Sinclair Inlet, 9/13/2023. Photo courtesy: Eyes over Puget Sound, MMU, ECY

Phase 2 Salish Sea Modeling

Highlights of recently released report and related data products

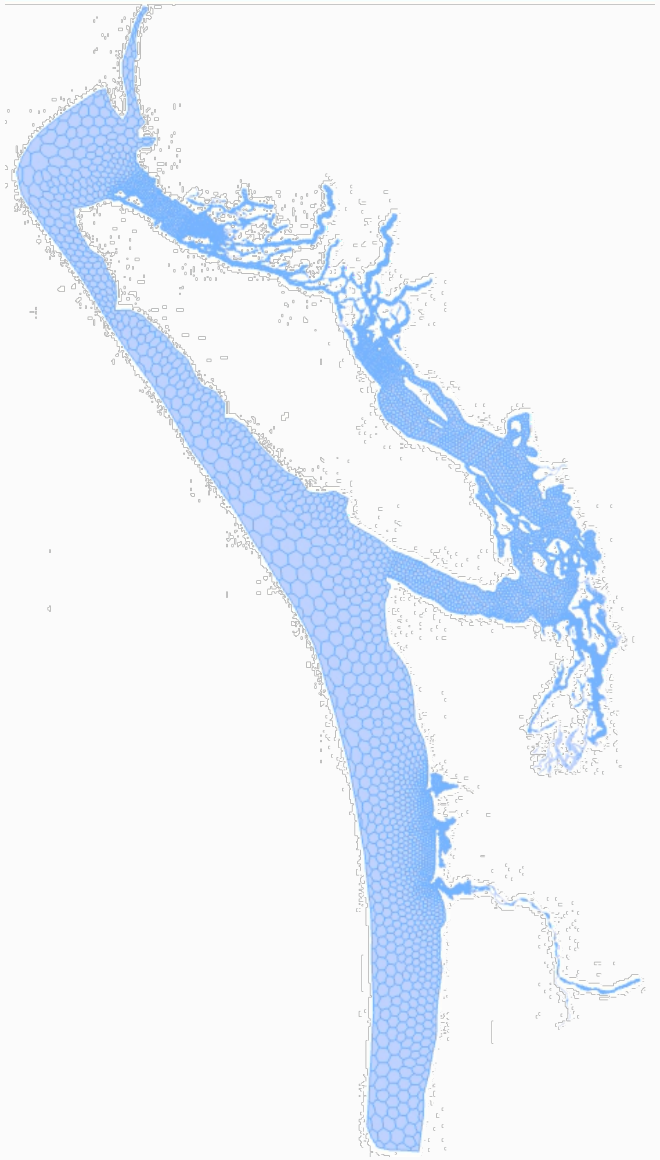
Hanis Zulmuthi

Environmental Assessment Program

June 24th, 2025

In the March forum, we:

- Provided context and summarized the key findings of our modeling work
- Presented Phase 2 Optimization Scenarios model results
- Presented model updates and performance metrics



SSM Phase 2 Report Published

Report published on June 12th, 2025:

- Link: https://apps.ecology.wa.gov/publications/SummaryPages/2503003.html

- Includes an **Executive Summary** that includes key model scenario results
- Includes **14 Appendices** that delve into further details and can be downloaded separately

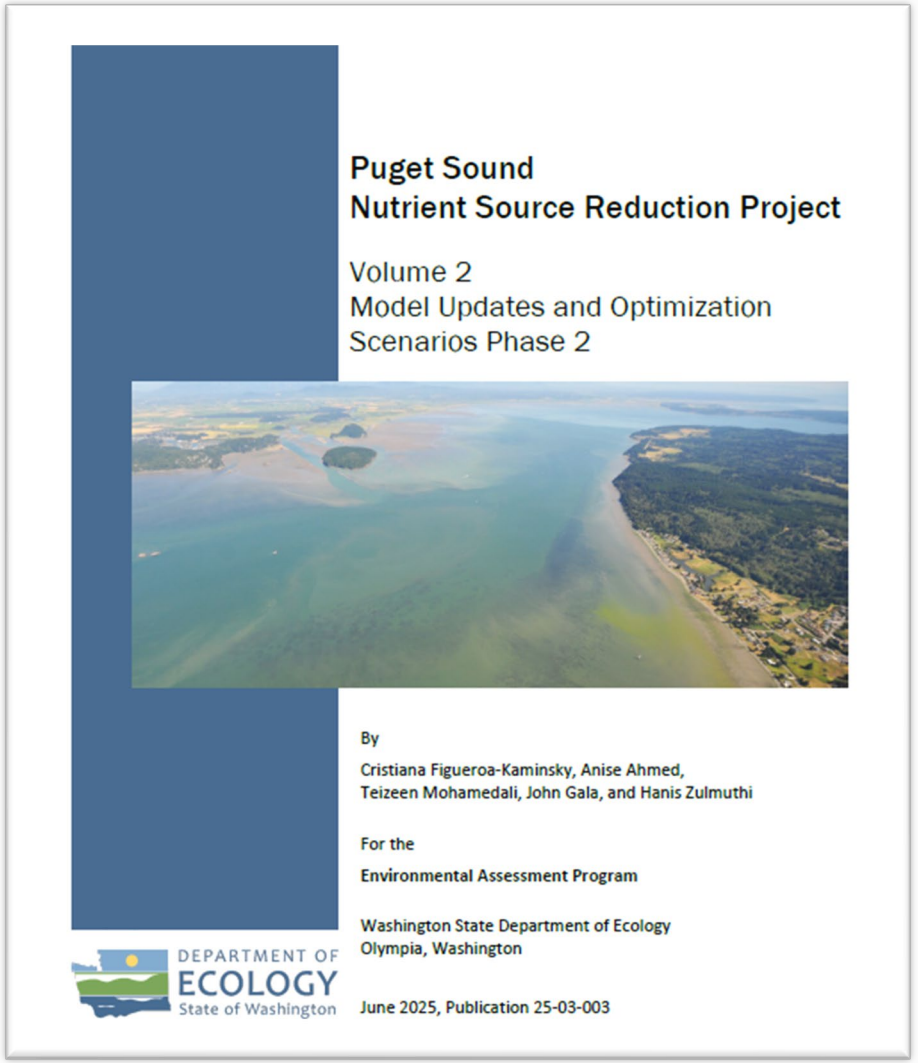
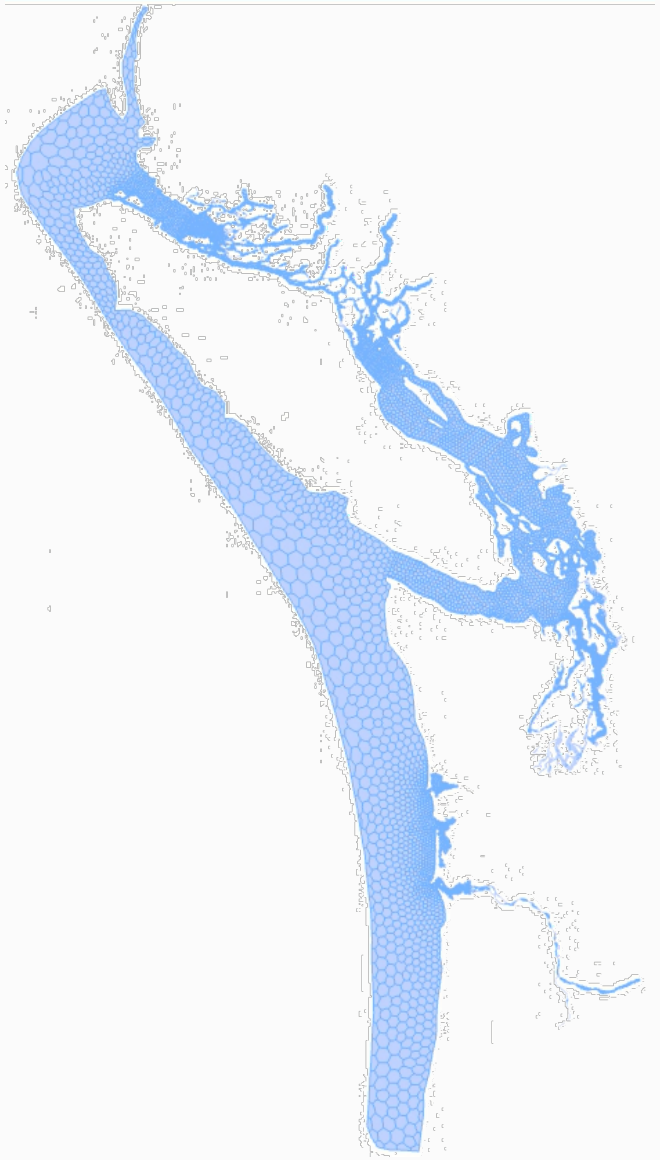


