FY16 RSM IPR

Seattle District, Feasibility of nearshore placement at the Swinomish Navigation Channel

David R. Michalsen, P.E.
Scott H. Brown, P.E.

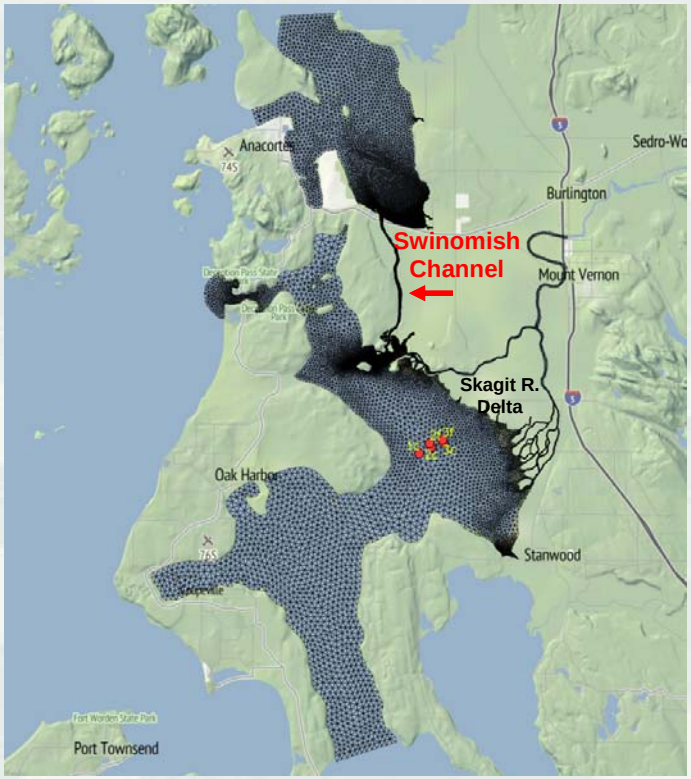
BLUF: The RSM project would provide the technical background needed for the Seattle District to justify the feasibility of a sediment bypassing operation at the Swinomish Federal Navigation Project. The goal of the bypassing program is to limit the life-cycle costs associated with the O&M dredging project

Description/Challenges

- High shoaling rates causing tidal delays likely due to deterioration of jetties at the inlet
- Limited O&M dollars available
- Long haul distance to designated open water placement site
- Nearshore habitat, water quality, and fish passage concerns

Objectives

- Investigate placement areas within the Skagit River delta to minimize O&M costs
- Keep material within the nearshore system
- Engage stakeholders in discussions on siting issues
- Revise existing NEPA documentation



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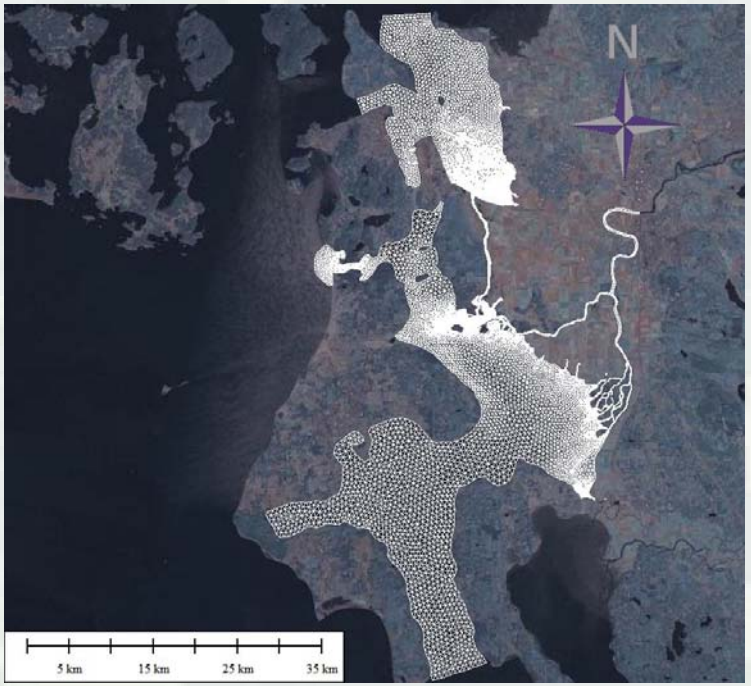
Approach

