

Puget Sound Nutrient Forum

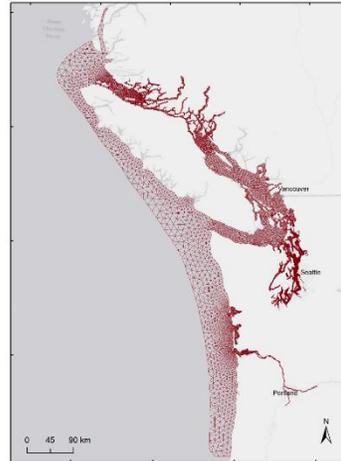
Connecting the Forum to the Implementation Strategy

May 30, 2018

Presented by: Dustin Bilhimer, Project Manager
ECY Water Quality Program



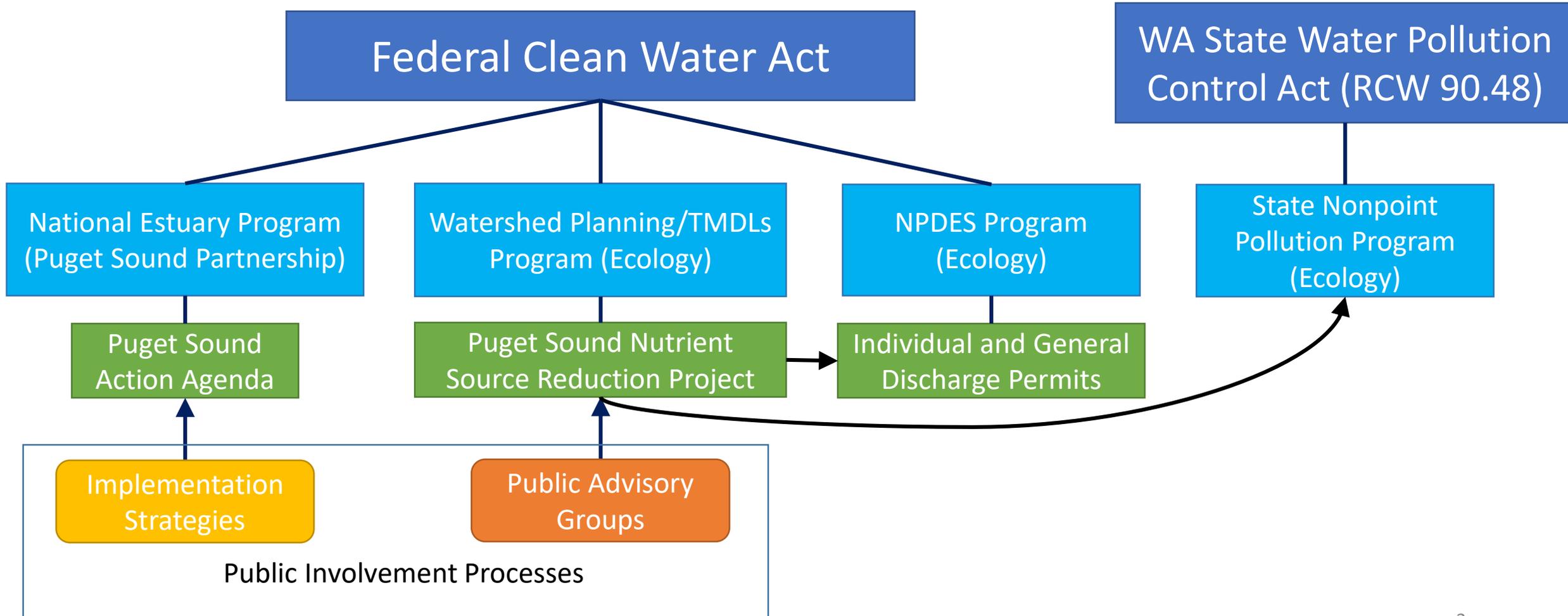
DEPARTMENT OF
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Presentation Overview

- What we are working towards:
 - Puget Sound Nutrient Management Plan
- Relationship between the Forum and Marine WQ Implementation Strategy (MWQ IS)
- Questionnaire responses we received and turned into a Forum schedule

Regulatory Connections



Project Vision Statement

Develop and implement a Puget Sound nutrient source reduction plan to guide regional investments in point and nonpoint source nutrient controls so that Puget Sound will meet DO water quality criteria and protect aquatic life designated uses by 2040

