990



1990. PCL excavation with David Mason. David worked with Ron Thom (UW Fisheries etc.), Wolf Bauer & others in construction of a project seeking to integrate backshore and intertidal habitat components reflecting 1850s conditions. (The City's CZM/Ecology-assisted study of the area identified reference site characteristics using the 1855 USCS/McMurtrie map showing meadowlands as a major component of the Padden Creek estuary complex just to the south.) Bauer's concept of an island where David is standing was modified in the final ALEA grant agreement.

Early Restoration - 1990



Pacific crabapple

REVEGETATING THE WEST SHORE

SELECTED SPECIES PLANTED AND FOUND HERE IN LATE 1991:

SHRUBS:

tall Oregon grape
red-flowering currant
mock orange
oceanspray
Nootka rose
baldhip rose
cluster rose
service berry
soopalallie
hairy manzanita
salal
red elder
blue elder
snowberry

TREES:

shore pine
Scouler's willow
Sitka willow
Sitka alder
beaked hazel
Garry oak
chokecherry
Pacific crabapple
black hawthorn
cascara
Douglas maple
Pacific madrone

EASY-TO-SEE UPLAND PERENNIALS AND GRASSES:

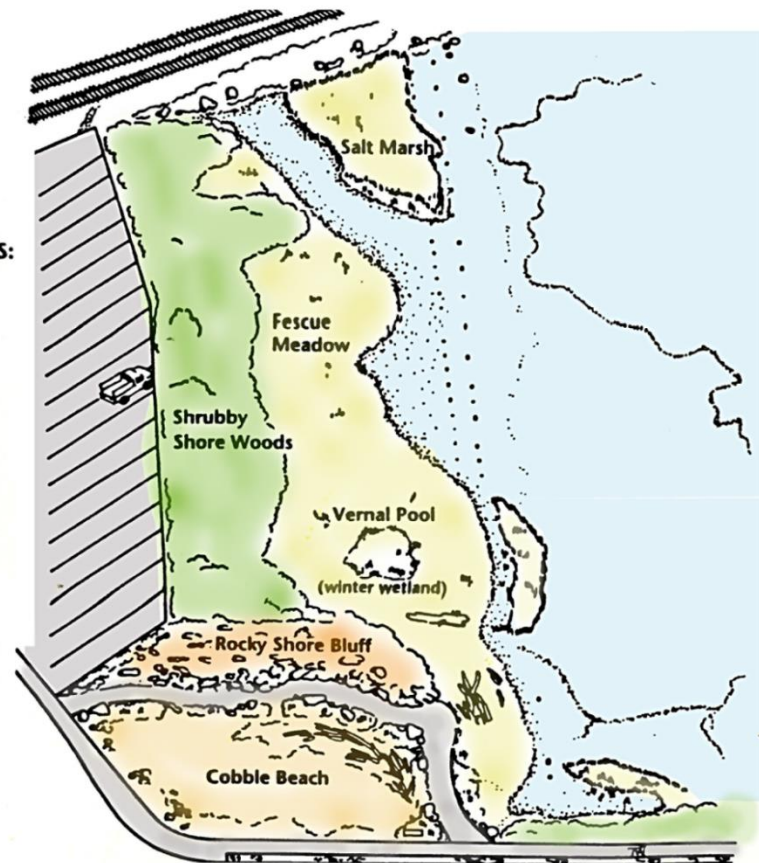
starry cerastium
Menzies' larkspur
broad-leaved stonecrop
Oregon stonecrop
streambank lupin
seawatch angelica
bare-stem parsely
Douglas aster
Canadian goldenrod
common woolly sunflower
great camas
purple camas
nodding onion
red fescue



black hawthorn

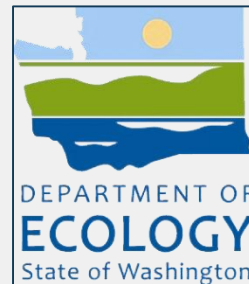


Sitka alder



Current Restoration:

- Project Partners and Funding
 - City of Bellingham
 - Department of Ecology
 - Bellingham Bay Action Team



