



DEPARTMENT OF  
**ECOLOGY**  
State of Washington

## AMENDMENT NO. 8

TO

Contract NO. C1500059

BETWEEN THE

STATE OF WASHINGTON DEPARTMENT OF ECOLOGY

AND

**City of Redmond**

PROJECT TITLE: Paired Basin Study

**PURPOSE:** To amend the Agreement between the state of Washington, Department of Ecology, hereinafter referred to as "ECOLOGY," and City of Redmond, hereinafter referred to as "CITY" or "Contractor."

**WHEREAS,** This Agreement is undergoing an increase in scope and extension of the timeline to allow for completion of the work described in the new Appendix F

IT IS MUTUALLY AGREED the Agreement is amended as follows:

1) The Period of Performance is amended to read as follows:

The period of performance is extended from September 30, 2025 to September 30, 2026.

2) The Scope of Work is amended to read as follows:

Additional tasks are added by this amendment as Appendix F (attached), a new appendix with two tasks. Task F1.0 continues monitoring at the study sites through September 30, 2025. Task F2.0 is for a trend analysis report for Water Years 2016 – 2025.

3) The Budget is amended to read as follows:

Compensation is increased for additional tasks added by this amendment. The total compensation is increased by \$524,847.12, from \$3,689,834.33 to \$4,214,681.45.



## APPENDIX F

### STATEMENT OF WORK FOR OCTOBER 1, 2024 THROUGH SEPTEMBER 30, 2026

#### Background

The City of Redmond (REDMOND) has a Citywide Watershed Management Plan (WMP) to implement structural and nonstructural stormwater controls pursuant to the Phase II municipal stormwater permit. This Redmond Paired Watershed Study (RPWS) will study and quantify improvements in receiving water conditions based on implementing the WMP controls. This RPWS will measure various hydrologic, chemical, physical, and biological indicators of stream health. The RPWS was initiated in the fall of 2015 and will be implemented over an anticipated ten-year timeframe. Funding comes from the Stormwater Action Monitoring (SAM) program, a coordinated monitoring program founded by Phase I and II municipal stormwater permittees and administered by Ecology.

This scope of work in Appendix F continues field measurement collection, data management and quality assurance of review, data analysis, and reporting for this study for water year 2025. Additionally, a trend analysis report for water years 2016 – 2025 is included in Appendix F. The monitoring and trend analysis report will follow the already approved quality assurance project plan (QAPP) for this Paired Watershed study.

This scope of work includes several deviations from the QAPP:

- The application watershed of Evans Creek Tributary 108 was removed from the scope of work in WY2022. Evans Creek Tributary 108 is in unincorporated King County. King County has no further plans for stormwater retrofits within this watershed during the timeline of this project. The trend analysis report for water years 2016 through 2019 (Herrera, 2021) did not identify any improvement within the watershed based on the two vaults installed by King County in water year 2017. Based on this finding and no further retrofits planned during the project timeline, the watershed was removed to reduce project costs.
- The QAPP indicates that continuous conductivity will be collected in all watersheds. Results from the conductivity monitoring are very noisy, and no trend was detected during the trend analysis report for water years 2016 through 2019 (Herrera, 2021). It was decided in WY2022 to not include continuous conductivity monitoring in future Scope of Works.

This scope of work includes a discussion of the activities, assumptions, deliverables, and a schedule associated with the following tasks:

- Task F1.0 – Water Year 2025 Study Implementation

- Task F2.0 – Trend Analysis Report: Water Years 2016 - 2025

Work on these tasks will be performed by REDMOND with assistance from Herrera Environmental Consultants (Herrera), and King County. REDMOND, Herrera, and King County are collectively referred to as the “Project Team” in this scope of work. Where applicable, specific roles for each member of the Project Team are called out under individual tasks. The cost by deliverable, and schedule are included in the table at the end of this Scope of Work.

