

EXHIBIT A
Scope of Work for
City of Snoqualmie
2025 Stormwater Comprehensive Plan Update
September 2024

Background

The City of Snoqualmie (City) is a municipal corporation that is responsible for providing stormwater service to its service areas. The City provides services to areas within the City limits and areas of unincorporated King County. The City has requested that Northwest Hydraulic Consultants (NHC) author a 2025 update to the City's Stormwater Comprehensive Plan (SCP). The 2025 SCP update will be performed as Task Assignment under NHC's on-call agreement with the City.

NHC will request new asset information from the City and will use and rely upon the data information for the update. Unless otherwise noted, deliverables will be provided in electronic MS Word, PDF, and Geographical Information System (GIS) formats as appropriate and requested by the City.

A detailed workplan follows.

1 TASK 1 - PROJECT MANAGEMENT

Objective: Manage the NHC project team, files, and records. Monitor the scope and budget. It is estimated this project will extend approximately twelve (12) months.

Approach: Prepare, monitor, and update the project schedule on a monthly basis. Review work performed for consistency with this Scope of Work, monitor budget, prepare monthly invoices, and provide City staff with monthly briefing via email for the twelve (12)-month schedule.

- 1.1 Maintain project records, coordinate NHC staff with project team, prepare, monitor, and update the project schedule and budget.
- 1.2 Kick-off meeting (remote).

Assumptions:

- *Attendees may participate via web-ex or in person – no travel time or expenses are included for kick-off meeting.*

NHC Deliverables:

- Invoice documenting monthly progress of work completed and earned value compared to contract value.
- It is assumed that two NHC staff will attend the kick-off meeting.

2 TASK 2 – REVIEW OF EXISTING INFORMATION AND DATA GAP IDENTIFICATION

Objective: Review the existing information and data available from the City and other local entities. Review planning-related documents and identify the impact of population projections on the City’s stormwater system. Identify additional data necessary to complete the SCP. Assist the City in collecting data and inventorying for the stormwater system planning process and review the data and inventories used in developing the SCP. Existing data will be leveraged where available, so the amount of field survey can be limited.

Approach:

- 2.1 Prepare and submit a list of data and mapping needs.
- 2.2 Review the 2022 Preliminary Draft Stormwater System Plan and other relevant plans, existing system information, drainage complaints, and data.
- 2.3 Review GIS inventory data and maps provided by the City and develop an inventory of stormwater utility for use during the plan updates.
- 2.4 Review/QAQC historic hydrometric data (sewer and streams) and develop inventory and summary. Provide narrative and quantitative characterization.
- 2.5 Based on review of records, field investigations, and discussions with City maintenance staff, determine if there are areas of the existing stormwater system with critical data gaps that require additional investigation (e.g. field survey, video inspection, or other).
- 2.6 Send future land use condition and impervious area assumptions to City for confirmation.

Assumptions:

- *The stormwater system has been mapped in GIS and will be provided for use (either as shapefiles or in a geodatabase).*

- *The City will provide data and maps requested in the data request within five (5) weeks of contract execution.*
- *The City will provide additional investigations and/or video inspection of utility systems if required.*
- *NHC will rely upon the accuracy and completeness of any information, data, and materials generated or produced by the City or others in relation to this Scope of Work.*

Provided by the City:

- All available data on the existing stormwater system will be Provided by the City, including drainage reports, if available.
- City is responsible for providing information identified as data gaps. This may require field work and traffic control for spot surveying of utilities.

NHC Deliverables:

- Compilation and review of data and maps provided by the City.

3 TASK 3 - BASIN IDENTIFICATION AND ANALYSIS

Objective: Review stormwater basin delineations to define areas contributing runoff to the City’s drainage system, conduct field reconnaissance, and update facility inventory information to support the modeling and capacity analysis. This Task aims to describe stormwater-specific aspects of the study area, the tributary drainage basins in the City, applicable total maximum daily load (TMDL) requirements, and extents of the City’s Municipal Separated Stormwater System Service (MS4) area served under its National Pollutant Discharge Elimination System (NPDES) Phase II Permit. Develop stormwater models of the City’s existing stormwater system.

