



Stormwater Action Monitoring Quarterly Report October 1 through December 31, 2021

SAM accomplishments and key decisions reported for the quarter

- SWG approved a substantial addition to the Individual tree hydrology study, to focus on smaller trees
- Redmond 2nd to last amendment adds two more years, 2022-24, to the paired watershed study.

SAM budget for the previous quarter and anticipated in the next quarter

Table 1 shows the SAM budget for each account for the whole program. Revenue for 2020 is expected in August, and each year thru 2024. The Pooled Resources Oversight Committee (PRO-C) approves encumbrance of SAM funds. Encumbrances in excess of projected revenues are due to projects that span multiple years. Projected expenditures for the next quarter are based on anticipated approved deliverables and invoices and an estimate of Ecology’s expenses. Indirect charges are applied quarterly to the individual accounts while SAM management staff costs are applied proportionally at the end of each fiscal year.

Table 1. Quarterly summary of revenues, expenditures, encumbrances, and available funds for each SAM account.

Reported and projected income and expenditures	Puget Sound status and trends		Lower Columbia status and trends		Effectiveness studies		Source ID Projects		Admin Costs (Qtr)
	Oct-Dec 2021	Jan-Mar 2022 (anticipated)	Oct-Dec 2021	Jan-Mar 2022 (anticipated)	Oct-Dec 2021	Jan-Mar 2022 (anticipated)	Oct-Dec 2021	Jan-Mar 2022 (anticipated)	Ecology’s Oct-Dec expenses
Balance at start of quarter	\$2,216,534	\$2,124,904	\$140,437	\$140,437	\$4,909,699	\$4,823,798	\$303,631	\$303,631	
Revenues	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Expenditures	\$91,630	\$151,599	\$0	\$65,777	\$85,902	\$531,041	\$0	\$42,935	\$33,859
Balance at end of quarter	2,124,904	\$1,973,305	\$140,437	\$74,661	\$4,823,798	\$4,292,757	\$303,631	\$260,696	
Encumbrances	1,912,079	\$1,760,480	\$341,919	\$276,143	\$2,735,653	\$2,539,577	\$283,895	\$240,960	

SAM contracting activities

All contract scopes of work are reviewed and approved by the PRO-C and Ecology are posted online. The following contracting activities occurred this quarter:

- Signed new or amended in Oct-Dec
 - MOU for \$34,945 developed for Ecology’s Environmental Assessment Program to review and upload watershed health data for three stream studies (Puget stream, Redmond and Lower Columbia) into the WHM database.
 - Redmond paired watershed study amendment to extend monitoring through fall 2024.
 - Individual tree hydrology study existing contract was closed; new contract agreement will be made next year for additional 2-yr monitoring of smaller/younger trees.

SAM summary by topic

Communications

Routine deliverable and contracting updates to SAM website. No projects were completed this quarter and no new fact sheets this quarter.

Receiving water projects

SAM monitors the impacts of stormwater runoff in urban and urbanizing areas in the Western Washington small streams and nearshore environments. There are two active stormwater receiving water monitoring in Puget Sound region and one stream monitoring in Lower Columbia region.

USGS completed 2021 year PSS sampling successfully, and started next year sampling site evaluation. The first round of Lower Columbia urban stream monitoring was done this year. As these two streams studies are annual basis, we expect annual reports in the summer of following year.

For the mussel monitoring, WDFW deployed caged mussels at 33 sites throughout the Puget Sound nearshore using the new study design. 33 sites are selected based on impervious cover gradient of the region. The last report summarizing 3 rounds of mussel monitoring from 43-41 fixed locations between 2016 and 2020 has been delayed and expected to be out in the summer of 2022.

Effectiveness studies

SAM studies determine the effectiveness of operational or structural BMPs, maintenance and management actions, and outreach efforts to reduce stormwater runoff and transport of pollutants to receiving waters. There are 6 active effectiveness studies at the end of this quarter. A new SAM project (led by Bellevue) to provide a white paper (survey + data review) and recommendations for permittees to improve BMP maintenance efforts is under review with an anticipated start in early 2022.