Puget Sound Nutrient Source Reduction
Project

Activities to fulfill project vision

Marine WQ
Implementation
Strategy

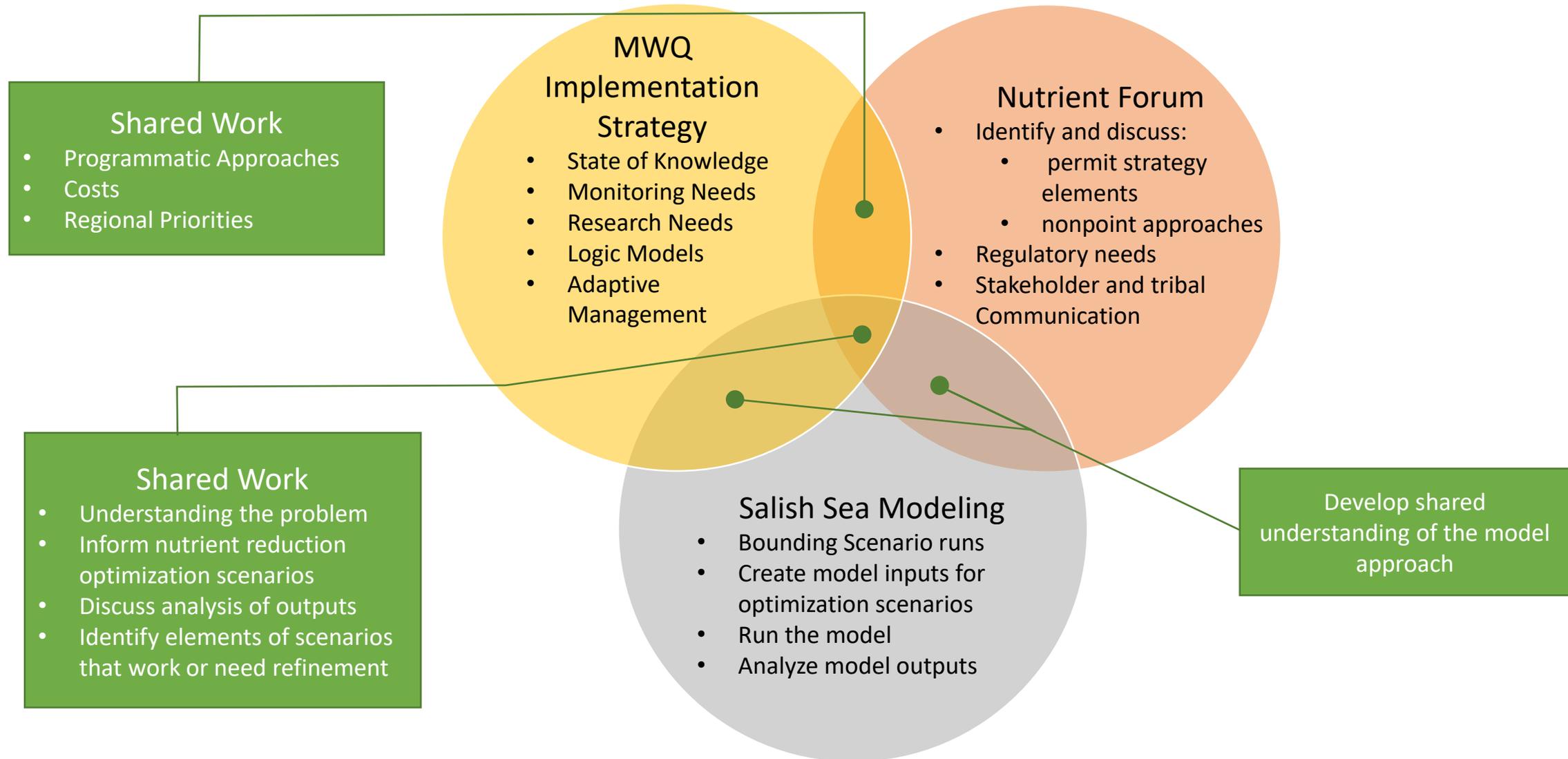
Salish Sea
Modeling

Puget Sound
Nutrient Forum

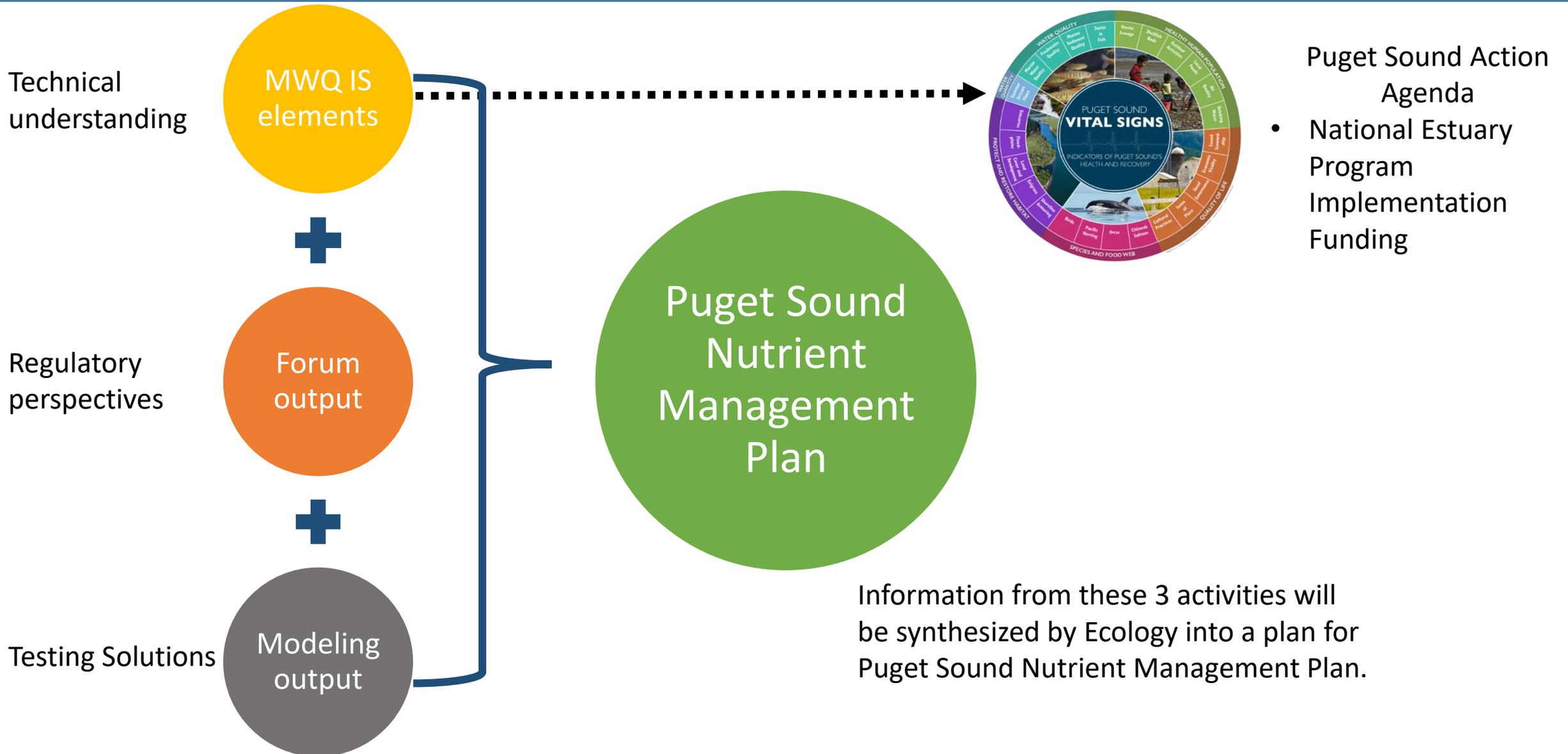
3 Primary Activities

- Marine Water Quality Implementation Strategy (**MWQ IS**):
 - Process that is part of the Puget Sound recovery process
 - Prioritizes actions and informs investments in recovery including National Estuary Program funding of Action Agenda and other programs
- Puget Sound Nutrient Forum (**Forum**):
 - Public Advisory Workgroup to inform Ecology's significant regulatory actions
 - Discuss issues and barriers to implementation
- Salish Sea Modeling:
 - Testing the water quality response to different scenarios of nutrient load reductions from human sources