Approach:

- 3.1 Prepare a description of the stormwater system ownership and management. Include the contact person and address. The SCP will focus on the City's regulated MS4 but also will reference major private facilities that affect operation at the City's facilities.
- 3.2 Delineate stormwater basins based on the City's system and existing GIS data.
- 3.3 Develop and execute a desktop analysis to identify fish passage barrier culverts across the City that are of the highest priority for replacement (approximately 10). Includes 1 day of field verification.
- 3.4 Review and summarize regulated flood hazard areas within the City.
- 3.5 Utilizing one (1) field day, visit as many stormwater facilities (e.g., detention ponds, water quality treatment facilities, etc.) as possible with City staff to collect field information, observe layouts and existing conditions, and obtain maintenance staff input/complaints regarding the existing stormwater system. Deficiencies in the facilities will be noted, along with potential for retrofit improvements (e.g. available space for expansion, etc.). It is assumed that two (2) NHC staff person for a total of one (1) days in the *field plus time for travel*.
- 3.6 Perform hydrologic analysis. NHC recommends using a combination of drainage complaints and modeling to identify limitations and assess capacities of the existing system. Runoff from the entire City was modeled using Hydrologic Simulation Program Fortran (HSPF) in 2022 to characterize runoff quantity and quality. Additionally the conveyance network in downtown Snoqualmie was also modeled using the USEPA's Stormwater Management Manual (SWMM) model to identify conveyance deficiencies. Under this task NHC will review and refine the basin delineation in the HSPF model to characterize new developments and changes in runoff patterns. Updates to the SWMM conveyance model are not included.
- 3.7 Input land use classifications into the HSPF model and assign estimated pervious and impervious areas for use in future condition stormwater modeling and review with the City.
- 3.8 Provide short narrative about potential impacts from change on future precipitation and conveyance capacity, but City did not authorize explicit future climate modeling.
- 3.9 Review the modeling for consistency with specific drainage complaints and maintenance staff observations applicable to existing stormwater system modeling. Coordinate with the City to identify the source of inconsistencies between the drainage complaints, and modeled results. Inconsistencies may be the result of unknown pipes in the system or incorrect diameter of pipes shown on system mapping. *Since this item is highly variable*

in nature, an initial allocation of forty (40) hours of a stormwater modeling specialists time have been included for this subtask.

- 3.10 Review downstream boundary conditions. An existing 1D HEC-RAS model of the Snoqualmie River was used to establish downstream water-levels at stormwater outfalls to Snoqualmie River. Those water-levels will be reviewed and updated, if required.

Assumptions:

- *No new stormwater ponds need to be added to the HSPF model.*
- *It is assumed that neither a Washington State Department of Transportation (WSDOT) survey permit nor other traffic control plan review will be required for field survey work (i.e. it will be performed outside the WSDOT right-of-way).*
- *Maintenance staff will accompany and provide access to stormwater facilities.*

Provided by City:

- Review and comment on future conditions for modeling.
- Assistance with identifying sources of inconsistencies in model calibration (if added and flow monitoring data exists).
- As-built drawings for existing stormwater facilities in digital format.

NHC Deliverables:

- Stormwater basins delineated based on the City’s system in GIS format.
- Attendance at facility visits with City staff.
- Descriptions of existing system components.
- Coordination with the City to confirm completeness and accuracy of the stormwater model.
- Written summary of the hydrologic analysis findings in tabulated format summarizing existing flow rates and potential peak flow rates for each basin and sub-basin in PDF format.
- System inventory in electronic database (ESRI Shapefile or Excel).

4 TASK 4 - DETERMINE BASIN DEFICIENCIES

Objective: Evaluate existing stormwater collection system, including detention and treatment facilities, for existing and projected future growth conditions to identify deficiencies and recommend improvements. Assess the overall reliability and vulnerability of the existing

system. Evaluate the stormwater system to identify pollution hotspots and develop an inventory of opportunities for stormwater retrofits.

Approach:

- 4.1 Develop tabulation of historic climate 2, 10, 25, and 100-year return period storm peak flows for each basin in the study area.
- 4.2 Perform stormwater modeling of the existing stormwater system in the Downtown Snoqualmie basins to identify and describe existing deficiencies in the system.
- 4.3 Perform stormwater modeling of future land use conditions in the Downtown Snoqualmie basins to identify and describe impacts to the existing system.
- 4.4 Document the stormwater modeling criteria and model settings and assumptions.
- 4.5 Map flooding locations within the downtown region and under-capacity pipes in GIS covering the project area.
- 4.6 Develop conveyance improvement recommendations to address existing deficiencies and plan for future stormwater system needs (i.e. pipe size increases and/or replacements).
- 4.7 Identify water quality concerns at hot spots in the system that are not currently meeting the City’s goals for water quality. These problems will not be identified through modeling but through existing water quality data and/or the application of GIS to identify areas in the stormwater system lacking adequate existing water quality treatment BMPs using metrics such as high ADT businesses and roadways and industrial uses with relatively high pollutant loading rates.
- 4.8 Identify programmatic and structural opportunities to improve water quality (as required by TMDLs).