Table of Contents Outline

Introduction & Project Description	• Context based on prior work: multiple inlets and embayments in Puget Sound are vulnerable to lower DO due to human nutrient inputs
Methods	• Model updates • Description of existing and reference conditions and refined nutrient reduction scenarios
Results & Discussion, Conclusions & Recommendations	• Model performance and limitations • Processes consuming DO, uncertainty and sensitivity analysis • DO noncompliance under existing conditions and Opt2 refined nutrient reduction scenarios

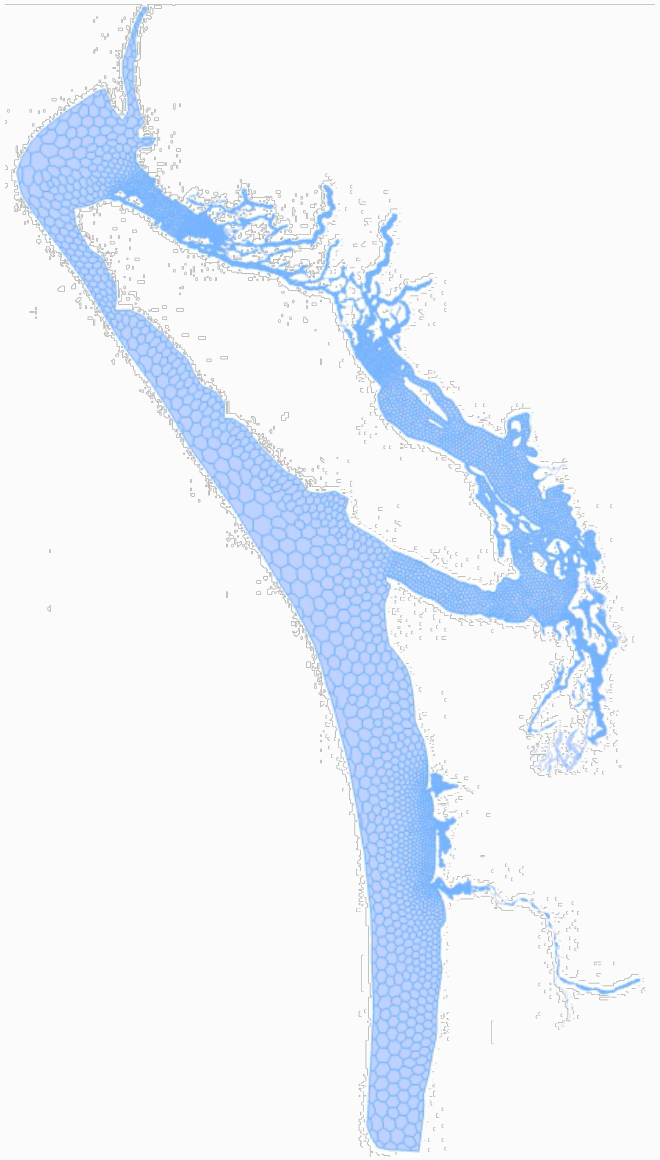
Key Takeaways

- Model performance improved due to updates.
- Fundamental key physical and biogeochemical processes are well represented in the model.
- Report contains initial and refined hypothetical nutrient reduction scenarios in support of the PSNSRP



Additional Data Products

- **Downloadable SSM files** are available by July 4th here: https://fortress.wa.gov/ecy/ezshare/EAP/SalishSea/SalishSeaModelBoundingScenarios.html
- **Phase 2 SSM Scenarios Web Map:** https://gis.ecology.wa.gov/portal/apps/experiencebuilder/experience/?id=a4f911186f7d4ee89252f8089463886a
- **USGS SPARROW model:**
  - Tool for estimating contributions of watershed sources and pathways
  - Preprint: https://doi.org/10.22541/essoar.173878059.92247480/v1
  - Mapper: https://sparrow.wim.usgs.gov/sparrow-puget-sound/
- **Please direct report/modeling questions to Cristiana Figueroa-Kaminsky at: c.figueroa@ecy.wa.gov**



