

Attachment A

United States Geological Survey -Detailed Scope of Work

Project Summary: Puget Lowland Small Streams Monitoring for the RSMP

The Stormwater Work Group (SWG) members recommended a specific NPDES municipal permittee-funded plan for monitoring the effects of stormwater under the permits in the Puget Sound region. The resulting program, a subset of the overall strategy, is called the Regional Stormwater Monitoring Program (RSMP). The RSMP has three main components; one of which is a status and trends monitoring in Puget ecoregion lowland streams and Puget Sound marine nearshore. For the Puget lowland streams the focus for monitoring is water quality and "watershed health" (physical habitat, sediment chemistry, and biological communities) of wadeable streams.

The RSMP Coordinator at Ecology has formed a small streams monitoring team made up of federal, state, and local government entities to conduct the small streams monitoring. These team members include; King County, Skagit County, San Juan Conservation District, and the United States Geological Survey (USGS) who will conduct the RSMP streams sampling. USGS is one of these entities (referred to as RSMP Contractors) and will conduct monitoring at RSMP small streams sites from January to December of 2015 in Whatcom, Snohomish, Pierce, Thurston, Mason, Kitsap, Jefferson and Clallam Counties.

Project Activities, Tasks, and Deliverables

Task A1: Planning: Confirm suitability, secure permission if necessary, and develop stage height/flow measurement plan for each site, conduct watershed basin delineation for all RSMP sites

Deliverable A1.1: Summary of select site visits for suitability, permissions and stage measurement approach. (Target Date January 31, 2015)

Deliverable A1.2: GIS coverages of all 96 RSMP watershed basins and associated metadata. (Target Date February 28, 2015)

Task A2: Project Management and Quarterly Reporting

Deliverable A2.1: Prepare and send via email, project management status updates (quarterly), field data reports (quarterly), and attend coordination meetings (typically by phone monthly). (Target Dates: March 31 2015, June 30 2015, September 30 2015 and January 30, 2016).

Task A3: Conduct monthly water quality monitoring from January – December 2015

Deliverable A3.1: Monthly field measured data will be submitted quarterly with copies of field data sheets. (Target Dates: March 31 2015, June 30 2015, September 30 2015 and January 30, 2016).

Deliverable A3.2: Final water quality field and laboratory data deliverable sent to RSMP Coordinator. (Target Date: January 31, 2016).

Task A4: Conduct Watershed Health Monitoring during the index period from July 1 – October 15, 2015.

Deliverable A4.1: Field data will be submitted using electronic field forms and field data sheets quarterly. Grab samples will be sent to designate laboratories. (Target Dates: September and December 2015).

Project Schedule

Calendar Year	2014	2015				2016
Task	4	1	2	3	4	1
1. Site Summary and GIS basins						
2. Project Management & Quarterly reports						
3. Water Quality monthly monitoring						
4. Watershed Health Monitoring						

Detailed Descriptions of Tasks and Deliverables

USGS staff will monitor suitable RSMP small stream sites located in the Puget Sound Lowland ecoregion.

Task A1: Visit sites, secure permissions and develop winter flow monitoring plan for each site, GIS basin analysis.

(Total Cost \$= \$20,039)

Most streams are expected to still be wadeable and sample timing can be planned to accommodate better sampling conditions within that month timeframe. However, some creeks may have unsafe high flow conditions for wading or such low flows measurement using meters is impossible. The RSMP Coordinator needs to understand the extent of streams that may exhibit these conditions during 2015. Using best professional judgment, RSMP Contractors shall conduct a site visit to visualize low flow conditions and estimate tenable high flow conditions.

Deliverable A1.1: Summary of site visit for suitability, permissions and stage measurement approach. Due Date: January 31, 2015

USGS will email a letter to the RSMP Coordinator providing a summary of site conditions: 1) dry in late summer, 2) anticipated to be hazardous for wading in winter months, and 3) how stage and discharge is planned to be monitored near the site. This letter will also discuss any pertinent local knowledge about the sites and/ or any outstanding permission necessary for monitoring.

Deliverable A1.2: GIS coverages of watershed delineations for 96 RSMP sites. Due Date: February 28, 2015

USGS will email GIS coverages and all associated metadata to the RSMP Coordinator that will delineate 96 watershed basins for the RSMP random sites. These boundaries are a first step needed for future analysis of the GIS attributes for the RSMP basins.