Assumptions:

- Stormwater modeling will be performed for existing conditions and a single future condition, assumed *to be build-out based* on land use.
- *Analyses of the conveyance system will be conducted for the 25-year event (or other event identified as the preferred level-of-service).*
- *Improvements will be planning level and conceptual in nature.*

Provided by City:

- All existing stormwater policies and practices currently implemented by the City.

NHC Deliverables:

- Stormwater modeling results.
- A list of recommended stormwater conveyance improvements in PDF format.
- Description of known deficiencies of existing facilities in PDF format.
- A list of recommended water-quality retrofit areas and/or locations in PDF format.

5 TASK 5 - CAPITAL FACILITIES PLAN CHAPTER AND PLANNING ESTIMATES

Objective: Describe, prioritize, and schedule improvements to address deficiencies identified in the stormwater system analyses. Prepare planning-level option of costs for each project identified. Combine schedule and estimates into an overall CIP chapter for the stormwater utility plan.

Approach:

- 5.1 Review CIP list from preliminary 2022 plan and prepare an updated list of proposed stormwater system improvements (both structural and non-structural) based on the results of the existing system and planned future system analyses. Briefly describe each group of related improvements and the purpose/benefit of the improvements.
- 5.2 Develop cost estimates for identified CIP projects. RH2 will support NHC as a sub-consultant for this task.
- 5.3 Coordinate with City staff to establish criteria for prioritizing and scheduling improvements. Prioritization and scheduling will consider other scheduled projects based on information provided by the City and the CIPs developed for transportation and other utilities.
- 5.4 Describe the criteria and procedures used for prioritizing and scheduling improvements.
- 5.5 Meet with City staff to discuss the stormwater system improvements and the proposed schedule of implementation. *It is assumed that one NHC staff will attend this meeting.*

NHC Deliverables:

- Written summary of capital projects
- Attendance at one (1) meeting with City staff.

- Meeting minutes

6 TASK 6 – REGULATORY AND O&M REVIEW

Objective: Review existing stormwater regulations, policies, and design criteria and recommend, as necessary, changes to these policies so that stormwater facilities can meet current design standards and new and existing regulatory requirements. The review will specifically address the 2024 NPDES permit requirements for maintenance, inspection, and enforcement. A recommended timeline of milestones to meet each requirement will be included in the SCP. Perform a review of the stormwater system’s operations and maintenance (O&M) program, as well as maintenance and staffing levels. If new facilities and/or maintenance activity needs are identified, recommendations for additional staffing will be provided.

Approach:

- 6.1 Summarize the City’s current stormwater code and regulations and identify if gaps exist that should be revised.
- 6.2 Review 2024 NPDES permit requirements and the City’s stormwater program to identify gaps related to O&M, inspection, enforcement, or review of applications for new and re-development projects.

Provided by City:

- Current City stormwater regulations and access to City attorney for consultation.

NHC Deliverables:

- A copy of the effective stormwater code as an appendix of the SCP in PDF format.
- Summary of gaps in the City’s stormwater program that need to be filled to meet 2024 NPDES permit requirements in PDF format.

7 STORMWATER COMPREHENSIVE PLAN COMPILATION

Objective: Prepare draft and final SCP.

Approach:

- 7.1 Identify the purpose of the SCP and summarize the major system characteristics.
- 7.2 Briefly describe the key issues in the SCP, including the following.
 - Policies and design criteria
 - Watershed and tributary drainage basins
 - Existing and future systems
 - System evaluation and deficiencies
 - Recommended improvements
- 7.3 Preparation of draft SCP for City review
- 7.5 Respond to City comments and submittal of final SCP.
- 7.6 Prepare the appendices for the SCP.

Assumptions:

- *The number of review comments are difficult to predict and highly variable. An initial allocation of ten (10) hours has been included for revisions to the SCP chapters based on City review comments. If an unusual number of comments are received, or the scope of the comments are excessive, a scope amendment may be required to address the comments.*

NHC Deliverables:

- Draft executive summary chapter for City review and comment