



# 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



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## 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



Art Krukeberg, Photo

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:

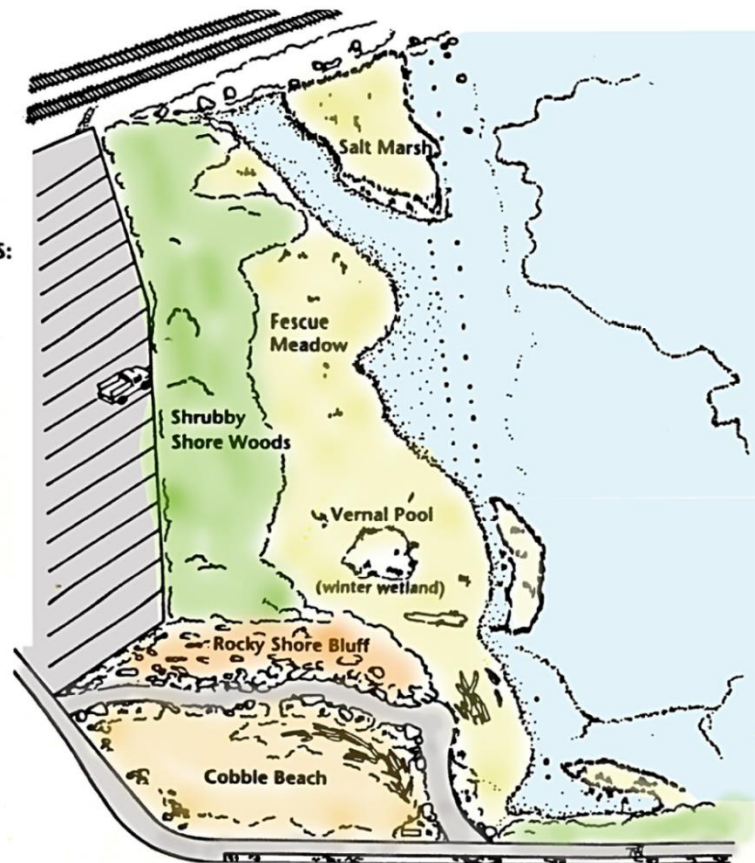
starry cerastium  
Menzies' larkspur  
broad-leaved stonecrop  
Oregon stonecrop  
streambank lupin  
seawatch angelica  
bare-stem parsely  
Douglas aster  
Canadian goldenrod  
common woolly sunflower  
great camas  
purple camas  
nodding onion  
red fescue



