



DEPARTMENT OF  
**ECOLOGY**  
State of Washington

**IAA No. C2100086**

**INTERAGENCY AGREEMENT (IAA)**

**BETWEEN**

**THE STATE OF WASHINGTON, DEPARTMENT OF ECOLOGY**

**AND**

**THE STATE OF WASHINGTON, DEPARTMENT OF FISH AND WILDLIFE**

**THIS INTERAGENCY AGREEMENT** (“Agreement” or “IAA”) is made and entered into by and between the state of Washington, Department of Ecology, hereinafter referred to as “**ECOLOGY**,” and the State of Washington, Department of Fish and Wildlife hereinafter referred to as the “**WDFW**” and “**CONTRACTOR**,” pursuant to the authority granted by Chapter 39.34 RCW.

**THE PURPOSE OF THIS AGREEMENT** is for **the mussel monitoring to evaluate the spatial extent of mussel tissue contamination in the Puget Sound nearshore.**

**WHEREAS**, ECOLOGY has legal authority (RCW 90.48 and WAC 173-220) and WDFW has legal authority (RCW 90.48) that allows each party to undertake the actions in this agreement.

**THEREFORE, IT IS MUTUALLY AGREED THAT:**

**1) SCOPE OF WORK**

**WDFW** shall furnish the necessary personnel, equipment, material and/or service(s) and otherwise do all things necessary for or incidental to the performance of the work set forth in Appendix A, *Statement of Work and Budget*, attached hereto and incorporated herein.

**2) PERIOD OF PERFORMANCE**

The period of performance of this IAA will commence on **May 15, 2021** and be completed by **August 30, 2025**, unless the Agreement is terminated sooner as provided herein. Amendments extending the period of performance, if any, shall be at the sole discretion of ECOLOGY.

**3) COMPENSATION**

Compensation for the work provided in accordance with this IAA has been established under the terms of RCW 39.34.130 and RCW 39.26.180(3). This is a performance-based agreement, under which payment is based on the successful completion of expected deliverables.

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The source of funds for this IAA is **General Fund/Private-Local account for Stormwater Action Monitoring**. Both parties agree to comply with all applicable rules and regulations associated with these funds.

The parties have determined that the cost of accomplishing the work identified herein will not exceed \$613,829 dollars, including any indirect charges. Payment for satisfactory performance of the work shall not exceed this amount unless the parties mutually agree via an amendment to a higher amount. Compensation for services shall be based on the terms and tasks set forth in Appendix A, *Statement of Work and Budget*. ECOLOGY will not make payment until it has reviewed and accepted the work.

ECOLOGY may, at its sole discretion, terminate or suspend this Contract, or withhold payments claimed by the CONTRACTOR for services rendered, if the CONTRACTOR fails to satisfactorily comply with any term or condition of this Agreement.

#### **4) BILLING AND PAYMENT PROCEDURE**

Payment requests shall be submitted on state form, Invoice Voucher A19-1A. Invoice voucher shall reference the Agreement (IAA) number and clearly identify those items that relate to performance under this Agreement. Invoices shall describe and document to ECOLOGY's satisfaction a description of the work performed, the progress of the work, and related costs. Attach supporting documentation to the invoice.

Send invoices to:

State of Washington Department of Ecology Water Quality Program Attn: Keunyea Song P.O. Box 47600 Olympia, WA 98504-7600
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Payment requests may be submitted on a quarterly basis. Upon expiration of this Agreement, any claim for payment not already made shall be submitted to ECOLOGY within 30 days after the expiration date or the end of the fiscal year, whichever is earlier.

Payment will be made within thirty (30) days of submission of a properly completed invoice (form A19-1A) with supportive documentation. All expenses invoiced shall be supported with copies of invoices paid.

Payment will be issued through Washington State's Office of Financial Management's Statewide Payee Desk. To receive payment, CONTRACTOR must register as a statewide vendor by submitting a statewide vendor registration form and an IRS W-9 form at website, <https://ofm.wa.gov/it-systems/statewide-vendorpayee-services>. For questions about the vendor registration process, contact Statewide Payee Help Desk at (360) 407-8180 or email [PayeeRegistration@ofm.wa.gov](mailto:PayeeRegistration@ofm.wa.gov).