Sinclair Inlet, 9/13/2023. Photo courtesy: Eyes over Puget Sound, MMU, ECY

Phase 2 Salish Sea Model Scenarios Web Map Demonstration

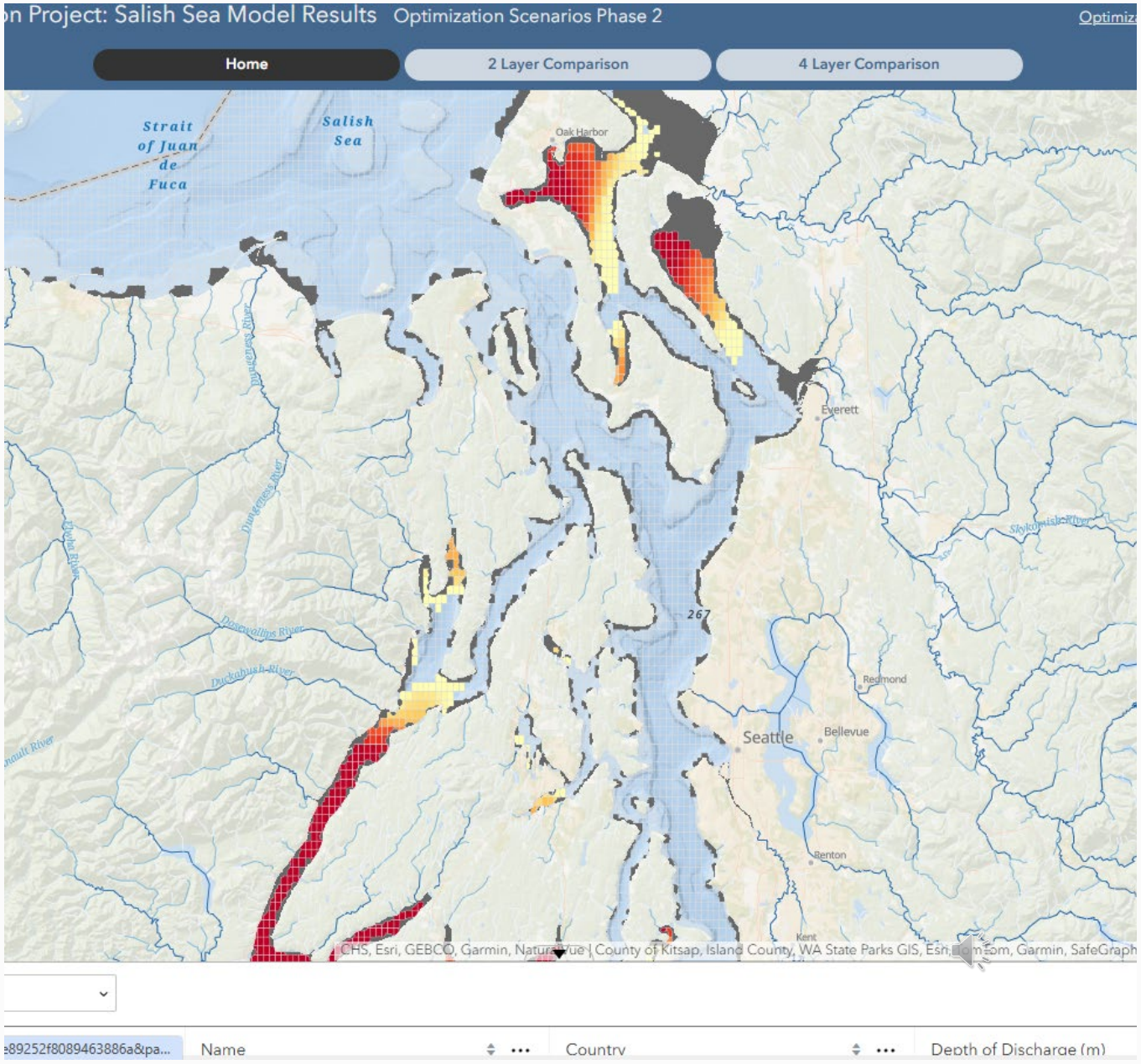
Jamie Wasielewski

Environmental Assessment Program

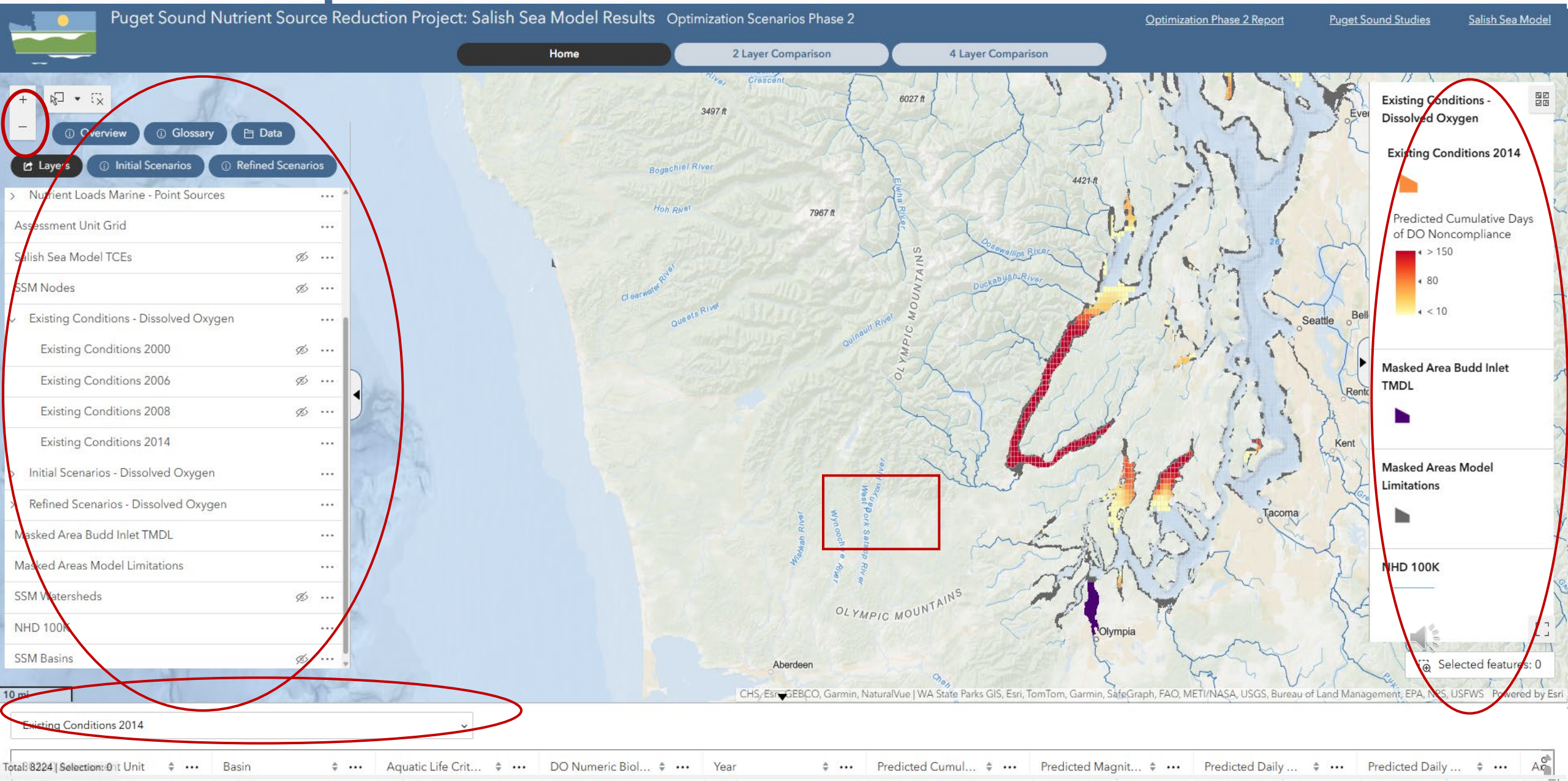
June 24th, 2025

Web Map Overview

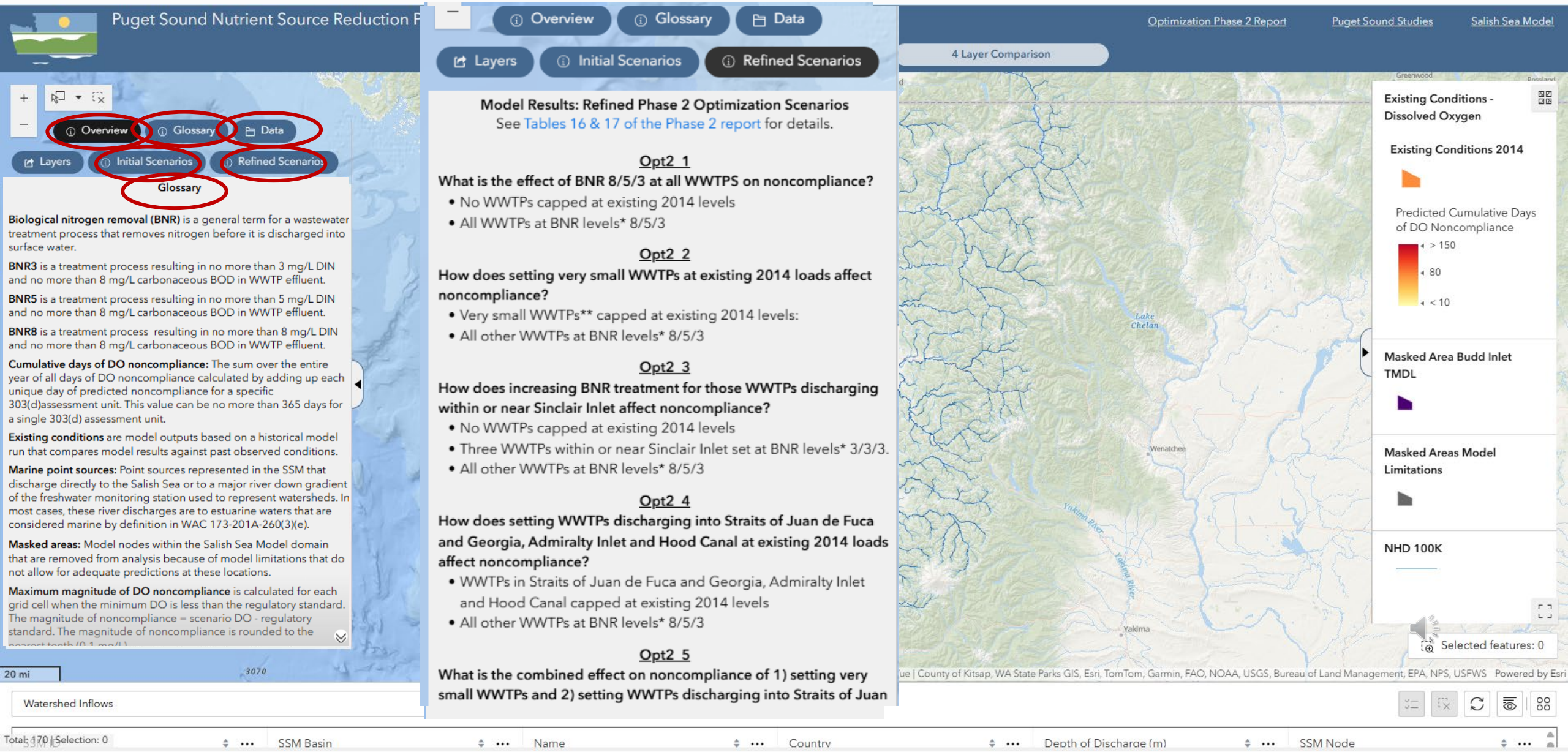
- Data
- Tools and Features
- Views



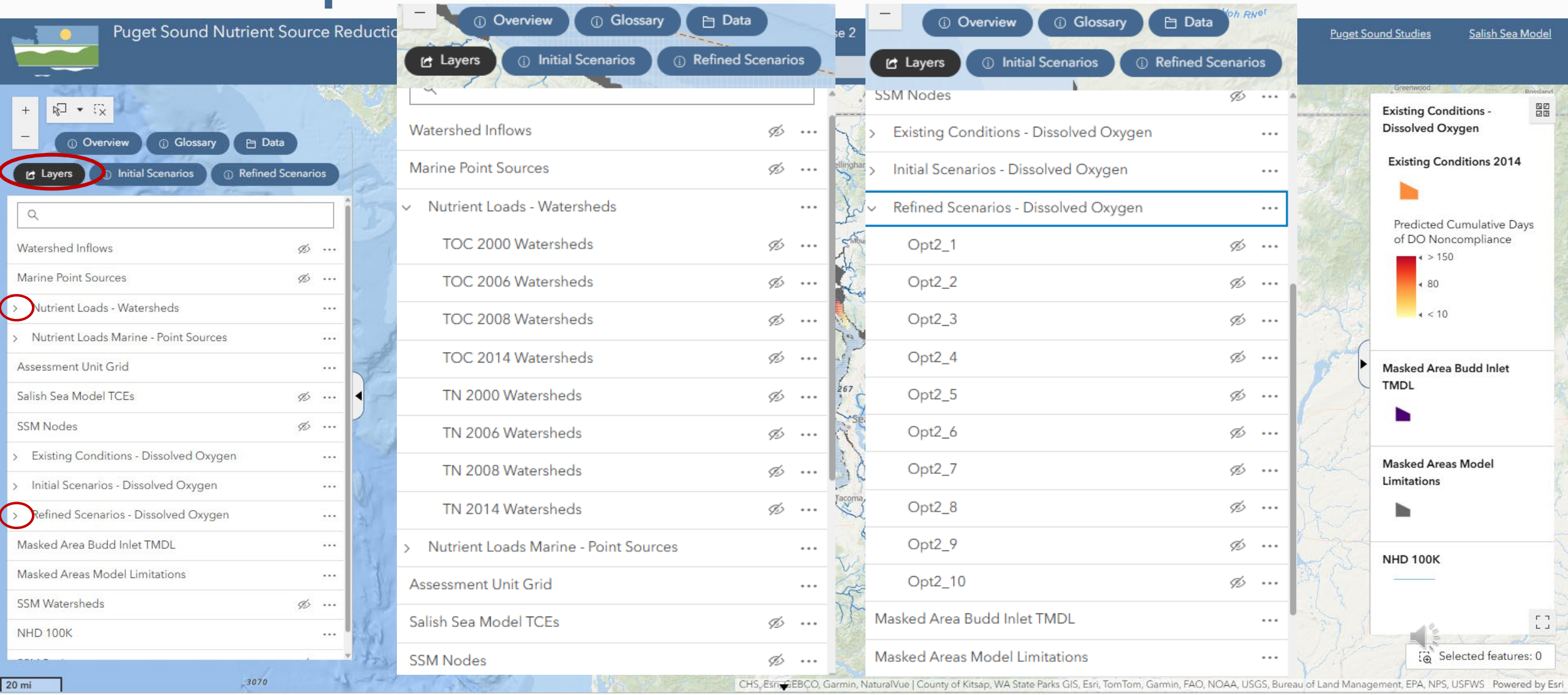
Web Map: Overview and Information



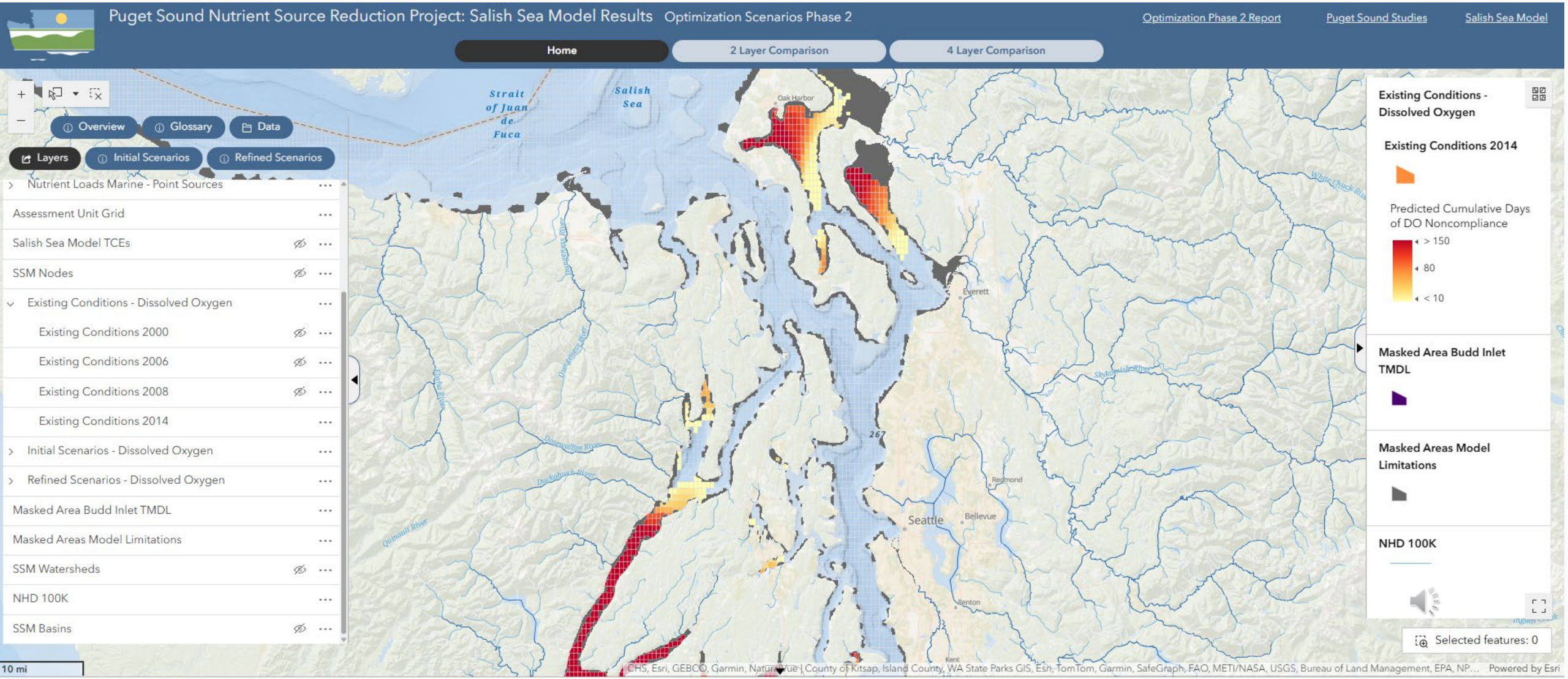
