

Consent Agenda Briefing for PWSRCAC Board of Directors – January 2025

ACTION ITEM

Sponsor: Danielle Verna & the Scientific Advisory Committee

Project number and name or topic: 9850 – Transcriptomics

1. **Description of agenda item:** The Board is being asked to approve a research contribution to the United States Geological Survey (USGS) of \$109,703, to genetically analyze blue mussel samples obtained at 10 of the Council’s monitoring sites for its Long-Term Environmental Monitoring Program (LTEMP) in Port Valdez and Prince William Sound. These data will be used in conjunction with hydrocarbon monitoring of mussels at these sites to assess the long-term impacts of operation of the Valdez Marine Terminal and associated tankers. The samples have already been collected and are in storage at the contractor’s facility in California.

Project 9850 – Transcriptomics Monitoring was deferred based on Long Range Plan ranking and lack of available funds. With the FY2024 audit now complete, and the associated additional funds available in contingency, staff is proposing to implement this project for completion this fiscal year. Additionally, if approved, there will be overlap with the FY2025 and FY2026 transcriptomics work reducing the proposed FY2026 budget to an approximate amount of \$23,000.

2. **Why is this item important to PWSRCAC:** The Oil Pollution Act of 1990 instructs the PWSRCAC to “devise and manage a comprehensive program of monitoring the environmental impacts of the operations of terminal facilities and of crude oil tankers while operating in Prince William Sound.” The work done under the Council’s Long-Term Environmental Monitoring Program has been designed by the Scientific Advisory Committee to fulfill that responsibility. Transcriptomics is a complementary approach to hydrocarbon monitoring. Transcriptomics can be used to assess physiological changes in organisms when exposed to hydrocarbons, which is an important indicator of the impacts of that exposure over time.

3. **Previous actions taken by the Board on this item:**

<u>Meeting</u>	<u>Date</u>	<u>Action</u>
Board	1/23/2020	Accepted of the “Port Valdez Mussel Transcriptomics” report by Lizabeth Bowen of the U.S. Geological Survey, dated November 20, 2019, as meeting the terms and conditions of contract number 951.20.06, and for distribution to the public.
Board	5/21/2020	Approved the following: authorizing a contract negotiation with Payne Environmental Consultants Inc., for work to be performed under LTEMP, at an amount not to exceed \$115,064. Authorizing a contract negotiation with Newfields Environmental Forensics Practice, for work to be performed under LTEMP, at an amount not to exceed \$95,807. Authorizing a contract negotiation with the United States Geological Survey, for work to be performed under LTEMP, at an amount not to exceed \$65,371. Authorizing a contract negotiation with Oregon State University, for work to be performed under LTEMP, at an amount

Approval of Transcriptomics Research Contribution to the USGS 3-3

		not to exceed \$22,030. Authorizing a contract work to commence prior to the start of FY2021, as approximately \$33,000 of these funds will need to be expended in May and June 2020.
Board	5/6/2021	Accepted the report titled "Long-Term Environmental Monitoring Program: 2020 Sampling Results and Interpretations," by Dr. James R. Payne and William B. Driskell, dated March 2021, as meeting the terms and conditions of contract number 951.21.04, and for distribution to the public. The Board accepted the report titled "Using Mussel Transcriptomics for Environmental Monitoring in Port Valdez, Alaska: 2019 and 2020 Pilot Study Results", dated February 17, 2021, as meeting the terms and conditions of contract number 951.21.06 and for distribution to the public.
Board	5/21/2021	Authorized individual contracts with Newfields Environmental Forensics Practice, Oregon State University, and the United States Geological Survey (USGS) with the aggregate total not to exceed the amount approved in the final FY2022 LTEMP budget (\$147,720) for contract expenses, and delegated authority to the Executive Director to enter into individual contracts with the aforementioned consultants; and authorized that the contract work commence prior to the start of FY2022 as approximately \$30,000 of these funds will need to be expended in May and June 2021.
Board	1/27/2022	Approved that PWSRCAC provide the United States Geological Survey with a research contribution of \$75,555 to genetically analyze blue mussel samples obtained to monitor the environmental impacts of the April 12, 2020 oil spill at the Valdez Marine Terminal.
Board	5/4/2023	Accepted the reports titled "Executive Summary: Transcriptomic responses to an Alaskan oil spill over time reveal a dynamic multisystem involvement in exposed mussels" and "Transcriptomic responses to an Alaskan oil spill over time reveal a dynamic multisystem involvement in exposed mussels (Mytilus trossulus)" by Lizabeth Bowen, William B. Driskell, Brenda Ballachey, James R. Payne, Shannon Waters, Eric Litman, and Austin Love as meeting the terms and conditions of research contribution number 951.22.07, and for distribution to the public.

4. **Summary of policy, issues, support, or opposition:** Since 2019, the Council has been working with Dr. Liz Bowen from the USGS on transcriptomics analysis of mussels, a new genetic testing method, as part of LTEMP. Transcriptomics is a promising new tool and in 2019, 2020, and 2021, the Scientific Advisory Committee advised that the Council conduct transcriptomics monitoring work to serve as a pilot study, the results of which would be used to determine if the Council should continue to use this technique in the long term. Originally, the pilot study was only planned for 2019 and 2020, but then the April 12, 2020 oil spill occurred, providing a unique opportunity to further test the utility of transcriptomics to monitor the environmental impacts of the Valdez Marine Terminal and tankers.

Initially, 14 genes were chosen to assess the mussels, then the scope was expanded to include all mussel genes. Genes that could potentially distinguish between ANS crude oil and harbor contaminants were identified. A recommendation of the expanded study that looked at all genes was to develop assays from a shorter list of genes of potential interest. In 2023, mussels were collected for transcriptomics analysis and were shipped to the contractor, but the samples were not analyzed due to a lack of funding.

This project would prioritize (1) developing assays for an expanded 24-gene panel and (2) analyzing mussel tissues collected at 10 LTEMP sites in Port Valdez and Prince William

Approval of Transcriptomics Research Contribution to the USGS 3-3

Sound in 2023. This project was deferred during the FY2025 Long Range Planning process due to lack of funds.

Making a research contribution to the USGS for this work has significant financial benefit for the Council. By making a research contribution rather than entering into a contract, the Council will avoid paying overhead costs of 51.25%. Since 2019, the Council has made research contributions to the USGS to support related transcriptomics work and the results of all those contributions have been successful (i.e., the research and associated report was completed and delivered to the Council). The Finance Committee has provided [guidelines for providing research contributions](#) using PWSRCAC funds.

5. **Committee Recommendation:** The Scientific Advisory Committee has supported previous transcriptomics projects and supported this project during the FY2025 Long Range Planning process. SAC will be made aware of the requested action to add this project to the FY2025 budget at a meeting in January 2025, and their recommendation will be given at the Board meeting.
6. **Relationship to LRP and Budget:** Project 9850 was deferred for FY2025, noting it may be brought back mid-year if funding allows.
7. **Action Requested of the Board of Directors:** Transfer \$109,703 from contingency to project 9850 – Transcriptomic Monitoring and provide the United States Geological Survey a research contribution of \$109,703 to genetically analyze blue mussel samples already obtained to monitor the environmental impacts of the Valdez Marine Terminal.
8. **Alternatives:** None recommended.
9. **Attachments:** Budget estimate from Dr. Liz Bowen from the United States Geological Survey available upon [request](#).