#### **5) ALTERATIONS AND AMENDMENTS**

This Agreement may be amended by mutual agreement of the parties. Such amendments shall not be binding unless they are in writing and signed by personnel authorized to bind each of the parties.

#### **6) ASSIGNMENT**

The work to be provided under this Agreement, and any claim arising thereunder, is not assignable or delegable by either party in whole or in part, without the express prior written consent of the other party, which consent shall not be unreasonably withheld.

## **7) ASSURANCES**

Parties to this Agreement agree that all activity pursuant to this agreement will be in accordance with all the applicable current federal, state, and local laws, rules, and regulations.

## **8) CONFORMANCE**

If any provision of this Agreement violates any statute or rule of law of the state of Washington, it is considered modified to conform to that statute or rule of law.

## **9) DISPUTES**

Parties to this Agreement shall employ every effort to resolve a dispute themselves without resorting to litigation. In the event that a dispute arises under this Agreement that cannot be resolved among the parties, it shall be determined by a Dispute Board in the following manner. Each party to this Agreement shall appoint one member to the Dispute Board. The members so appointed shall jointly appoint an additional member to the Dispute Board. The Dispute Board shall review the facts, agreement terms, and applicable statutes and rules, and then make a determination of the dispute. The determination of the Dispute Board shall be final and binding on the parties hereto, unless restricted by law. The cost of resolution will be borne by each party paying its own cost. As an alternative to this process, if state agencies, either of the parties may request intervention by the Governor, as provided by RCW 43.17.330, in which event the Governor's process will control. The parties may mutually agree to a different dispute resolution process.

## **10) FUNDING AVAILABILITY**

ECOLOGYS ability to make payments is contingent on availability of funding. In the event funding from state, federal, or other sources is withdrawn, reduced, or limited in any way after the effective date and prior to completion or expiration date of this Agreement, ECOLOGY, at its sole discretion, may elect to terminate the Agreement, in whole or part, for convenience or to renegotiate the Agreement subject to new funding limitations and conditions. ECOLOGY may also elect to suspend performance of the Agreement until ECOLOGY determines the funding insufficiency is resolved. ECOLOGY may exercise any of these options with no notification restrictions, although ECOLOGY will make a reasonable attempt to provide notice.

In the event of termination or suspension, ECOLOGY will reimburse eligible costs incurred by the CONTRACTOR through the effective date of termination or suspension. Reimbursed costs must be agreed to by ECOLOGY and the CONTRACTOR. In no event shall ECOLOGYS reimbursement exceed ECOLOGYS total responsibility under the agreement and any amendments.

## **11) GOVERNING LAW AND VENUE**

This Agreement is entered into pursuant to and under the authority granted by the laws of the state of Washington and any applicable federal laws. The provisions of this Agreement shall be construed to conform to those laws. This Agreement shall be construed and interpreted in accordance with the laws of the state of Washington, and the venue of any action brought hereunder shall be the Superior Court for Thurston County.

## **12) INDEPENDENT CAPACITY**

The employees or agents of each party who are engaged in the performance of this Agreement shall continue to be employees or agents of that party and shall not be considered for any purpose to be employees or agents of the other party.

### **13) ORDER OF PRECEDENCE**

In the event of an inconsistency in the terms of this Agreement, or between its terms and any applicable statute or rule, the inconsistency shall be resolved by giving precedence in the following order:

- a. Applicable federal and state of Washington statutes, regulations, and rules.
- b. Mutually agreed upon written amendments to this Agreement.
- c. This Agreement, number C2100086.
- d. Appendix A, *Statement of Work and Budget*.
- e. Any other provisions or term of this Agreement, including materials incorporated by reference or otherwise incorporated.

### **14) RECORDS MAINTENANCE**

The parties to this Agreement shall each maintain books, records, documents, and other evidence that sufficiently and properly reflect all direct and indirect costs expended by either party in the performance of the service(s) described herein. These materials shall be subject to inspection, review, or audit by personnel of both parties, other personnel duly authorized by either party, the Office of the State Auditor, and federal officials so authorized by law. All books, records, documents, and other materials relevant to this Agreement must be retained for six years after expiration of this Agreement. The Office of the State Auditor, federal auditors, and any persons duly authorized by the parties shall have full access and the right to examine any of these materials during this period. Each party will utilize reasonable security procedures and protections for all materials related to this Agreement. All materials are subject to state public disclosure laws.