Task A2: Project Management and Quarterly Reporting

(Total Cost \$ = \$4,327)

Rich Sheibley will be the point of contact at USGS. As a RSMP Contractor, USGS will provide oversight of the field team monitoring crews, and interface with the RSMP Coordinator (Brandi Lubliner) to ensure the goals and reporting requirements are met. Project management by RSMP Contractor will include attending the coordination calls hosted by the RSMP Coordinator, managing the field team, resolving any monitoring issues, and preparation of quarterly data deliverables.

After the last monitoring event of the year, USGS will send the RSMP Coordinator the final EIM data spreadsheet and a completeness report on samples taken for each parameter at each site.

Deliverable A2.1: Send (email) quarterly project management status updates. Participate in coordination meetings (monthly calls) for sampling alignment and management.

Due Date: March 31, 2015; June 30, 2015; September 30, 2015, and January 31, 2016. (Approximately \$1,082 per quarter)

USGS will prepare and send a project management status update in the form of an emailed letter to the RSMP Coordinator. These quarterly reports will include delivery of field data and flow measurements from each water quality site to upload into EIM. USGS will participate on the RSMP Coordination conference calls. These emails are encouraged to accompany the data deliverables, however if communication about monitoring or site conditions is important, then the USGS is expected to send independent correspondence. This status update will be comprehensive but concise. The use of tables is encouraged. Project management for which attending the coordination meetings and preparing quarterly reports throughout the project is the deliverable.

The status report will contain a summary of the status of monitoring efforts to date, any QA/QC concerns and resolutions. Project management status updates will include an invoice for the costs associated with project management and preparation of deliverables. The final deliverable in January 2016 will briefly summarize performance and completeness of sampling. This will include the number of monitoring events, including attempted monitoring trips where monitoring was not successful. The final report deliverable will also include the finalized data for the field gathered parameters, stage height, and flow measurements in the provided EIM spreadsheet.

Task A3: Conduct monthly water quality monitoring from January – December 2015

Monitoring will consist of both field measured parameters using a multi-meter and grab samples for laboratory measured parameters, listed in the table below and discussed in detail in the QAPP. Ecology's EIM data spreadsheet template will be provided by the RSMP Coordinator and populated with the field-measured data. This EIM spreadsheet and copies of the field data sheets will be sent to the RSMP Coordinator, who will verify and enter the data into EIM.

Water quality parameters to be collected.

Parameter	Where measured/Lab
Ammonia	MEL or KCEL ^[1]
Chloride	MEL or KCEL ^[1]
Dissolved organic carbon	MEL or KCEL ^[1]
Dissolved oxygen	Field Meter
Hardness	MEL or KCEL ^[1]
Fecal coliform	Clallam County laboratory, WA; Edge Analytical Laboratory, Bellingham, WA; or MEL or KCEL ^[1]
Metals (total and dissolved)	MEL or KCEL ^[1]
Nitrate-Nitrite-N	MEL or KCEL ^[1]
Polycyclic aromatic hydrocarbons	MEL or KCEL ^[1]
pH	Field Meter
Orthophosphate	MEL or KCEL ^[1]
Specific Conductance	Field Meter
Temperature	Field Meter
Total nitrogen	MEL or KCEL ^[1]
Total phosphorus	MEL or KCEL ^[1]
Total suspended solids	MEL or KCEL ^[1]
Turbidity	MEL or KCEL ^[1]

MEL = Manchester Environmental Laboratory; primary laboratory.

KCEL = King County Environmental Laboratory

^[1] = Samples from northern Snohomish County sites may be analyzed at either MEL or KCEL per necessary USGS sampling logistics to best facilitate holding times.

Sub-task A3(a): Monthly Water Quality Monitoring

Total Cost \$ = \$439,294 34 RSMP small stream sites in Puget Sound Lowland ecoregion.

(\$12,920 per WQ site which includes ALL costs for monitoring, not just labor).

Beginning January 2015, USGS will conduct monthly water quality monitoring at **34** RSMP sites, unless any of these sites is deemed unsuitable according to the criteria in the monitoring plan for this study *Quality Assurance Project Plan for Status and Trends Monitoring of Small Streams in the Puget Lowlands Ecoregion for Monitoring Conducted using Pooled RSMP Funds contributed by Municipal Stormwater Permittees (QAPP)*. These **34** sites are further described:

RSMP stream sites monitored by USGS.