## Task F1.0 – Water Year 2025 Study Implementation

Under this task, REDMOND will ensure Herrera and King County implement required monitoring and reporting activities identified in the QAPP for the RPWS over water year 2025 (October 1, 2024, through September 30, 2025). This includes field measurement collection, data management and quality assurance review, and reporting. These activities are described in more detail under the following subtasks:

### Subtask F1.1 – Hydrologic Monitoring

REDMOND has subcontracted with King County to continue the hydrologic monitoring component of the RPWS. This involves continuous flow monitoring at 12 stations. Data from the continuous flow monitoring is processed to calculate a suite of indicators for evaluating hydrologic impacts from urban development. King County will continue hydrologic monitoring which involves maintenance of the continuous flow monitoring equipment and replacement as needed, telemetry where cell phone coverage is available, maintenance of the automatic processing, and posting of data on King County’s Hydrological Information Center (HIC) database on their public website. King County will perform a quality assurance review on these data that will clearly identify any limitations to their use by January each calendar year for the prior water year’s data. Herrera will generate summary statistics (e.g., antecedent dry period, flow at time of sample collection) from the flow record for storm and base flow events that were sampled for water quality under Subtask F1.2. REDMOND will coordinate with Herrera and King County to summarize the continuous flow monitoring data for each station for presentation in the data report described in Subtask F1.6.

### Assumptions

- Telemetry and database all continue to work without problems.
- Equipment will be replaced as it reaches maximum manufacturer’s life expectancy.

### Deliverables

- Posting of telemetered data on HIC (continual).
- Posting of non-telemetered data on HIC will occur every 5 weeks.
- Table with flow summary statistics for sampled storm and base flow events from 12 stations.

### **Subtask F1.2- Water Quality Monitoring**

REDMOND subcontracted with Herrera for the water quality monitoring component of the RPWS. This involves the collection of up to twelve grab samples over the water year during storm events (three each quarter) at 12 stations. In addition, up to four grab samples will be collected over the water year during base flow (one each quarter) at these stations. Each sample will be analyzed for the following indicators for evaluating water quality impacts from urban development:

- Total suspended solids
- Turbidity
- Hardness
- Dissolved organic carbon
- Fecal coliform bacteria
- Total phosphorus
- Total nitrogen
- Copper, total and dissolved
- Zinc, total and dissolved

In addition, probes will be used for continuous in-situ monitoring of temperature at all 12 stations.

Collection of grab samples during both storm and base flow events will include the following activities performed in accordance with the QAPP for the study:

- Weather tracking and go/no go decision coordination
- Mobilization of field crews for sampling during the event
- Delivery of samples to the laboratory after the event
- Auditing of laboratory analytical results within seven days of their receipt
- Entry of the analytical results into the study's data management system
- Preparation of a data validation memorandum that will establish the usability of all the data
- Preparation of graphical and tabular summaries for the data report described in Subtask F1.6.

REDMOND will ensure coordination between the project team members. King County will oversee the continuous in-situ monitoring at each station using the probes. Herrera will coordinate with King County to provide review of continuous data and summarize them for presentation in the data report described in Subtask F1.6.

### **Assumptions**

- Storm event sampling will be performed by two teams of two Herrera staff. Sampling for each event will be performed over an 8- hour period including travel

but not including storm tracking and go/no go decision coordination. A 15 percent contingency is included to account for sampling event false starts and to allow for make-up sampling.

- Nominally, all 12 stations will be sampled during each storm event. If specific stations are not sampled because a sampling event was terminated, they will be prioritized for sampling in subsequent events to ensure the annual sampling goals established for the study are met for every station.
- Base flow event sampling will be performed by one team of two Herrera staff. Sampling for each event will be performed over a 10- hour period including travel.
- King County will provide continuous water quality monitoring data in an electronic format for review by Herrera. King County will perform a quality assurance review on these data that will clearly identify any limitations to their use and interpretation.
- Obtaining storm event samples may not be possible during particularly dry quarters. If this should occur, efforts will be made to conduct makeup sampling in subsequent quarters to obtain twelve grab samples from each station over the water year.

#### **Deliverables**

- Laboratory analytical results and documentation of Herrera audits from water quality sampling at 12 stations during 3 storm events and 1 base flow event per quarter; these data will be uploaded to the Environmental Information Management (EIM) database.
- Data validation memorandum.