### **15) RESPONSIBILITIES OF THE PARTIES**

Each party of this Agreement hereby assumes responsibility for claims and/or damages to persons and/or property resulting from any act or omissions on the part of itself, its employees, its officers, and its agents. Neither party will be considered the agent of the other party to this Agreement.

### **16) RIGHTS IN DATA**

Unless otherwise provided, data which originates from this Agreement shall be "work made for hire" as defined by the United States Copyright Act, Title 17 U.S.C. section 101 and shall be owned by state of Washington, ECOLOGY and WDFW. Data shall include, but not be limited to, reports, documents, pamphlets, advertisements, books magazines, surveys, studies, computer programs, films, tapes, and/or sound reproductions. Ownership includes the right to copyright, patent, and register these items, and the ability to transfer these rights.

### **17) SEVERABILITY**

If any provision of this Agreement or any provision of any document incorporated by reference shall be held invalid, such invalidity shall not affect the other provisions of this Agreement which can be given effect without the invalid provision, if such remainder conforms to the requirements of applicable law and the fundamental purpose of this Agreement, and to this end the provisions of this Agreement are declared to be severable.

### **18) SUBCONTRACTORS**

CONTRACTOR agrees to take complete responsibility for all actions of any Subcontractor used under this Agreement for the performance. When federal funding is involved there will be additional contractor and subcontractor requirements and reporting.

Prior to performance, all subcontractors who will be performing services under this Agreement must be identified, including their name, the nature of services to be performed, address, telephone, WA State Department of Revenue Registration Tax number (UBI), federal tax identification number (TIN), and anticipated dollar value of each subcontract. Provide such information to ECOLOGY's Agreement manager.

**19) SUSPENSION FOR CONVENIENCE**

ECOLOGY may suspend this Agreement or any portion thereof for a temporary period by providing written notice to the CONTRACTOR a minimum of seven (7) calendar days before the suspension date. CONTRACTOR shall resume performance on the first business day following the suspension period unless another day is specified in writing by ECOLOGY prior to the expiration of the suspension period.

**20) TERMINATION FOR CAUSE**

If for any cause, either party does not fulfill in a timely and proper manner its obligations under this Agreement, or if either party violates any of these terms and conditions, the aggrieved party will give the other party written notice of such failure or violation. The responsible party will be given the opportunity to correct the violation or failure within fifteen (15) business days. If failure or violation is not corrected, this Agreement may be terminated immediately by written notice of the aggrieved party to the other.

**21) TERMINATION FOR CONVENIENCE**

Either party may terminate this Agreement without cause upon thirty (30) calendar day prior written notification to the other party. If this Agreement is so terminated, the parties shall be liable only for performance rendered or costs incurred in accordance with the terms of this Agreement prior to the effective date of termination.

**22) WAIVER**

A failure by either party to exercise its rights under this Agreement shall not preclude that party from subsequent exercise of such rights and shall not constitute a waiver of any other rights under this Agreement unless stated to be such in a written amendment to this Agreement signed by an authorized representative of the parties.

**23) AGREEMENT MANAGEMENT**

The representative for each of the parties shall be responsible for and shall be the contact person for all communications, notifications, and billings questions regarding the performance of this Agreement. The parties agree that if there is a change in representatives, they will promptly notify the other party in writing of such change, such changes do not need an amendment.

The ECOLOGY Representative is:	The WDFW Representative is:
Name: Keunyea Song Address: 300 Desmond Dr SE (FedEx) P.O. Box 47600 (USPS) Phone: 360-407-6158 Email: Keunyea.Song@ecy.wa.gov	Name: Mariko Langness Address: WDFW-Fish Program PO Box 43150 Olympia, WA 98504-3150 Phone: 360-688-4873 Email: Mariko.Langness@dfw.wa.gov

**24) ALL WRITINGS CONTAINED HEREIN**

This Agreement contains all the terms and conditions agreed upon by the parties. No other understandings, oral or otherwise, regarding the subject matter of this Agreement shall be deemed to exist or to bind any of the parties hereto.

The signatories to this Agreement represent that they have the authority to bind their respective organizations to this Agreement.