Consultant Team:

- **ESA and Coastal Geologic Services**
 - Feasibility analysis
 - Design
 - Permitting applications
- **Herrenkohl Consulting**
 - Environmental site characterization

Project Goals

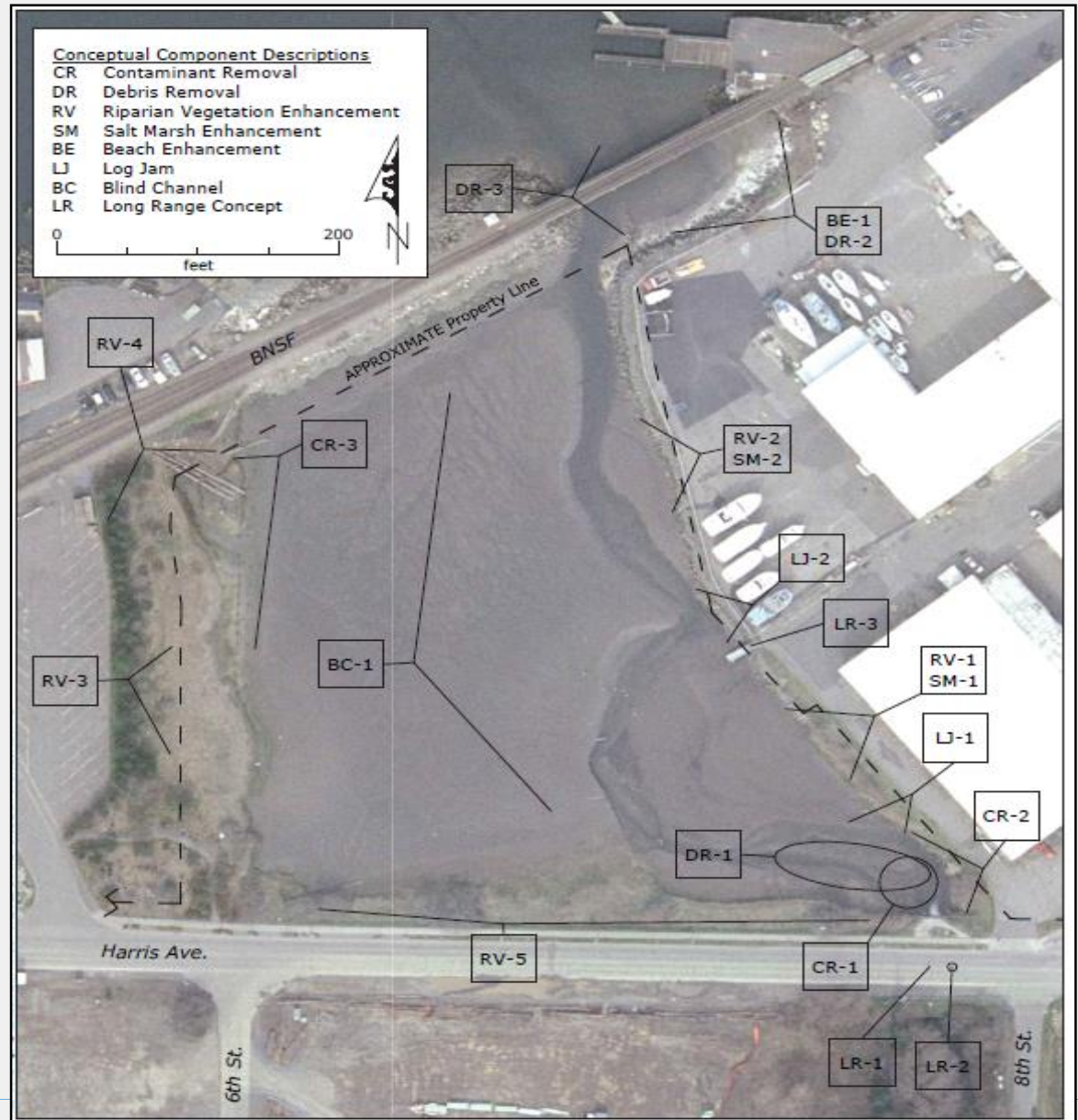
1. Implement enhancement actions that will result in an estuary system that supports a greater number and magnitude of ecosystem functions, resulting in greater species use and habitat value.
2. Create a site that will serve as a more substantial amenity to the community.