#### **Subtask F1.3 – Sediment Quality Monitoring**

The sediment quality monitoring component of the RPWS involves the collection of sediment samples once during the water year at 17 monitoring stations. Each sample is analyzed for the following indicators for evaluating sediment quality impacts from urban development:

- Total organic carbon
- Copper
- Zinc
- Polycyclic aromatic hydrocarbons
- Phthalates

This task is to collect stream sediment samples. This includes the following activities that will be performed in accordance with the QAPP for the study:

- Mobilization of field crews for sampling
- Delivery of samples to the laboratory after the event
- Auditing of laboratory analytical results within seven days of their receipt
- Entry of the analytical results into the study's data management system

- Preparation of a data validation memorandum that will establish the usability of all the data
- Preparation of tabular summaries for the data report described in Subtask F1.6

### **Assumptions**

- Sediment samples and the benthic macro invertebrate samples described in Subtask F1.5 will be collected during the same field visit to each station. This sample collection will be performed by one team having two Herrera staff. Collection of these samples from 3 stations will require approximately 8-hours of field time including travel.

### **Deliverables**

- Laboratory analytical results and documentation of Herrera audits from sediment sampling at 17 stations.
- Data validation memorandum.

### **Subtask F1.4 - Physical Habitat Monitoring**

Under this subtask, REDMOND will ensure Herrera is trained and conducts physical habitat monitoring for the RPWS once during the water year at 17 monitoring stations. Herrera will coordinate directly with Ecology's Environmental Assessment Program (EAP) for training, data management, and quality control of habitat data. At each station, the characteristic bed-form type will be recorded as a whole, and physical habitat quality indicators will be measured at 11 cross sections and one longitudinal (thalweg) profile. Pursuant to the QAPP for the study, the following indicators will be measured at each cross-section:

- Bank-full width, wetted width, and cumulative bar width
- Bank-full depth, wetted depth, substrate class and embeddedness
- Fish cover
- Riparian shading
- Riparian vegetation structure

The following indicators will be measured along the thalweg profile:

- Thalweg depth and the presence of bars and/or edge pools
- Main channel slope and bearing
- Large woody debris tally, including notation of diameter, length, category, zone, and key-pieces

Upon completion of field work, physical habitat monitoring data will be uploaded to the EIM. Based on post processing of these data within this system, Ecology will provide a suite of indicators for assessing physical habitat quality that are consistent with those being used for

the broader SAM program. A summary of these indicators will be presented in the data report described in Subtask F1.6.

### **Assumptions**

- One Herrera staff will participate in an Ecology sponsored 2-day training session on the physical habitat monitoring protocols developed for the SAM program. These staff will coordinate an additional 1-day training session for three additional Herrera staff that will be involved in the monitoring.
- Physical habitat monitoring will be performed by two teams having two Herrera staff. Physical habitat monitoring at each station will require approximately 8-hours of field time including travel.
- Data from the physical habitat monitoring will be recorded on custom forms while in the field. The custom forms will be reviewed in the field upon completion of the monitoring at each station to ensure all required data have been collected. In an office setting, data from the custom forms will then be transferred to the electronic field data collection software that has been developed by Ecology to ensure completeness in field data collection and facilitate upload of these data to Ecology's Watershed Health database in the EIM.
- Ecology's EAP will perform quality assurance review of the compiled physical habitat monitoring data and calculate metrics for assessing physical habitat conditions using scripts that have been developed to work with the Watershed Health database in the EIM. Costs for EAP's support for these activities are not included in the cost proposal for this scope of work.
- A delay of approximately 6 to 8 months can be expected for obtaining processed indicators for assessing physical habitat conditions from EAP via the Watershed Health database in the EIM system.

### **Deliverables**

- Results from physical habitat monitoring at 17 stations that are uploaded to Watershed Health database in the EIM.