IN WITNESS WHEREOF, the parties below, having read this Agreement in its entirety, including all attachments, do agree in each and every particular as indicated by their signatures below.

**State of Washington  
Department of Ecology**

**State of Washington  
Department of Fish and Wildlife**

By:

\_\_\_\_\_  
Signature                      Date

By:

\_\_\_\_\_  
Signature                      Date

\_\_\_\_\_  
Heather R. Bartlett

\_\_\_\_\_  
Jeffrey R. Hugdahl

\_\_\_\_\_  
Deputy Director

\_\_\_\_\_  
Contracts and Purchasing Manager

**APPENDIX A**  
**STATEMENT OF WORK AND BUDGET**

## Project Background: Puget Sound Nearshore Contaminant Monitoring with Transplanted Mussels

Bay mussels (*Mytilus* spp.) and other sessile, filter-feeding bivalves have been used to monitor contaminant conditions in nearshore biota worldwide. National Oceanic and Atmospheric Administration's national Mussel Watch program collected mussels in the Puget Sound from 1986 to 2012, to broadly characterize ambient contaminant conditions in Puget Sound's nearshore biota. More recently, based on recommendations from the [Stormwater Work Group](#), Washington State's [Stormwater Action Monitoring \(SAM\)](#) includes a component to monitor the status and trends of contaminants in the marine nearshore of Puget Sound using transplanted native bay mussels.

SAM status and trends monitoring follows a probabilistic sample design such that data gathered can be summarized across the Puget Sound ecoregion. In the fall/winter of 2015/2016, 2017/2018, and 2019/2020, the Washington Department of Fish and Wildlife's (WDFW) Toxics Biological Observation System (TBIOS) team conducted the first three rounds of mussel contaminant status assessment for the SAM nearshore monitoring program. For the fourth and fifth SAM status and trends assessment, WDFW TBIOS will monitor thirty-three (33) nearshore monitoring sites (GRTS random) in the fall/winter of 2021/2022 and 2023/2024. Additionally, 3 reference sites (selected) will be visited and 3 baseline samples (not caged/transplanted mussels) will be collected from the mussel aquaculture source for initial condition assessment.

The objectives of this project are to:

- Every survey year, evaluate the spatial extent of tissue contamination in nearshore biota residing inside the Puget Sound lowlands, using native bay mussels (*Mytilus* spp.) as the primary indicator organism.
- Evaluate trends in mussel tissue contamination in the Puget Sound nearshore using SAM survey results from the new study design, and prior (2015-2020) SAM survey results where appropriate.
- Provide updates and reports for status and trends monitoring with mussels to answer questions about stormwater impacts and stormwater management.

This statement of work (SOW) describes the mussel monitoring that will be conducted by WDFW-TBIOS from May 15, 2021 through June 30, 2025 and defines the activities and products that will be delivered to the SAM Coordinator at the Washington State Department of Ecology. This SOW describes the work to be completed for each task, the deliverables to be submitted upon completion of each task, and the total estimated cost and schedule per task.

## Task 1: Quality Assurance Project Plan (QAPP)

### 1a. 2021-2022 Survey

ECY will develop a draft QAPP with details on the new study design and site selection process. WDFW will review/edit and finalize QAPP for WDFW publication.

Deliverable 1a. Final QAPP for new SAM Mussel Monitoring survey design.

- Target Completion Date: Jun 30, 2021

Task 1a. Estimated Cost: \$3,018

### 1b. 2023-2024 Survey

WDFW will draft a QAPP amendment *if* it is determined that changes are needed after the 2021-2022 survey.

Deliverable 1b. Final QAPP Amendment

- Target Completion Date: April 30, 2023

Task 1b. Estimated Cost: \$1,356

## Task 2 – Site Evaluations

Evaluation of a candidate site will include a preliminary evaluation using remote sensing desktop applications (e.g. GIS) and if determined to be a viable site a subsequent field site visit will be conducted during summer daylight low tides. Sites will be evaluated on their accessibility and safety, whether the property owner and/or tenants give permission to access to the site, and the suitability of the intertidal substrate for anchoring/securing a mussel cage. If a site is determined to be unacceptable WDFW will then evaluate the next qualifying site and continue evaluating sites, moving numerically through the provided GRTS site list, until a total of 33 monitoring sites are accepted for each survey year.