County	UGA Strata	ORDER #	WQ Site Count
Thurston	Outside	22, 28,30,60	4
Thurston	Inside	20,24	2
Snohomish North	Outside	50	1
Snohomish North	Inside	38,44,47	3
Whatcom	Outside	32	1
Whatcom	Inside	16, 21	2
Pierce	Outside		
Pierce	Inside	4,5,23	3
Kitsap	Outside		
Kitsap	Inside	6,19,30,33	4
Mason	Outside	1,25,46,56,59	5
Mason	Inside	0, 25	2
Jefferson	Outside	54	1
Jefferson	Inside		
San Juan	Outside		
San Juan	Inside		
Clallam	Outside	9,26,33,37,42	5
Clallam	Inside	17	1
Total			34

RSMP coordinator will notify the county in writing if a site becomes disqualified for sampling.

If site(s) identified in sub-task A3(a) fail suitability criteria at some point during the course of monitoring then, USGS will notify the RSMP coordinator immediately. A re-sample in the same month will be attempted and if the site still fails suitability, then that site will not be sampled that month. USGS should resume monitoring the following month if conditions improve, or discuss with the RSMP Coordinator for a full cessation of monitoring at that site.

Optional Sub-task A3(b): Addition of Water Quality Sites (\$12,920 per site)

Site suitability conditions may change at any point in the sampling program across all of the RSMP sites. These changes may be accommodated by this agreement by increasing (or decreasing) the number of sites monitored by USGS staff. The anticipated change in the final number of sites is expected to be low and will be capped at 5 sites. These include sites that are currently considered “maybe” sites. All replacement sites will come in order on the master list and must meet suitability criteria.

The RSMP coordinator will be notified by the other RSMP contractors about sites suitability and disqualifications in other counties. The RSMP Coordinator will notify USGS in writing to begin sampling the additional site(s). The timeline that replacement sites would begin monitoring is from January – July, otherwise a replacement site will not be sought after the summer watershed health monitoring.

Deliverables A3.1 Quarterly field measured data and copies of field data sheets.

Due Dates: March 31, 2015; June 30, 2015; September 30, 2015, and January, 31, 2016. Costs for quarterly data reporting are included in task A2).

USGS will send field measured data in the EIM spreadsheet format to the RSMP Coordinator for sampling conducted at each RSMP monitoring site with each quarterly report. This will also include photocopies of field data sheets and notes taken in the field. This data package will be attached to an email to the RSMP Coordinator. The email will also provide a brief status update on the completeness of the grab samples for the laboratory parameters for each site. This deliverable will invoice the costs associated with monthly monitoring including labor, travel, equipment, and monitoring supplies.

Task A4: Conduct watershed health monitoring during July 1 – October 15, 2015

(Total Cost = \$143,746 for up to 57 RSMP small stream sites in Puget Sound Lowland ecoregion.)

Watershed Health monitoring consists of benthic macroinvertebrate, periphyton, stream bed sediment and habitat monitoring, which are discussed in detail in the monitoring plan for this study entitled: *Quality Assurance Project Plan for Status and Trends Monitoring of Small Streams in the Puget Lowlands Ecoregion for Monitoring Conducted using Pooled RSMP Funds contributed by Municipal Stormwater Permittees*. USGS will conduct Watershed health monitoring (WHM) at all retained WQ sites from Task A3 plus additional sites as listed below. Much of the data collected for habitat variables will be recorded in the field. USGS will seek permit coverage from Washington Department of Fish and Wildlife for a scientific collection permit to collect macroinvertebrates at the sites monitored by USGS staff and sites in San Juan and Skagit Counties. Benthic macroinvertebrates and periphyton samples will be stored by USGS for delivery to the qualified laboratory. Sediment samples will be sent to Manchester Environmental Laboratory (MEL). USGS will follow notification guidelines and chain-of-custody procedures discussed in the MEL Manual <http://aww.ecology/programs/eap/forms/labmanual.pdf>. Samples will be shipped via Fed Ex to MEL.

MEL = Manchester Environmental Laboratory
WA State Department of Ecology
Attn: Sample Receiving
7411 Beach Dr E
Port Orchard, WA 98366-8204
Phone: 360-871-8800
Fax: 360-871-8850.