Project Objectives

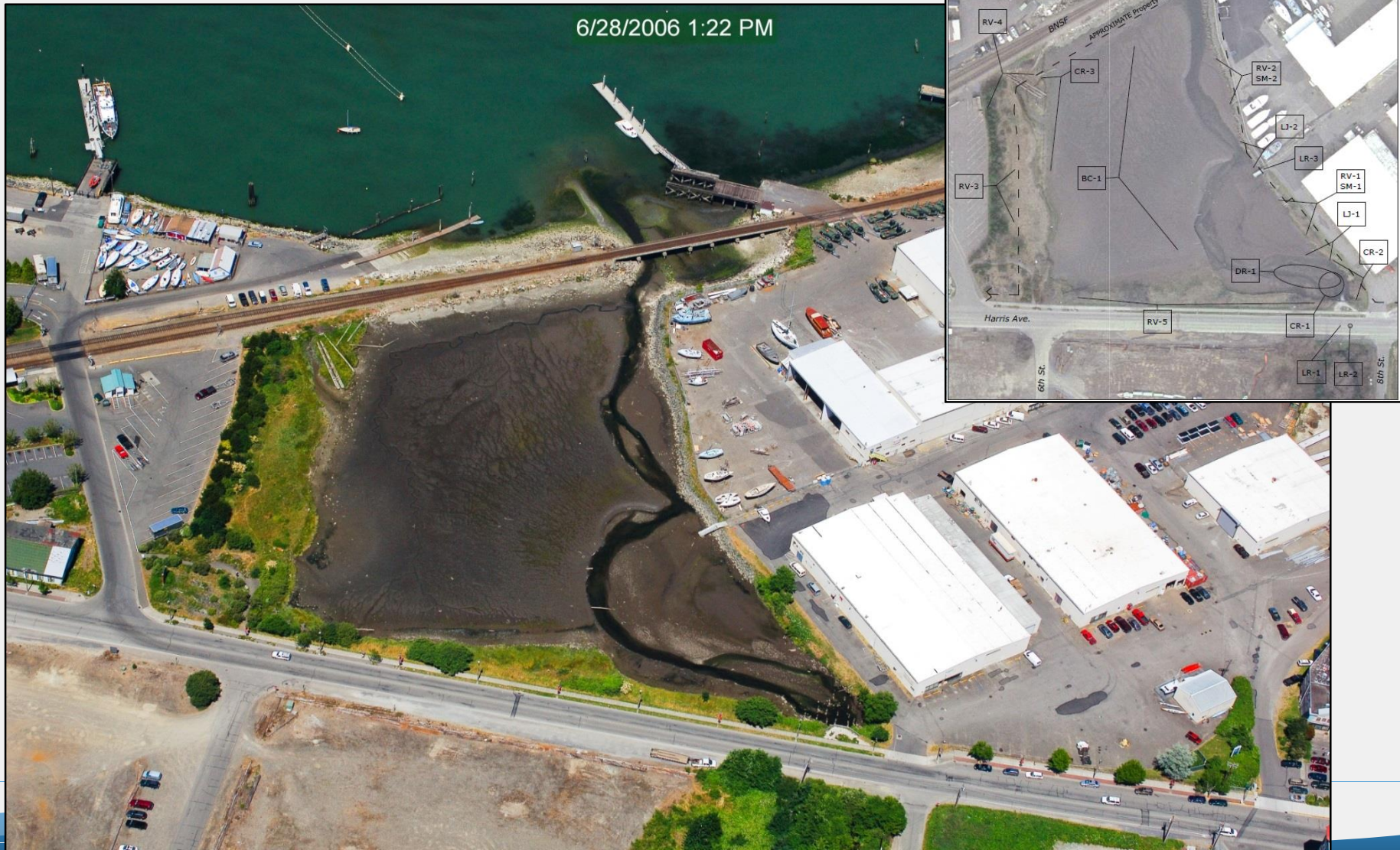
- Increase estuary residence time of juvenile salmon.
- Increase the quality and quantity of salmon forage species.
- Increase habitat complexity within the Padden Creek estuary.
- Improve water quality within the Padden Creek estuary.