Relationship between Forum and MWQ IS

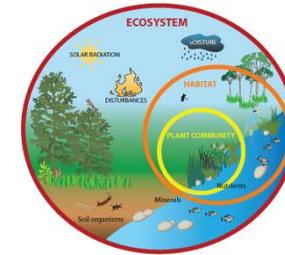
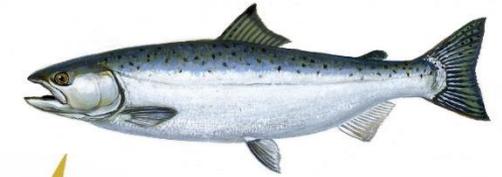


Desired Outcome



Elements of a Puget Sound Nutrient Management Plan

- Describes the problem and response to improvements
- Nitrogen and Carbon load reduction targets
- Strategy to address nutrient sources
- Point and nonpoint sources
- Measuring progress and adapting plan
- Funding plan



Steps to Develop a Nutrient Management Plan

- Define the problem (synthesize and interpret available data)
- Establish water quality objectives and recovery targets
- Evaluate nutrient control strategies for point and nonpoint sources
- Consider alternative reduction scenarios
- Test alternatives with Salish Sea Model
- Identify funding to implement best alternative

Challenges

To find the best solutions for nutrient reductions that are:

- ✓ Implementable
- ✓ Effective
- ✓ Efficient

Achieved by:

- Conducting a transparent process
- Discussing issues and variety of perspectives
- Getting input from those who will be doing the work

Implementation Issues Questionnaire

1. What do you want to know more about?
2. What does healthy water quality in Puget Sound look like to you?
3. What are your significant issues regarding implementation?
4. Other concerns?

Themes we heard:

Science Involvement

WQ Standards

WQ Trends

Model Scenarios

Model Performance

Forum/MWQ IS Process

Certainty

Implementation Challenges

Implementation BMPs

Implementation Funding

Costs/Affordability

Regulatory Fairness

Incentives

Sequencing

Creative Solutions

Nutrient Forum Schedule

Addressing the Themes we heard
Building our knowledge base



Winter 2019

Nov-Dec 2018

Sep-Oct 2018

Summer 2018

May 30, 2018

April 25, 2018

Kickoff

WQ Standards
WQ Trends
Model Inputs
Forum/MWQ IS
Process

Science
Involvement
WQ Trends
Indicators of
eutrophication
Impacts of
nutrient over-
enrichment

July 16th &
August 22nd

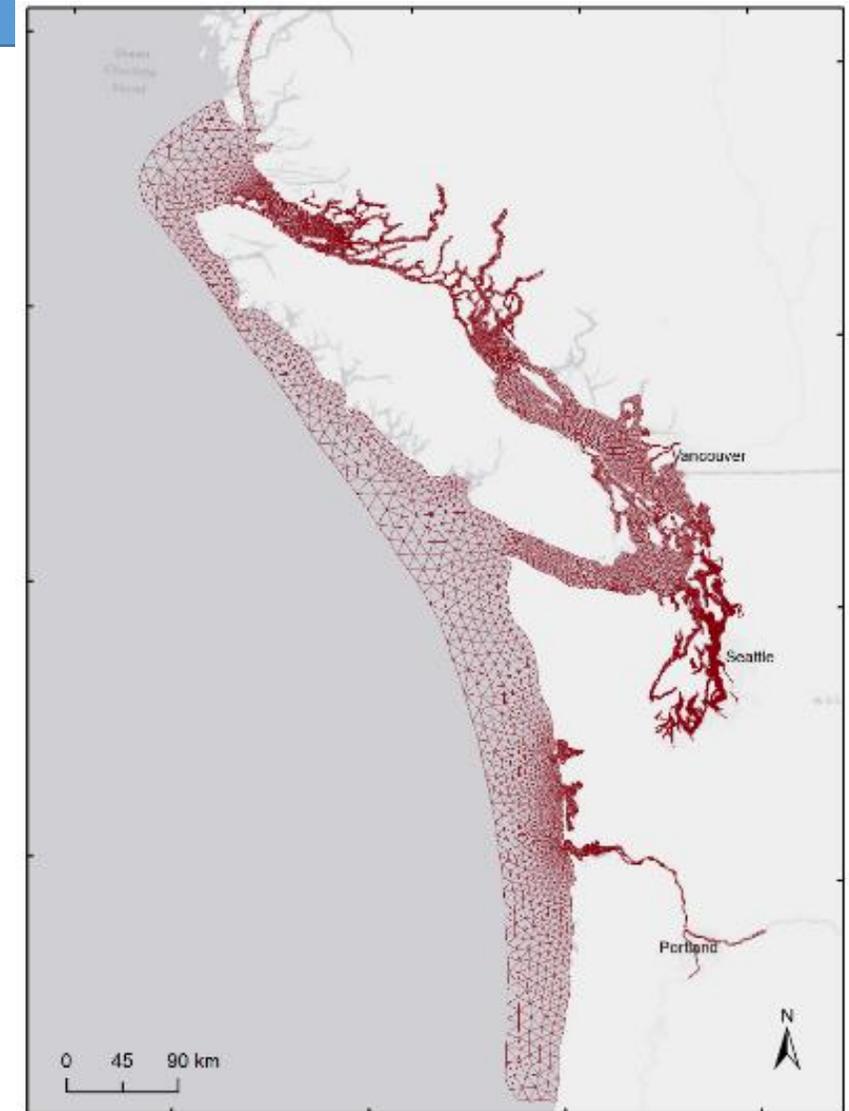
Salish Sea model
Model
Performance
Model Scenarios
and Outputs
Certainty