Web Map: Overview and Information



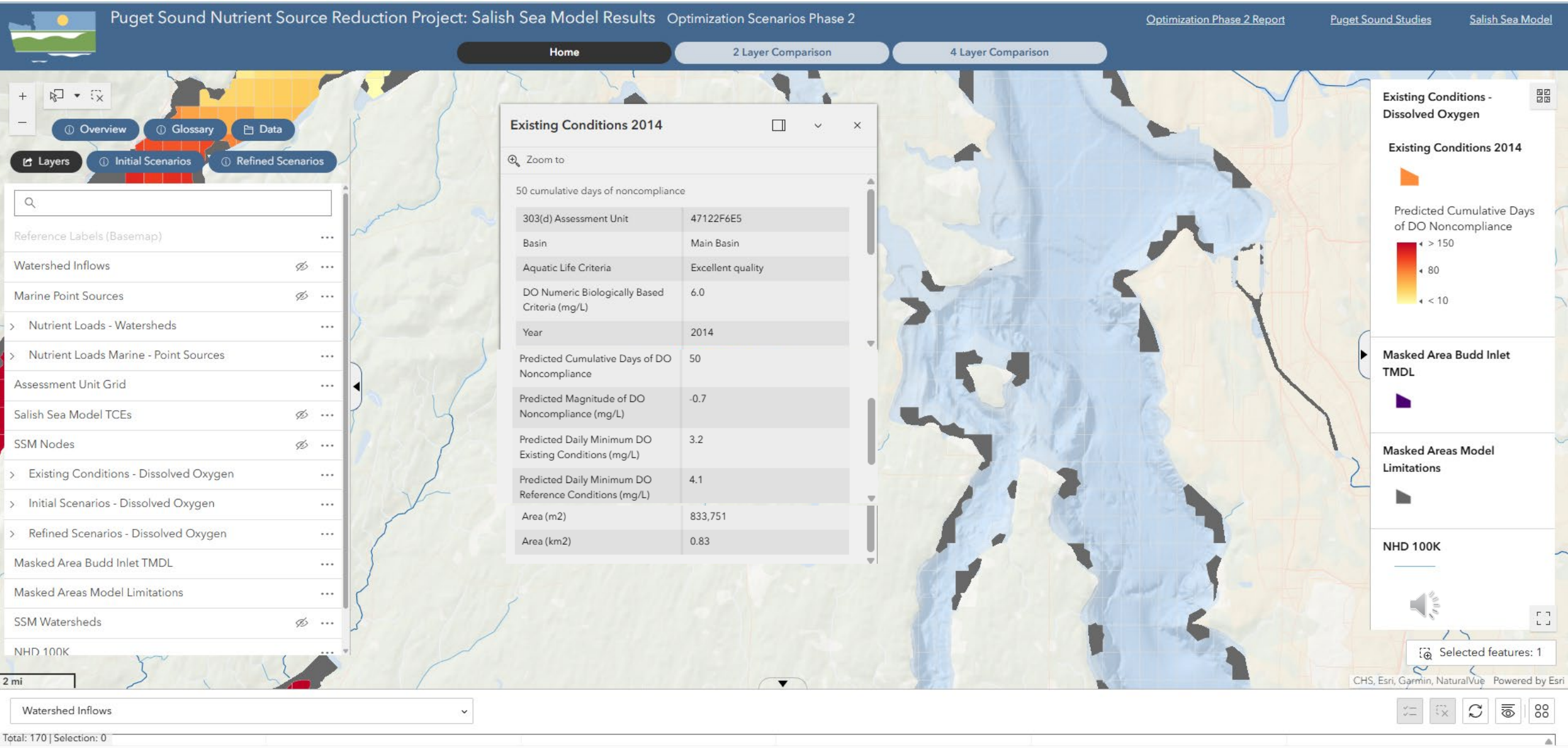
Web Map: Available Data



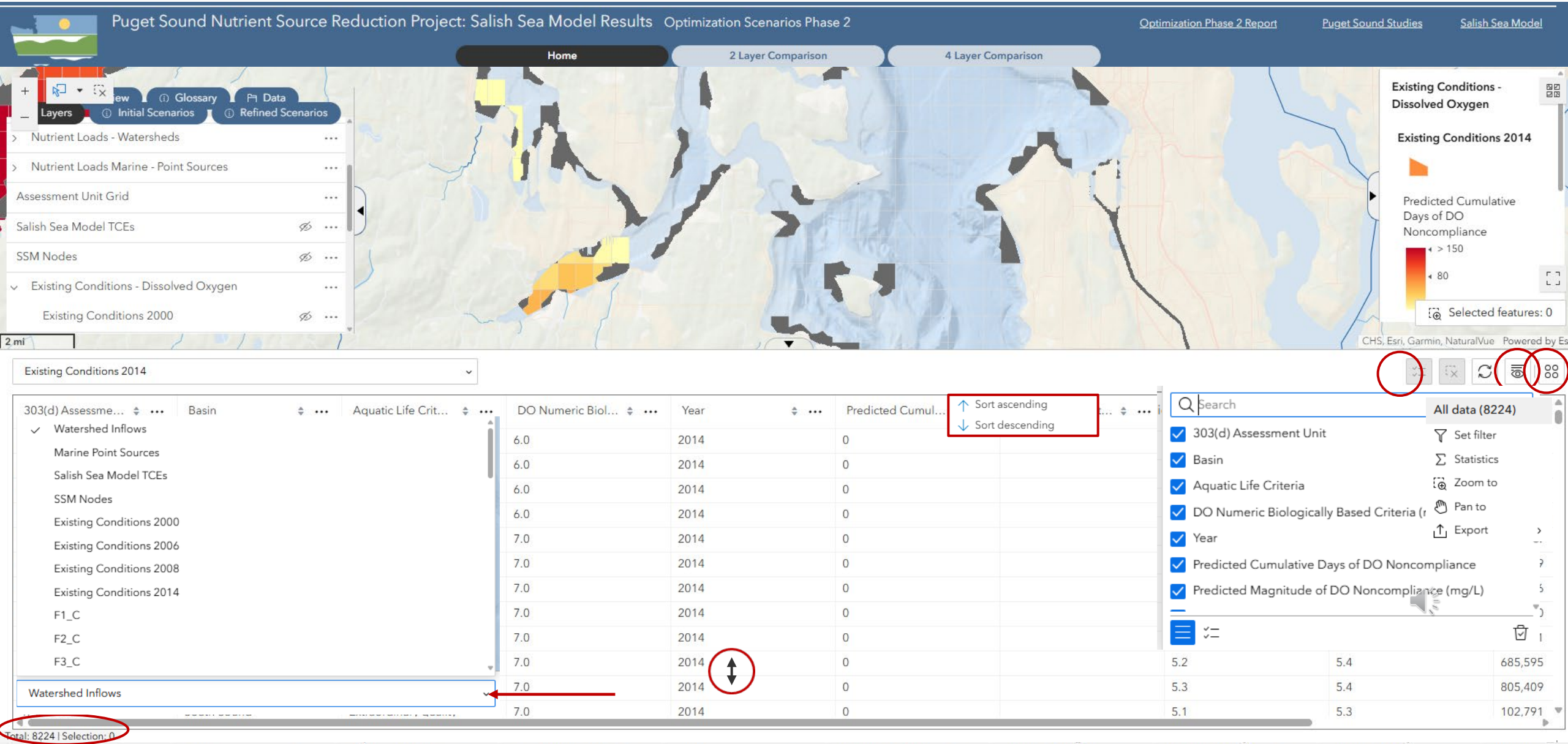
Web Map: Layer Visibility



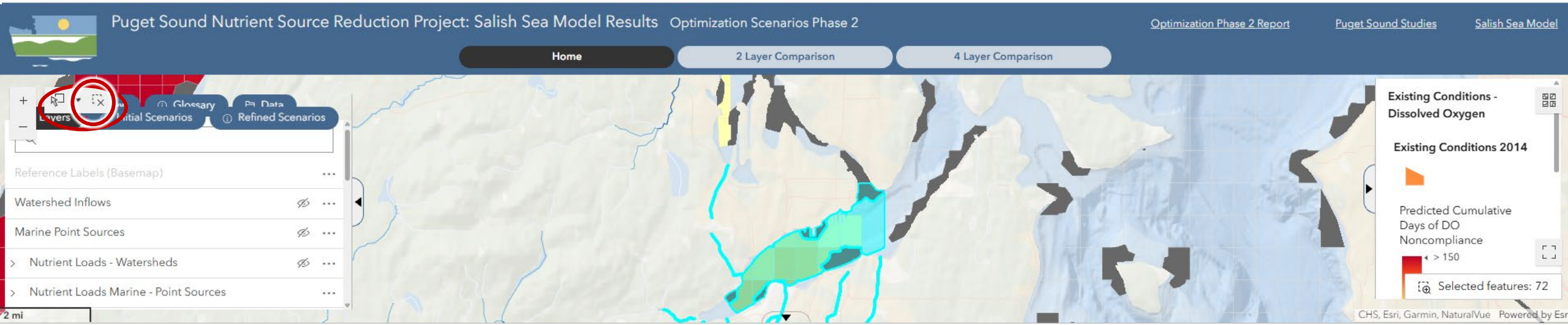
Web Map: Pop-ups



Web Map: Attribute Tables



Web Map: Feature Selection & Filtering

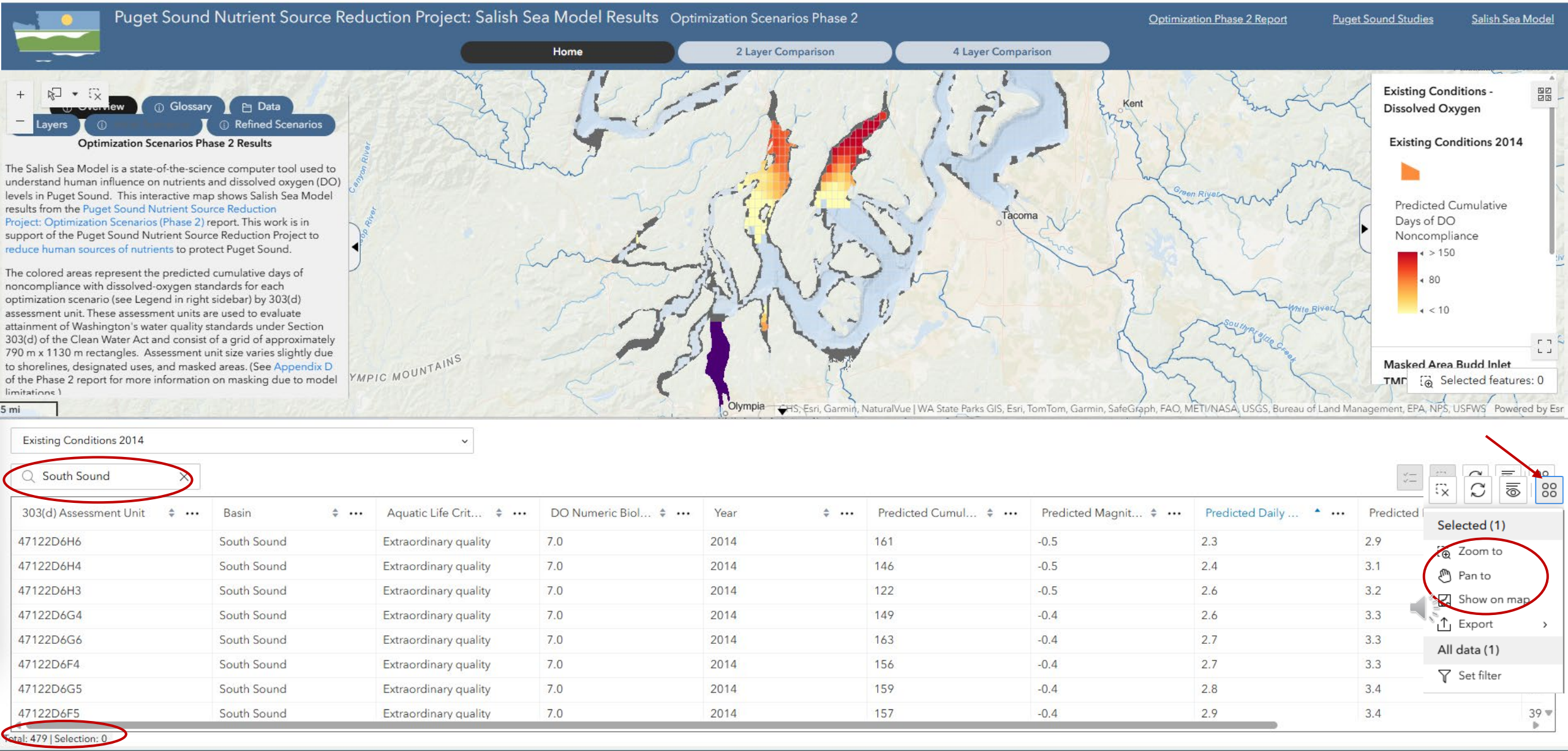


Existing Conditions 2014

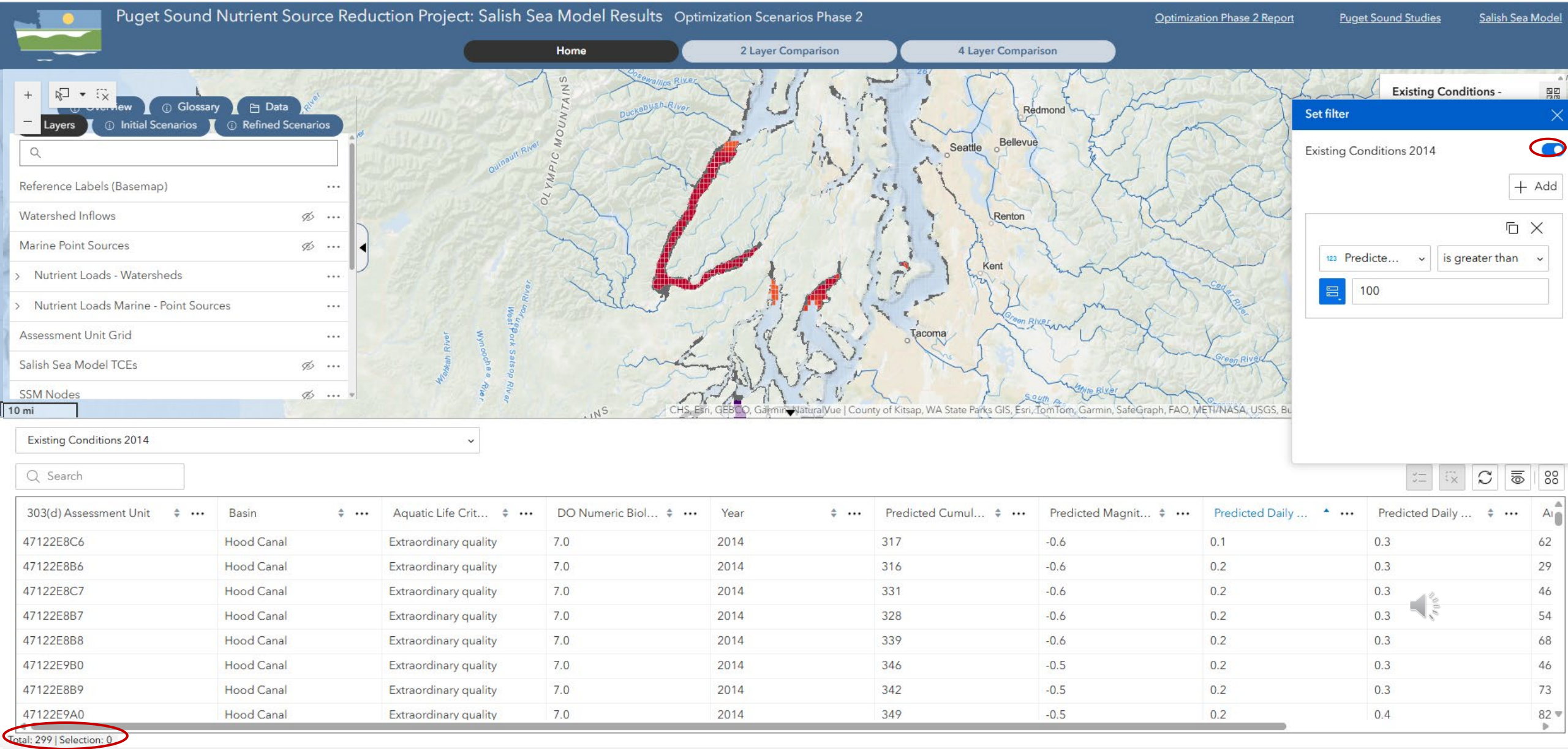
303(d) Assessme...	Basin	Aquatic Life Crit...	DO Numeric Biol...	Year	Predicted Cumul...	Predicted Magnit...	Predicted Daily ...	Predicted Daily ...	Area (m2
