Skokomish Estuary Restoration Monitoring

Skokomish Tribe Natural Resource Department
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Habitat Biologist

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Location

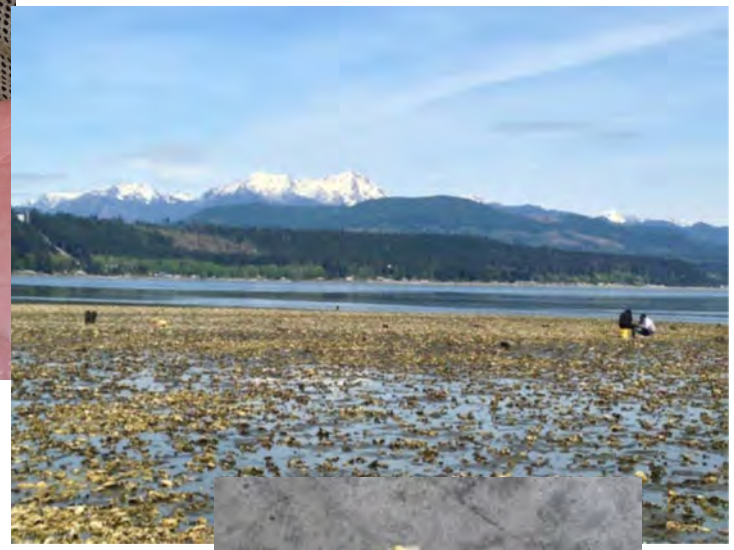
W A S H I N G T O N
COLUMBIA
BASIN

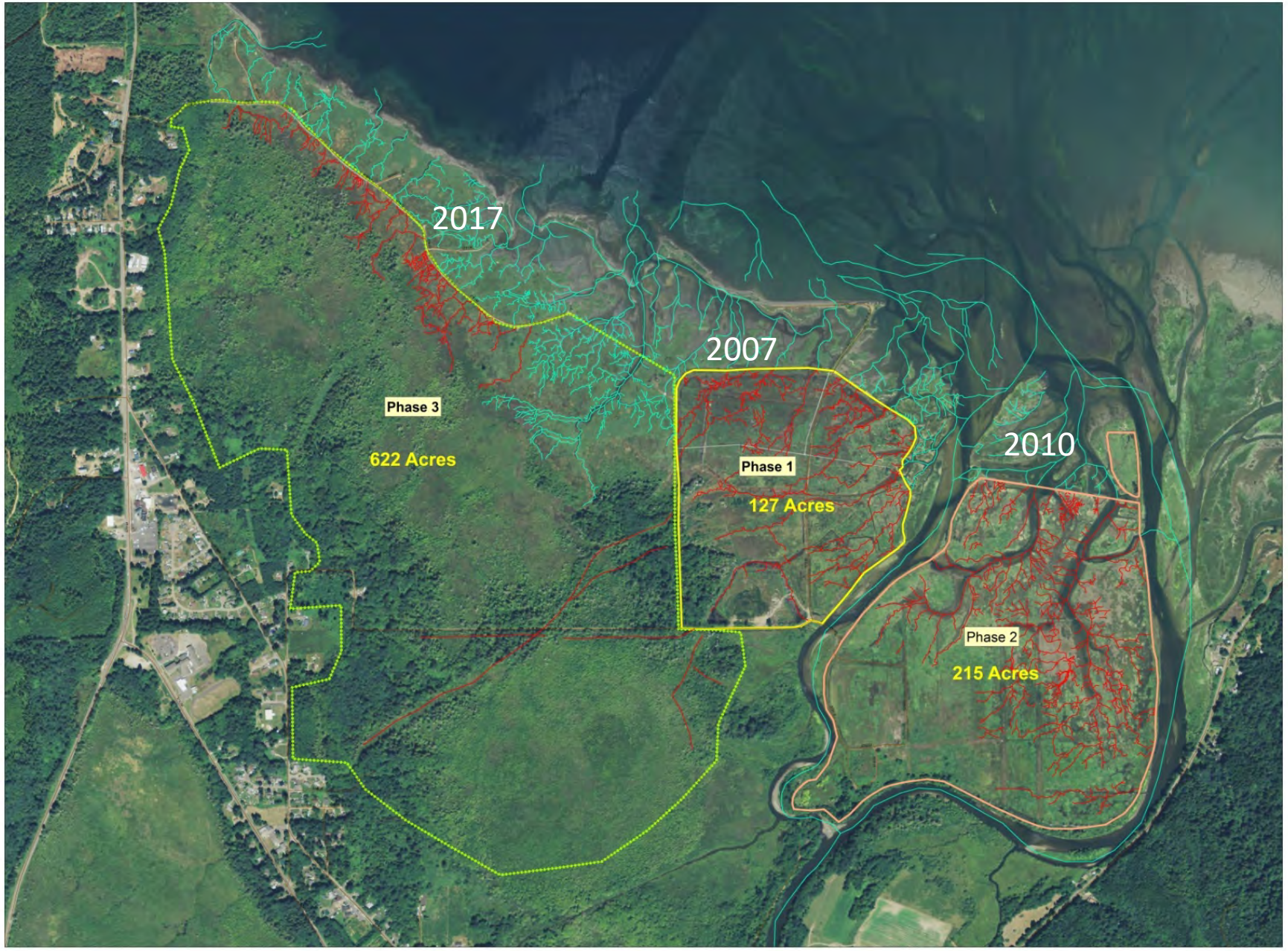
Victoria
Strait of
Juan de Fuca
Everett
Olympic
Peninsula
Hood Canal
Puget Sound
Seattle
Kitsap
Peninsula
Tacoma
Olympia

What is an Estuary?