- **Utilize FVCOM model developed by PNNL/USACE to investigate circulation shoaling patterns in Skagit Bay and Swinomish channel**
- **Couple FVCOM with Particle Tracking model (PTM) to investigate potential placement sites for both hydraulic and mechanical placement**



PNNL/USACE FVCOM

Deliverables

1.	PTM simulations of dredged material placement downdrift of navigation channel	**May 2016**
2.	Meeting with Port of Skagit and Swinomish and Skagit Tribes	**January 2016**
3.	NEPA / SEPA coordination with resource agencies	September 2016
4.	Supplemental EA/BA	September 2016
5.	Technical Memorandum	September 2016

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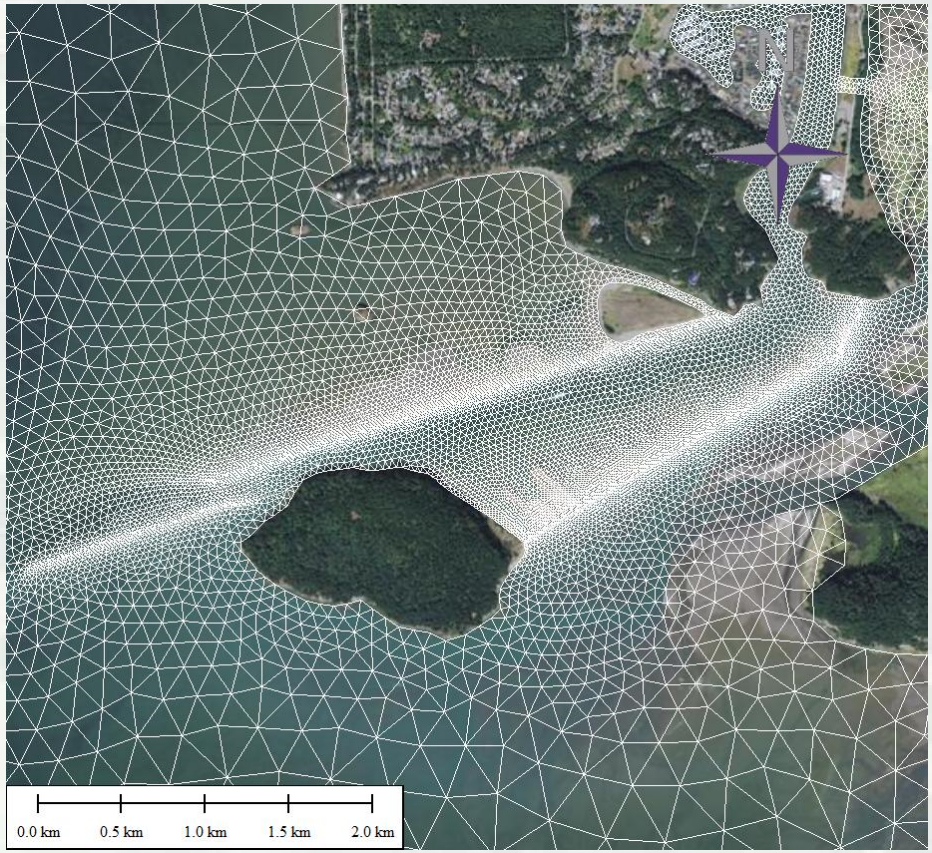
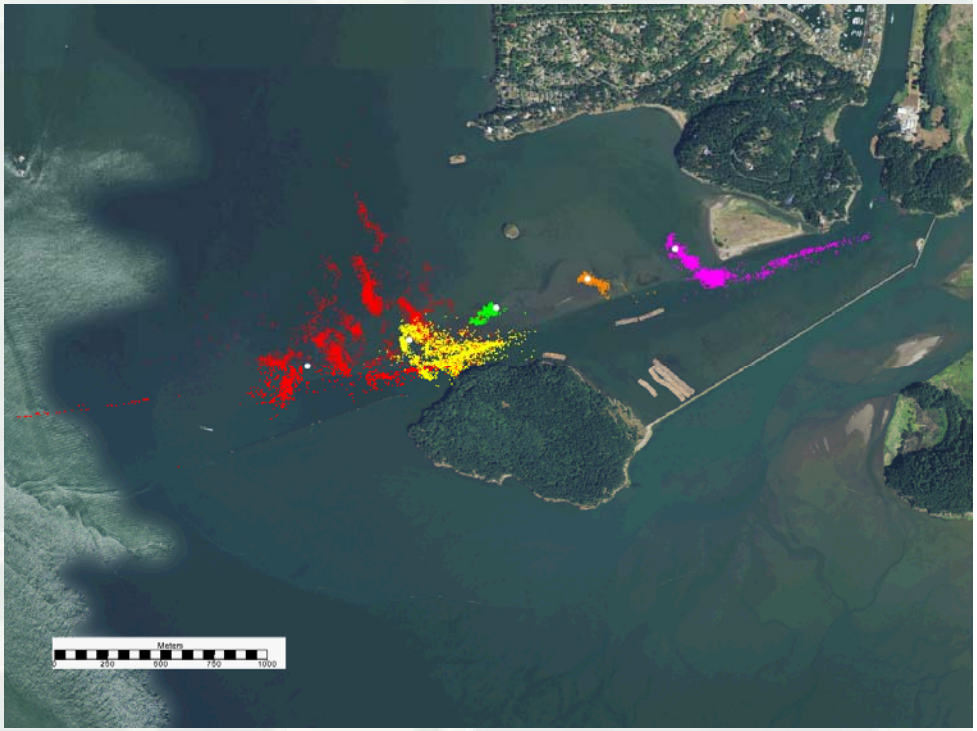
Accomplishments/Benefits/Lessons