47122F6D5	Main Basin	Excellent quality	6.0	2014	63	-0.7	2.5	3.4	47,393
47122F6D6	Main Basin	Excellent quality	6.0	2014	58	-1.0	1.7	2.8	203,400
47122F6D7	Main Basin	Excellent quality	6.0	2014	58	-1.1	1.6	2.7	504,403
47122F6E1	Main Basin	Extraordinary quality	7.0	2014	0		6.2	6.2	112,666
47122F6E3	Main Basin	Excellent quality	6.0	2014	35	-0.5	3.9	4.5	283,409
47122F6E4	Main Basin	Excellent quality	6.0	2014	47	-0.6	3.4	4.2	767,037
47122F6E5	Main Basin	Excellent quality	6.0	2014	50	-0.7	3.2	4.1	833,751
47122F6E6	Main Basin	Excellent quality	6.0	2014	34	-0.7	3.3	4.2	689,799
47122F6E7	Main Basin	Excellent quality	6.0	2014	38	-1.0	2.6	3.7	118,569
47122F6F1	Main Basin	Extraordinary quality	7.0	2014	0		6.2	6.3	836,924
47122F6F2	Main Basin	Excellent quality	6.0	2014	1	-0.1	5.5	5.8	821,478
47122F6F3	Main Basin	Excellent quality	6.0	2014	13	-0.3	4.6	5.1	605,013
47122F6F4	Main Basin	Excellent quality	6.0	2014	32	-0.5	3.8	4.5	249,830