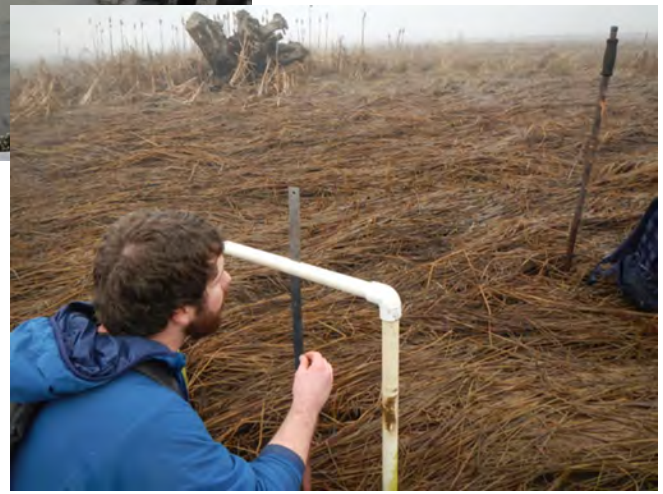
Unique Habitat

Nurseries



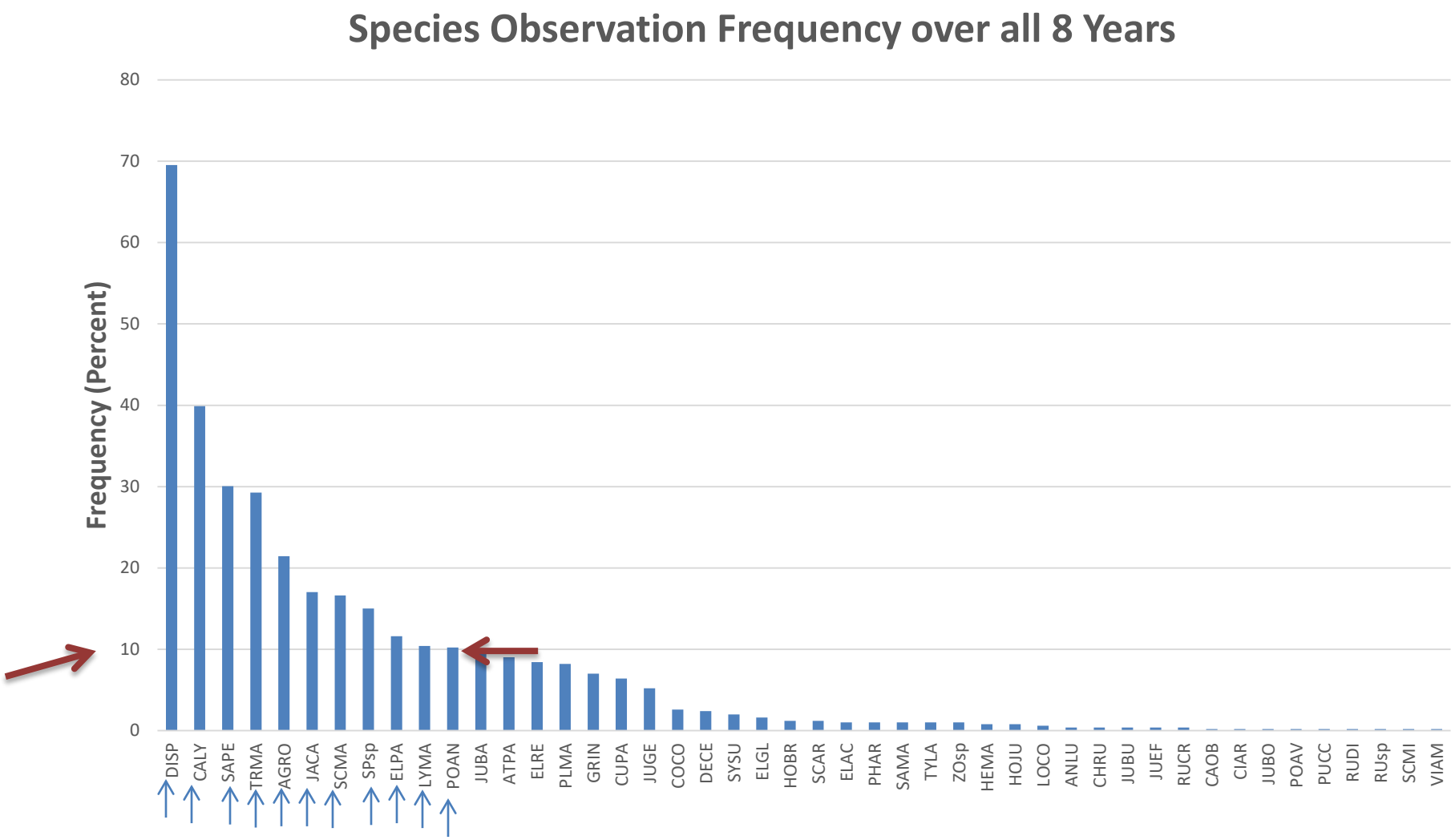

2017
2007
2010
Phase 3
622 Acres
Phase 1
127 Acres
Phase 2
215 Acres

Monitoring

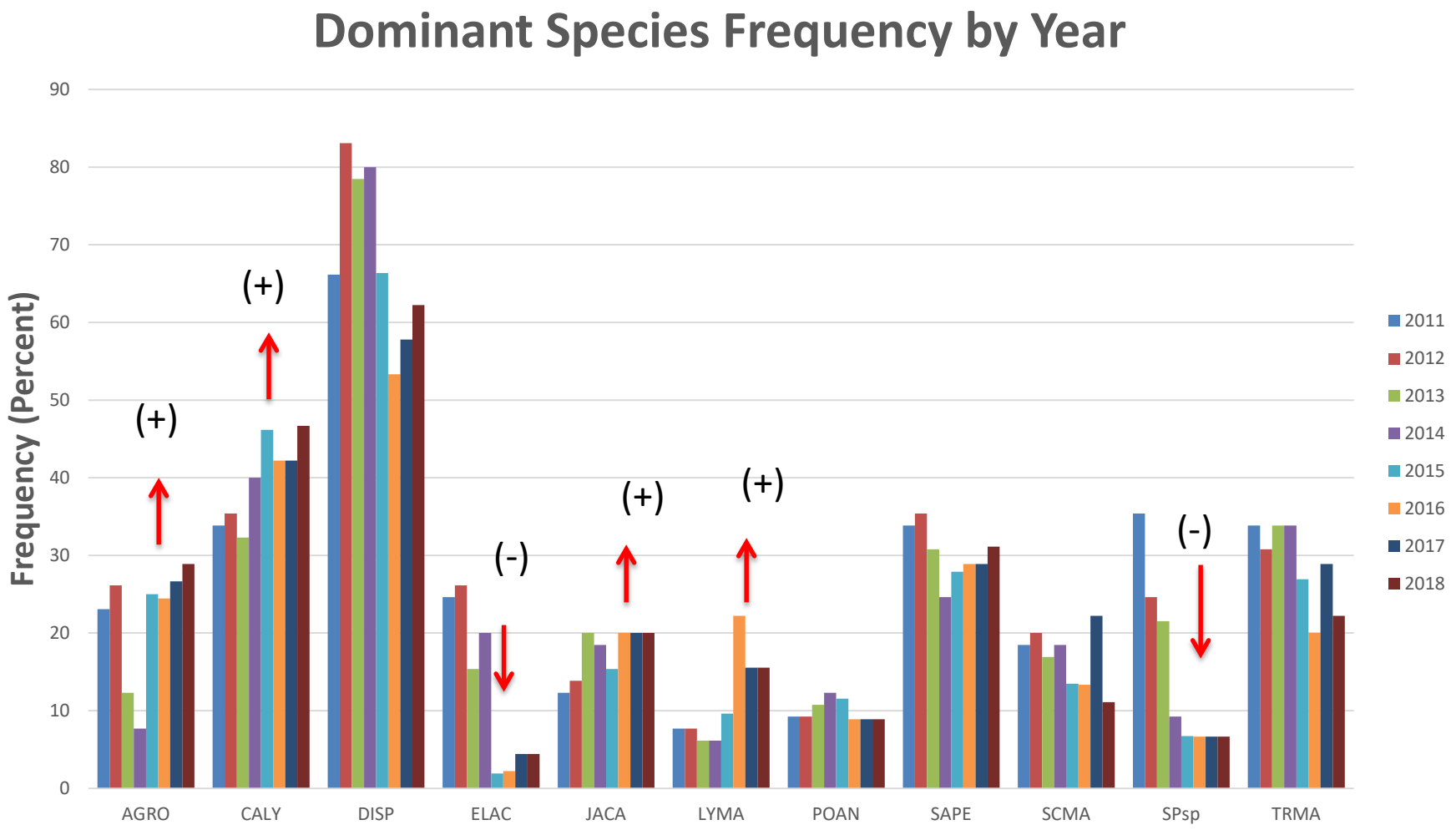


Monitoring - Vegetation

Monitoring - Vegetation



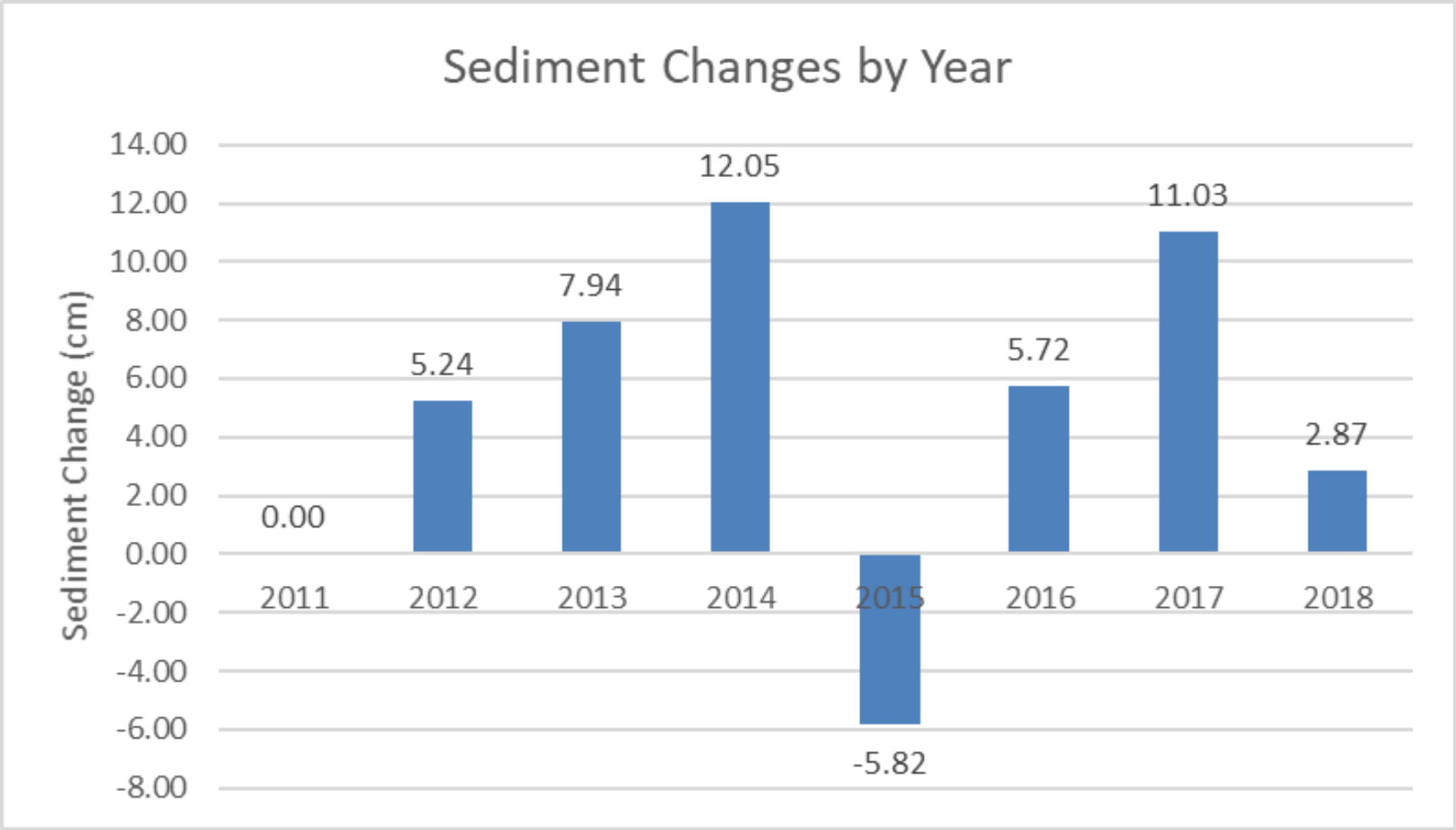
Monitoring - Vegetation