Implementation:
Challenges
BMPs
Sequencing
Creative Solutions

Regulatory
Fairness
Cost/Affordability
Funding
Incentives

Optimization Scenarios

- Help develop questions for the model to answer
- Inform model inputs
- 4 modeling iterations
- Analysis of each iteration will be shared and we'll seek input to develop the next round
- Salish Sea modeling objective:
 - To test suites of nutrient load reductions to achieve our water quality goals



Salish Sea computer model grid

Sharing SSM Outputs Online

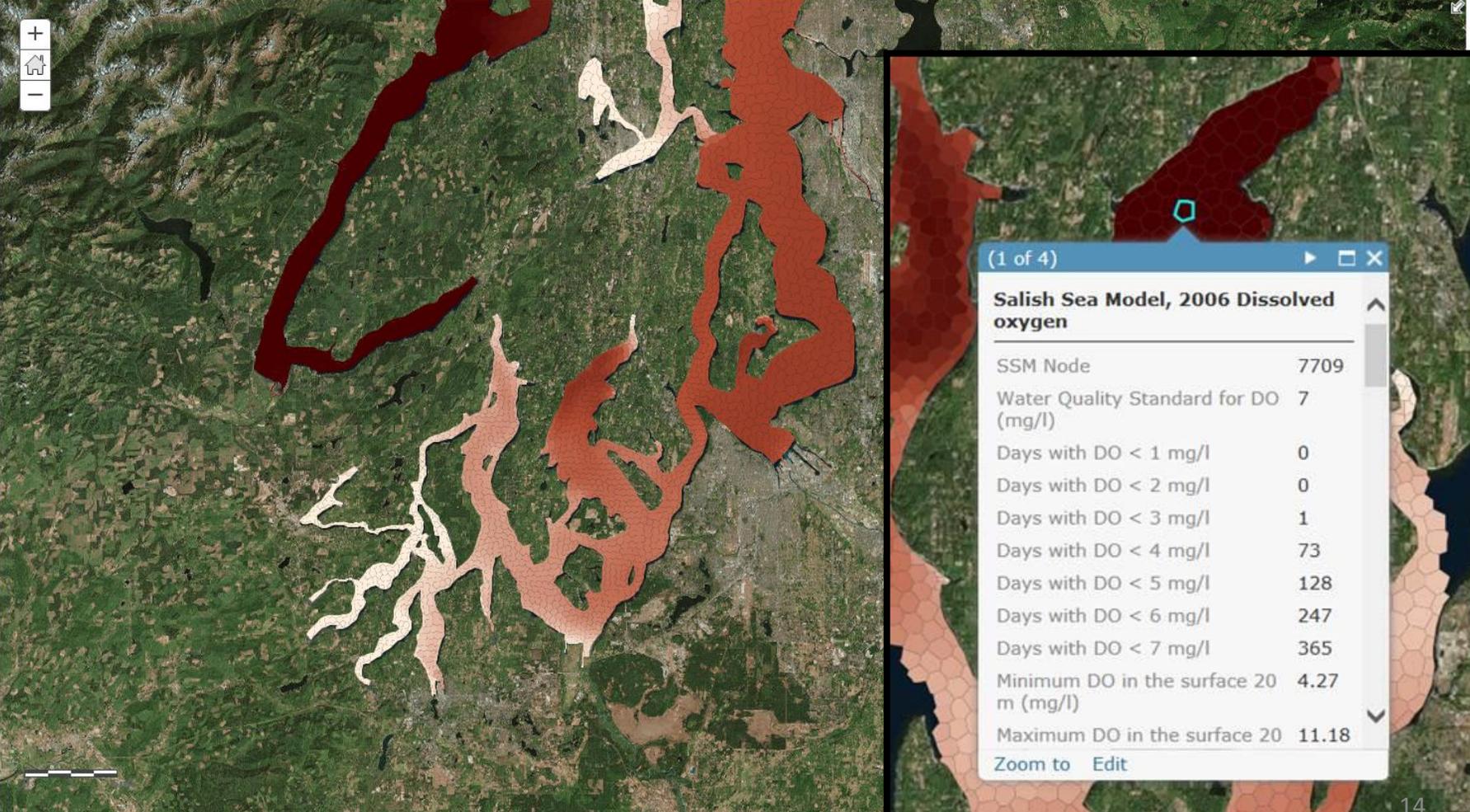
Home ▾ Salish Sea Model - Dissolved oxygen during 2006 New Map Dustin ▾

