Attachment A

Scope of Work for Site Selection and Technical Assistance with the Quality Assurance Project Plan in support of the 2015 Status and Trends Stormwater Monitoring and Assessment for Small Streams, Regional Stormwater Monitoring Program

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Background

The Regional Stormwater Monitoring Program (RSMP) is the cumulative regional monitoring effort collectively funded by the Phase I and II Municipal Stormwater Permittees in the Puget Sound region of Washington State. Task 1 under the program, Status and Trends Monitoring in Small Streams in Puget Sound Lowlands, has begun. The Stormwater Work Group (SWG) is a coalition of federal; tribal; state and local governments; business; environmental; agriculture; and research interests that was convened at the request of the Puget Sound Partnership and Washington Department of Ecology (Ecology) to develop and implement the RSMP.

Objectives

This Scope of Work includes two tasks in support of the RSMP:

Task 1. The objective of the first task will be to evaluate and select 88 sites (up to 43 within the Urban Growth Area (UGA), and up to 45 outside the UGA) for status and trend sampling under the RSMP. The candidate sites will be provided from a list generated by the SWG for the RSMP. Reasons for site selection or rejection will be documented based on objective criteria, along with professional judgment of USGS Hydrologists with particular expertise in surface-water monitoring of water and sediment chemistry, aquatic habitat, periphyton, and stream benthos.

Task 2. The objective of the second task is to provide a technical review of the Quality Assurance Project Plan (QAPP) in support of the Status and Trends Stormwater Monitoring and Assessment for Small Streams. This QAPP was written by Ecology's Environmental Assessment Program (EAP) to provide technical guidance for permit-required monitoring, such that collected data will be both consistent with the RSMP and integrated with existing status and trend programs in Puget Sound. In addition to elements of a standard review (technical correctness, readability, internal consistency, and similar), our review will focus on consistency with USGS and other agency field protocols for their status and trends monitoring programs in Puget Sound and will offer alternative field methods for consideration if appropriate.

The following approach applies to Task 1; the approach to task 2 will be a straightforward technical review of the draft QAPP as described above.

Approach

Site evaluations, which will include a field visit to a candidate site, will determine the suitability of each site for monitoring to meet the RSMP goals. Site suitability will determined by selection criteria related to accessibility; to flow, physical, and chemical; and to location relative to a candidate sites' original coordinates.

Candidate sites to be evaluated are pre-determined in the Master Sample Site list that was generated for Puget Lowland Ecoregion streams that drain to Puget Sound. Within that area, candidate sites are specified within each of the assessment regions: inside the Urban Growth Area (UGA) boundaries, and outside the UGA boundaries. Site evaluations will begin with the priority list of the initial 100 RSMP candidate sites—less about 12 sites that will evaluated by so-called "opt-out" jurisdiction—shown in the draft QAPP for Status and Trends Monitoring of Small Streams in the Puget Lowland Ecoregion. If any of those initial candidate sites are deemed unsuitable for monitoring, additional candidate sites for the relevant assessment region will be evaluated in the numerical order listed in the Master Sample Site list (from lowest to highest in the SITE_ID column).

The site evaluation will begin with a desktop evaluation of candidate sites in advance of the initial field visit, and will include comparing candidate site coordinates to existing information on such items as surficial geology, parcel/property ownership, upstream drainage area, NHD-related waterbody data, historical streamflow and /or water quality data, and aerial photographs.

Criteria for Selecting a Suitable Sampling Site

Selection criteria for determining the suitability of a candidate site for monitoring to meet the RSMP goals are described below. These may change slightly as the draft Quality Assurance Project Plan for the RSMP (written communication, Washington Department of Ecology, February 24, 2014) goes through final reviews and updates.

Accessibility Criteria

These criteria concern whether access to a site is permitted by the land owners, and if the site can be safely accessed and sampled throughout the year.

Permission and Access

If a candidate site is not obviously accessible through public property, property owners and/or tenants whose property will need to be accessed will, if feasible, be contacted prior to site evaluation. Parcel information gained from the desktop evaluation will be researched and a good faith effort to contact owners or tenants will be made. A site will be deemed unsuitable for sampling if permission has been denied by all land owners, tenants, or resource managers along the entire hydrologic reach (see Location Criteria, below). The Washington State Department of Natural Resources guidance (WDNR, 2010) on how to discern public and state-owned waters will be consulted. A site may also be deemed unsuitable for sampling certain if it is an extreme distance from parking and requires more than two hours to access the site.