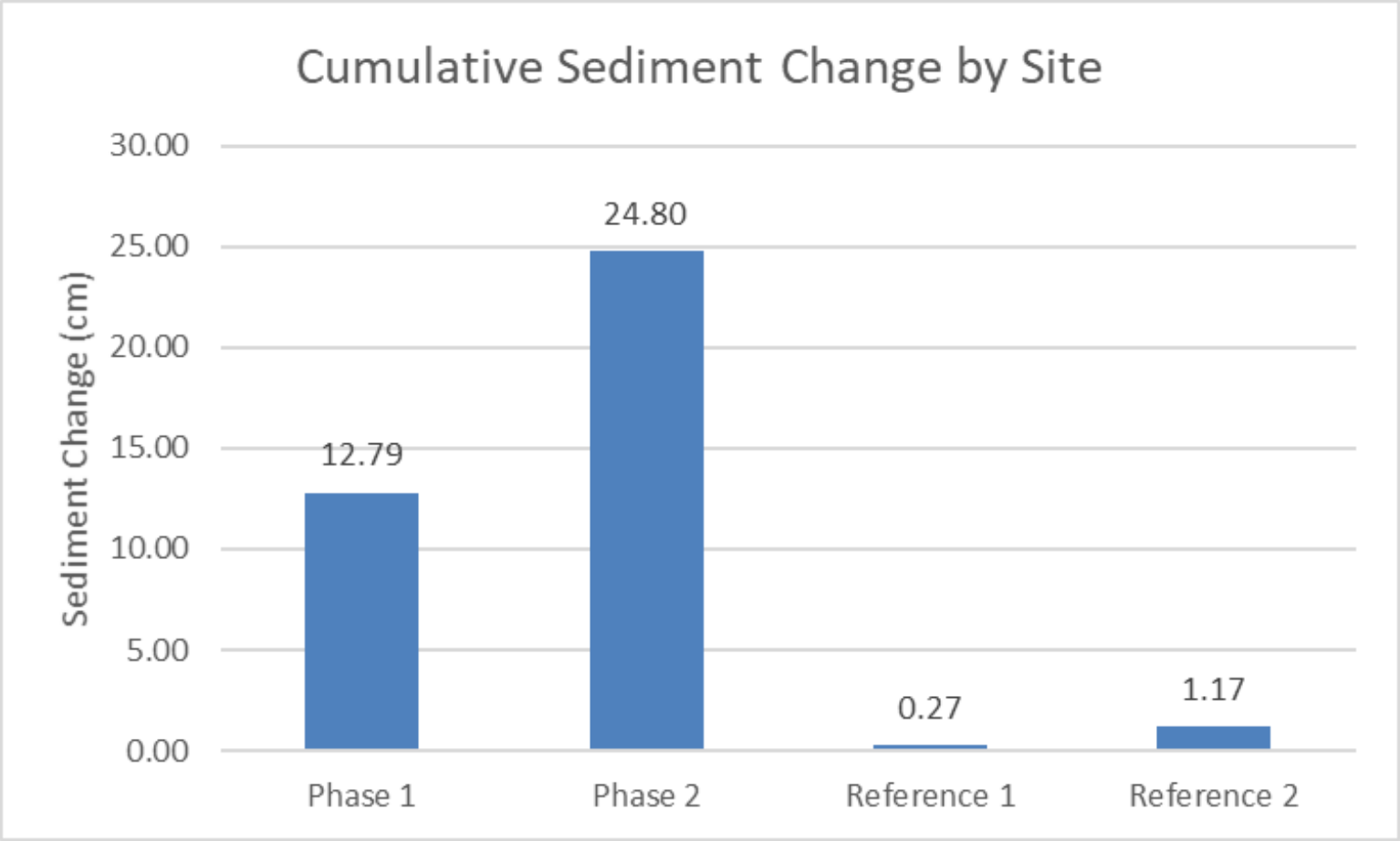
Monitoring - Vegetation

Monitoring - Sediment

Monitoring - Sediment

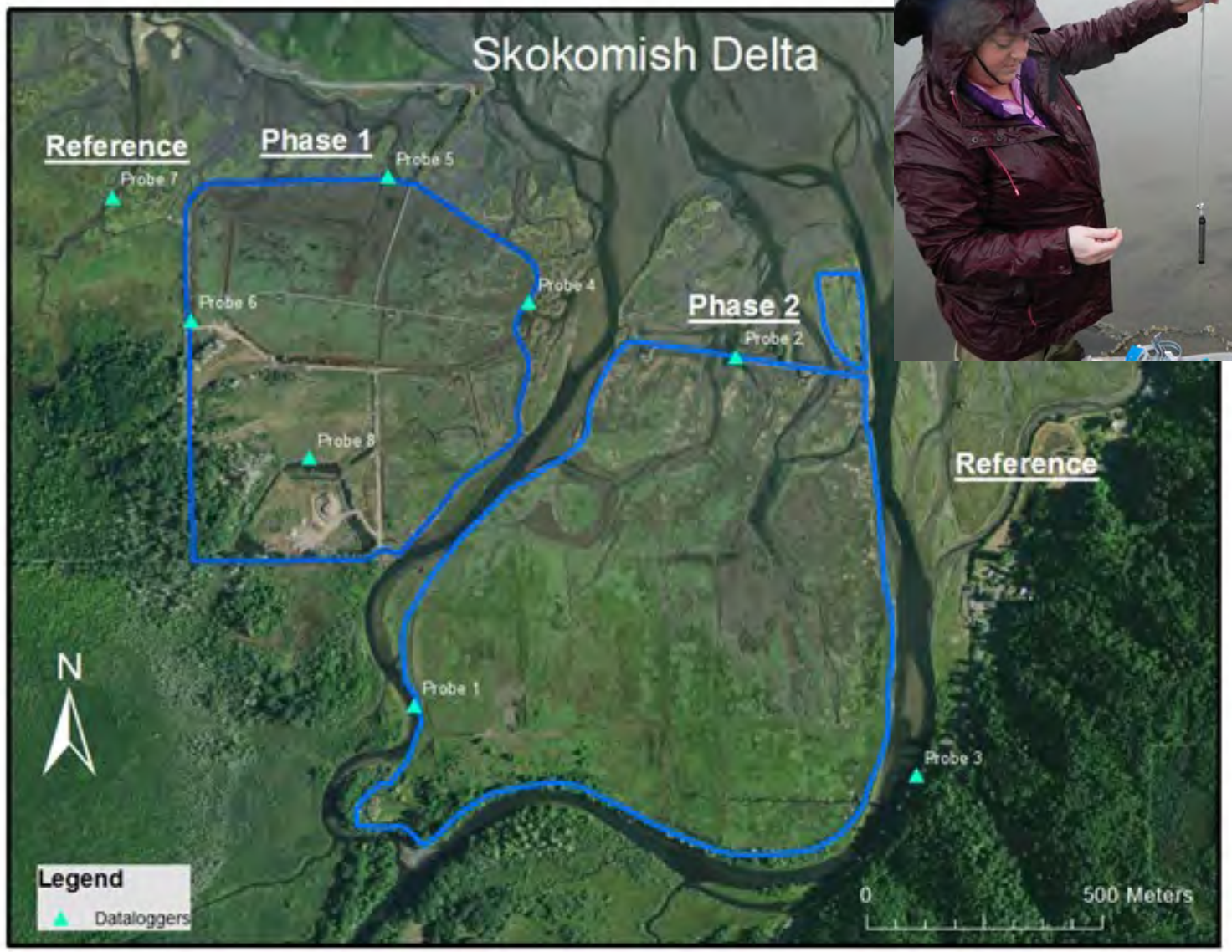


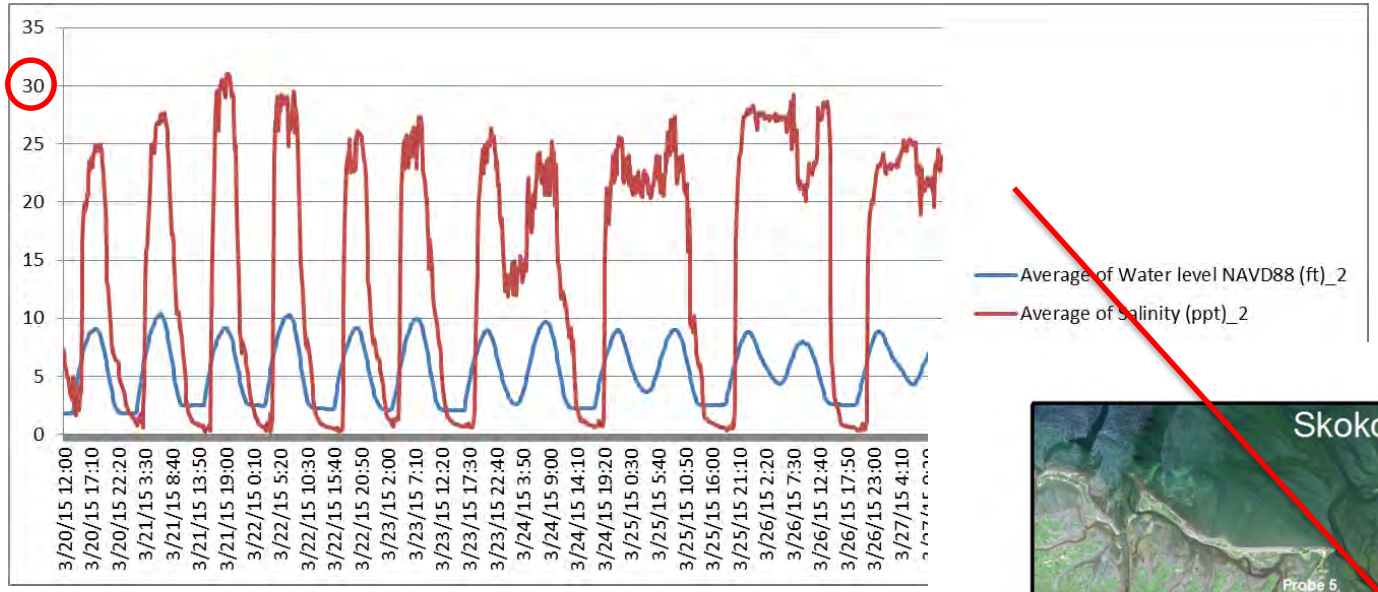
Monitoring - Sediment



- Reference sites at equilibrium as expected
- Phase 2: taller vegetation helps trap more sediment and proximity to river
- 8yr total accretion 39cm (1.3 ft!)