black hawthorn

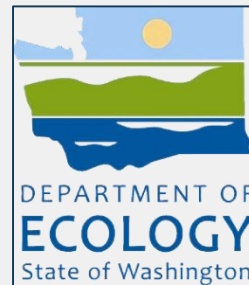


Sitka alder



# 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

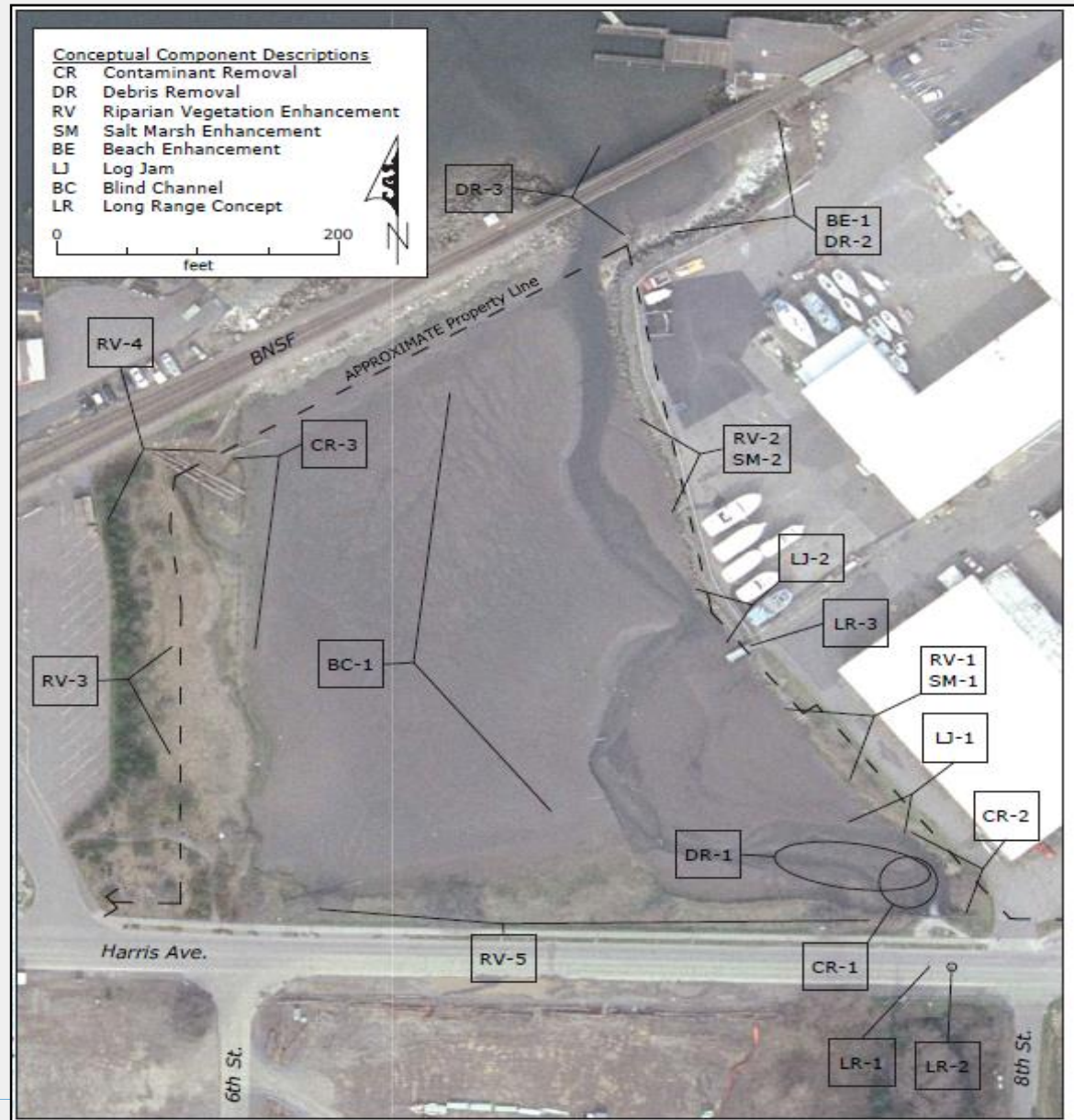
1. Implement enhancement actions that will result in an estuary system that supports a greater number and magnitude of ecosystem functions, resulting in greater species use and habitat value.
2. Create a site that will serve as a more substantial amenity to the community.