### 2a. 2021-2022 Survey

WDFW staff and volunteers will reconfirm the suitability of 15 nearshore sites successfully monitored in prior SAM surveys and evaluate a minimum of 18 new sites from the new SAM study design.

Deliverable 2a. Map of confirmed 2021-2022 SAM Mussel Monitoring survey sites and a list (Excel file) of site names and coordinates for confirmed and rejected monitoring sites.

- Target Completion Date: August 31, 2021

Task 2a. Estimated Cost: \$15,186



## 2b. 2023-2024 Survey

WDFW staff and volunteers will evaluate a minimum of 33 new sites from the new SAM study design.

Deliverable 2b. Map of confirmed 2023-2024 SAM Mussel Monitoring survey sites and a list (Excel file) of site names and coordinates for confirmed and rejected monitoring sites.

- Target Completion Date: August 31, 2023

Task 2b. Estimated Cost: \$28,411

## Task 3 – Site Permits/Permissions

WDFW will obtain a Hydraulic Project Approval (HPA) and Shellfish Transfer Permit for both 2021-2022 and 2023-2024 SAM Mussel Monitoring surveys. WDFW will also obtain an MOU with Washington Department of Natural Resources to access State-Owned Aquatic Lands for all SAM mussel monitoring sites. In addition, WDFW will obtain permissions from individual property owners/tenants (city Ports, U.S. Navy, tribes, state parks, residential property owners, etc.) to access each SAM site.

### 3a. 2021-2022 Survey

Deliverable 3a. List (Excel file) of permits/permissions obtained to gain access to and place a mussel cage at confirmed 2021-2022 SAM mussel monitoring sites.

- Target Completion Date: September 30, 2021

Task 3a. Estimated Cost: \$10,273

### 3b. 2023-2024 Survey

Deliverable 3b. List (Excel file) of permits/permissions obtained to gain access to and place a mussel cage at confirmed 2023-2024 SAM mussel monitoring sites.

- Target Completion Date: September 30, 2023

Task 3b. Estimated Cost: \$10,885

## Task 4 – Recruit and Organize Volunteers

WDFW will contact regional groups that have worked with WDFW in the past in an attempt to recruit them to assist with the both the 2021-2022 and 2023-2024 SAM Mussel Monitoring surveys. WDFW will offer stipends to four local organizations for volunteer recruitment, training and coordination, and reimbursements to individual volunteers for costs associated with participation in the SAM survey (e.g. ferry tickets, parking fees, gas mileage, etc.). Volunteers will visit potential nearshore monitoring sites to verify their safety and feasibility for use (see Task 2) and will assist with mussel preparation in advance of deployment (see Task 6). WDFW anticipates there will be enough volunteers to deploy and retrieve mussel cages at approximately

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90% of the confirmed SAM mussel sites (see Tasks 7 and 8). WDFW will maintain contact with the volunteer groups throughout the study period to answer questions, verify their commitment to participate, provide feedback, register them in the WDFW volunteer tracking system, and manage efforts at every step of the SAM Mussel Monitoring effort.

#### 4a. 2021-2022 Survey

Deliverable 4a. List (Excel file) of volunteer groups/individuals that plan to participate in the 2021-2022 SAM Mussel Monitoring survey and the sites for which each volunteer group will be responsible.

- Target Completion Date: September 30, 2021

Task 4a. Estimated Cost: \$35,976

#### 4b. 2023-2024 Survey

Deliverable 4b. List (Excel file) of volunteer groups/individuals that plan to participate in the 2023-2024 SAM Mussel Monitoring survey and the sites for which each volunteer group will be responsible.

- Target Completion Date: September 30, 2023

Task 4b. Estimated Cost: \$30,983

## Task 5 – Equipment and Supplies Procurement and Assembly

WDFW will procure and own all the equipment for mussel deployment (e.g. mussel cages, anchors, fastening devices, etc.) and the supplies for the field kits (e.g. thermal bags, zip ties, wire cutters, etc.) and laboratory processing (e.g. I-Chem jars, solvents, scalpels, weighing pans, gloves, etc.) necessary to complete mussel monitoring at 36 SAM sites (33 SAM monitoring sites, 3 SAM reference sites) in each survey year (2021-2022 and 2023-2024). Mussel deployment equipment purchased for the 2021-2022 survey will be reused in the 2023-2024 survey, if not lost or damaged beyond repair. WDFW will also obtain the mussels (donated) from Penn Cove Shellfish to be transplanted for the monitoring. WDFW will assemble and distribute all the equipment and supplies necessary for the deployment and retrieval phases of the monitoring.