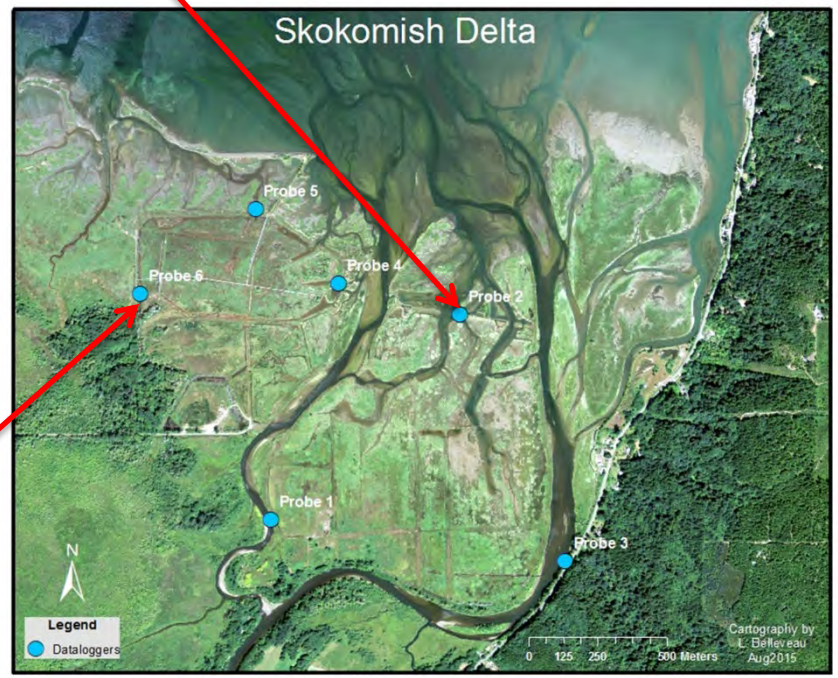
Monitoring – Water Probes

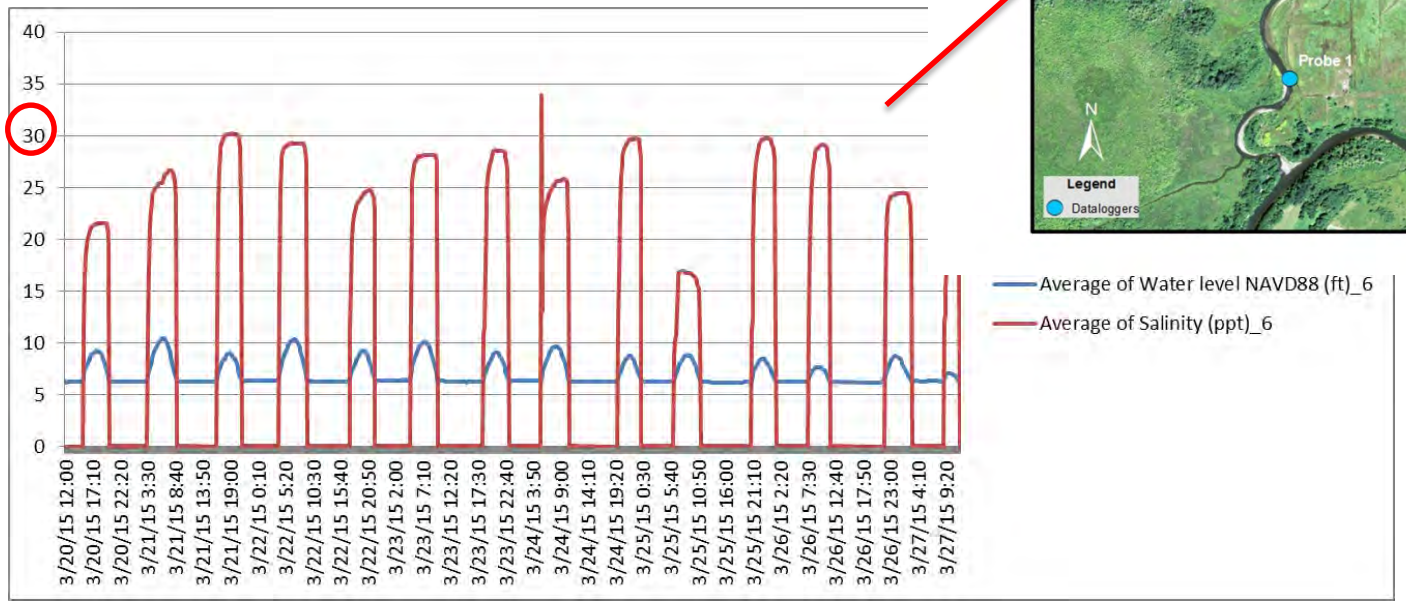


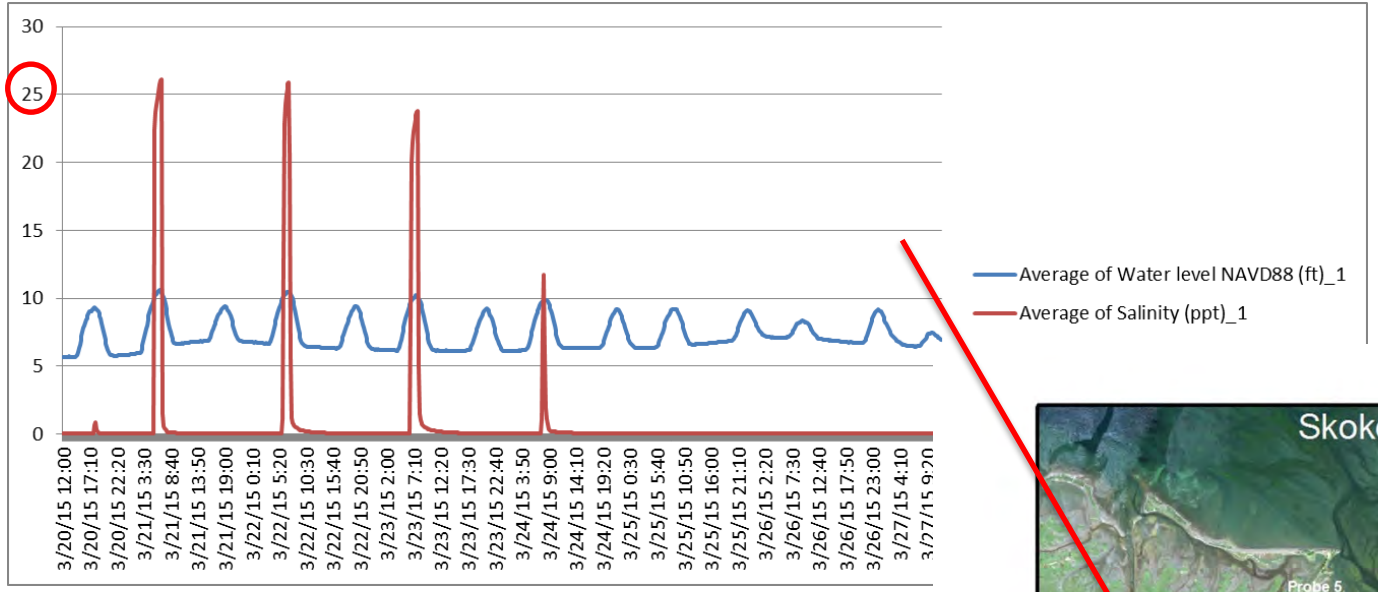


Salinity peaks with every tide

Saltwater Probes

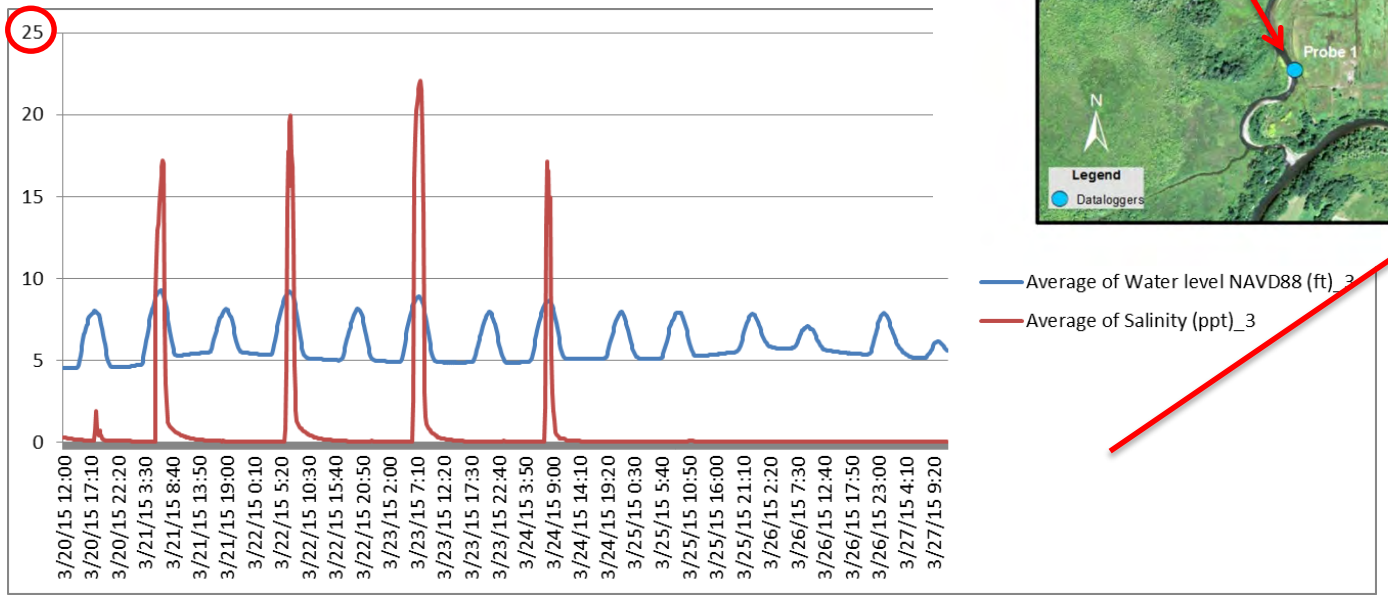






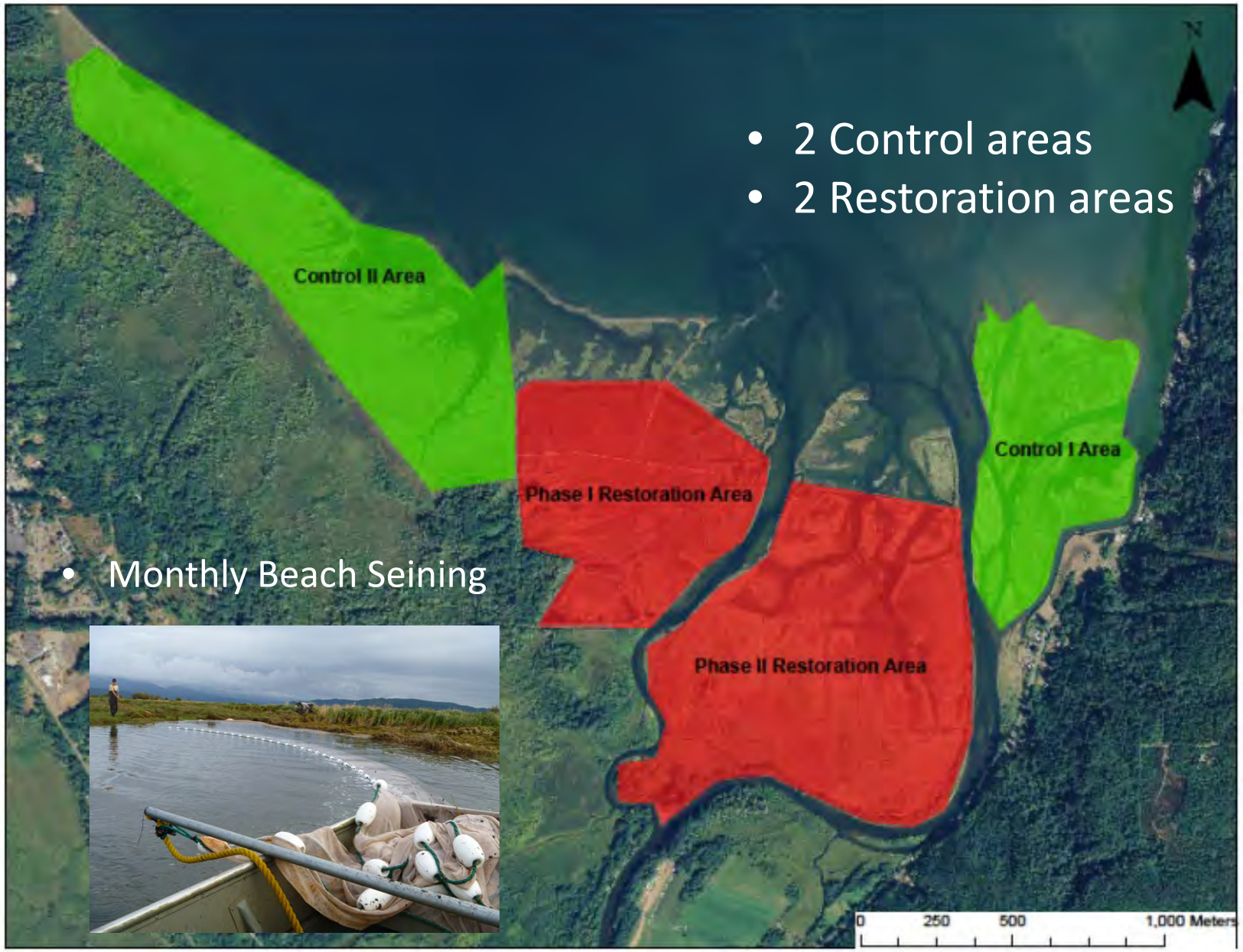
Salinity peaks at 10’ tide or above

Freshwater Probes



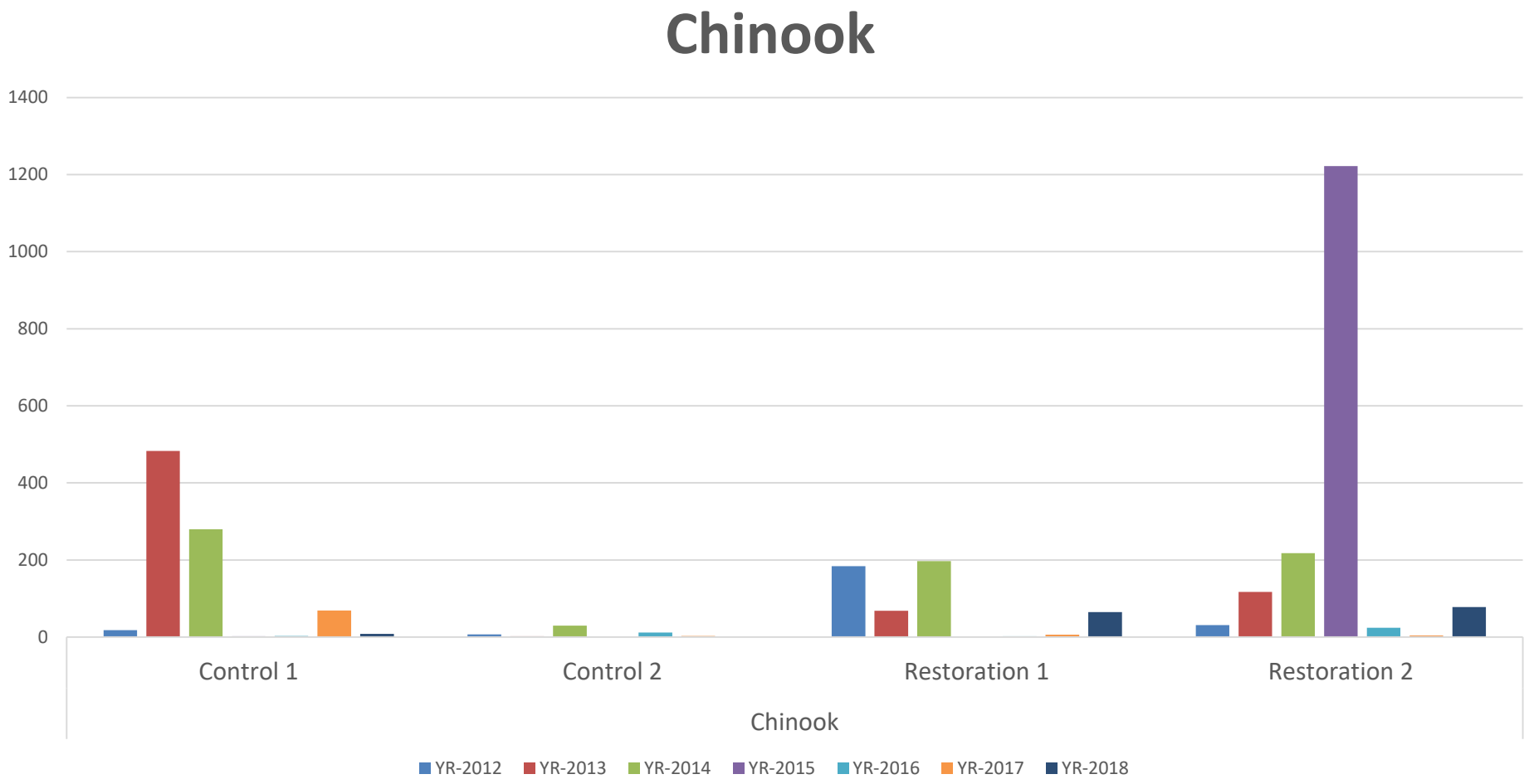
Probe 3 more river influence shown by lower salinity peak

