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PROJECT SUMMARY MEMO AND RECOMMENDATIONS

Port of Kingston

Lindvog Remote Ferry Holding Lot

Submitted to  
Port of Kingston and Project Partner Agencies

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## SECTION 1: INTRODUCTION AND PURPOSE

The Kingston-Edmonds Ferry, while operated by Washington State Ferries (WSF) is part of a larger, regional transit and community system that includes WSF, Washington State Department of Transportation (WSDOT), Kitsap Transit, Kitsap County, Port of Kingston and the Kingston community and businesses. The operations of any one of these system elements can have positive and negative effects on the others. As is the subject of this study, the ferry vehicle traffic exceeds the current capacity of the system.

**The Problem:** The Kingston-Edmonds ferry route handles the second highest annual volume of vehicle and drivers (over 2 million vehicles) and the third highest volume of additional passengers (1.9 million) in the Washington State Ferry system. During peak and near-peak periods, the on-dock ferry terminal holding areas fills to maximum capacity without notice, forcing ferry traffic to queue within the travel lane on SR104 from the ferry terminal to Lindvog Road NE (approximately 2/3 mile from the dock) and on a variable width shoulder from Lindvog Road NE to Miller Bay Road (approximately 1.9 miles). The ferry traffic queue creates congestion on SR104 in Kingston, blocking intersections, commercial driveways, and prohibiting local traffic from access to downtown Kingston. The traffic conditions can result in near or full gridlock in Kingston.

The site to be evaluated is located at the southwest corner of the intersection of Lindvog Road NE and SR104. The site is currently fully wooded and is understood to have never been developed, though it has been previously logged. The site slope generally to the south towards properties that are in development or are already developed.

The Port of Kingston, leading the effort for the Project Partners (Washington State Ferries, WSDOT, Kitsap Transit, and Kitsap County), is revisiting the feasibility of a remote ferry holding lot. This feasibility study will perform site investigations, perform traffic analysis including Project Partner projects already in progress, evaluate potential site vehicle capacity, develop site concepts, evaluate operations and prepare cost estimates for the preferred concept.

## SECTION 2: STUDY DOCUMENTS PREPARED TO SUPPORT FEASIBILITY ANALYSIS AND SUMMARIES

### Section 2.1: Study Documents Prepared

In order to evaluate the feasibility of the site to support control of traffic through the Kingston community while effectively holding and conveying vehicles to the main ferry terminal that provides for efficient loading of the ferries, a number of documents were required to examine the environmental aspects of the site and the capacity and function of the site for traffic management. Additionally, meetings minutes were created for working group meetings to document discussions and decisions made at those meetings. The documents are listed as follows:

- Traffic Analysis Report
- Preliminary Geotechnical Engineering Report
- Critical Areas Study and Preliminary Impact Assessment
- Cultural Resources Assessment
- 30% Design Plans
- 30%/Preliminary Drainage Report
- 30% Construction and Engineering Opinion of Cost
- Project Partner Meeting Minutes

## Section 2.2: Traffic Analysis Report

Per-teet modeled and evaluated traffic operations through Kingston with and without the remote holding lot. The traffic operations review included two main components. First, the active traffic management (ATM) strategies for the remote holding lot, focusing on how the lot should operate to best achieve the primary goal for the project of managing queuing through Kingston were reviewed and analyzed on a qualitative level. Second, the simulated traffic demands for the local roadway network and ferries were implemented to test the proposed ATM systems. Traffic operations were modeled with the remote holding lot in 2040—consistent with the WSF Long-Range Planning horizon. Observations and analysis from the traffic simulations helped refine the ATM recommendations.

Our key findings from this traffic analysis effort include the following:

- The site should be designed to accommodate at least 380 vehicles to satisfy peak ferry-traffic demands through 2040, though infrequent extreme peak periods will require temporary shoulder queuing on SR 104;
- The remote holding lot can achieve its primary goal of managing queuing through downtown Kingston, which will improve access and mobility for local traffic;
- The remote holding lot can be controlled by WSF staff or full automation without significant impacts on effectiveness;
- Operating the remote holding lot at all times on all days will result in a more familiar user experience and ensure that queues are always managed through Kingston;
- Using a variable-operations system at the remote holding lot will generally achieve the primary goal of the project, but certain peak arrival periods for ferry traffic (typically at the beginning of the peak period) will introduce temporary access and mobility restrictions for local traffic through downtown Kingston.

Based on these observations, we recommend that the remote holding lot operate continuously. This strategy will reduce driver confusion and ensure that the queue-management goals of the project are always met.