Details Add ▾ Basemap Analysis Save ▾ Share Print ▾ Directions Measure Bookmarks Find address or place 🔍

About Content Legend

Contents

- OAH WA inventory public
- PS Sentinel Stations
- DIN load from rivers (total)
- DIN load from rivers (anthropogenic)
- DIN load from WWTPs
- Average DO in the bottom layer from Jan-Dec 2006
- Minimum DO in the bottom layer from Jan-Dec 2006
- Days with DO less than 5 mg/l during 2006
- Days with anthropogenic DO depletion more than 0.2 mg/l when DO is below WQS in 2006
- Average DIN in the surface 20 m from Apr-Sep 2006
- Average Chlorophyll a in the surface 20 m from Apr-Sep 2006
- Average Non-algal organic C in the bottom layer from Apr-Sep 2006
- Average Apr-Sep 2006 fraction of anthropogenic DIN in the surface 20 m
- Average Apr-Sep 2006 fraction of anthropogenic Chlorophyll a in the surface 20 m
- Average Apr-Sep 2006 fraction of anthropogenic organic C in bottom layer
- Reference condition average DO in the bottom layer from Jan-Dec 2006
- Reference condition minimum DO in the bottom layer from Jan-Dec 2006



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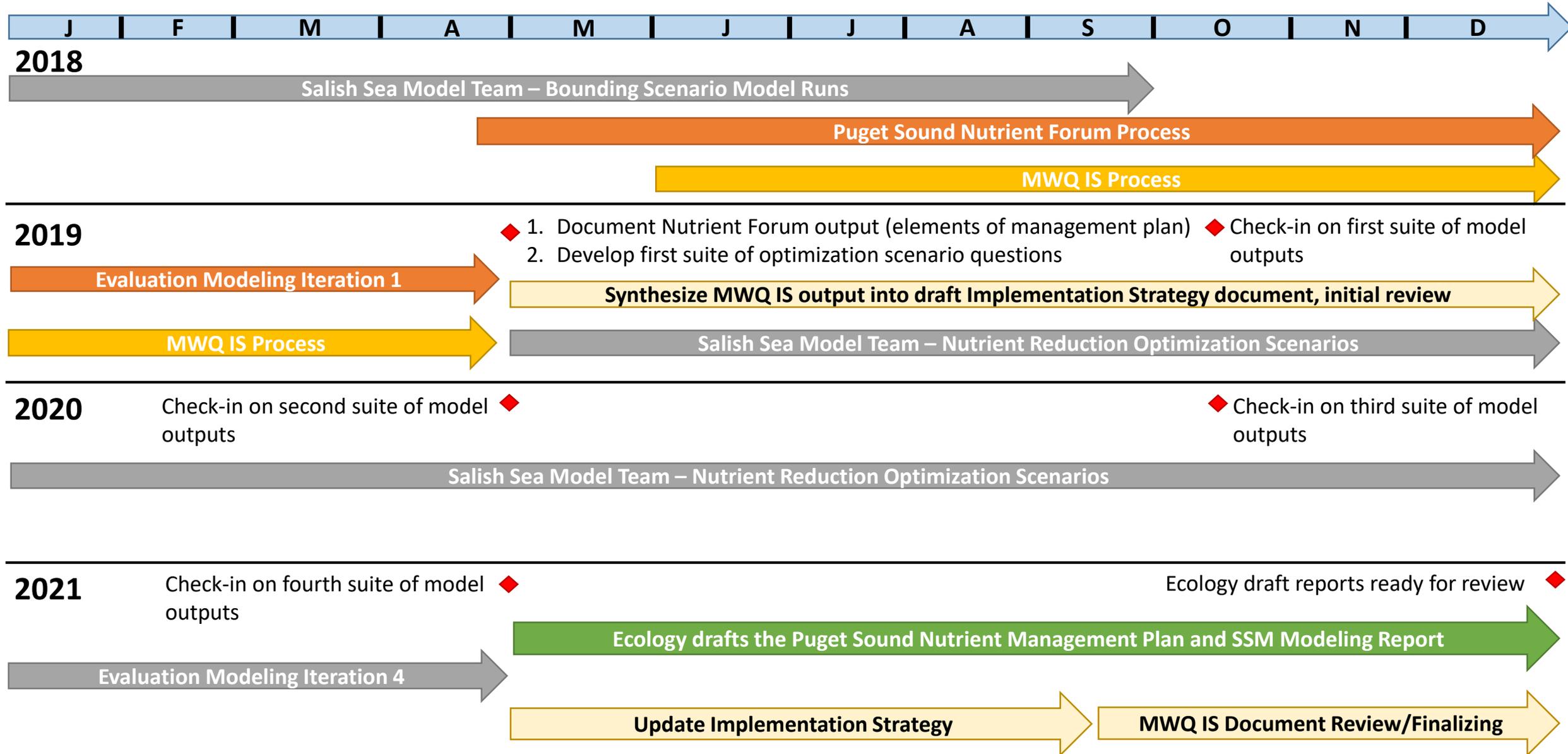
Salish Sea Model, 2006 Dissolved oxygen

SSM Node	7709
Water Quality Standard for DO (mg/l)	7
Days with DO < 1 mg/l	0
Days with DO < 2 mg/l	0
Days with DO < 3 mg/l	1
Days with DO < 4 mg/l	73
Days with DO < 5 mg/l	128
Days with DO < 6 mg/l	247
Days with DO < 7 mg/l	365
Minimum DO in the surface 20 m (mg/l)	4.27
Maximum DO in the surface 20 m (mg/l)	11.18