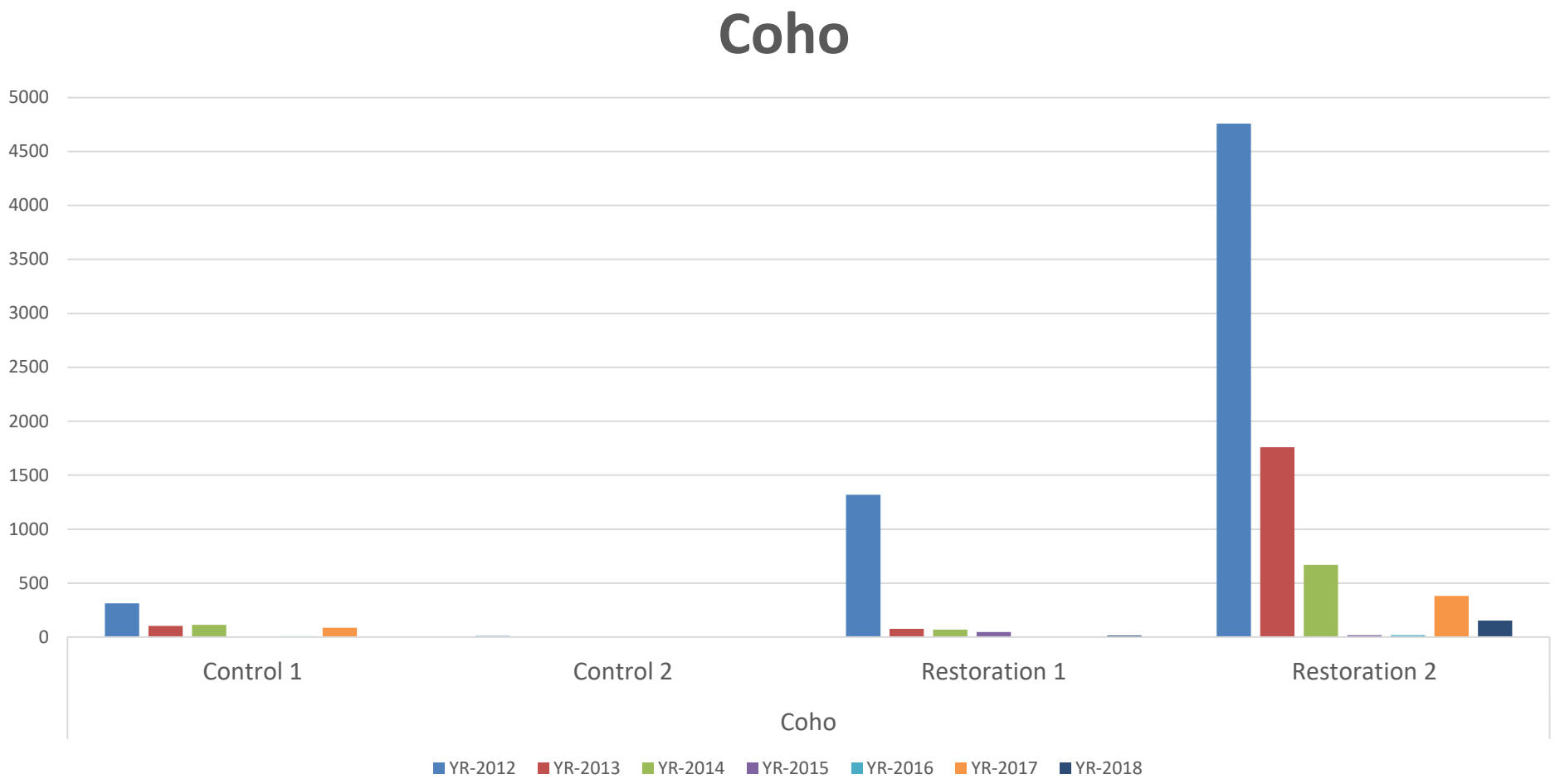
Monitoring - Fish

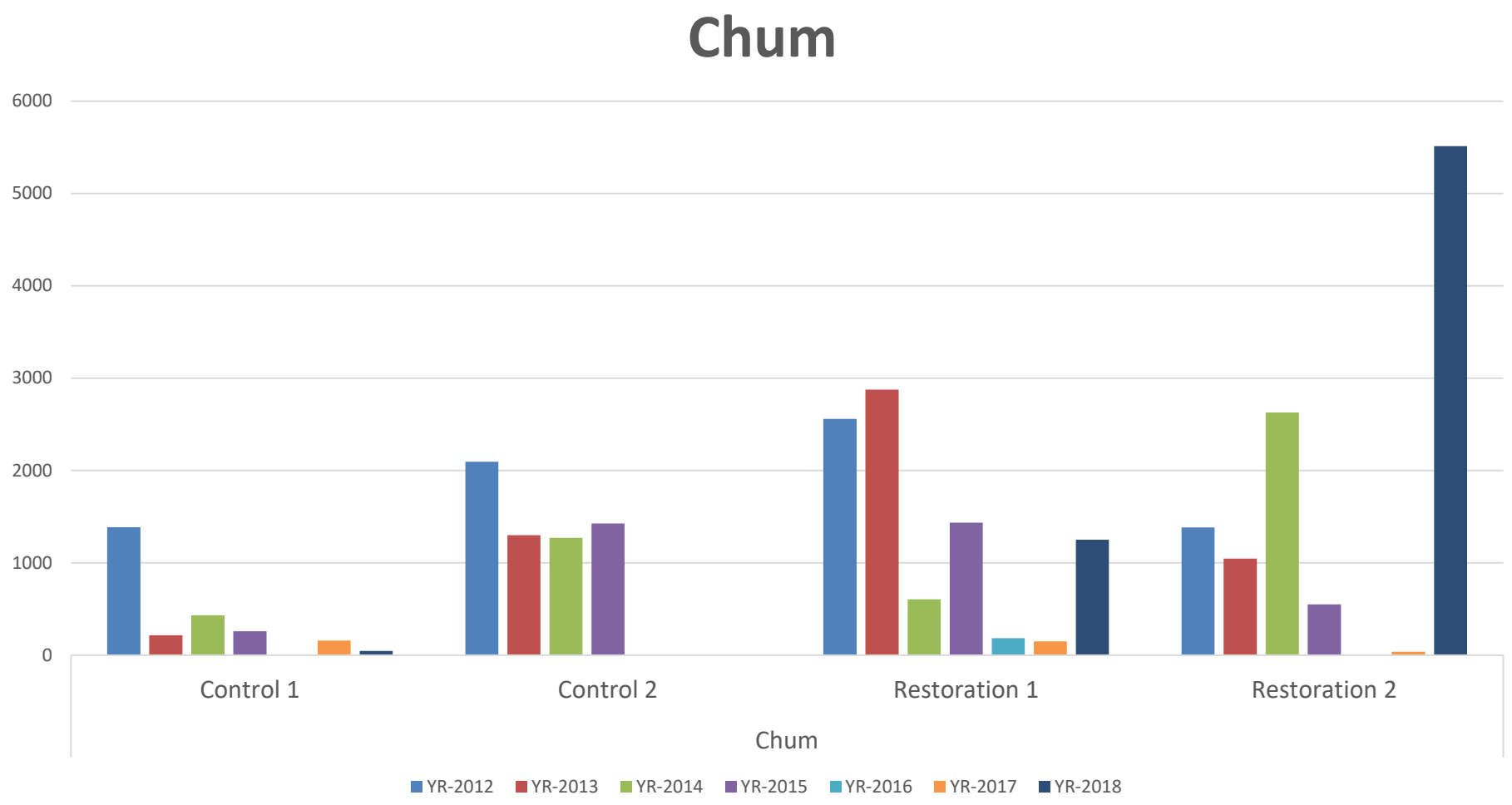


- 2 Control areas
- 2 Restoration areas

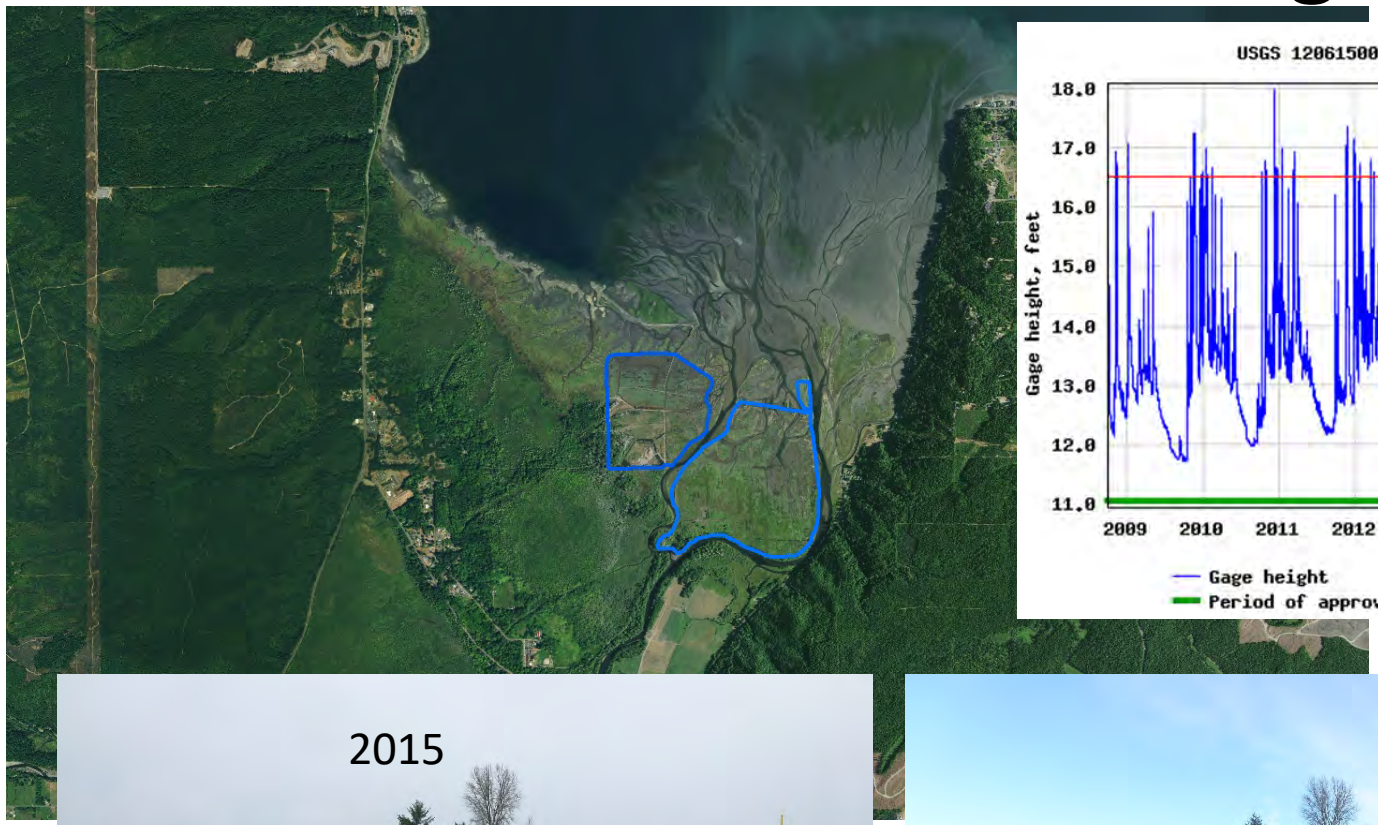
- Monthly Beach Seining

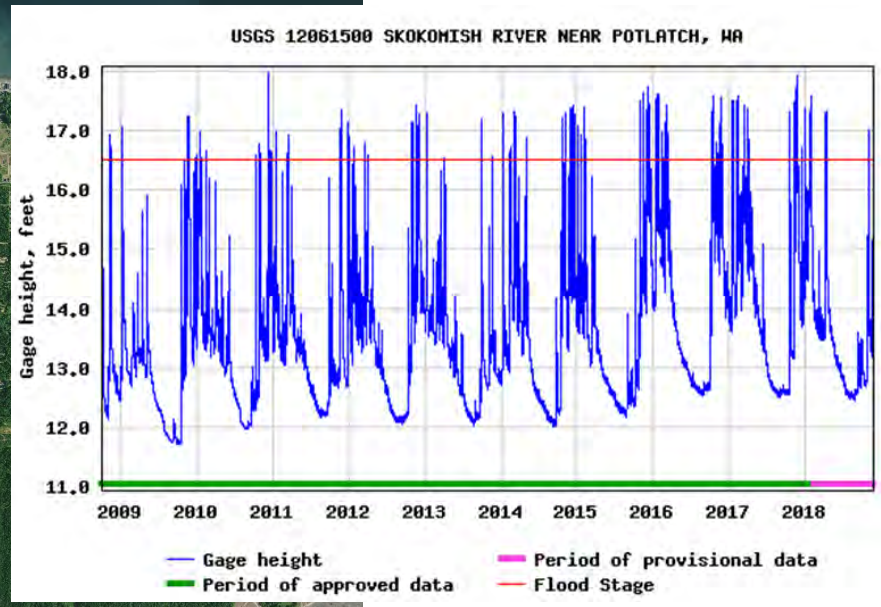

Chinook
1400
1200
1000
800
600
400
200
0
Control 1
Control 2
Restoration 1
Restoration 2
Chinook
YR-2012
YR-2013
YR-2014
YR-2015
YR-2016
YR-2017
YR-2018


Coho
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Control 1