Based on the preliminary modeling efforts, running the system with continuous-use operations will result in queue lengths at the dock lot toll booths that are a maximum of 411 feet, which is less than the distance between the dock-lot toll booths and the Iowa Avenue NE intersection. In conjunction with the planned SR 104 realignment project through Kingston, this proposed remote holding lot operations plan would reduce control delays at the Main Street/NE 1st Street and Illinois Avenue NE intersection significantly, changing from level of service (LOS) F operations at peak demand periods in 2040 to LOS A.

The proposed system should be further reviewed—including in a testing phase after installation—to determine optimal site variables including release rates from the remote holding lot. We anticipate and recommend that the system be installed with the flexibility to modify release rates during different times of day when demand for the ferry system may be lower and warrant reduced rates, for example.

The remote holding lot will require substantial intelligent transportation system (ITS) investments to fully function. Some of the elements that play a key role in the lot operations and driver experience are vehicle detection, license plate reader systems, lane control signing at multiple locations within the lot, and communication systems to allow for connectivity between the remote holding lot and other WSF and WSDOT systems.

The Traffic Analysis Report provides detailed ITS system element schematics for a complete picture of how the remote holding lot would operate to serve the needs of the Community of Kingston.

### **Section 2.3: Preliminary Geotechnical Engineering Report**

Geotechnical investigations test pits performed on November 15th, 2019 encountered dense, gray, sand with silt and variable gravel content; typically at a depth of between 2 and 4 feet. The upper 6 to 12 inches were organic-rich, root-bearing silty sand, then loose to medium dense, light brown, weathered till. Below the organics, the weathered and un-weathered till should perform well as a common borrow fill source for mass grading of the site and will likely behave well for pavement and foundation support. No groundwater was encountered in the test pits. Outside of the wetland areas, there is potential for meaningful infiltration capacity with long term infiltration rates estimated at 0.36 in/hr to 0.72 in/hr. However, depending on proximity to proposed retaining walls and groundwater concerns, infiltration may not be feasible or could cause undesired impacts downstream. Careful attention will be required if using infiltrating stormwater Best Management Practices to not cause downstream negative impacts such as additional groundwater discharge towards existing residences. Onsite soils have been identified as moisture sensitive so good soil management during construction phasing will be required to reuse on site soils. However, onsite soil have been determined to be suitable for structural support if managed properly.

### **Section 2.4: Critical Areas Study and Preliminary Impact Assessment**

A wetland delineation was conducted by Perteet on October 25th, 2019 to complete a prior partial delineation conducted by WSDOT in November 2018. Critical areas and sample plots were flagged for topographic land survey and preliminary impact and evaluation, inclusive of permitting. Field location and mapping of the delineation was completed by professional land survey and as depicted in associated project drawings. Four wetlands are present in or near the project area (Wetlands 1 through 4). Wetland 1 and the north portion of Wetland 3 were preliminarily delineated by WSDOT in November 2018. Perteet completed delineations for Wetlands 2, 3, and 4. Wetland 2 extends off-site to the south and Wetland 4 occurs immediately off-site to the southwest corner of the project site. Perteet also conducted wetland ratings: Wetland 1 (Cat III), Wetland 2 (Cat IV), Wetland 3 (Cat IV), and Wetland 4 (Cat IV). The rating of Wetland 1 (Cat III) was reconfirmed by Perteet after WSDOT review and provision of comments and with subsequent Ecology consultation on specific rating criteria to evaluate the wetland habitat score.

The entire project area, including wetlands, is forested with a diverse native mixed deciduous / conifer forest containing a mosaic of dense understory shrub and herbaceous communities. Himalayan blackberry is present sporadically except for a few dense understory thickets near the wetlands. A preliminary wetland impact assessment was prepared based on the site survey and proposed site plan. Wetland impacts preliminarily identified include 3,820 square feet (sf) of wetland fill to Wetland 1 (Cat III) and 5,340 sf of wetland fill to Wetland 3 (Cat IV). Off-site mitigation is assumed and off-site mitigation opportunities will need to be further evaluated and located in a future project phase. Wetland buffer impacts (removed areas of buffer) for filled wetland areas are typically addressed in the design of wetland mitigation. Wetland buffers associated with wetland mitigation are usually addressed concurrent with wetland mitigation and would need to be sufficient for the category of mitigated wetland pursuant to the Kitsap County Code and to the regulatory standards of Ecology and the Corps. Temporary impacts to buffers adjacent to the site development would require restoration if temporarily impacts occur due to adjacent construction. Mitigation options for wetland fill are identified under Kitsap County Code 19.200.230. Wetland mitigation for Wetland 1 (Category III) wetland impacts would require a 2:1 mitigation to impact ratio for reestablishment or creation, a 4:1 ratio for rehabilitation, 1:1 creation and 4:1 enhancement, or 8:1 ratio for enhancement only. Wetland mitigation for Wetland 3 (Category IV) wetland impacts would require a 1.5:1 mitigation to impact ratio for reestablishment or creation, a 3:1 ratio for rehabilitation, 1:1 creation and 2:1 enhancement, or 6:1 ratio for enhancement only. Pursuant to the Kitsap

County Code, the conceptual area needed for Wetland 1 for enhancement mitigation (a common mitigation option) is estimated at 30,560 sf and the conceptual area needed for Wetland 3 enhancement mitigation is estimated at 32,040 sf.