#### 5a. 2021-2022 Survey

Deliverable 5a. List (Excel file) of equipment/supplies ordered and procured by WDFW in support of the 2021-2022 SAM Mussel Monitoring survey.

- Target Completion Date: September 30, 2021

Task 5a. Estimated Cost: \$9,527

### 5b. 2023-2024 Survey

Deliverable 5b. List (Excel file) of equipment/supplies ordered and procured by WDFW in support of the 2023-2024 SAM Mussel Monitoring survey.

- Target Completion Date: September 30, 2023

Task 5b. Estimated Cost: \$8,190

## Task 6 – Preparation of Mussels

WDFW will obtain mussels (*Mytilus* spp.) from a local shellfish aquaculture facility in the Puget Sound. WDFW and volunteers will measure and sort enough mussels to accommodate up to 80 mussels per cage at the 33 SAM monitoring sites and 3 SAM reference sites, and for three baseline (i.e. starting condition) samples. Mussels used for the SAM Mussel Monitoring surveys will be measured and selected to fall within a uniform size range, and they will be placed into aquaculture bags in groups in preparation for deployment. Bagged mussels will rest for a brief period, likely at the aquaculture source, before they are deployed to cages at the monitoring sites.

### 6a. 2021-2022 Survey

Deliverable 6a. Confirmation letter that all mussels necessary for deployment to the 2021-2022 SAM Mussel Monitoring sites are prepared and resting.

- Target Completion Date: November 30, 2021

Task 6a. Estimated Cost: \$22,421

### 6b. 2023-2024 Survey

Deliverable 6b. Confirmation letter that all mussels necessary for deployment to the 2023-2024 SAM Mussel Monitoring sites are prepared and resting.

- Target Completion Date: November 30, 2023

Task 6b. Estimated Cost: \$23,185

## Task 7 – Deployment of Cages

WDFW staff and volunteers will deploy bagged mussels (see Task 6) in anti-predator, wire mesh cages to the 33 confirmed (see Task 2) SAM mussel monitoring sites and 3 SAM reference sites during evening low tides. Mussel cages will be anchored into the substrate and/or secured to fixed objects in the intertidal environment at each site at approximately zero to -1.5 feet mean lower low water (MLLW). As part of this effort WDFW staff will spend several evenings at the aquaculture facility handing out bagged mussels, cages, and deployment kits to all volunteers participating in the SAM mussel monitoring. In addition, environmental data specific to each SAM mussel monitoring site will be recorded at the time of deployment on a Deployment Datasheet and photos of each deployed cage and its surroundings will be collected.

#### 7a. 2021-2022 Survey

Deliverable 7a. Confirmation letter that all mussel cages were successfully deployed to the 2021-2022 SAM Mussel Monitoring sites.

- Target Completion Date: December 31, 2021

Task 7a. Estimated Cost: \$13,452

#### 7b. 2023-2024 Survey

Deliverable 7b. Confirmation letter that all mussel cages were successfully deployed to the 2023-2024 SAM Mussel Monitoring sites.

- Target Completion Date: December 31, 2023

Task 7b. Estimated Cost: \$14,025

## Task 8 – Retrieval of Cages

During a series of evening low tides approximately 90 days after deployment, WDFW staff and volunteers will revisit the 33 SAM mussel monitoring sites and 3 SAM reference sites and retrieve all remaining mussel cages. Mussel cages and all anchoring devices will be removed from the substrate so that nothing is left behind. Mussel bags will be removed from each cage and transported in coolers on ice overnight to the WDFW Marine Resources Lab in Olympia, WA. As part of this effort WDFW staff will send out retrieval kits in advance to all the participating volunteers and will make several trips to collection points across the north and central Puget Sound to facilitate delivery from volunteers. In addition, environmental data specific to each SAM mussel monitoring site will be recorded at the time of retrieval on a Retrieval Datasheet and photos of each retrieved cage and its surroundings will be collected.