Control 2
Restoration 1
Restoration 2
Coho
YR-2012
YR-2013
YR-2014
YR-2015
YR-2016
YR-2017
YR-2018

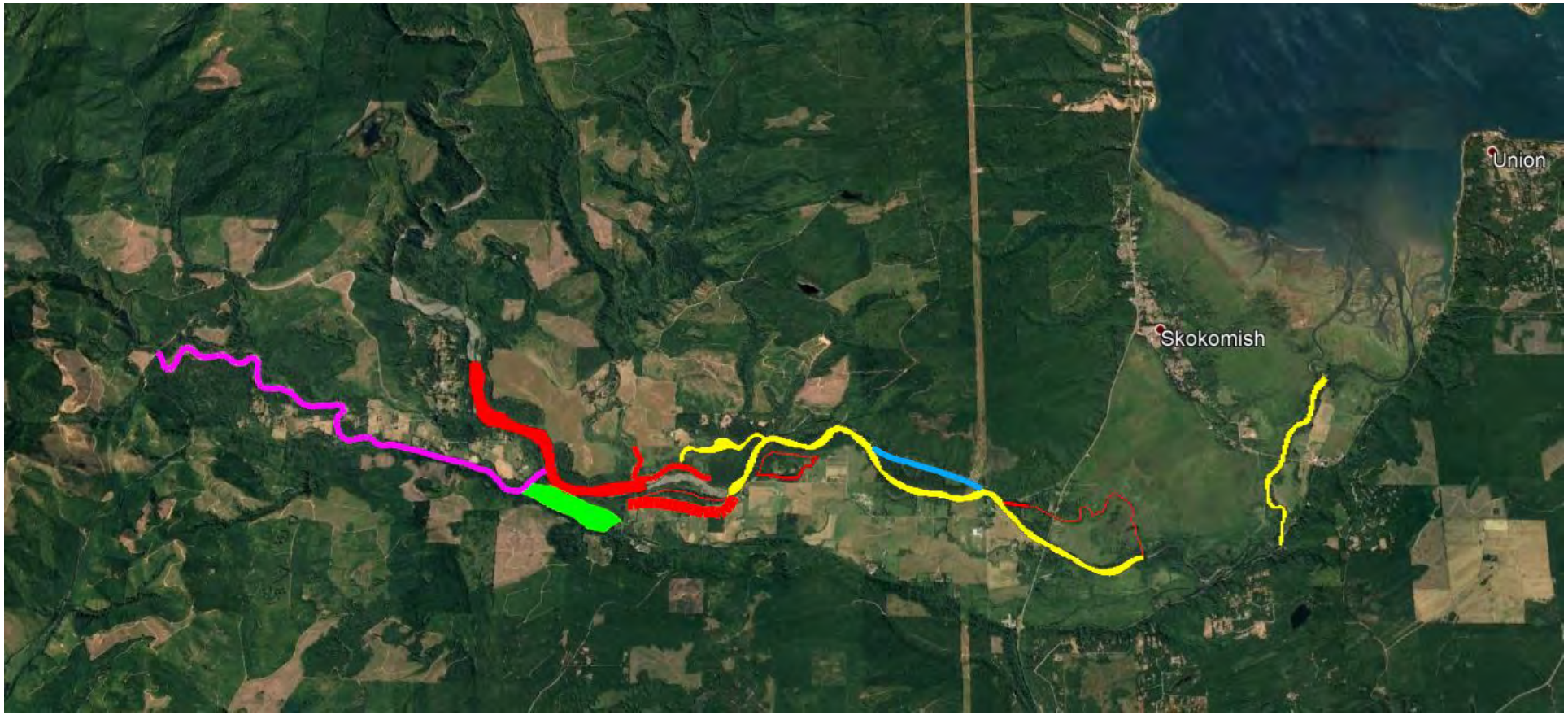

Chum
6000
5000
4000
3000
2000
1000
0
Control 1
Control 2
Restoration 1
Restoration 2
Chum
YR-2012
YR-2013
YR-2014
YR-2015
YR-2016
YR-2017
YR-2018

Reduced Flooding

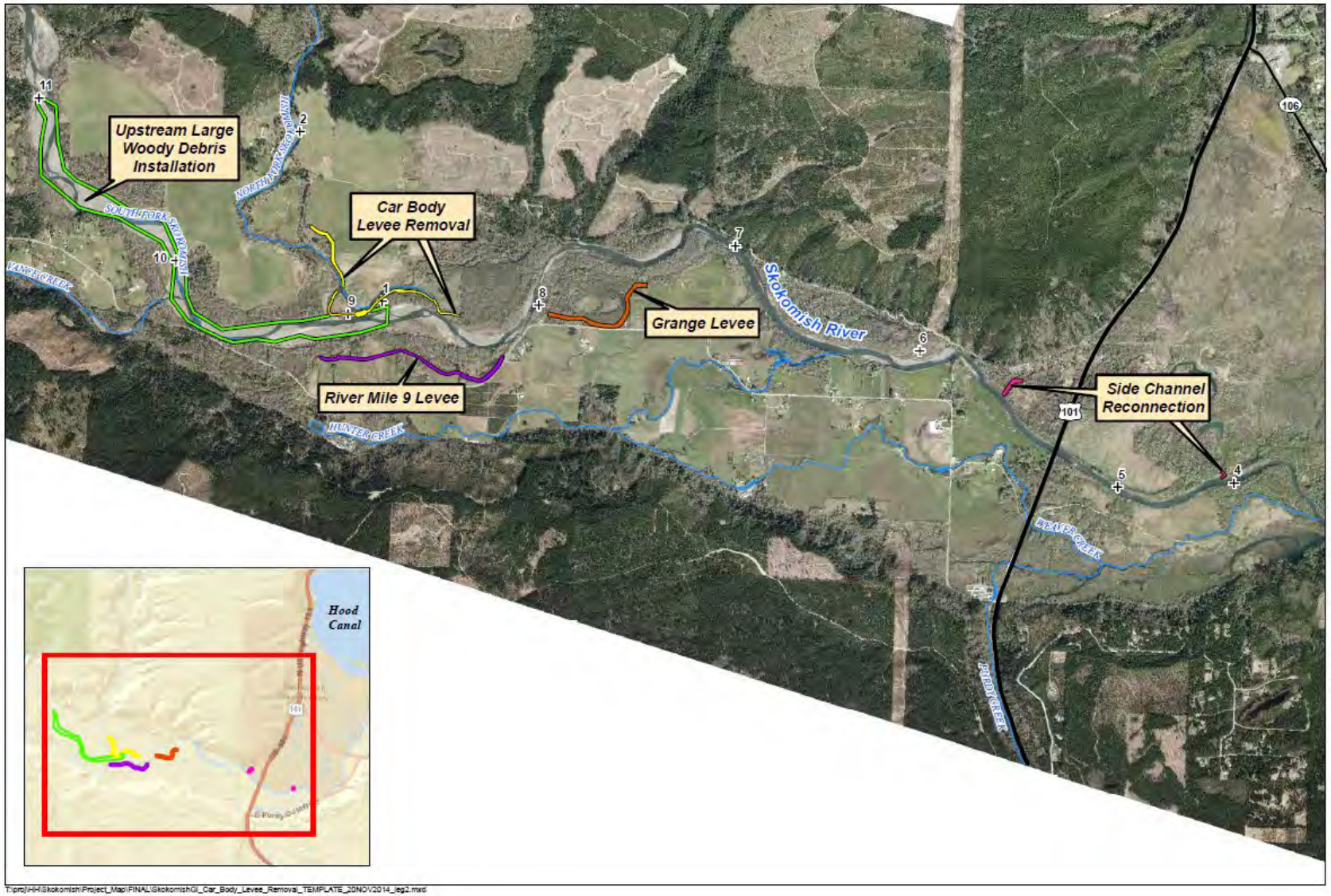




Purple: Vance creek restoration assessment
Green: Road project & Floodplain reconnect