### **Subtask F1.5 Biological Monitoring**

Under this subtask, REDMOND will ensure Herrera conducts biological monitoring for the RPWS once during the water year at 17 stations. Pursuant to the QAPP for the study, this entails the collection of a composite sample of benthic macro invertebrates from specific locations along the cross-sections for physical habitat monitoring. These samples will be submitted to an analytical laboratory where they will be processed to compute the following indicators for use in evaluating stream health:

- Benthic Index of Biotic Integrity



- Taxa Richness
- Ephemeroptera Richness
- Plecoptera Richness
- Trichoptera Richness Clinger Percent
- Long-Lived Richness
- Intolerant Richness
- Percent Dominant
- Predator Percent
- Tolerant Percent

### **Assumptions**

- Benthic macro invertebrate samples and the sediment samples described in Subtask F1.3 will be collected during the same field visit to each station. This sample collection will be performed by one team having two Herrera staff. Collection of these samples from 3 stations will require approximately 8-hours of field time including travel.
- A delay of approximately 6 to 8 months can be expected for obtaining biological metrics from the laboratory.

### **Deliverables**

- Laboratory results from macroinvertebrate sample analysis for 17 stations entered into the Puget Sound Stream Benthos database.

### **Subtask F1.6 Water Year Data Summary Report**

A data summary report will contain tabular and/or graphical summaries of all data that were collected over the water year in connection with the following monitoring components of the RPWS: hydrologic, water quality, sediment quality, physical habitat, and biological. This report will provide a detailed description of any quality assurance issues associated with these data based on results from audits and data validation memoranda. Any corrective actions that were undertaken to address quality assurance issues will also be described. Finally, this report will document all rehabilitation efforts that have occurred in the Application watersheds over the previous year. Included will be detailed information on the design and operational status of structural stormwater controls and the frequency and geographic extent of nonstructural stormwater control implementation.

REDMOND will collaborate with Herrera and King County to prepare a preliminary draft of the data summary report. The draft will be sent to Ecology (SAM Coordinator) and the technical advisory committee that has been established for the study (see Subtask F1.7). Herrera will then finalize the water year report based on comments received. REDMOND will review and send to Ecology.

### **Deliverables**

- Draft data summary report.
- Final data summary report.

### **Subtask F1.7 -Technical Advisory Committee Coordination**

The technical advisory committee (TAC) for this study includes representation from the following agencies: City of Redmond, City of Kirkland, City of Seattle, King County, US Geological Survey, and Ecology. This subtask is to coordinate and for the project team to participate in up to two meetings to obtain input from the committee on technical issues related to the study over water year 2025. It is anticipated that one of these meetings may occur after the release of the data report from Subtask F1.6 to review and discuss the monitoring results from the water year. Contingency budget is also provided for a second, optional meeting to address unforeseen issues that may arise during implementation of the RPWS over the water year.

### **Assumptions**

- Technical advisory committee meetings will last 2-hours and be attended by up to 3 Herrera staff.
- King County presentation on hydrologic data and attended by up to 4 staff.

### **Deliverables**

- King County presentation on hydrologic data and review of report.
- Meeting notes documenting discussion items and consensus decisions from the technical advisory committee.

### **Subtask F1.8 - Project Management**

REDMOND, Herrera, and King County will share responsibilities for ongoing contract administration of this project, including preparing invoices and progress reports, as well as coordination of all work efforts with Ecology (SAM Coordinator) and the Project Team.

### **Deliverables**

- Monthly invoices and progress reports from Herrera.
- Semi-annual invoices and annual progress report from King County.

### **Task F2.0 –Trend Analysis Report: Water Years 2016 - 2025**

Following completion of required monitoring for water year 2025 and preparation of the associated data summary report, REMOND will ensure Herrera prepares a trend analysis report covering data collected over 10 years of study implementation (water years 2016 – 2025). This report will summarize results from statistical analyses performed to detect improving or degrading trends in receiving water conditions in the six watersheds that are the focus of

monitoring efforts for the RPWS. A detailed discussion of these trends will be provided with a specific emphasis on relationships between trends and rehabilitation efforts in the Application watersheds relative to trends in the Reference and Control watersheds. A summary of major conclusions from these analyses will also be provided.

Statistical analyses will follow procedures that are described in the QAPP and documented in minutes from the technical advisory committee meeting that occurred on July 29, 2019. The following specific procedures will be performed in connection with these analyses:

- Correlation analyses to detect trends over time in water and sediment pollutant concentration data and computed indicators from hydrologic and biological monitoring.
- Computation of annual mass load estimates from data for a subset of parameters from water quality monitoring; correlation analyses would then be performed on these estimates to detect trends over time.
- Comparison of data from physical habitat monitoring to reference conditions from Puget Sound lowland ecoregion streams.