Safety

Safety considerations for both the site evaluation and the actual sampling will be based on state and federal law and organizational policy. We will estimate the safety considerations for sampling at a site during the evaluation, but it will ultimately be the responsibility of the sampling team at the time of their arrival to decide if a stream is safe to sample or enter. Reasons for disqualifying a site from sampling may include:

- Current is too swift
- Water is too deep
- Steep or unstable route of entry
- Hostile people or dogs
- Hornets or similar hazards

Flow, Physical, and Chemical Criteria

These criteria concern the conditions of the stream and streambed with regard to the specific types of data desired for the RSMP. To be considered a suitable sampling site, the water-body at the candidate site must be on a stream or small river, and not on a lake, pond, or wetland.

Specifically, the water-body must:

- have a net flow of water that is unidirectional;
- have defined left and right banks readily discernable from mid-stream;
- have uninterrupted surface-water flow for more than half the length of approximately 20 bankfull widths or a minimum of 150 meters surrounding the candidate site coordinates;
- have perennial flow (as best as can be determined at the time of the site visit with additional information gained from the desktop evaluation);
- flow in a natural channel that might have been highly modified, but was not constructed (such as canals, ditches, or pipelines);
- have natural substrate on the channel bottom;
- have freshwater, as defined by a water column with more than 95 percent of its depth with less than 1 part per thousand salinity at any time during the year. Multiple lines of evidence will be used to make this estimation (e.g., vegetation, proximity to a known estuary, or salinity measurement).

Location Criteria

The following location rules apply such that the sampling site reflects the intended probabilistic stream characteristics. During the site evaluation field visit, the field crew will attempt to access the site at the given coordinates or as nearby as possible, with recognition of the challenges of sampling in urban areas, particularly in gaining access to discretely defined locations. Ideally, a suitable sampling location will be located within 250 meters of the given candidate site coordinates. However, if access, flow, physical, and chemical criteria are not met within this distance, the field crew will continue to investigate locations upstream and downstream of the initial reach with the objective finding a suitable site that maintains the intended size class of

the original candidate site. More specifically, suitable sampling sites upstream and downstream of the candidate site coordinates will fall within the constraints of:

- no surface-water inflows with continuous flow in excess of approximately 25 percent of the flow already in the reach;
- no substantial change in adjacent land use, such as from residential to industrial, or from undeveloped to developed; and
- less than 500-m from the original candidate site coordinates (in recognition that the Master Sample probabilistic sample sites are located 1 km apart).

If a sampling site varies slightly from the preferred criteria, USGS will provide enough information for the RSMP to determine how to interpret (i.e., statistically weight) the data from the site.

Documentation of Site Evaluations

Observations and decisions resulting from both the desktop and field evaluations will be recorded and copies provided to the RSMP. The attached Site Evaluation form will be completed for all candidate sites that were evaluated.

Deliverables

Task 1 -- The primary deliverable will be Excel spreadsheets containing the metadata of all visited sites with 88 suitable suits identified. The spreadsheets will be annotated with observation notes, digital photographs, a brief discussion about the final decision on selection for each site visited. We will likely collect additional ownership/permission/contact information in the field from land-owners (such as site owner names, addresses, and phone numbers). To be sensitive to the owner's privacy concerns, we will work with SWG representatives to share these Personally Identifiable Information only with selected others who have a clear need for it for the RSMP. All original field notes and forms will be archived at the USGS WAWSC, and copies will be openly provided on request.

Task 2 – The deliverable will be a tracked change document of the subject QAPP and a cover memo highlighting any substantial technical comments.

Schedule

Task 1 -- Site reconnaissance and selection is anticipated to begin April 2014 and we anticipate needing approximately 25 working days to complete the task. We expect to fully complete and document the work by the end of June 2014; this date can be negotiated. It is recognized that unforeseen issues may become apparent at sites during actual monitoring under varying flow conditions, so the suitability of list of sites may change through the sample season, and alternative sites may need to be considered.

Task 2 – The QAPP review will begin and be completed during March 2014.

Costs

Task 1 -- The total costs for this site evaluation work is estimated at $35,800. This estimate assumes two USGS hydrologist (one senior, one junior) will visit every site. This estimate could

change (be less) if representatives from the local permittees were to accompany the senior USGS hydrologist on site visits within their jurisdictions.

Task 2 – The total cost for the QAPP review will be $6,000 and will include five days of effort by a senior-level hydrologist