Red: Army Core projects
Yellow: LWD projects
Blue: Side channel project



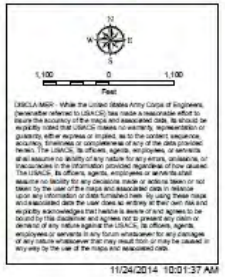
Legend

Sites

- Car Body Levee Removal
- River Mile 9 Levee
- Grange Levee
- Side Channel Reconnec...
- Upstream Large Woody Debris Installation
- \+ River Miles

Orthophoto: 4/23/2011

Location Map



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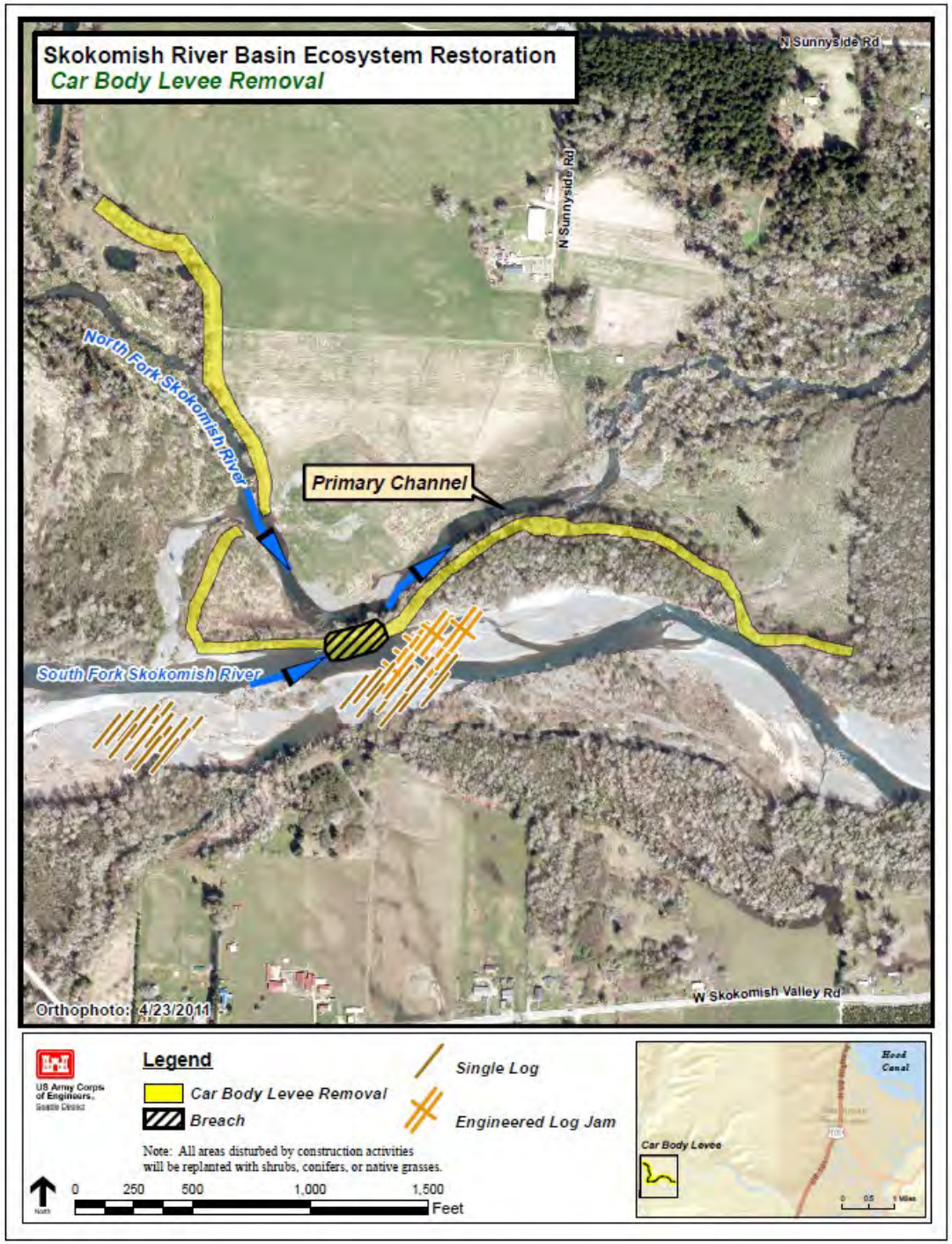
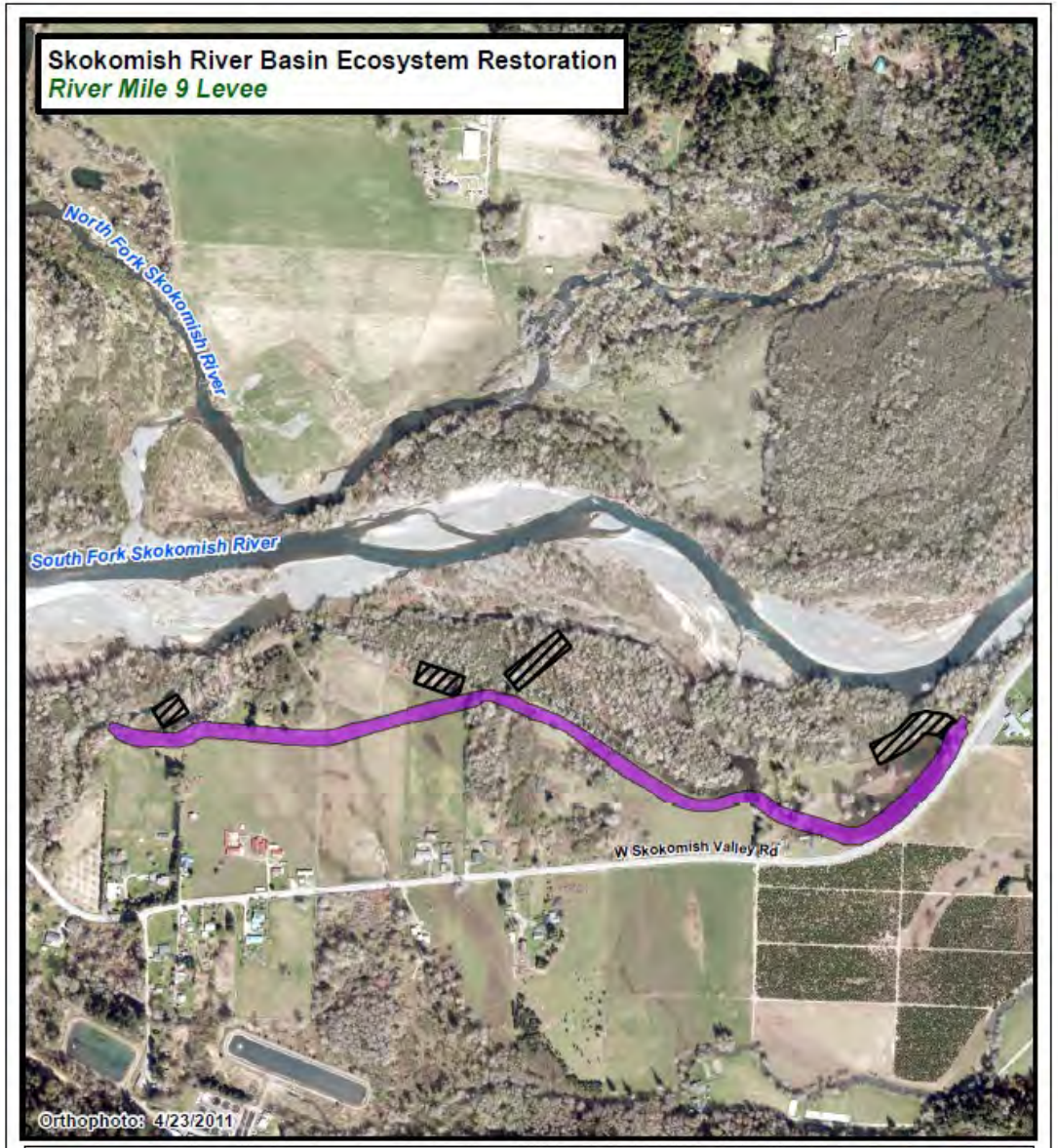
11/24/2014 10:01:37 AM

Skokomish River Basin Ecosystem Restoration
Upstream Large Woody Debris
N. Sunnyside Rd
South Fork Skokomish River
North Fork Skokomish River
Vance Creek
W Skokomish Valley Rd
Orthophoto: 4/23/2011
US Army Corps of Engineers, Seattle District
Legend
Upstream Large Woody Debris
Single Log
Five Log Cluster
Engineered Log Jam
Note: All areas disturbed by construction activities will be replanted with shrubs, conifers, or native grasses.
0 500 1,000 2,000 3,000 Feet
Hood Canal
Upstream Large Woody Debris


Skokomish River Basin Ecosystem Restoration
Car Body Levee Removal
N Sunnyside Rd
N Sunnyside Rd
North Fork Skokomish River
Primary Channel
South Fork Skokomish River
W Skokomish Valley Rd
Orthophoto: 4/23/2011
US Army Corps of Engineers, Seattle District
Legend
Car Body Levee Removal
Breach
Single Log
Engineered Log Jam
Note: All areas disturbed by construction activities will be replanted with shrubs, conifers, or native grasses.
North
0 250 500 1,000 1,500
Feet
Hood Canal
Car Body Levee
0 0.5 1 Miles



US Army Corps of Engineers, Seattle District

Legend

- Construct New Levee
- Breach Existing Levee

Note: All areas disturbed by construction activities will be replanted with shrubs, conifers, or native grasses.

North

0 300 600 1,200 1,800 Feet

US Army Corps of Engineers, Seattle District

Legend

- Construct New Levee
- Breach Existing Levee

Note: All areas disturbed by construction activities will be replanted with shrubs, conifers, or native grasses.