REDMOND will collaborate with Herrera and King County to prepare a draft of the trend analysis report. The draft will be sent to Ecology (SAM Coordinator) and the technical advisory committee that has been established for the study (see Subtask F1.7). Herrera will then finalize the trend analysis report based on comments received. REDMOND will review and send to Ecology.

REDMOND will collaborate with Herrera to will create two (2) presentations that summarize major findings from the trend analysis report and the RPWS more broadly for permittees and stakeholders. One of these presentations will be made to the Stormwater Work Group. The other will be made at a conference with a stormwater and regional focus (e.g. MuniCon), upon agreement with Ecology (SAM Coordinator). REDMOND will collaborate with Herrera to create a SAM fact sheet for distribution on the SAM website.

### **Assumptions**

- Comments on the draft and revised draft trend analysis reports will be provided using a standardized template to be provided by Herrera.

### **Deliverables**

- Draft trend analysis report.
- Final trend analysis report.
- Two presentations on study design and findings to date.
- SAM factsheet on project findings.

Task/Deliverable	Quantity	Total by Deliverable	Target Dates
<b>Task F1.0 – Water Year 2025 Study Implementation</b>			
<i>Subtask F1.1 Hydrologic Monitoring</i>			
Posting of telemetered data on HIC (continual). Posting of non-telemetered data on HIC will occur every 5 weeks.	1	\$74,297.40	
Equipment maintenance	1	\$12,075	
Table with flow summary statistics for sampled storm and base flow events from 12 stations.	1	\$9,300	
Subtask Total		\$95,672.40	3/31/2026
<i>Subtask F1.2 Water Quality Monitoring</i>			
Laboratory analytical results and documentation of Herrera audits for 12 stations X 16 sampling events	16	\$147,680	
Data validation memorandum	1	\$16,400	
Subtask Total		\$164,080	3/31/2026
<i>Subtask F1.3 Sediment Quality Monitoring</i>			
Laboratory analytical results and documentation of Herrera audits for 17 stations	1	\$20,300	
Data validation memorandum	1	\$5,080	
Subtask Total		\$25,380	3/31/2026
<i>Subtask F1.4 Physical Habitat Monitoring</i>			
Results from physical habitat monitoring at 17 stations that are uploaded to Ecology’s data management system	1	\$72,900	
Subtask Total		\$72,900	3/31/2026
<i>Subtask F1.5 Biological Monitoring</i>			
Laboratory results from macroinvertebrate sample analysis for 17 stations entered into the Puget Sound Stream Benthos database	1	\$17,100	
Subtask Total		\$17,100	3/31/2026
<i>Subtask F1.6 Water Year Data Summary Report</i>			
Draft data summary report	1	\$25,900	5/31/2026
Final data summary report	1	\$6,480	6/30/2026
Subtask Total		\$32,380	

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Task/Deliverable	Quantity	Total by Deliverable	Target Dates
<i>Subtask F1.7 Technical Advisory Committee Coordination</i>			
King County presentation on hydrologic data and review of WY2025 and Trend Analysis reports	1	\$11,980.32	
Meeting notes documenting discussion items and consensus decisions from the TAC.	2	\$4,300	
Subtask Total		\$16,280.32	4/30/2026
<i>Subtask F1.8 Project Management</i>			
Monthly progress reports from Herrera	12	\$38,160	
Annual progress reports from King County	1	\$1,874.40	
Subtask Total		\$40,034.40	12/31/2025
Task Total		\$463,827.12	
<b>Task F2.0 – Trend Analysis Report: Water Years 2016 – 2025</b>			
Draft data analysis report	1	\$42,900	5/31/2026
Final data analysis report	1	\$10,720	6/30/2026
Stormwater Work Group and Conference Presentations	2	\$4,000	9/30/2026
Fact Sheet	1	\$3,400	9/30/2026
Task Total		\$61,020	
Project Total		\$524,847.12	