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General Timeline: Nutrient Management Plan



Marine WQ IS Teams

Core Team (12-15 people)

- Guide the Marine WQ Implementation Strategy development
- Confirm team roles, responsibilities, work plan, communication, and timeline, draft and review written materials

Interdisciplinary Team (20-24 people)

- Actively participate in 5-6 technical workshops
- Participate in drafting and reviewing written materials and other products developed in the workshops

Will be seeking volunteers to apply beginning in June

- Need a range of perspectives, skills, technical background and experience

Questions?



Contact:

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Birch Bay Point

spawn

Nutrient Forum Next Steps

Susan Braley, ECY

Questionnaire Responses covered today

- ✓ Understanding the science:
 - Nutrient over-enrichment in Puget Sound
 - A Primer on the Salish Sea Model
 - Water Quality Trends
- ✓ Regulatory backstop: Applying DO criteria to nutrients
- ✓ The relationship between the Nutrient Forum and MWQ IS

Coming Next

Save the dates for the next two Forum Meetings (in person at Ecology in Olympia and by webinar)

- **July 16th**
- **August 22nd**
- Meeting materials will be made available on the project webpage:
 - <https://ecology.wa.gov/Water-Shorelines/Puget-Sound/Helping-Puget-Sound/Reducing-Puget-Sound-nutrients>
 - Please sign up for the Puget Sound DO listserv if you haven't already
- Solicitation for the Marine WQ Implementation Strategy team will be posted in June