Total: 17 | Selection: 17

Web Map: Feature Selection & Filtering



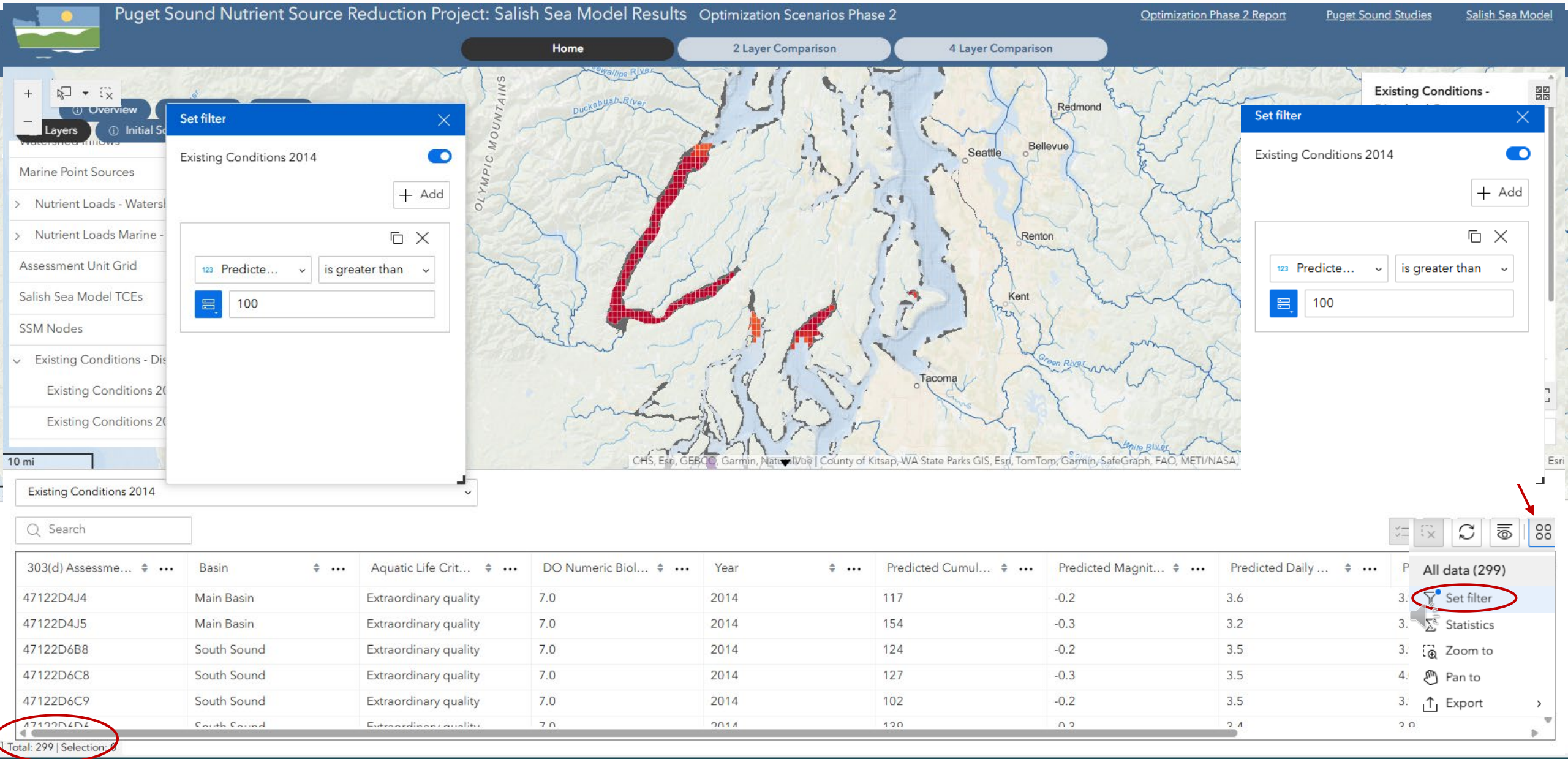
Web Map: Feature Selection & Filtering



303(d) Assessment Unit	Basin	Aquatic Life Crit...	DO Numeric Biol...	Year	Predicted Cumul...	Predicted Magnit...	Predicted Daily ...	Predicted Daily ...	A
47122E8C6	Hood Canal	Extraordinary quality	7.0	2014	317	-0.6	0.1	0.3	62
47122E8B6	Hood Canal	Extraordinary quality	7.0	2014	316	-0.6	0.2	0.3	29
47122E8C7	Hood Canal	Extraordinary quality	7.0	2014	331	-0.6	0.2	0.3	46
47122E8B7	Hood Canal	Extraordinary quality	7.0	2014	328	-0.6	0.2	0.3	54
47122E8B8	Hood Canal	Extraordinary quality	7.0	2014	339	-0.6	0.2	0.3	68
47122E9B0	Hood Canal	Extraordinary quality	7.0	2014	346	-0.5	0.2	0.3	46
47122E8B9	Hood Canal	Extraordinary quality	7.0	2014	342	-0.5	0.2	0.3	73
47122E9A0	Hood Canal	Extraordinary quality	7.0	2014	349	-0.5	0.2	0.4	82