# 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



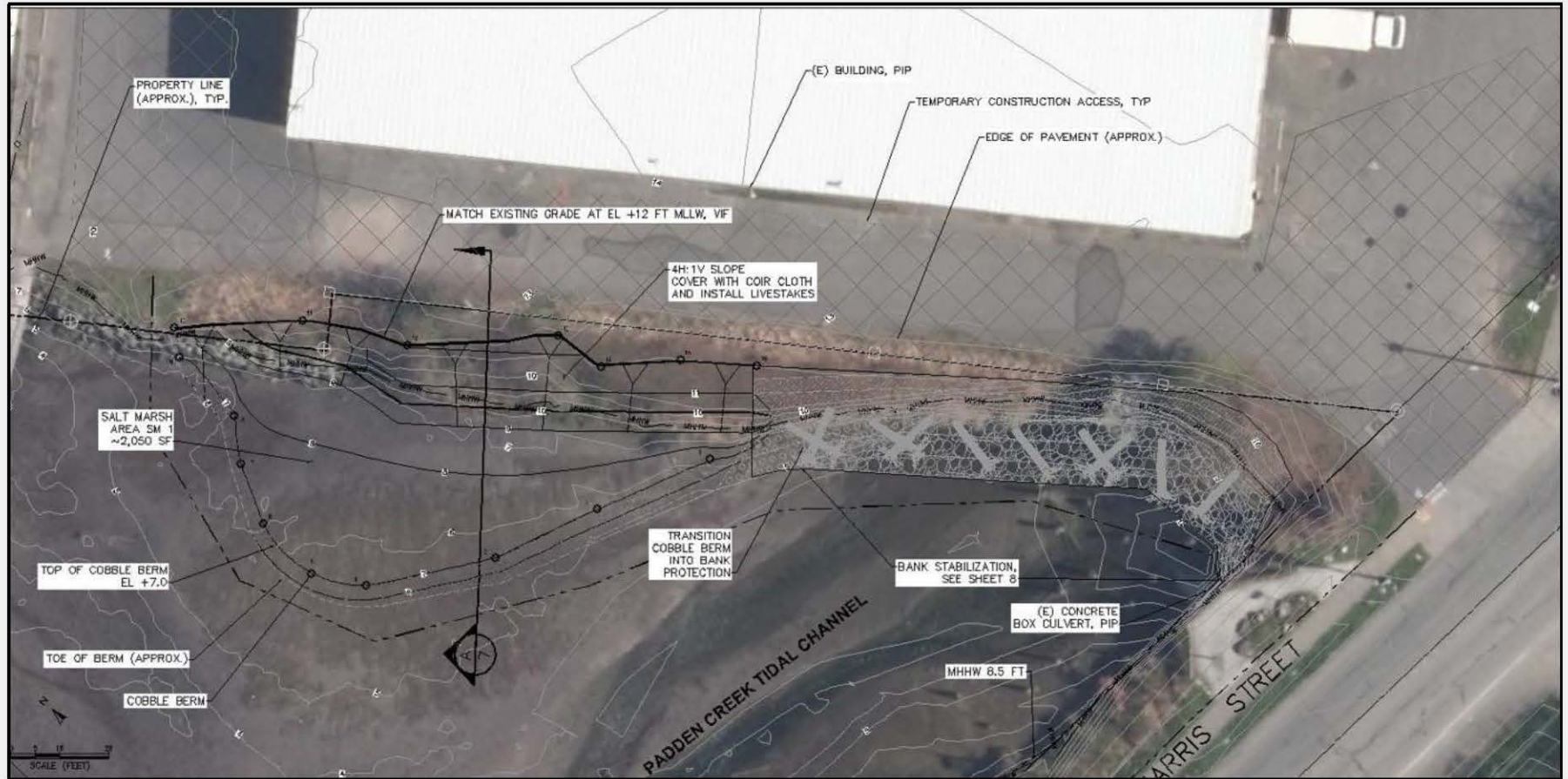
# Design Constraints



# Proposed project elements



# Salt Marsh Area – East Bank



# Salt Marsh Area – West Bank



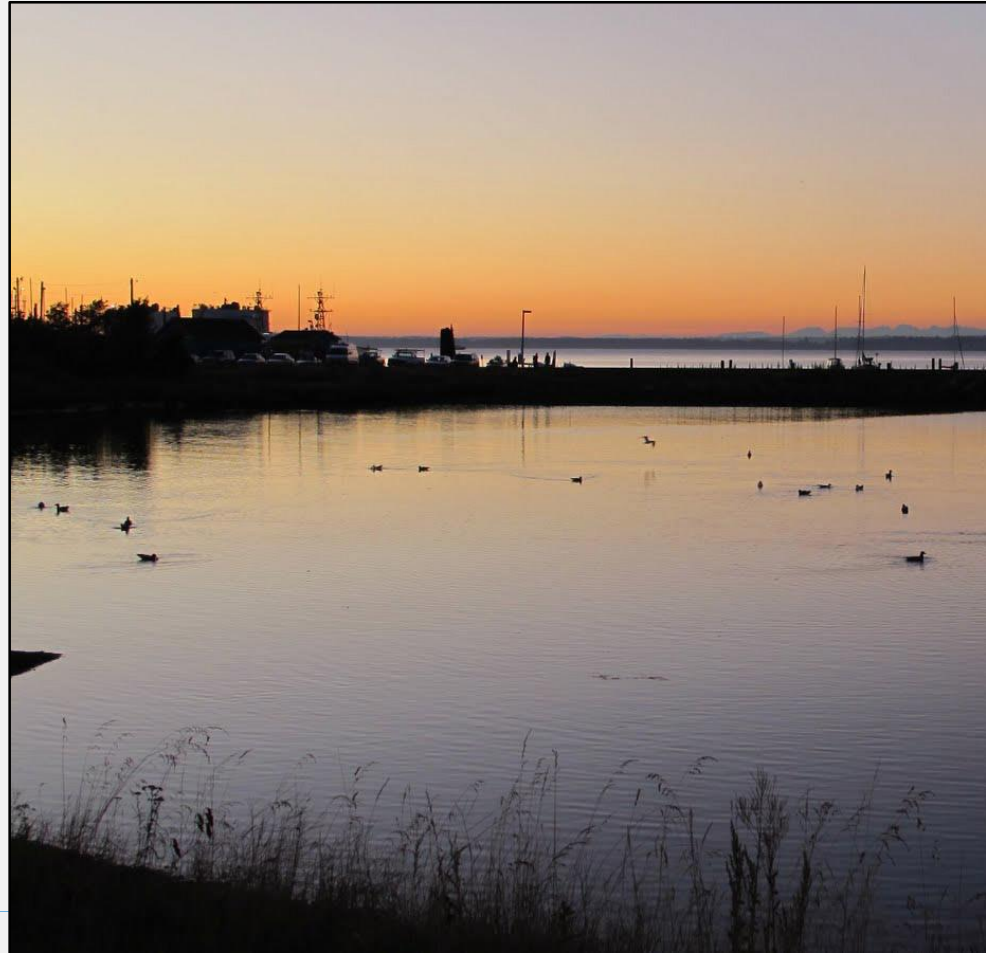
# Padden Creek Estuary Water Quality

- 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.