- Increase bird use of the Padden Creek estuary.
- Increase bird and wildlife usage, providing increased opportunities for public viewing/bird-watching.
- Incorporate on-site public education/outreach materials to enhance public enjoyment of Padden Creek estuary and inform public on restoration efforts.

Conceptual Design Ideas



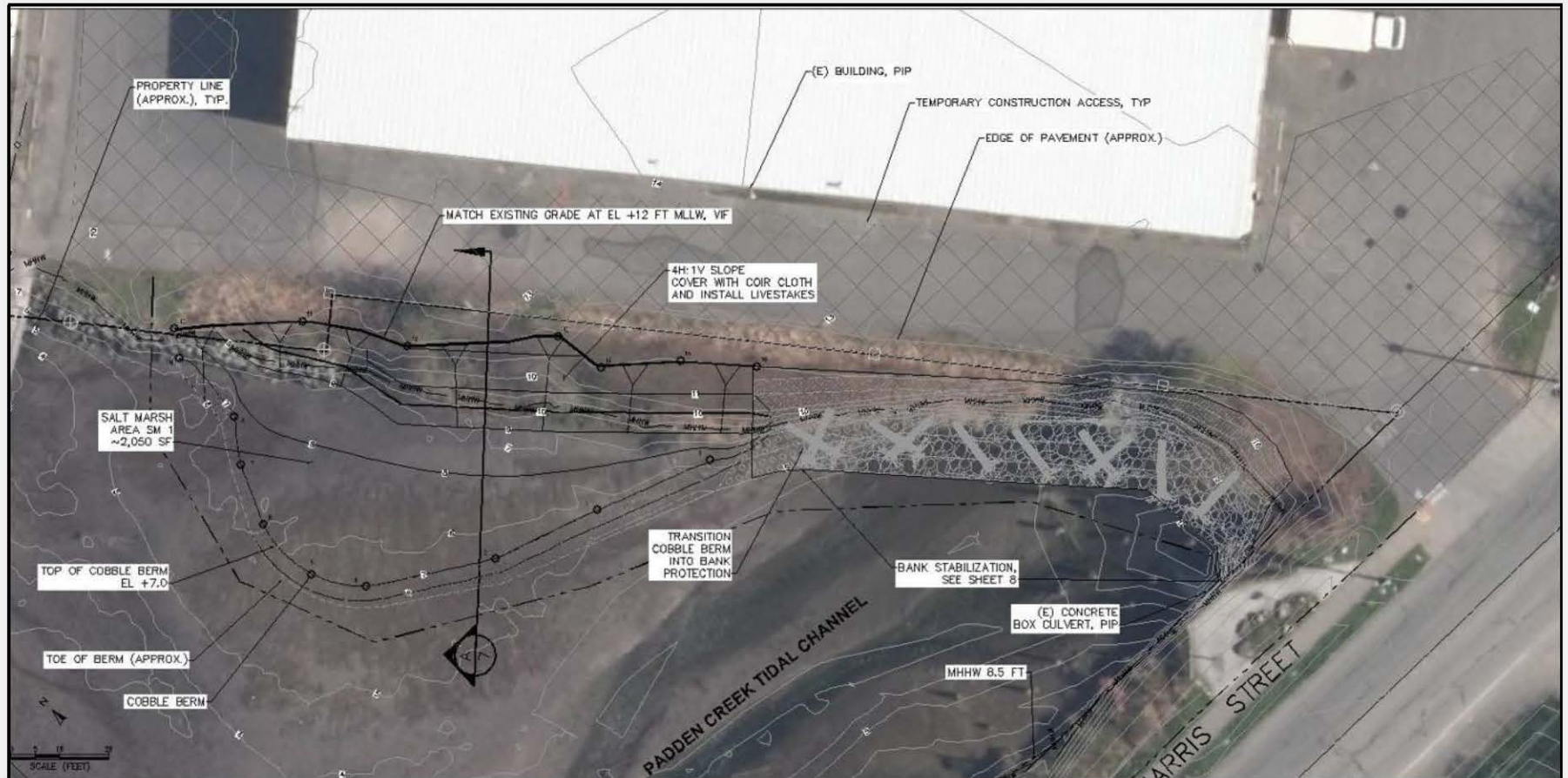
Design Constraints