- **Working hydro-model allowed for easy PTM simulations to investigate feasibility level siting questions**





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What is working?

- **Good collaboration between USACE, PNNL, USGS, Port, and Tribes**
- **Possibility of implementing a more sustainable O&M solution**

What is not working?

- Current O&M operations. Deteriorated coastal navigation structures are impacting navigation channel functionality
- Moderate use harbor (without large TONNAGE) does not receive O&M dollars to immediately FIX problems

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District/Other USACE PDT Members

- David Michalsen, P.E., Coastal Engineer
- Scott Brown, P.E., Coastal Engineer
- John Pell, P.G., Swinomish Navigation Project Manager
- Nancy Gleason, Fisheries Biologist

Stakeholders and Partners

- Tarang Khanggaonkar, PNNL
- Eric Grossman, USGS
- David Ralston, WHOI
- Patsy Martin, Port of Skagit

Leveraging/Collaborative Opportunities

Description of collaborative or leveraging effort: Prior work with Pacific Northwest National Laboratory (PNNL) to investigate detailed hydrodynamics and sediment dynamics near the mouth of the Skagit River North Fork and southern Entrance to the Swinomish Channel is applied. This model is being used as the driver to investigate sediment fate and transport pathways associated with nearshore dredged material placement downdrift of the channel.

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Value to the Nation

- Cost savings -> YES (placement <1mile vs. 20+ miles away through Deception Pass)
- Value added -> YES (Material kept in Skagit nearshore area)
- Leveraging resources -> YES (Existing model/survey data)
- $/habitat credits -> ? Possibly (if marsh habitat can be created)
- Environmental benefits -> YES (minimize carbon footprint of dredging/disposal)
- Improved partnerships, happy stakeholders -> YES (if more dredging can be done at same cost and provide habitat, this is a WIN-WIN!)
- Permitting and compliance requirements improved -> YES, Supplemental EA/BA
- Capacity of placement site saved -> YES, in existing deepwater site