#### 8a. 2021-2022 Survey

Deliverable 8a. Confirmation letter of the site location and number of mussel cages successfully retrieved from the 2021-2022 SAM Mussel Monitoring sites.

- Target Completion Date: March 31, 2021

Task 8a. Estimated Cost: \$13,452

#### 8b. 2023-2024 Survey

Deliverable 8b. Confirmation letter of the site location and number of mussel cages successfully retrieved from the 2023-2024 SAM Mussel Monitoring sites.

- Target Completion Date: March 31, 2023

Task 8b. Estimated Cost: \$14,025

## Task 9 – Mussel Processing, Chemical Analysis, and Data Entry

WDFW staff and volunteers will process retrieved mussels at the Marine Resources Lab in Olympia, WA. Laboratory mussel processing will include, 1) an assessment of mortality in each mussel cage, 2) determination of condition index for a subset of mussels, and 3) compositing of a subset of the mussels (i.e. soft tissue only) for chemical analysis.

Upon completion of mussel processing, WDFW staff will deliver mussel composite samples (up to 39 samples: 33 monitoring sites, 3 reference sites, 3 baseline samples) for chemical analyses to the contracted analytical laboratories and track progress on analysis.

WDFW staff will evaluate quality assurance metrics and track quality control measures to ensure high quality data is received from the analytical laboratories. Error checking and data validation procedures will be performed on all chemistry data received from the labs. WDFW staff will ensure all data collected during the deployment and retrieval phases and all biological data from mussel processing are digitized and error-checked. In addition, WDFW staff will submit all relevant site, biological, sample and chemistry data (w/QA/QC) from SAM Mussel Monitoring surveys to Ecology's EIM database.

### 9a. 2021-2022 Survey

Deliverable 9a. Excel file of all relevant 2021-2022 SAM Mussel Monitoring site location (GIS), biological, sample and chemistry data (w/ QA/QC) in EIM compatible format, and confirmation letter of data submittals to EIM.

- Target Completion Date: December 31, 2022

Task 9a. Estimated Cost: \$112,836

### 9b. 2023-2024 Survey

Deliverable 9b. Excel file of all relevant 2023-2024 SAM Mussel Monitoring site location (GIS), biological, sample and chemistry data (w/ QA/QC) in EIM compatible format, and confirmation letter of data submittals to EIM.

- Target Completion Date: December 31, 2024

Task 9b. Estimated Cost: \$114,841

## Task 10 – Data Analysis, Report, and Presentations

WDFW staff will analyze chemical and biological data from the SAM Mussel Monitoring surveys to determine the extent and magnitude of chemical contamination of mussels in the Puget Sound nearshore. Summary statistics, maps of contaminant distribution, and cumulative frequency distribution (CFD) plots will be produced for individual or groups of chemicals, depending on the analyte. CFD plots will be created each year for the status of the region and status of each strata (four strata based on %IS categories), and trends of contaminants will be identified (visually) using overlapping current and prior survey year CFD plots. WDFW staff will produce a draft report based on the analysis described above and complete a final summary report (WDFW agency technical report) for each survey year. WDFW staff will present survey

results to the Stormwater Work Group (SWG). In addition, WDFW staff will produce a draft SAM factsheet of key findings for each survey.

#### 10a. 2021-2022 Survey

##### Deliverable 10a.

- 1) Draft report
  - Target Completion Date: April 30, 2023
  - Percent of Estimated Cost: 65%
  
- 2) Final report
  - Target Completion Date: June 30, 2023
  - Percent of Estimated Cost: 20%
  
- 3) Presentation to Stormwater Workgroup
  - Target Completion Date: June 30, 2023
  - Percent of Estimated Cost: 7.5%
  
- 4) Draft SAM factsheet
  - Target Completion Date: June 30, 2023
  - Percent of Estimated Cost: 7.5%

Task 10a. Estimated Cost: \$63,986

#### 10b. 2023-2024 Survey

##### Deliverable 10b.

- 1) Draft report
  - Target Completion Date: April 30, 2025
  - Percent of Estimated Cost: 65%
  
- 2) Final report
  - Target Completion Date: June 30, 2025
  - Percent of Estimated Cost: 20%
  
- 3) Presentation to Stormwater Workgroup
  - Target Completion Date: June 30, 2025
  - Percent of Estimated Cost: 7.5%
  
- 4) Draft SAM factsheet
  - Target Completion Date: June 30, 2025
  - Percent of Estimated Cost: 7.5%

Task 10b. Estimated Cost: \$67,802

## Total Project Budget

Total project costs for both the 2021-2022 and 2023-2024 SAM Mussel Monitoring surveys combined are **\$613,829**. This includes salaries and benefits, personnel services, travel, materials, professional service contracts (analytical laboratories and volunteer coordination support), 10% contingency, and WDFW indirect (36.28%).