Redmond's Paired Watershed Study amendment 5 for \$936K. This will fund monitoring and report writing for 2022 to fall of 2024. To make wise use of funds, drops the frequency of sediment and physical habitat monitoring and completely drops continuous conductivity and the application watershed "Evans Crk Trib 108" from the study as no further retrofits are planned. This is the second to last amendment for this long-term project.

Scope of work development is underway on the Bellevue-led project (FP7) Stormwater BMP maintenance conditions evaluation study. The contract is expected to be completed next quarter.

Scope of work development was initiated this quarter on the remaining three SAM Round 3 proposals approved by SWG: (FP 1) Effect of particle size distribution on stormwater characterization and BMP effectiveness with WDNR and Osborn Consulting (Aimee Navickis-Brasch); (FP4) Replacement and lifecycle costs of permeable pavements compared with conventional pavements (WSU-P); (FP8) Evaluation of the influence of bioretention soil infiltration performance rate and safety factors on facility sizing and maintenance (Olympia).

Source Identification Projects

SAM projects on source control and source identification will improve illicit discharge detection and adapt our management solutions for pollutant sources in stormwater runoff. Two active projects. King County's Mobile Business project survey sent to permittees needs a very high response rate per the contract. WSU's Business Source Control has 2 websites; one at [WSU's project page](#) and the [SAM \(Ecology\) project page](#). Their draft online guidance manual is anticipated in Feb 2022.

SAM contract deliverable activity

Project activities, contracting actions and meetings are summarized under each SAM category in this section.

Receiving water agreements	Deliverables approved Q4 2021	Anticipated deliverables Q1 2022
Marine mussels – WDFW	Confirmed sampling site list, obtained permits/permissions list, volunteer list, equipment/supplies list, preparation of mussels, confirmation of mussel deployment	Confirmation of mussel retrieval
Marine mussels (older design) – WDFW	Chemical analysis invoices	QA-QC'd chemistry data, outline of final report
Puget small streams – USGS, Manchester lab, Rhithron lab	Email confirmation for sampling, data recording and equipment maintenance	Confirmation of sampling, Annual status report
Lower Columbia urban streams- Clark County	Continuous data upload, confirmation of monitoring completeness	Continuous data upload, flow metrics calculation from continuous data
Source ID Contracts	Deliverables approved Q4 2021	Anticipated deliverables Q1 2022
Improving business source control programs – WSU	Summary of municipal interviews, BIG report gap findings, online resources list of materials and tools, 3 draft report sections for TAC review	Draft online guidance manual, and quarterly report.
Mobile business source control – King Co	draft survey	project schedule, TAC#1 & 2 notes, final survey, quarterly report
Effectiveness study contracts	Deliverables approved Q4 2021	Anticipated deliverables Q1 2022
Paired watershed study – Redmond	WY 2020 final report.	TAC notes. Early WY2021 monthly progress reports, sediment, biological, and physical habitat data.
Longevity of bioretention toxicity prevention – WSU Puyallup	None received	Progress report 5 and 6
Hydrologic benefits of individual trees - WDNR	Final Interim report draft, Quarterly reports 12& 13	Final report, data file, New agreement for 2-yr study extension
Mulch choices for bioretention - WSU Puyallup	Maintenance effort memo	Draft and final analysis on WQ, TAC and SWG presentations, and draft project report.
Orifice control for bioretention - WSU Puyallup	Progress report 3, Interim result presentation to SWG, contract amendment	Progress report 4 and 5
Evaluating stormwater education and outreach program - WSU	Draft and revised mock-up website, draft synthesis of E&O efforts (D3.1), draft interview questions (D5.1), TAC members and 2 TAC meeting's notes, project schedule, 2 progress reports	Status report, TAC #3 meeting notes, Summary of guidance vision (D5.2), summary of data analysis and interview questions (D5.3), draft checklist and report template (D5.4), web survey draft and final, annotated bibliography, and

		operational website
Improving ditches and maintenance – WSU-Puyallup	None received	Project on hold, looking for new sites