0 250 500 1,000 1,500 Feet

US Army Corps of Engineers, Seattle District

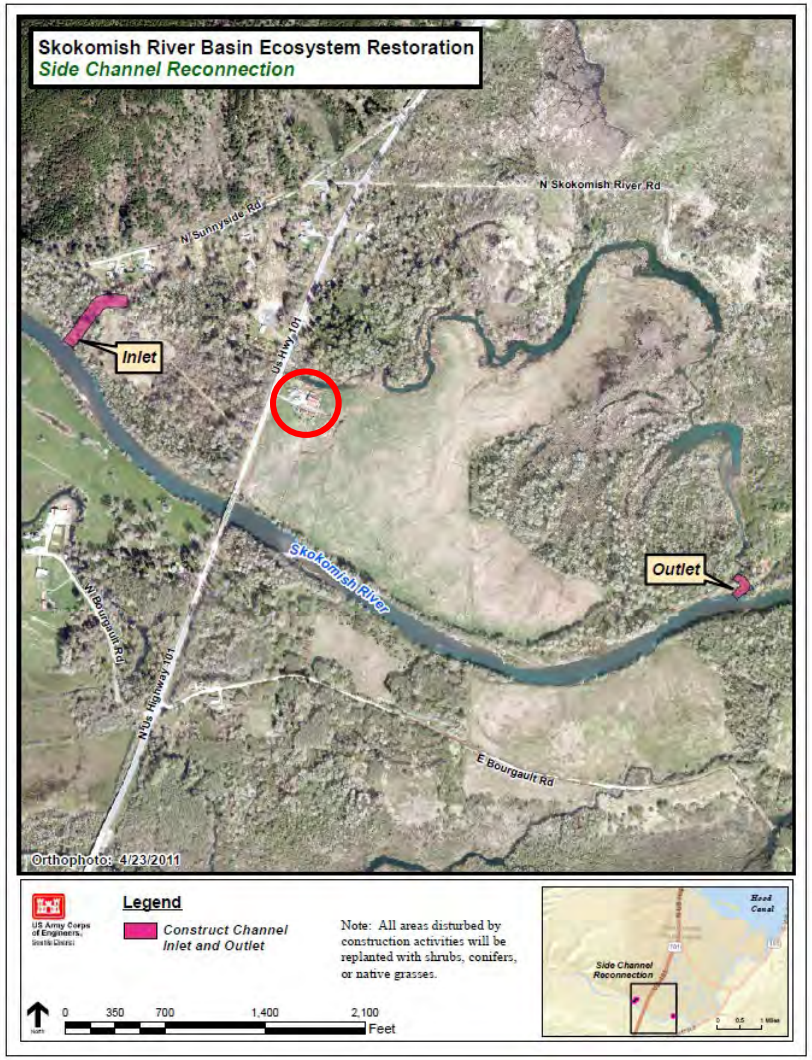
Legend

Construct Channel Inlet and Outlet

Note: All areas disturbed by construction activities will be replanted with shrubs, conifers, or native grasses.

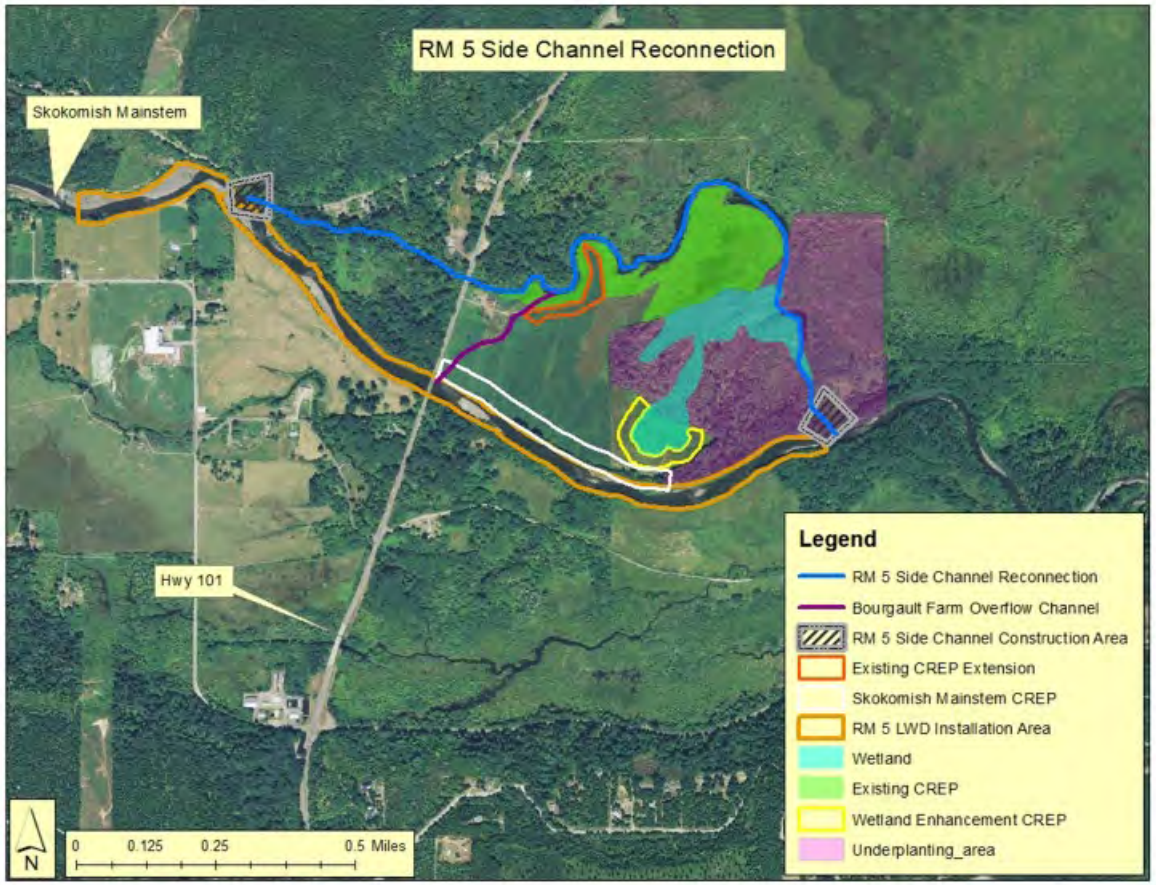
North

0 350 700 1,400 2,100 Feet


Skokomish River Basin Ecosystem Restoration
Side Channel Reconnection
N Skokomish River Rd
N Sunnyside Rd
US Hwy 101
Inlet
Outlet
Skokomish River
W Bourgault Rd
N US Highway 101
E Bourgault Rd
Orthophoto: 4/23/2011
US Army Corps of Engineers, Seattle District
Legend
Construct Channel Inlet and Outlet
Note: All areas disturbed by construction activities will be replanted with shrubs, conifers, or native grasses.
0 350 700 1,400 2,100 Feet
Hood Canal
Side Channel Reconnection

N US-101
N US-101
Skokomish River
100' PLANTING BUFFER
100' PLANTING BUFFER
LOG OR ROCK INVERT ELEVATION CONTROL
ENGINEERED LOG JAM
© 2017 DigitalGlobe ©CNES (2017) Distribution Airbus DS © 2017 HERE © 2017 Microsoft Corporation
Mason Conservation District
Designed
Drawn: MS
BOURGAULT FARMS SIDE CHANNEL
(Insert Name) Property
Skokomish, Washington
Date 11/28/17
Sheet No 1 of 1

RM5 Reach Update

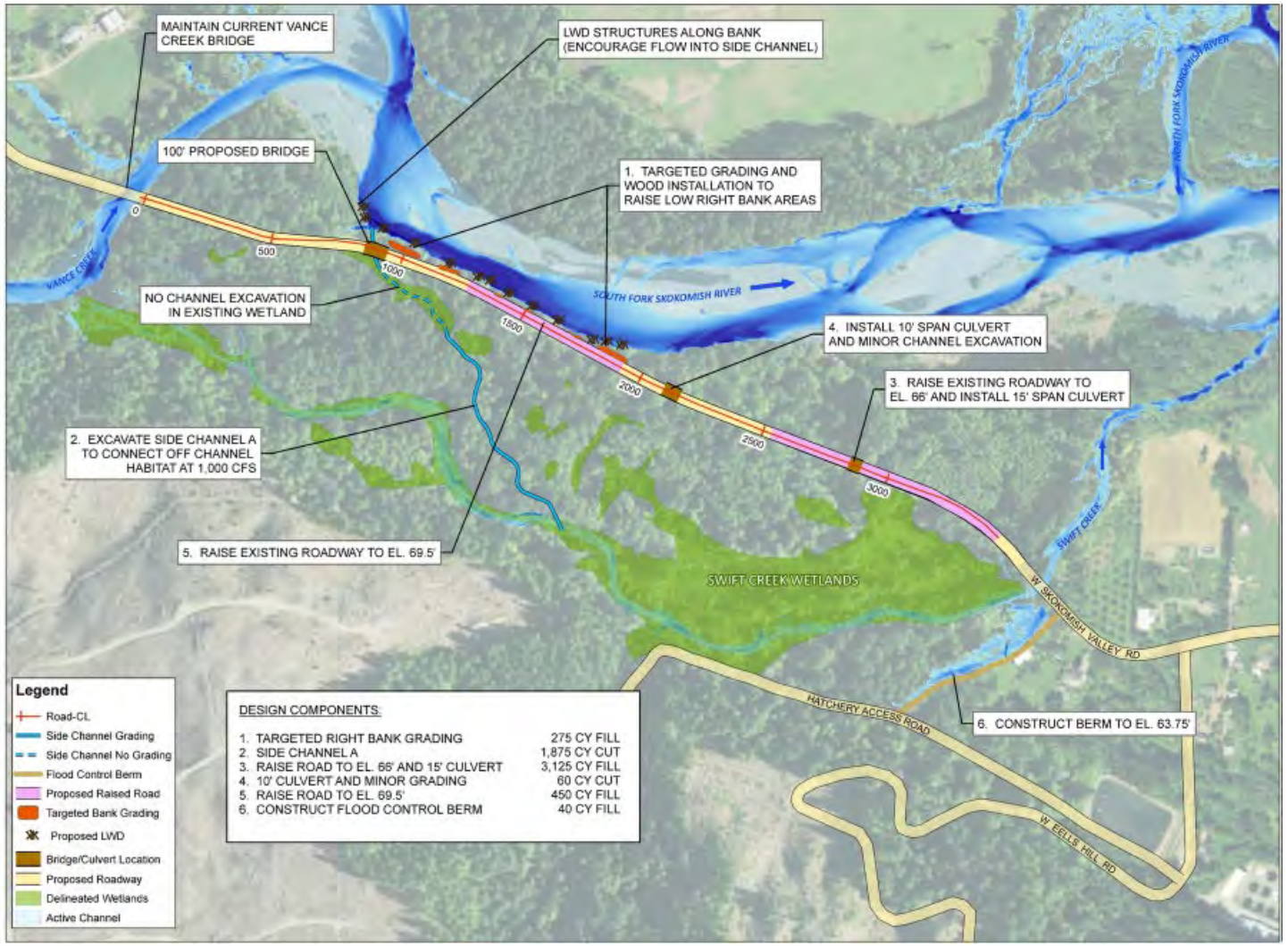


Skokomish Valley Road and Habitat Improvement Project

Preferred Alternative

Components target habitat uplift and reductions in road flooding:

1. Targeted right bank grading
2. Side Channel A
3. Raise road elevation and add culvert
4. Minor grading and an additional culvert
5. Raise road elevation (pink)
6. Construct flood control berm



Skokomish Estuary Restoration Successes

- Increased estuarine habitat by almost 1000 acres
- Native salt marsh vegetation increasing
- Overall sediment accreting
- Water probes establishing baselines to track changes and impacts due to SLR
- Endangered Chinook utilizing the restoring habitat
- Reduced flooding impacts to the local community

Questions?