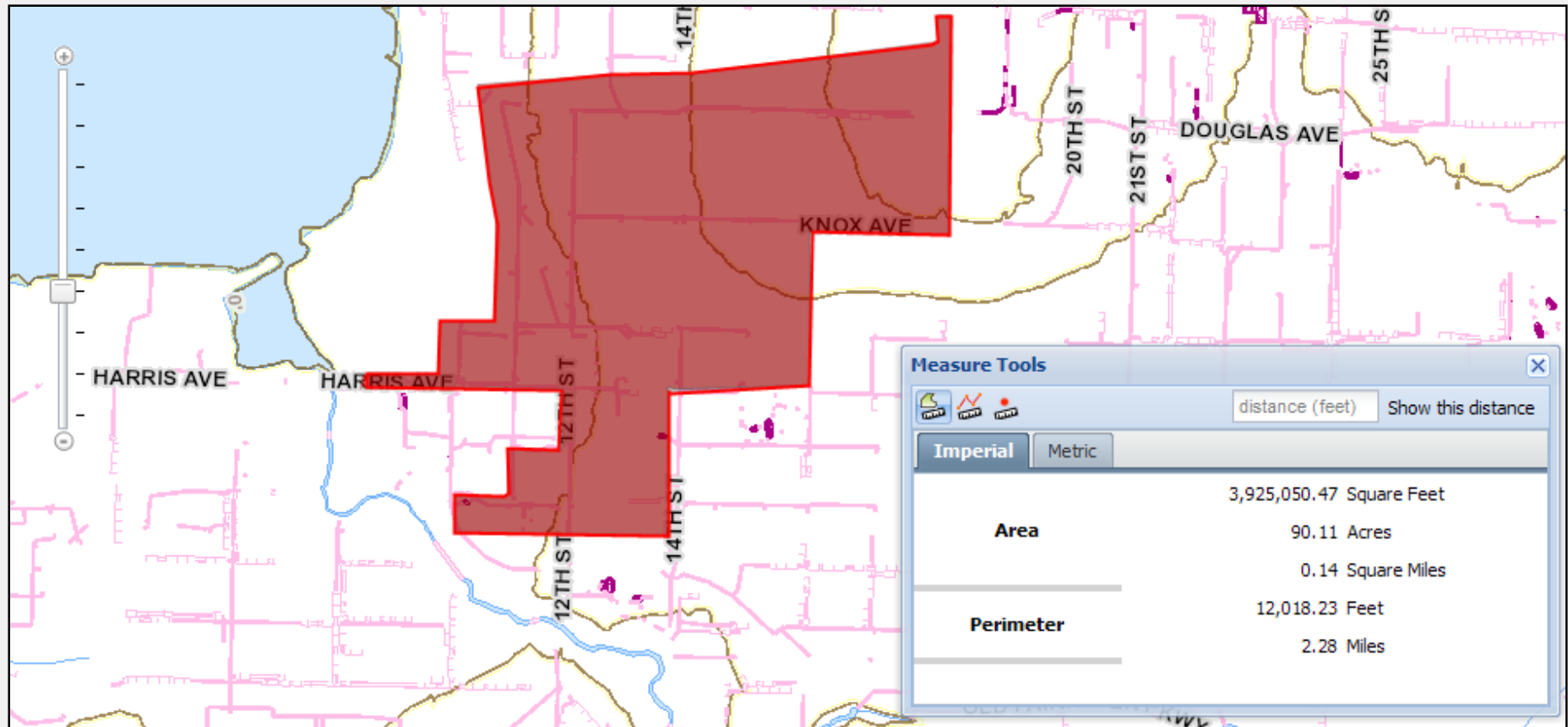
## **Funding:**

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?



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# Padden Creek Estuary Enhancements

Presented by:

Renee LaCroix, Ecology & Restoration Manager

Tim Wahl, Greenways Coordinator, Parks & Recreation

Bill Reilly, Stormwater Manager

Jim Johanessen, Consultant



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