Sub-task A4.1: Watershed Health Monitoring

Total Cost \$ = 143,746 to monitor 57 RSMP small stream sites in Puget Sound Lowland ecoregion following WHM protocols.

(\$2,522 per WHM site which includes ALL costs, not just labor.)

Once during the index period (July 1 – October 15th, 2015) USGS will conduct watershed health monitoring at the following RSMP sites in King and Snohomish County.

RSMP stream sites monitored by USGS

County	UGA Strata	ORDER #	WHM Site Count
Skagit	Outside	19,20,27,44,75	5
Skagit	Inside	15, 45	2
Thurston	Outside	22, 28,30,60	4
Thurston	Inside	20,24,62	3
Snohomish North	Outside	50,71,76,78,80,89	6
Snohomish North	Inside	38,44,47	3
Whatcom	Outside	32,96,97	3
Whatcom	Inside	16,21,64	3
Pierce	Outside		
Pierce	Inside	4,5,23,63,81	5
Kitsap	Outside		
Kitsap	Inside	6,19,30,33	4
Mason	Outside	1,25,46,56,59,83	6
Mason	Inside	0, 25	2
Jefferson	Outside	54	1
Jefferson	Inside		
San Juan	Outside	6	1
San Juan	Inside		
Clallam	Outside	9,26,33,37,42,84,93	7
Clallam	Inside	17,87	2
Total			57

If site(s) identified in Task A4 fail suitability criteria for watershed health monitoring, USGS will notify the RSMP coordinator immediately. A re-sample will be attempted and if the site still fails suitability, then that site will not be further sampled. USGS will notify the RSMP coordinator, who will notify the RSMP Pooled Resources Oversight Committee that the site is disqualified for sampling.

Optional Sub-task A4.2: Addition or Deletion of Watershed Health Sites

\$2,522 per site as needed from January to August 2015.

Site suitability conditions may change at any point in the sampling program across all of the RSMP sites. These changes may be accommodated by this agreement by increasing or decreasing the number of sites monitored by USGS staff. The anticipated change in the final number of sites is expected to be low and is capped to 5 sites. All replacement sites will come in order on the master list and must meet suitability criteria.

The RSMP coordinator will be notified by the other RSMP contractors about sites suitability and disqualifications in other counties. The RSMP Coordinator will notify USGS in writing to begin sampling the additional site(s). The timeline that replacement sites would begin monitoring is from January – August, otherwise a replacement site will not be sought after the summer watershed health monitoring.

Deliverables A4.1 Quarterly field measured data and copies of field data sheets.

Due Dates: September 30, 2015 and December 31, 2015. Costs included in task A2.

USGS will send field measured data in the provided electronic field forms and spreadsheets to the RSMP Coordinator for sampling conducted at each RSMP monitoring site. This will include photocopies of field data sheets and notes taken in the field. This data package will be attached to an email to the RSMP Coordinator. The email will also provide a brief status update on the completeness of the grab samples for the laboratory parameters for each site. This deliverable will invoice the costs associated with the summer monitoring including labor, travel, equipment, and monitoring supplies.

For habitat variables collected under WHM, the RSMP Coordinator will supply Ecology's watershed health electronic software and specialized field data spreadsheets for use by USGS. This software will be used to populated habitat data into a format suitable for EIM, and those forms sent to the RSMP Coordinator along with copies of any other field notes. Ecology will review and upload the habitat data into EIM.

USGS - Budget Detail by Task

	Task 1. Planning and GIS	Task 2. Project Management	Task 3. WQ Monthly for 34 sites	Task 4. WHM Summer 2015	Total by Object
USGS Salaries and Benefits	\$10,089	\$2,179	\$194,333	\$67,297	\$273,898
Travel			\$30,393	\$7,980	\$38,373
Supplies and shipping			\$4,875	\$2,125	\$7,000
Equipment			\$15,340		\$15,340
Overhead	\$9,950	\$2,148	\$194,353	\$66,344	\$272,795
Total Task	\$20,039	\$4,327	\$439,294	\$143,746	\$607,406

Budget Detail by federal fiscal year (October 1 to September 30)

	FY2015	FY2016	TOTAL
Project costs	\$491,560	\$115,846	\$607,406