Local permitting (Kitsap County) and federal and state permitting (Corps of Engineers and Ecology) for wetland impacts will require compensatory wetland mitigation to be identified and designed prior to submitting permit information to reviewing agencies. Next steps for the project include identification and design of wetland mitigation and permitting through Kitsap County, the Corps, and Ecology

## **Section 2.5: Cultural Resources Considerations and Impacts**

Perteet conducted an archaeological survey of the project area on November 18th-19th, 2019. Archaeologists conducted a pedestrian survey of the project area and excavated 50 shovel probes. Shovel probes reached an average depth of 72 centimeters below surface (cmbs), with most terminating in culturally sterile glacial sediment. Historical archaeological material was observed in one shovel probe (SP 23). Cultural material was observed on the surface in the vicinity of the probe and was recovered up to 100 cmbs in the probe. Diagnostic material included a Karo syrup bottle bearing an Owens-Illinois makers mark dating it to 1950 . Probe 23 (SP 23) was near the center of the project area, near the eastern edge of parcel 1-033, approximately 50 meters south of SR 104 and 60 meters north of the existing home at 26424 Granny Smith Lane NE . A 1951 aerial photograph shows no domiciles or structures in the vicinity, but SP 23 was near a road that cut through the project area at that time. Since diagnostic material more than 50 years old was identified, this probe location will be recorded on a Washington State Archaeological Site Inventory Form and submitted to DAHP. The site will not be recommended eligible for listing in the National Register of Historic Places but future ground disturbance impacting this location may require a Department of Archaeology and Historic Preservation excavation permit. No precontact period cultural material was identified in the project area and no other historical material was recorded. Based on these findings, Perteet recommends that an inadvertent discovery plan be developed prior to construction.

## **Section 2.6: 30% Plan Set**

A 30% design set of plans was developed for costing. The plans were additionally developed to demonstrate lot capacity and operations, prepare preliminary utility and drainage, grading and wall elevations. The plan set includes paving and channelization, utilities, grading and illumination, signal, ITS plans.

## **Section 2.7: 30% Preliminary Drainage Report**

The preliminary drainage report was prepared to determine the stormwater requirements for the project. The project is required to provide both water quality and flow control even though the project discharges to the Puget Sound, a flow control exempt receiving water body. Flow control is required because the downstream conveyance system is constrained. The flow control requirement could be waived if the Kitsap County conveyance improvement project is completed prior to the lot construction. Additional coordination with Kitsap County is required to determine if this is possible and is the preferred approach of the project working group. The project proposes to use StormFilter® cartridge systems for water quality and an onsite detention vault for flow control. The overall system is designed to maintain the hydroperiod for the wetlands on site in conjunction with the required flow control for the remaining flow not directed to the wetlands.

## **Section 2.8: Construction and Engineering Opinion of Cost**

A construction opinion of cost was prepared targeting big cost items known at this level of design. The overall construction cost estimate was \$10,000,000 which included a 30% construction contingency. Of this, most of

the cost was contained within the ATM system (\$2,332,000) and earthwork, paving and grading items (\$2,004,800). Drainage elements including conveyance and detention compromised \$759,700.

Other costs included design, construction engineering and sales tax. These items added an additional \$2,830,000. Right-of-way costs and environmental costs were not included in this estimate. The estimate is in 2020 dollars.

## Section 2.9: Partner Meeting Minutes

Five Partner Meetings were convened approximately at 6 week intervals. Meeting minutes were prepared for these meetings to document the discussion, decisions and action items from the meetings. These meetings provided opportunities for the five partner agencies to review work progress, provide feedback and provide updates on partner agency projects that are related or adjacent to the project. The five partner agencies included, Port of Kingston, Washington State Department of Transportation, Washington State Ferries, Kitsap County and Kitsap Transit.

## SECTION 3: RECOMMENDATIONS AND NEXT STEPS

Resulting are the final recommendations and required next steps. They are:

- It is recommended by the working group and the consultant team that the remote lot function on a continuous basis.
- It is recommended that coordination with Kitsap County continue to support elimination of the onsite detention vault through a fee in lieu contribution to the regional facility and conveyance improvement project.
- It is recommended that addition review of onsite wetland mitigation potential and offsite mitigation options be further evaluated.
- Next steps for the project include identification and design of wetland mitigation and permitting through Kitsap County, the Corps, and Ecology