### 2021-2022

Task Description		Salaries	Benefits	Personnel Services	Travel	Materials	Professional Service Contracts	10% Contingency	Indirect	Total Task
Task 1	Final QAPP	\$1,443	\$557	\$13				\$201	\$804	\$3,018
Task 2	Evaluate New Sites and Confirm Old Sites	\$6,915	\$3,138	\$79				\$1,011	\$4,043	\$15,186
Task 3	Obtain Permits/Permissions	\$4,700	\$2,102	\$53				\$683	\$2,735	\$10,273
Task 4	Recruit, Train, Organize Volunteers	\$13,625	\$6,216	\$158			\$4,000	\$2,400	\$9,577	\$35,976
Task 5	Equipment Procurement/Assembly	\$1,831	\$844	\$21		\$3,660		\$636	\$2,536	\$9,528
Task 6	Preparation of Mussels	\$5,858	\$2,635	\$66	\$6,400			\$1,493	\$5,969	\$22,421
Task 7	Deployment of Cages	\$4,328	\$2,044	\$53	\$2,550			\$896	\$3,581	\$13,452
Task 8	Retrieval of Cages	\$4,328	\$2,044	\$53	\$2,550			\$896	\$3,581	\$13,452
Task 9	Mussel Processing, Chemical Analysis, and Data Entry	\$15,435	\$6,859	\$171			\$52,806	\$7,526	\$30,039	\$112,836
Task 10	Data Analysis, Report, Presentations	\$30,596	\$11,825	\$263				\$4,268	\$17,034	\$63,986
<b>Total by Object</b>		<b>\$89,059</b>	<b>\$38,264</b>	<b>\$930</b>	<b>\$11,500</b>	<b>\$3,660</b>	<b>\$56,806</b>	<b>\$20,010</b>	<b>\$79,899</b>	<b>\$300,128</b>

### 2023-2024

Task Description		Salaries	Benefits	Personnel Services	Travel	Materials	Professional Service Contracts	10% Contingency	Indirect	Total Task
Task 1	Final QAPP	\$649	\$251	\$5				\$90	\$361	\$1,356
Task 2	Evaluate New Sites and Confirm Old Sites	\$12,828	\$5,980	\$144				\$1,895	\$7,563	\$28,410
Task 3	Obtain Permits/Permissions	\$4,981	\$2,227	\$53				\$726	\$2,898	\$10,885
Task 4	Recruit, Train, Organize Volunteers	\$11,199	\$5,337	\$131			\$4,000	\$2,067	\$8,248	\$30,982
Task 5	Equipment Procurement/Assembly	\$1,409	\$659	\$16		\$3,380		\$546	\$2,180	\$8,190
Task 6	Preparation of Mussels	\$6,208	\$2,792	\$66	\$6,400			\$1,547	\$6,172	\$23,185
Task 7	Deployment of Cages	\$4,587	\$2,166	\$53	\$2,550			\$935	\$3,734	\$14,025
Task 8	Retrieval of Cages	\$4,587	\$2,166	\$53	\$2,550			\$935	\$3,734	\$14,025
Task 9	Mussel Processing, Chemical Analysis, and Data Entry	\$16,361	\$7,271	\$171			\$52,806	\$7,659	\$30,573	\$114,841
Task 10	Data Analysis, Report, Presentations	\$32,432	\$12,535	\$263				\$4,522	\$18,050	\$67,802
<b>Total by Object</b>		<b>\$95,241</b>	<b>\$41,384</b>	<b>\$955</b>	<b>\$11,500</b>	<b>\$3,380</b>	<b>\$56,806</b>	<b>\$20,922</b>	<b>\$83,513</b>	<b>\$313,701</b>