Proposed project elements



Salt Marsh Area – East Bank



Salt Marsh Area – West Bank



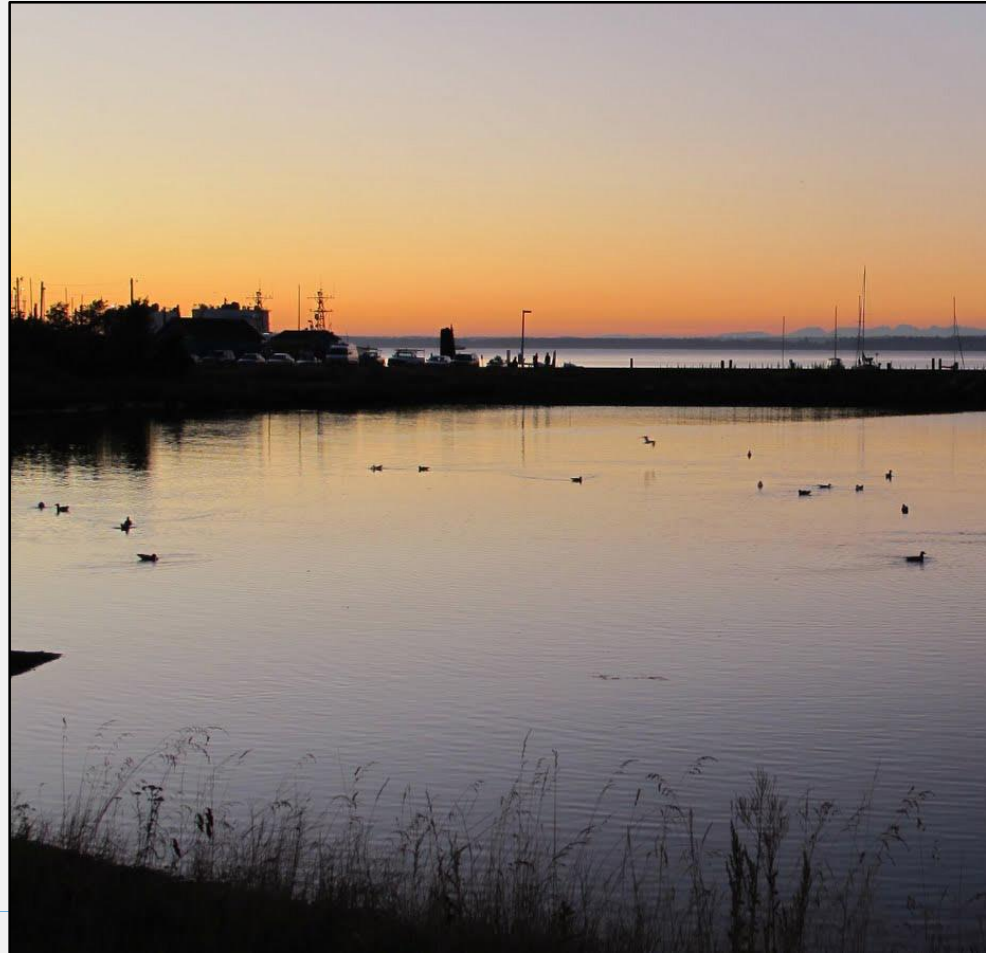
Padden Creek Estuary Water Quality

- Design and construction of Low Impact Development (LID) and conventional water quality facilities
- Treat flows from a 30" diameter discharge pipe that conveys untreated stormwater from 90 acres directly into the Padden Creek Estuary.