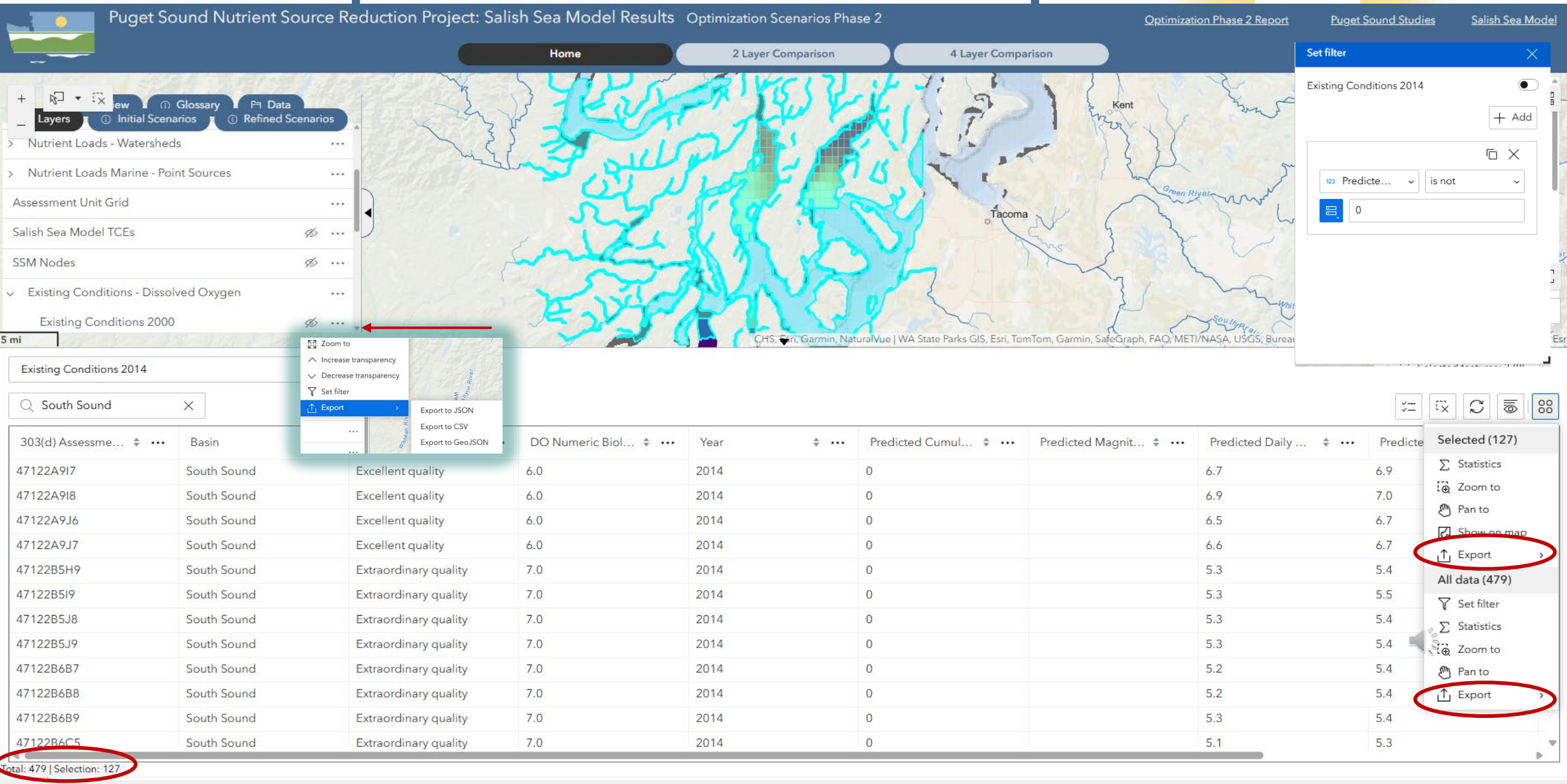
Total: 299 | Selection: 0

Web Map: Feature Selection & Filtering

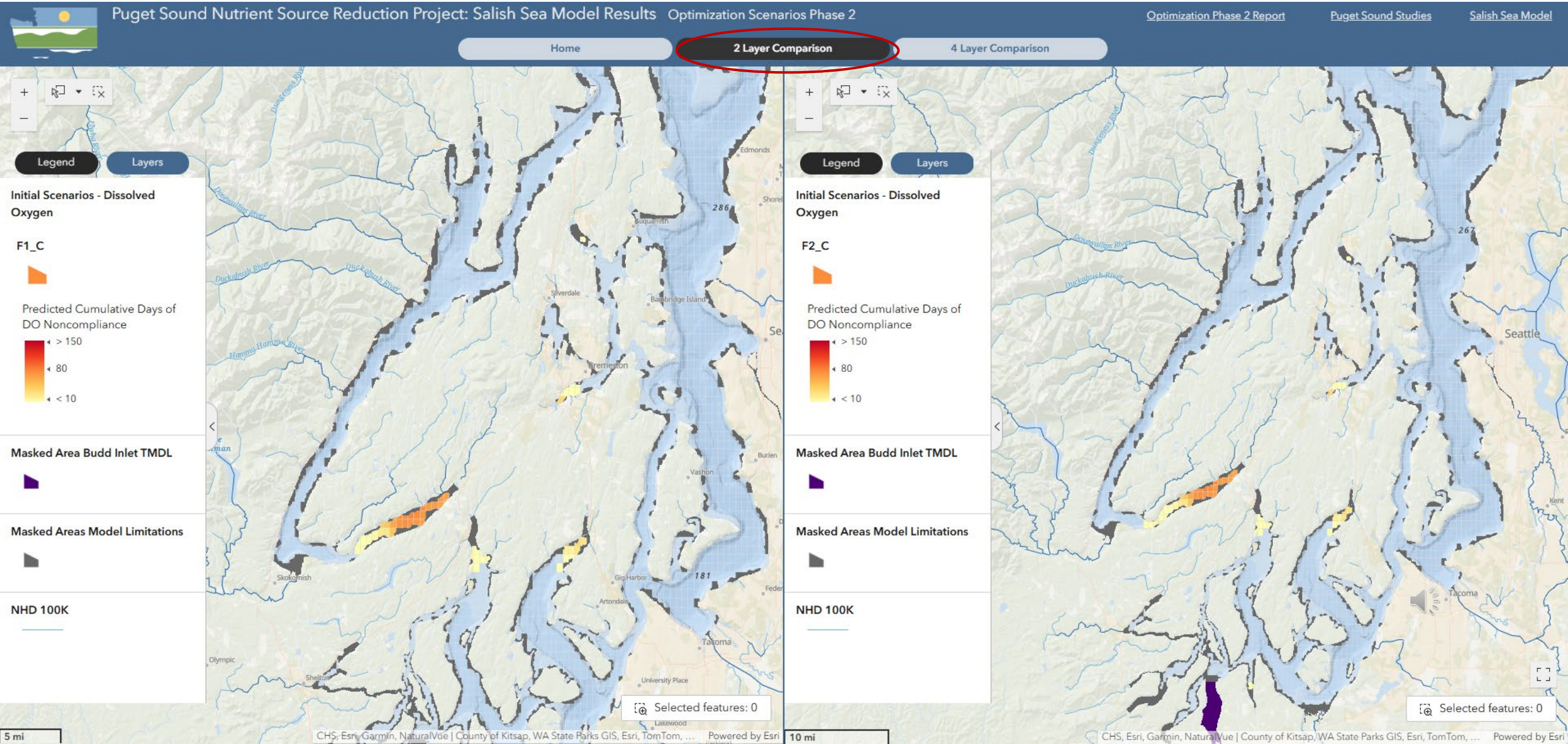


303(d) Assessme...	Basin	Aquatic Life Crit...	DO Numeric Biol...	Year	Predicted Cumul...	Predicted Magnit...	Predicted Daily ...
47122D4J4	Main Basin	Extraordinary quality	7.0	2014	117	-0.2	3.6
47122D4J5	Main Basin	Extraordinary quality	7.0	2014	154	-0.3	3.2
47122D6B8	South Sound	Extraordinary quality	7.0	2014	124	-0.2	3.5
47122D6C8	South Sound	Extraordinary quality	7.0	2014	127	-0.3	3.5
47122D6C9	South Sound	Extraordinary quality	7.0	2014	102	-0.2	3.5

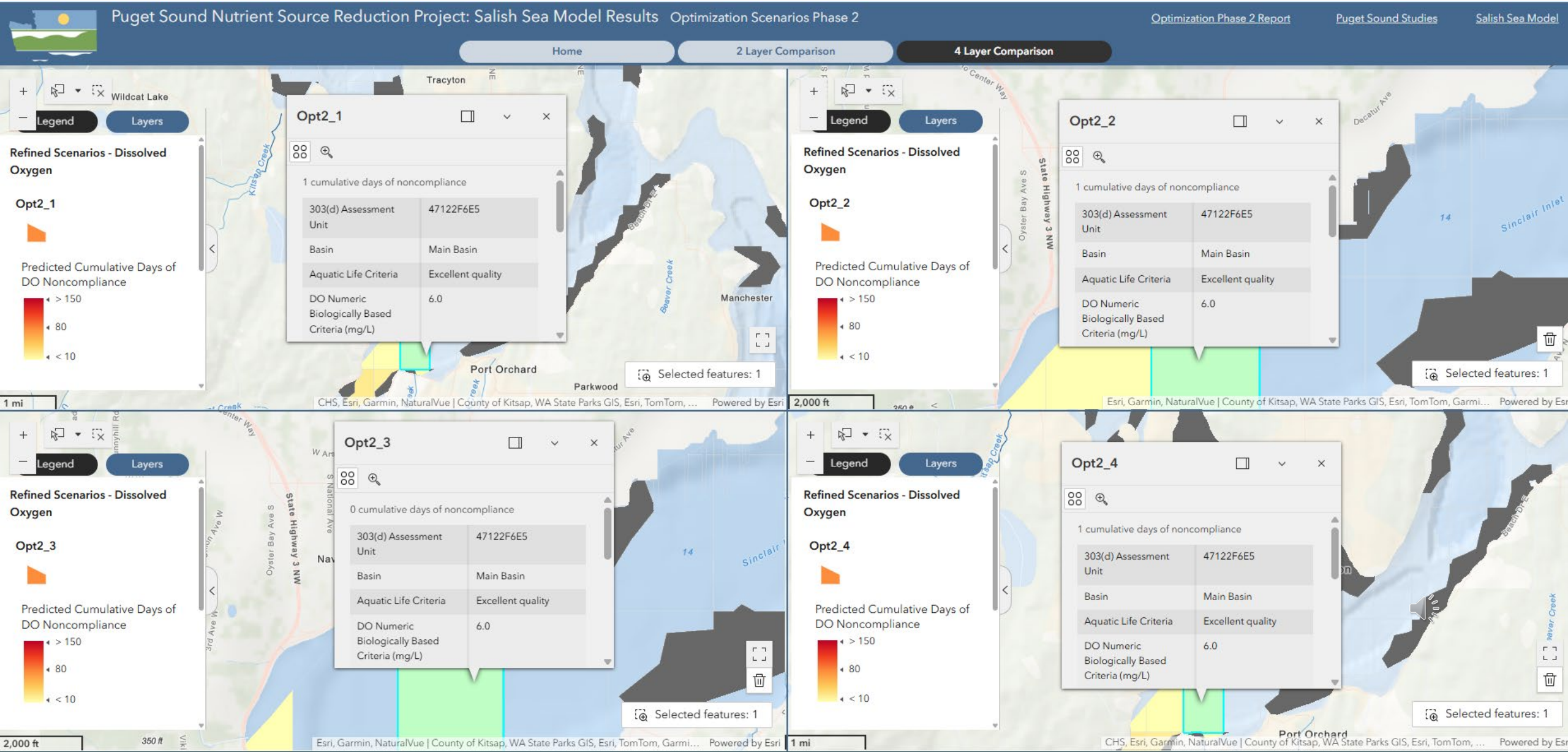
Web Map: Attribute Tables - Export



Web Map: Views



Web Map: Views



Questions?

Please direct questions about how to use the web map to Jamie Wasielewski at jamie.wasielewski@ecy.wa.gov