

City of Blaine

SEMIAHMOO WATER AND SEWER SERVICE EXPANSION PLANNING

Task Order #2023-01

This Task Order is authorized under the Agreement for Professional Services between City of Blaine and CHS Engineers, LLC effective May 14, 2020, and thereafter assigned to David Evans and Associates, Inc. effective June 27, 2020, as amended effective January 18, 2021, as amended effective April 11, 2022, as amended effective May 10, 2023.

(A) Scope of Work

July 7, 2023

The City Public Works Department has requested support with refined planning for provision of service for two proposed developments in the Semiahmoo area of the City: Avista and Inverness. The projects are expected to add approximately 500 units and 65 units, respectively, to the City water and sewer service areas.

The City's 2019 Water System Plan (WSP) forecasts a deficiency in storage capacity starting in 2021 with growth in the subject area. The WSP proposes a solution that will add a second source of supply for the Semiahmoo portion of the system. The second source of supply (through BBWSD system for emergency situations) will reduce the required amount of standby storage in the City system and provide a source should the present single source across the mouth of Drayton Harbor be compromised.

The City's General Sewer Plan (GSP) has not been updated since 2005. The subject area includes existing sewer Lift Station 10 (LS 10, a.k.a., Royal Troon or Troon). LS 10 discharges to a trunk line that discharges to LS 8. Flow is then pumped to another trunk line for discharge to a pump station at the site of the former Blaine wastewater treatment plant. The 2005 GSP anticipated growth in the subject area of nearly 2,100 persons, including development of the areas of the Avista and Inverness projects. The 2005 GSP reports that a few gravity pipe segments will be over 100% capacity once the area is fully developed and that several segments will be between 75% and 100% of capacity at full development. However, no pipeline improvements or lift station capacity upgrades are identified in the project area in the GSP. The City has a project in process to upgrade LS 10 including consideration of relocation for better access.

The desired services for this planning work is understood to include the following:

- **Water Service**
 - Review of proposed improvements relative to service in the 330 or 360 pressure zone
 - Review of connections and growth in the 330 and 360 Zones to estimate timing of storage deficiency relative to phased project development
 - Review of 360 Zone pump station pump capacity and opportunity for future expansion

- Review of developer proposal to consider converting 330 Zone, or portions thereof, to be served by pump station as part of 360 Zone, including reduction in dead storage, need for pressure reducing valve assemblies (PRVs) and reliability of supply to the subject area
- Coordinate with Public Works and the project developers and their engineer including meetings
- Outline list of improvements to be completed by the City and/or by the developers to provide water service.
- **Sewer Service**
 - Review existing lift station, gravity sewer and trunk line configuration and capacity from LS 10 downstream to pump station that discharges to new water reclamation facility.
 - Review GSP for estimate of anticipated growth and wastewater flow increase relative to station and trunk line capacity.
 - Coordinate with Public Works and the project developers and their engineer including meetings
 - Outline list of improvements to be completed by the City and/or by the developers to provide sewer service

The proposed Scope of Work for completion of the planning work is presented below.

1. Project Management

- 1.1. Project Planning – planning this Scope of Work
- 1.2. Project Monitoring and Control – monthly monitoring and invoices preparation
- 1.3. Project Closeout – closeout project files

2. Resources

- 2.1. Review resources provided by the City for water and sewer system facilities in the project area
- 2.2. Complete site visit for review of 360 Zone pump station, LS 10, LS 8 and downstream pump station
- 2.3. Review developer's proposed means of water and sewer service

3. Planning Review

- 3.1. Water:
 - 3.1.1. Review impact of proposed projects on WSP demand in 330/360 Zones and consider phased development relative to forecast growth and consider service pressure for adequacy relative to existing pressure zones
 - 3.1.2. Review 330 Zone and 360 Zone supply and storage capacity relative to anticipated phased growth
 - 3.1.3. Schematically define system configuration to convert all of 330 Zone to 360 Zone service as a closed system, or a significant area thereof, to allow substantial conversion of existing dead storage in the City's Semiahmoo Reservoir to be available for emergency and/or normal storage. Identify piping configuration changes and need for PRVs.

- 3.1.4. Develop order of magnitude cost estimates for the WSP approach to storage deficiency resolution and for the schematic system reconfiguration to reclaim dead storage and include cost of backup supply for both options.
- 3.1.5. Recommendations – Provide a summary of the recommended improvements to address the forecast storage deficiency, and address a second source of supply
- 3.2. Sewer:
 - 3.2.1. Review impact of proposed projects on GSP wastewater flows and consider phased development relative to forecast growth
 - 3.2.2. Review feasibility of gravity sewer service to subject developments or need for additional lift station(s)
 - 3.2.3. Review capacity of existing lift stations, force mains and gravity sewer lines
 - 3.2.4. Identify additional facilities or upgrades necessary to provide adequate service capacity
 - 3.2.5. Recommendations – Provide a summary of the recommended improvements to provide sewer service and provide for adequate capacity downstream in the sewer system
- 3.3. Meetings – prepare for and attend up to 10 meetings (six in person) with City and developer representatives to review findings, discuss alternatives and support development of an agreed set of improvements for each system.

The City will provide the following information (as available) relevant to the project area in support of completion of this planning work:

- Existing plans for 360 Zone pump station
- Existing Semiahmoo area water system piping maps
- Existing Semiahmoo area sewer system piping maps – gravity lines and force mains
- Existing sewer facilities record drawings for lift stations, force mains and gravity line
- Capacity and description for LS 10, LS 8 and downstream lift stations to the water reclamation facility
- Preliminary plans for improvements to LS 10
- Proposed Avista and Inverness development plans and proposed means of service

The following analyses are not included in this Scope of Work:

- Water system or pump station hydraulic modeling
- Sewer system or pump station hydraulic modeling
- Preparation of detailed construction or project cost estimates

(B) Deliverables

The planning work will be documented with the following deliverables:

- Summary memo for recommended water and sewer improvements. Deliverables to be provided in electronic (*.pdf) format.

(C) Schedule

The planning work will be completed by October 31, 2023.

(D) Fee Basis

The Services indicated above are to be billed on a time and expense basis, not to exceed \$35,717. The City may authorize additional supporting or subsequent services on a time and expense basis as confirmed by email to the DEA Project Manager.

DAVID EVANS AND ASSOCIATES, INC. Date

Rodney Langer, P.E., Senior Associate

CITY OF BLAINE:

Michael Harmon, City Manager Date

DEPARTMENTAL APPROVAL:

Harpiar Gandhi, Public Works Director Date

ATTEST:

Samuel Crawford, City Clerk Date