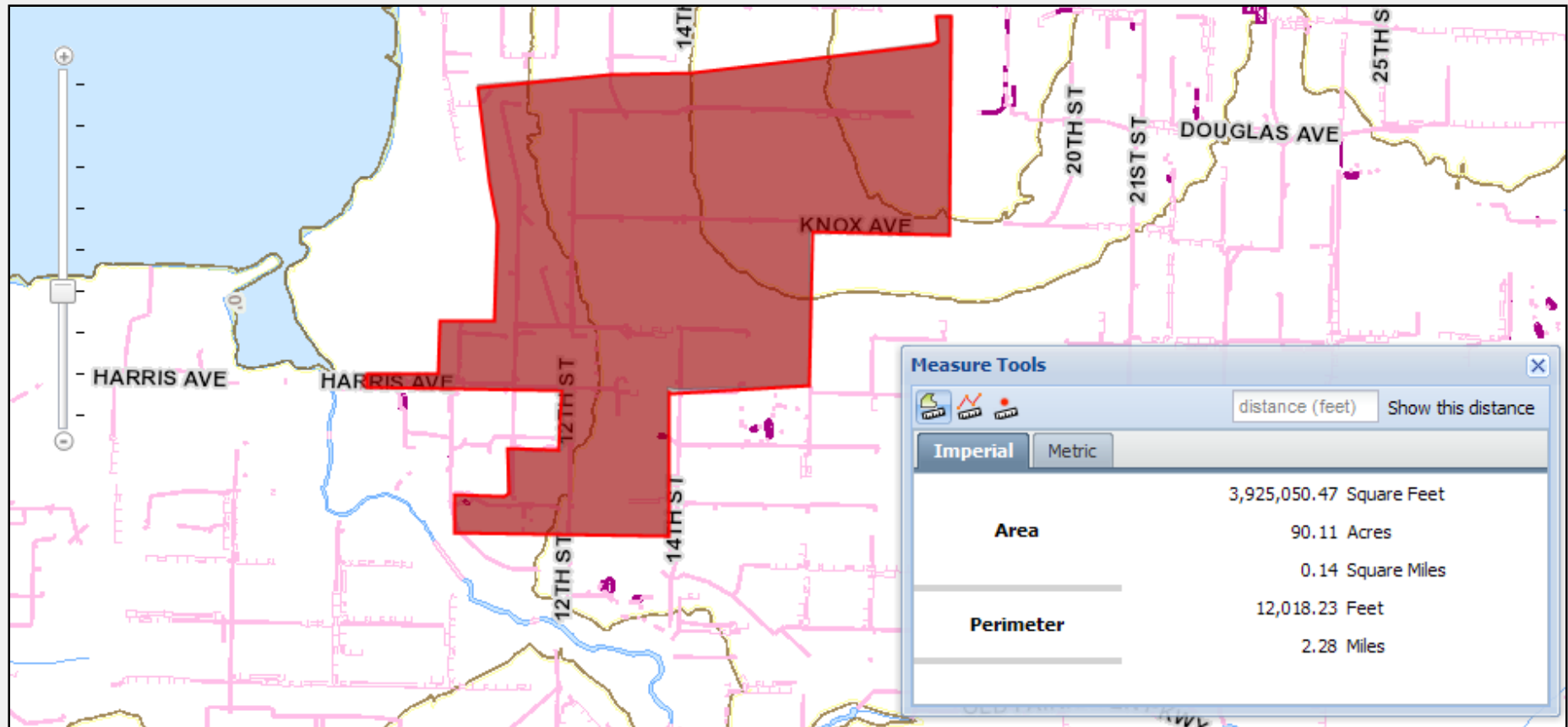
Funding:

Total Project \$1,125,000

Ecology Share \$843,750



Water Quality for Padden Creek Estuary Tributary Area



Water Quality for Padden Estuary

Proposed Facility Locations



Project Timelines:

- Estuary Enhancements:
Late 2014- Early 2015
- Stormwater treatment improvements:
Early 2015

Questions?





Padden Creek Estuary Enhancements

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Jim Johanessen, Consultant



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